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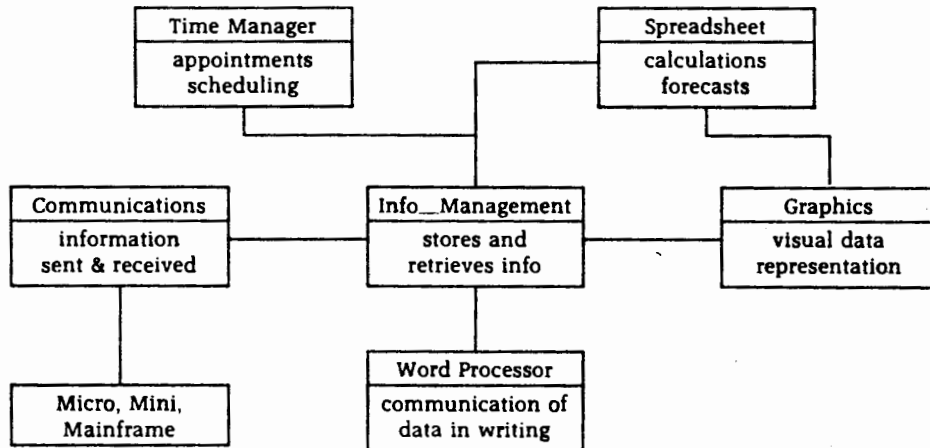
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WHAT IS OPEN ACCESS?

Open Access is an integrated software package of six modular programs that work together to enhance office productivity. The six modules are designed to store, retrieve and manipulate data electronically.

Most office tasks involve filing, scheduling and information processing through calculations, reports, letters, graphs, and communications. The Open Access modules handle these tasks more quickly and efficiently than comparable systems.

Because Open Access is integrated, the same information can be handled in many different ways with one computer and one package.

Time Manager		Spreadsheet
appointments scheduling		calculations forecasts

Communications	Info_Management	Graphics
information sent & received	stores and retrieves info	visual data representation

	Word Processor	
Micro, Mini, Mainframe	communication of data in writing	

In Open Access, **Information Management** performs your filing tasks. The data from Information Management can be calculated and used in forecasts by **Spreadsheet**, visually presented by **Graphics**, and placed in written reports or letters by the **Word Processor**. **Time Manager** schedules your appointments and meetings, and **Communications** links your computer with others for data exchange.

Each of the six modules can be accessed quickly and easily through a main menu. As you move through the modules, you can take your data with you. You don't need to spend time re-entering data into each module, and rechecking the data for correctness.

The operation of each module is similar. If you learn to use one module, the others are easier to learn. Any time you need assistance in Open Access, help screens are available.

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For research and education purposes only.

The pop-up windows in Open Access concentrate tasks and information. Your work is organized and continuous. For example, you need not interrupt your work to use a pocket calculator or look up a simple definition. These tasks are contained in pop up windows.

Open Access can also be customized to fit your computer and your needs. In fact, it fits into almost any modern office. If you have a need to store, retrieve and share information with the world quickly and efficiently, Open Access is for you!

1.1 The Modules

Open Access is composed of six "modules." Each module is designed to meet a specific need.

Information Management is an advanced electronic filing system. You can store, retrieve, and manipulate data quickly and efficiently using the capabilities of a rela-
ι.ɔnal data base.

With Information Management, you can design your screen for convenient data entry, and modify your screens and files if your needs change. To retrieve data, you use a simple, easy to understand query language. With this language, you can retrieve exactly the data you need from one or more files without duplication. Scanning features in this module help you to find information at a glance. After you have your information, you can generate reports, mailing labels and other personalized forms. Information Management is your key to increased productivity.

Spreadsheet is a complete mathematician. In addition to the usual algebraic, trigonometric and business functions, this spreadsheet has Goal Seeking, Consolidation, and the ability to work with more than one model at a time. With Goal Seeking, you can forecast effectively by asking not only "what if" questions, but "how to" questions. The spreadsheet can tell you how you can achieve the goals you set. It can consolidate specific data from different models and achieve one result. If you want to work with more than one model at a time, the spreadsheet can combine them on the screen and manipulate data between them.

The Spreadsheet module works with large amounts of data quickly and efficiently. It can use data from modules within Open Access in calculations and forecasts. With Spreadsheet, your calculations are fast, accurate, efficient and effective.

Word Processor helps you perform your daily writing, editing and typing tasks. Besides inserting, deleting and exchanging text, the Word Processor can move text from one spot to another in your file. It also copies portions of text within your active file, or from another file to the active file.

You can design different paragraph formats and determine settings for wordwrap, autoindent, and right justification. Word Processor can use bold, underline, and Italic print types. It stores abbreviations, and substitutes their full text when they are used. It also has search capabilities and print formatting features. Text files created

with Word Processor can be used with Information Management's Mailer to produce form letters, mailing labels, and other personalized forms. With Word Processor, you can present a positive image with informative, professional-looking documents.

Communications exchanges information with people in your office, across the country, or around the world. Your computer connects with other computers, micros or mainframes, through your choice of available modems. With this module, you can receive information from such sources as the Dow Jones News Service. The information received can be stored in log files for later reference. Information is always at your fingertips!

If you use two computers, you can use one of them to manipulate the files of another. With this capability, you can send and receive much more information. If your Communications module is within Open Access, you can use your information in office memos, reports, or other forms, then quickly distribute it through your computer to those who need it.

Graphics creates full-color or monochrome pictorial representations of numeric data. You can use this module to graph two-dimensional histograms, pie charts, and line graphs as well as three-dimensional bar graphs. After you enter your own data or import data from other Open Access modules, you choose the graph type, select colors and textures, and label the axes by entering a few keystrokes. Graphics then draws the graph to your specifications. You can use Graphics to create and display several graphs at once on the same screen.

Your completed graphs can be saved and stored as "slides." Up to thirty-two different slides can be stored in a "carousel." Your Graphics carousel slide shows can present data in an efficient and attractive way to people who need to see it.

Time Manager organizes your time with a complete electronic calendar, appointment diary, and address book system. It's appointment scheduling options can warn you of potential conflicts, support tentative scheduling, find forgotten entries, and schedule regular meetings automatically. It even has a scratch pad for miscellaneous notes and messages.

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This part helps you to make use of peripheral devices such as printers, plotters, and special graphics adapter cards to get the maximum benefit from Open Access.

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PART I
SYSTEM OVERVIEW

The chapters in PART I show you how to run Open Access on your Computer. They explain how to find the Open Access function keys on your keyboard, and how to effectively use the documentation.

A Guide to Part I

ALL USERS should read Chapters One and Two:
→ Chapter 1   introduces you to using Open Access on your keyboard. It shows you how to find Open Access function keys on your keyboard and how to read the key notation in the documentation.
→ Chapter 2   explains the proper care of diskettes, backing up distribution diskettes, and how to boot up Open Access on your system.

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OPEN ACCESS ON YOUR KEYBOARD

Almost everything you can do with Open Access is just a matter of pressing a few keys and knowing what modules reside on which disk. You also need to know where the keys are located on your keyboard and how we have labelled them in the documentation. This chapter tells you what you need to know about Open Access on your computer. After you have read this Chapter, you will be able to follow the instructions presented in the rest of this manual.

1.1 Locating Key Names on Your Keyboard.

Some of the keys on your keyboard have been programmed to function in a special Open Access way. Each of these keys has been given a specific key name. As you run the demonstration in Part II or follow the tutorial lessons presented in the User's Manual, you will learn how these keys function. In this section, you learn how to locate the keys on your keyboard and how to identify them by their special Open Access names.

The Open Access documentation uses standard notation to identify keys. As you read the documentation, you will see words or symbols enclosed within angled brackets such as <**do**>, <**undo**>, and <**change**>. Each of these angle-bracketted key names refers to a particular key on your keyboard. The key reference tables on the following pages show you how to match each name to its key on your keyboard.

Please find the key template in your Open Access package. It fits over the function keys as shown in the diagram on page 4. Notice that some of the function keys have more than one name. The names of these keys are module dependent, as indicated in Table 1.3.

Please take a moment to become familiar with the Open Access key names and their keyboard locations.

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Table 1.1. The Special Open Access Function Keys

Key Name	IBM PC Key Operation	Function
\<help\>	Press F1	opens help windows
\<menu\>	Press F2	accesses command menus
\<print\>	Press F3	prints to output device
\<search\>	Press F4	finds text or files
\<change\>	Press F6	changes input/menu type
\<calc\>	Press F8	opens calculator window
\<pf1\>	Press SHIFT and F1	User-programmable
\<pf2\>	Press SHIFT and F2	function
\<pf3\>	Press SHIFT and F3	keys
\<macro\>	Press Home	accesses Execute/Learn procedure
\<do\>	Press F10	completes a procedure or answers "yes"
\<undo\>	Press ESC	revokes a procedure or answers "no"

Table 1.2. Keys for Moving the Cursor and Entering Data

Key Name	IBM PC Key Operation	Function
\<up\>	Press ↑	moves cursor up
\<down\>	Press ↓	moves cursor down
\<left\>	Press ←	moves cursor left
\<right\>	Press →	moves cursor right
\<jump up\>	Press END and ↑	distant moves upward
\<jump down\>	Press END and ↓	distant moves downward
\<jump left\>	Press END and ←	distant moves left
\<jump right\>	Press END and →	distant moves right
\<page up\>	Press PG UP	moves up one screen
\<page down\>	Press PG DN	moves down one screen
\<tab\>	Press ⊢→|	preset move right
\<backtab\>	Press SHIFT and ⊢→|	preset move left
\<back\>	Press ←	deletes one character
\<insert\>	Press INS	inserts an entry
\<delete\>	Press DEL	deletes an entry
\<line insert\>	Press END and INS	inserts parameter or file
\<line delete\>	Press END and DEL	deletes parameter or file
\<ret\> or \<enter\>	Press ←	accepts data or files

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FUNCTION KEY TEMPLATE
COMPUTER FUNCTION KEYS

HELP KEY   **MENU KEY**

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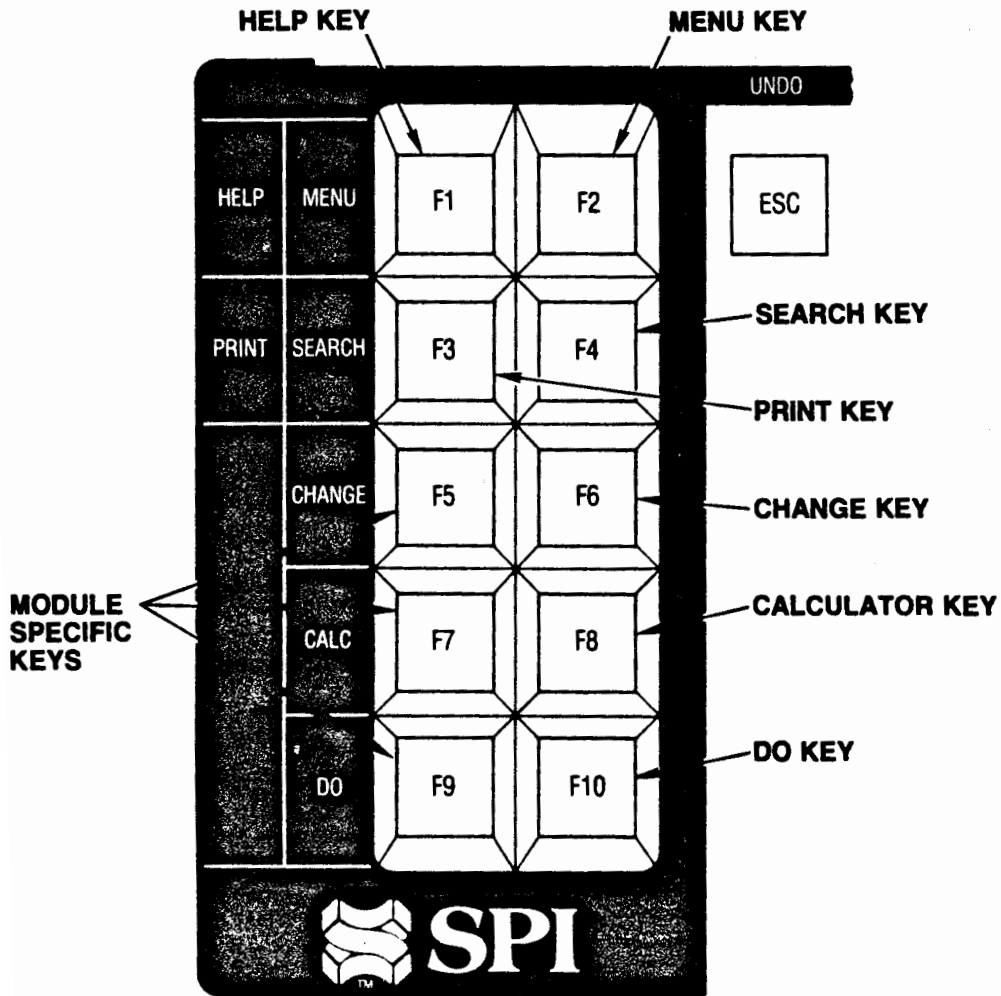
Table 1.3. The Module Dependent Function Keys

Module	Key Name	IBM PC Key Operation	Function
Information	\<del entry\>	Press F5	deletes entry
Management	\<move entry\>	Press F7	moves entry
	\<evaluate\>	Press F8	evaluate fields
	\<make entry\>	Press F9	make entry (locate)
Spreadsheet	\<window\>	Press F5	window
	\<justify\>	Press F7	justify
	\<calc/all\>	Press F8	calculate/all or print/all
	\<column\>	Press F9	start of next column or row
Word Processor	\<paragraph forward\>	Press F5	paragraph forward
	\<paragraph back\>	Press ALT and F5	paragraph backward
	\<sentence forward\>	Press F7	sentence forward
	\<sentence back\>	Press ALT and F7	sentence backward
	\<format\>	Press F8	format
	\<word forward\>	Press F9	word forward
	\<word back\>	Press ALT and F9	word backward
Time Manager	\<scratch\>	Press F5	scratch (pad)
	\<change\>	Press F6	change (delete calendar)
	\<date\>	Press F7	date (calendar)
	\<next\>	Press F9	next (appointment)
Communication	\<start\>	Press F5	starts communication
	\<stop\>	Press F7	stops communication
	\<break\>	Press F9	breaks communication
Graphics	\<graph\>	Press F7	graph

NOTE: These tables are permanently stored within Open Access. Any time you are using Open Access, you may display this table simply by pressing \<help\> twice.

1.2 Understanding Key Notation

Now that you are familiar with the Open Access key names and their location on your keyboard, you can learn how to interpret the instructions you will see in the documentation.

"Press <key name>." An instruction containing an angle-bracketed word like <help>, <change> or <enter> refers to one of the special keys on your keyboard. Follow the instructions by pressing the key or key sequence indicated on the Key Reference Table. DO NOT enter the angle brackets <> themselves, nor the word "press."

"Enter [A STRING]." Sometimes you will see a string of characters enclosed by square brackets, such as [OA], [A:], and [PRODNO.TXT]. These refer to the standard alphanumeric and punctuation keys on your keyboard. When you see these instructions, type in the characters (including spaces), **within** the brackets exactly as they appear in the instructions. Please do not enter the [ ] brackets themselves, nor the word "enter." You may use upper and lower case letters interchangeably, unless instructed otherwise.

<help><help>. Whenever you can't remember which key to press, just press the <help> key twice. The Key Reference Tables will appear on your screen for quick reference. Press <undo> twice to remove the tables from your screen.

1.3 Reading the Instruction Tables

Throughout this volume, the interaction between you and your computer is presented in table form. The "PROMPT" column tells you what should appear on your screen. As you follow the instructions, check to make sure that what you see on your screen matches the description or prompt in the table.

The "RESPONSE" column tells you what to do in response to the prompt on your screen. Please follow these instructions exactly, by pressing the keys indicated by <> brackets or entering the characters indicated with [ ] brackets. Remember: don't enter the brackets themselves.

The "EXPLANATION" column contains a brief note to help you understand what happens when you enter a particular response.

PROMPT	RESPONSE	EXPLANATION
This describes what appears on your screen.	This describes what you should do in response.	This summarizes the results of your entry

THE OPEN ACCESS DISKETTES

This chapter shows you how to use the disks in your Open Access package. You learn the contents and function of each diskette, and how to care for and backup your disksettes. It is important to take care of your diskettes properly and back them up regularly to maintain the integrity of your data.

2.1 Taking Care of Your Floppy Diskettes

Flexible disks ("floppies") are the permanent means of storage for all of your pro-
grams and data. It is vital to take good care of your disks. Here are a few guidelines to follow.

(1) To load the disks in a horizontally mounted disk drive, first remove the outer protective sleeve (not the black jacket), then insert the disks into the drive with the label facing up and toward you. To load the disks in a vertically mounted disk drive, insert the disks into the drive with the label facing toward you and to the left.

(2) Always keep the disk in its protective sleeve. Never expose the disk to excess heat, humidity, dust, or cigarette ashes as these elements may cause permanent damage.

(3) Never touch the exposed portion of the disk. Doing so may cause a loss of data, if not permanent damage to the disk. A good rule to follow is: always hold your disk lightly by the label end.

(4) Never place a disk on top of your terminal, near a speaker, or close to any source of magnetic fields. "Magnetizing" a disk can cause your data to be lost or destroyed.

(5) Always use a felt-tip pen, never a ballpoint pen or pencil, to write on the disk label. Always label your disks carefully so that you can identify their contents.

(6) Never bend or fold the disk. Handle it with care.

(7) ALWAYS KEEP A BACKUP COPY OF EVERY IMPORTANT DISK. Floppy disks are generally immune to normal office hazards, but they are not indestructible. To prevent accidents and insure the integrity of your programs and data, you should periodically duplicate your data disks. This duplication process is called "backing up disks;" the duplicates are called "back ups."

2.2 Which Disk is Which?

Your Open Access package includes five (5) 5-1/4 inch floppy diskettes in a diskette holder. Remove the numbered diskettes from the holder and examine the labels.

Disk #1 — BOOT

Purpose: Use this diskette to start or "boot" Open Access with your MS-DOS operating system disk.

Contents: Utilities

Disk #2 — CODE1

Purpose: Use this diskette instead of disk 1 to run the following Open Access modules.

Contents: Communications module
Word Processor module
Time Manager module
Macro Editor

Disk #3 — CODE2

Purpose: Use this diskette instead of Disk 2 to run other Open Access modules.

Contents: Information Management module
Spreadsheet module
Graphics module

Disk #4 — TUTORIAL DATA

Purpose: Use this diskette while you are reading the User's Manual and learning how to run the Open Access modules.

Contents: Sample data files for instructional use.

Disk #5 — GETTING STARTED

Purpose: Use this diskette while you are reading the Open Access Demonstration in Part II of this manual.

Contents: Demonstration data files.

Your Code disks (BOOT, CODE1, CODE2) are always used in drive A, or the drive that is used to boot your system. Your data disks (TUTORIAL, GETTING STARTED) are always used in drive B.

2.3 Backing Up Your Distribution Disks

To protect your investment in Open Access you should immediately make copies or "backups" of the disks in your Open Access package. These are your working copies of Open Access. If anything happens to the backups, you can copy the Open Access disks again. Never enter data onto the original Open Access diskettes.

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Backing up a disk involves preparing a blank disk to receive data (formatting), co-pying the original disks and comparing the copies to the originals. The procedures you use to do this are outlined in your Operating System Manual. When you format and copy the disks that will become the Open Access backups, use the command (DISKCOPY) to give the backups the same name as the distribution disks: BOOT, CODE1, CODE2, TUTORIAL, GETSTART.

Note: To create a BOOT back-up disk with the MS-DOS Operating System on it, follow the procedure outlined in the next section instead.

Transferring MS-DOS to Your BOOT disk When you create your backup of the BOOT disk, you can add the MS-DOS operating system. If you do so you can boot up direct-ly from the program disk and save time whenever you want to run Open Access. First use the formatting command (FORMAT with /V/S) that copies the operating system and allows you to name the disk "BOOT". Then use the command (COPY) that copies the files from the original BOOT disk. The files you need to transfer are:

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OA.EXE
OA1.SPI

</div>

2.4 Booting up Open Access on Your System

Do you have a hard disk system?
Yes → Please turn to Chapter Four for special instructions.
No → Please follow the instructions in this section to boot up Open Access.

The procedure for starting the system, "booting up," is used any time you turn on your machine to use Open Access. First access the DOS prompt (A>) as described in your Operating System Manual, then follow these steps to boot up Open Access.

PROMPT	RESPONSE	EXPLANATION
A>	Insert your copy of the BOOT disk in drive A; enter [OA] and press <ret>	Accesses the Open Access program
Open Access Today's Date:	Enter the date in mm dd yy format. Press <ret>	Accepts date; Open Access Options menu displayed

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PART II
OPEN ACCESS DEMONSTRATION

In the following pages, you will see some examples of how Open Access can work for you to perform a variety of tasks like those you encounter every week in your office. What you will see is only a small selection of features from the Open Access menus — enough to give you a taste of how the different modules function. After you have run the demonstration, you can turn to the step-by-step instructions in the User's Manual for the complete Open Access performance.

A Guide to Part II

Do you have this system?

An IBM Personal Computer, Compaq or other compatible with
–a monochrome screen
–two floppy disk drives

Yes → Please continue with the Open Access Demonstration.

No → If you have a color monitor and graphics card, you can run the Demonstration without color capability. Later, in Part III, you can configure Open Access for your color monitor. If you have a hard disk please read Chapter Four "Installing Open Access on Hard Disk Systems" before you run the Demonstration.

Note to floppy disk users: This demonstration changes information on your GET-TING STARTED disk (Open Access Disk 5). Each time the demo is run, you should use a fresh backup to insure the information presented matches the documentation below.

Note to hard disk users: To rerun the demo, hard disk users should recopy the original demo files from the backup floppy disks using option #3 of the Hard Disk Utility program described in section 4.5. Once you have put Open Access on your hard disk you can skip the instuctions in Part II related to changing code disks as you move from module to module.

Demonstration

This demonstration leads you through four modules of Open Access.

— Information Management

— Spreadsheet

— Graphics

— Word Processor

The demonstration first shows you how to use the windows in Open Access. It then continues as follows:

You perform these steps...	to produce this result...	with this module...
	Sales Information	
Retrieve the information on Product 611		Information Management
	Sales Forecast	
Forecast revenues and profits using conventional "what if" method and Goal Seeking		Spreadsheet
	Graphics/Displays	
Display information in 3D overlays and windows		Graphics
	Composite Letter	
Compose a letter and copy information from one file to another		Word Processor

**A composed letter containing information
from different modules**

After you boot-up Open Access and enter the date, your screen looks like this:

	Options
	Info__Mgmt
	Spread__Sheet
Open Access	Word__Processor
⌐ 1984 Software Products International	Graphics
	Time__Mgmt
	Communication
Today's Date: 01-03-84	Utilities
	Operating__System
	\<arrows\> \<do\>
	\<search\> \<undo\>

3.1 Some Common Features

The Options menu, in the upper right corner of your screen, lists all the OPEN AC-
CESS modules. To access a module, you simply select it from the menu. Before try-
ing it out, though, let's look at some special features that are common to all OPEN
ACCESS modules.

Using the Help key Suppose you are using one of the OPEN ACCESS modules and
you forget what to do next. One way to look for a reminder is to open the help
window.

PROMPT	RESPONSE	EXPLANATION
Open Access Options Menu	Press \<help\>	Help window opens
Help information	Press \<down\>; hold key down Press \<up\>.	Scrolls information to display portions of text for this part of the program

A "window" is an area on your screen that frames information. While a window
is open, you can see the information you need and manipulate it. As you will see,
you don't have to clear the screen each time you want access to another set of infor-
mation. Windows can be opened on top of other windows in layers, so that the in-
formation you want is always on top.

The information in the Help window is context-sensitive. Whenever you open a Help window, you see only those help-descriptions that apply to the module command you are using right now.

Notice the list of <key names> along the "sill" of the window. This is another place to look for a reminder when you don't know what to do next. The <key names> listed on the sill are the ones that are available while this window is open.

You have already seen that <key names> refer to particular keys on your keyboard (Chapter One), but you may have forgotten which key goes with which <key name>. More help is available.

PROMPT	RESPONSE	EXPLANATION
Help window with portion of help text	Press <help> again	Accesses listing of Open Access function keys
Function key list (upper right corner)	Press <page down> five times	Displays additional function keys

The key reference charts are always available just by pressing <help> twice.

Using the <undo> key Suppose, while you are running the demonstration, you accidentally press the wrong key and get an unexpected result on your screen. Or suppose you have finished looking at the information on the screen and want to continue. Use the <undo> key to clear the top window from your screen. You can start again from the window behind it.

PROMPT	RESPONSE	EXPLANATION
Function key list	Press <undo>	Closes Function key window
Help window	Press <undo>	Return to Open Access Options Menu

Using the Calculator Key Open Access provides you with a built-in "calculator," which can do basic math and even handle advanced functions. For this demonstration we stick to simple math.

PROMPT	RESPONSE	EXPLANATION
Open Access Options Menu	Press <calc>	Accesses Calculator window (upper left corner)
Calculator prompt	Enter [12+34] and press <ret>	Enters equation into calculator
Result, "46," is displayed	Enter [-15] and press <ret>	Enters the equation 46 minus 15
Result, "31," is displayed	Press <undo>	Closes Calculator window; Open Access Options Menu is displayed

Using the <Search> key The File Manager displays portions of a disk's directory on the screen. It is accessed by pressing <search>. If <search> is pressed from within the Options window, the files shown are those applicable to the module highlighted, in this case, Information Management. If you press <search> at this point, the file names will be placed in alphabetical order by file type.

PROMPT	RESPONSE	EXPLANATION
Options menu	Press <search>	File Manager window for Information Management appears

The windows on the screen show the directory of files stored on the first volume listed in the Volume Search table (usually drive B). The left window lists the volumes on line and the right window lists the files available from the highlighted volume.

PROMPT	RESPONSE	EXPLANATION
File Manager window	Press <undo>	Closes File Manager window; returns to Options menu

Running the demo: Now that you have seen some of the special features of OPEN ACCESS, you are ready to see the modules in action. Please follow instructions as carefully as you can. Remember to get <help> or to press <undo> if you make a mistake.

3.2 Information Management

To accomplish are goal, we retrieve the sales history information we need from the data base. After a preliminary review of the information, we send it to the Spread-sheet to complete the forecast analysis.

First, we access the Information Management module by selecting it from the Options window.

PROMPT	RESPONSE	EXPLANATION
Options menu	Press <I>	Selects Information Management
Insert Info__Mgmt disk and press <do>	Remove the BOOT disk, insert the CODE2 disk and press <do>	Accesses Information Management
Data Base Operations Menu.		

Next, we create a sales record for 1984 that will contain the product information we need. The record form we need is already stored in the data base.

PROMPT	RESPONSE	EXPLANATION
Data Base Operations Menu	Press <E>	Accesses Entry Command
"FROM"	Enter [SALES2.SMK] and press <do>	Retrieves the file that contains the form (screen mask)

```
                         Product Sales

        Product Number 0                  Year
     ─────────────────────────────────────────────────────────
     Sales Rank        0.00      Sales Volume (in thousands)   0.00

     Advertising       0.00      Description

     Quantity          0.00      Location

     Unit Cost         0.00      Inventory    0

     Unit Price        0.00      Contact

     Last On Sale      0· 0· 0    Phone Number
     ─────────────────────────────────────────────────────────
     Number   <movements> <do> <undo> <menu> <print> <calc> <make ent>
```

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The product sales form we are using requires that the Product Number entry (where the cursor is now) matches a predetermined list of product numbers. This prevents us from accidentally entering an invalid number. To demonstrate the "Must Match" feature, let's enter an invalid number.

PROMPT	RESPONSE	EXPLANATION
Product Sales form, cursor at Product Number	Enter [611] and press <ret>	Enters a value in a must match field
Must Match Window opens using all valid product numbers	Press <up> until "601" is highlighted and press <do>	601 is entered in the product number field. The must-match window closes
Product Number	Press <ret>	Positions cursor on Year

Now we can fill in some information about product sales. Some of the information is left blank or at zero, to be filled in through recalculation, or during the Spreadsheet analysis.

PROMPT	RESPONSE	EXPLANATION
Year	Enter [1984] and press <ret>	1984 appears in the Year entry.
Sales Rank	Enter [6000] and press <ret>	Enters Sales Rank and advances to Advertising
Advertising	Enter [1500] and press <ret>	Enters Advertising and advances to Description
Description	Enter [Omega Microcomputer] and press <ret>	Enters Description and advances to Quantity
Quantity	Enter [10] and press <ret>	Enters Quantity and advances to Location
Location	Enter [San Diego] and press <ret>	Enters Location and advances to Unit Cost
Unit Cost	Enter [1500] and press <ret>	Enters Unit Cost
Inventory	Press <ret>	Retains zero entry and advances cursor to Contact

Now that we have filled in the necessary information, we can perform a quick recalculation to find the correct values for the Sales Volume and Unit Price fields. Expressions have already been entered specifying the calculation procedure.

PROMPT	RESPONSE	EXPLANATION
Contact	Press <calc>	Performs a recalculation on the Sales Volume and Unit Price fields; Sales Volume is 20550.00, Unit Price is 2055.00 (in thousands)
Contact	Press <do>; then press <menu>	Saves the record in the data base and returns to the Operations Menu
Data Base Operations Menu	Press <N>	Clears the Data Base of active files

Now the Product Sales record for 1984 is saved in the data base. Next we scan the Sales records to update the information for the amount spent on advertising in 1983.

PROMPT	RESPONSE	EXPLANATION
Data Base Operations Menu	Press <B>	Select Browse command
File:	Enter [SALES] and press <ret>	Enters file to be scanned
Browse windows		

600		PRODNO	600
601		YEAR	1982
601		SALES	15.00
601		VOLUME	376.06
601		ADV	15.00
601		DESCRIP	Omega 2000 Network
602		QUANTITY	1.00
603		LOCATION	San Francisco
603		UNITCOST	274.50
604		INVENTORY	50
604		UNITPRICE	376.06
605		CONTACT	John Erickson
608		SALE	4- 15- 82
		PHONE	(346) 346-8997

SALES.PRODNO
<arrows> <change> <make entry> <del entry> <menu> <search>

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The Browse feature is used to scan files for information. Note how the information for a full record is displayed in the right window, and the specific field values for all records in the the file are displayed in the left window. In this case, we want to find the record for 1983 sales of product 601. The Search capabilities in the Browse command find the record quickly.

PROMPT	RESPONSE	EXPLANATION
Browse windows	Press <search>	Access Search function
Expression:	Enter [YEAR="1983"] and press <ret>	Record for product 601 for 1983 appears on the right

Once the record is located, we can change the information in that record. After we change the Advertising information, we save the updated record.

PROMPT	RESPONSE	EXPLANATION
Record for product 601 for 1983	Press <change>	Screen mask for this record appears
Product Number:	Press <ret> three times to Advertising; enter [1800] and press <ret>	Advertising changed to 1800.00 (thousands)
Description:	Press <do>	Accepts record change
Browse windows	Press <menu>	Returns to the Data Base Operations Menu

Now that our files are updated to reflect the latest data, we can retrieve all the information we need to produce a sales forecast.

Usually, we would store the information we are retrieving in three separate files: a sales file, a manufacturing file and a marketing file. Each file would be maintained by a different department of our company without duplicating information needed by the other departments. Then, whenever comprehensive information is needed, the three files would be "joined" (linked together) to form a composite of the three types of information. Information Management provides this sophisticated "join" feature. However, to simplify the demonstration, we have organized the information we need in just one file.

The information we need for our analysis includes the following data from the demo file: sales year, product number, product description, quantity sold, unit cost, retail unit price, and advertising expenses. Using a predetermined automatic procedure, we retrieve from the file only the information we need right now. The automatic procedure enters the "query" statement specifying which fields we want to see, and sorts them by sales year.

PROMPT	RESPONSE	EXPLANMATION
Data Base Operations Menu	Press <L>	Selects List command
FROM	Press <macro>	Accesses automatic procedure
"Execute" is highlighted	Press <do>	Selects to execute the procedure
"Execute what file:"	Enter [DEMO] and press <ret>	Starts the automatic procedure

Open Access automatically enters the conditions necessary to retrieve the specified information. This is your query statement.

PROMPT	RESPONSE	EXPLANATION
Procedure ends	Press <do>	Displays information according to selection criteria
List of records	Press <menu>	Returns to Data Base Operations Menu

Finally, we can send the information we need to the Spreadsheet to compute the sales forecast analysis. We use the Context command to create a temporary file in memory that can be read by the Spreadsheet.

PROMPT	RESPONSE	EXPLANATION
Data Base Operations Menu	Press <change>	Access the Data Base File Maintenance Menu
Data Base File Maintenance Menu	Enter [CO]	Selects the Context command
Options Window	Press <down> to highlight "Spreadsheet" then press <do>	Selects to context the file from Information Management to Spreadsheet
"Enter Destination Model Name"	Enter [FORECAST] and press <ret>	Moves 6 records to the FORECAST file in Spreadsheet

The message "Moving 6 records" informs you that the data on your screen is being sent to the Spreadsheet module.

3.3 Spreadsheet

From the Spreadsheet, we use the information to calculate the values necessary to reach headquarter's revenue and profit goals. Once we have the necessary results, we print the spreadsheet out to a word processing file and transfer the revenues, expenses, and profits information to the Graphics module.

The Spreadsheet model FORECAST is on your screen.

PROMPT	RESPONSE	EXPLANATION
"Enter context data by: Rows Columns"	Press <R>	Selects to enter data by rows
"Load to coordinate (top-left): A1"	Enter [A3] and press <ret>	Enters starting coordinate

Information Management also brings over the field names so that your information has some labels. Our Spreadsheet model, however, already has labels. Follow these steps to erase the labels which were transferred from the Information Manager:

PROMPT	RESPONSE	EXPLANATION
Spreadsheet Command menu is displayed	Press <B>	Selects Blank command
"Blank what area: A1"	Press <3> and then <ret>	Enters row 3 as the area to be erased
"Verify blank area: A3:HH3"	Press <do>	Confirms blank

All of the entries in row 3 are now blank.

W1	A	B	C	D	E	F
1	YEAR	PRODNO	DESCRIP	QUANTITY	UNITCOST	UNITPRICE
2						
3						
4	1980	601	Omega Microcomputer	1.00	$1500.00	$2049.74
4	1981	601	Omega Microcomputer	3.00	$1500.00	$2049.74
5	1982	601	Omega Microcomputer	2.50	$1500.00	$2049.74
6	1983	601	Omega Microcomputer	4.00	$1500.00	$2055.00
7	1984	601	Omega Microcomputer	10.00	$1500.00	$2055.00
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						

The matrix on your screen is set up in tabular form. All units of information are referred to by their coordinate locations. Each unit of information (i.e. word or number) can be accessed by specifying the column letter and the row number of the item.

The upper left hand corner of the spreadsheet is referred to as location "A1." The pointer is located at this coordinate whenever you enter a new model.

We need to arrive at the values for quantity of sales and advertising amounts which will satisfy headquarters' goals of ten million dollars in revenue and one million dollars in profit. First we experiment with normal "what if" procedures: we simply start entering some educated guesses for numbers and let the system recalculate the results to see how close each guess is.

The experiment is meant to show you that normal "what if" calculations can become quite time consuming. In contrast, the Spreadsheet's goal seeking feature by-passes the guess work and gets right to the point. We enter the results we want and let Open Access calculate the values automatically.

Follow these steps to enter our first set of "what if" possibilities to reach our revenue and profit targets:

PROMPT	RESPONSE	EXPLANATION
Command menu	Press <undo>	Closes Command menu window
"input:" prompt is displayed	Press <tab>	Accesses "goto" key to let us move quickly to a coordinate
"Move to what coordinate: A1"	Enter [D8] and press <ret>	Enters pointer destination
Pointer at D8	Enter [4.5] and press <ret>	Enters new quantity value at D8

Since our demonstration model maintains "Quantity" in groups of thousands of units, entering 4.5 asks, "what if we sell 4,500 units?" Follow the steps below to enter a number for the amount of advertising:

PROMPT	RESPONSE	EXPLANATION
"input:"	Press <tab>	Accesses "goto" key
"Move to what coordinate: A1"	Enter [G8] and press <ret>	Enters pointer destination
Pointer at G8	Enter [1600] and press <ret>	Enters new advertising value

As with Units Sold, Advertising is in groups of thousands, this time thousands of dollars spent. This asks, "what if we spend 1.6 million dollars in advertising?" To see the results of these guesses on revenues and profits for 1984, proceed as shown below:

PROMPT	RESPONSE	EXPLANATION
"input:"	Press <menu>	Accesses Command menu
Command menu	Press <R>	Selects Recalculate command
"Recalculate: equations over what area: G8"	Press <8> and then <ret>	Enters row 8 to be recalculated

All of row 8 in the Spreadsheet model will be recalculated using the values just entered. Look at locations I8 and K8 to see the effects on Revenues and Profits, respectively. As you can see, we have not quite reached Headquarters' goals, which were $10 million in revenues and $1 million in profit. Using this "What if" method, it will take a long time to come up with exactly the right combination of values.

Now, let's use the Goal Seeking feature of the Open Access Spreadsheet and see how easy it is to come up with the right values. Follow these steps:

PROMPT	RESPONSE	EXPLANATION
Command menu	Press <G>	Selects Goal Seeking command
DEPENDENT Variable is highlighted	Enter [I8] and press <ret>	Enters location of 1984 revenues
TARGET Value is highlighted	Enter [10000] and press <ret>	Enters 10,000 as the goal for revenues
"Enter another variable?"	Press <do>	Answers yes to the question
DEPENDENT Variable is highlighted	Enter [K8] and press <ret>	Enters location of 1984 profits
TARGET Value is highlighted	Enter [1000] and press <ret>	Enters 1,000 as the goal for profits
"Enter another variable?"	Press <undo>	Answers no to the question
INDEPENDENT Variable is highlighted	Enter [D8] and press <ret>	Enters location of units sold
INDEPENDENT Variable is highlighted	Enter [G8] and press <ret>	Enters location of advertising expenses

The Open Access Spreadsheet will now go through the calculations necessary to solve for the Quantity and Advertising values that will achieve our target values for Revenues and Profits. When it is finished, you can follow these steps to insert the values into our model and recalculate all the formulas.

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PROMPT	RESPONSE	EXPLANATION
"Save Independent Variables?"	Press <do>	Inserts the new Quantity and Advertising values into the model
"Do you wish to Goal Seek again?"	Press <undo>	Returns to FORECAST model
"Recalculate: equations over what area: G8"	Press <8> and then <ret>	Enters row 8 as area to be recalculated

We have found the values which will satisfy Headquarters' goals and we did it in only one step! Before we do anything else, let's print out the Spreadsheet to a text file on a disk. This way we may include it in the Word Processing document that we will send to Headquarters. To print the model to a file on disk, follow these steps:

PROMPT	RESPONSE	EXPLANATION
Command menu	Press <P>	Selects the Print command
"Print area: "	Press <calc/all>	Enters entire area of model
Output Device Selection window	Use arrow keys to highlight "DEMOFILE" and press <do>	Selects output file
"Output device for printer is not defined - Enter output device or file name"	Enter [FORECAST.TXT] and press <ret>	Enters text file name
"Print: Heading Print__area Equation__dump"	Press <P>	Selects Print__area option; model is printed to text file

Now we may proceed to the Graphics module to graph the revenues, expenses, and profits for the years 1980 through 1984. Follow the steps outlined below:

PROMPT	RESPONSE	EXPLANATION
Command menu	Press <Q>	Selects Quit command
"Quit: Model__Selection Menu Options Context"		

There are two possible paths at this point. This demonstration only displays graphs on a monitor screen. If your monitor has graphics capabilities, proceed to the Graphics demonstration. If not, bypass Graphics and proceed directly to Word Processing.

Note: You do not have to have a monitor with graphics capabilities to use the Open Access Graphics module. If you have a plotter device connected to your computer peripherally, you can display a graph as output on your plotter.

Without Graphics:

PROMPT	RESPONSE	EXPLANATION
"Quit: Model__ Selection__Menu Options Context"	Press <O>	Selects Options
"Quit: After__Saving Without__Saving"	Press <W>	Quits without saving your changes
Options window	Press <W>	Selects Word Processor module
"Insert Word Processor disk and press <do>	Remove the CODE2 disk from drive A; replace it with your copy of the CODE1 disk; press <do>.	Accesses the Word Processor

PLEASE SKIP AHEAD TO WORD PROCESSOR (SECTION 3.5)

With Graphics:

PROMPT	RESPONSE	EXPLANATION
"Quit: Model__ Selection__Menu Options Context"	Press <C>	Select Context
"Quit: After__Saving Without__Saving	Press <W>	Quits without saving your changes
"Enter context data by Rows Columns"	Press <R>	Selects rows
"Context: Get context data from what area?"	Enter [I4:K8] and press <ret>	Enters area of data to be sent
Options window	Press <G>	Selects Graphics as destination

3.4 Graphics

From past experience, we know that headquarters does not like to wade through a stack of numbers. So to display the goals from our forecast, we include a graph of the revenues, expenses, and profits for the years 1980 through 1984. The graph also shows how the goals compare against preceeding years. The Open Access Graphics module makes it easy to generate a 3-D, bar graph that shows the whole story in one picture.

We can immediately display the data sent from the Spreadsheet module without chart titles or descriptions.

PROMPT	RESPONSE	EXPLANATION
Graphics Chart Description Window	Press <T> then <graph>	Displays information from Spreadsheet as a 3-D graph
3-D graph display	Press <undo>	Returns to Chart Description Window

We can now display the same information with titles and descriptions by loading a Graphics file that contains the labels and color scheme for this information.

PROMPT	RESPONSE	EXPLANATION
Chart Description window	Press <menu>	Opens the Graphics Menu
Graphics Menu	Press <do>	Accesses the Load command
Asks if it is okay to throw away the present workfile	Press <do>	Removes the work file
"Load file:"	Press <search>	Accesses search window
List of available files	Use arrows to highlight FORECAST.CHT and press <do>	Enters FORECAST.CHT after the prompt
"Load file: FORECAST.CHT"	Press <ret>	Accepts FORECAST

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The FORECAST file is loaded. Now we will add our Spreadsheet data to the file.

PROMPT	RESPONSE	EXPLANATION
Chart Description Window	Press <menu>	Accesses menu window
Graphics menu	Press <I>	Accesses Import command
Data Setup Window	Press <down> then <right>	Highlights "Refresh—Context"
"Refresh—Context"	Press <do>	Accesses Import Setup window
"Refresh by: Levels Positions"	Press <do>	Selects Levels option

The Contexted data is "refreshed" or restored. Now we can display a new three-dimensional bar graph.

PROMPT	RESPONSE	EXPLANATION
Import Setup window	Press <menu>	Accesses Graphics menu
Graphics menu	Press <G>	Selects Graph command

The graph displays revenues, expenses, and profits for the years 1980 through 1984. By selecting other Graphics options, we can view the same information in many different ways. The following steps use the Spreadsheet information to draw a simple bar graph, a pie chart, a line graph, an overlay graph, and some windowed graphs.

PROMPT	RESPONSE	EXPLANATION
3-D bar graph is displayed	Press <undo>	Returns to Chart Description window
Chart Description window	Press <right> until "Simple" is highlighted	Selects Simple graph type
"Simple" highlighted	Press <down> until "Bar" is highlighted	Selects Bar level type
"Bar" highlighted	Press <graph>	Displays simple bar graph

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A simple bar graph of the Spreadsheet data appears on your screen. As you con-
tinue displaying the different graphs, wait until the graph is completely finished
before pressing <undo> to go on. If you inadvertently press it and the graphing
pauses, press <undo> again to return to the Chart Description window.

PROMPT	RESPONSE	EXPLANATION
Simple bar graph	Press <undo>	Returns to Chart Description window
Chart Description window	Press <P>	Selects Pie graph type
"Pie" highlighted	Press <graph>	Displays pie chart
Pie chart	Press <undo>	Returns to Chart Description window
Chart Description window	Press <L>	Selects Line graph type
"Line" highlighted	Press <graph>	Displays line graph

Now we will display several graphs on the screen at once using the Windowed graph
option.

PROMPT	RESPONSE	EXPLANATION
Line graph	Press <undo>	Returns to Chart Description window
Chart Description window	Press <up> until "Simple" is highlighted	Selects Simple graph type
"Simple" highlighted	Press <W>	Selects "Windowed" level type
"Windowed" highlighted	Press <menu>	Accesses Graphics menu
Graphics menu	Press <G>	Selects Graph command

A message now appears asking you if you would like to pause between the display of each graph level.

PROMPT	RESPONSE	EXPLANATION
Pause message	Press <do>	Answers "yes"
Windowed graph is displayed	Press <do> after each graph	Displays all of the graph levels
The fifth level is displayed	Press <do> again to return to the Chart window	Chart Description window

After the graphs are all displayed, the Chart Description window returns to your screen. The last type of graph we will display is the Overlay graph.

PROMPT	RESPONSE	EXPLANATION
Chart Description window	Press <O>	Selects Overlay graph type
"Overlay" highlighted	Press <graph>	Displays graph
Overlay graph displayed	Press <undo>	Returns to Chart Description window

In the Graphics module, you can also alter the color, texture, and outline of each graph. The size and position of the windows can be adjusted as well as the rotation and tilt of 3-D graphs.

Now that you have seen a sample of what the Open Access Graphics module can do, let's move to the Word Processing module. To access the Word Processor module, follow the steps listed below:

PROMPT	RESPONSE	EXPLANATION
Chart Description window	Press <menu>	Accesses Graphics menu
Graphics menu	Press <O>	Selects Options
Ok to throw away current workfile?	Press <do>	Throws away current workfile
Options window	Press <W>	Selects Word Processor module
"Insert Word Processor disk and press <do>	Remove the CODE2 disk from drive A; insert your copy of the CODE1 disk; press <do>	Accesses the Word Processor

3.5 Word Processor

We can assemble the final report using the Word Processor. First, we polish the text of the report using some of the Word Processor's special features. Next, we create a personalized memorandum for each board member that includes the report and the sales forecast results from the Spreadsheet. The complete report is finally sent to Information Management for "mailing."

First, the Word Processor reads in the text of the report

PROMPT	RESPONSE	EXPLANATION
File Selection menu	Press <R>	Selects Read_old option
"Name of old file:"	Enter [REPORT DOC] and press <ret>	Selects existing file

Press <page down> and <page up> to page through the report. Notice that some of the text appears in different colors (different intensities on a monochrome screen). This is because these sections of text are designated to be printed out with special attributes such as underline, boldface, and italicized as well as any combination of the three.

At the end of the file, you see the following: " include forecast.ima." This command instructs the printer to include the graphics file FORECAST at the end of this report when it is printed.

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The sales forecast must be included in the report. We copy the information from the text file that contains the forecast into the report file. When you are ready to copy in the file, perform the following steps:

PROMPT	RESPONSE	EXPLANATION
Word Processor menu	Press <menu>, and then <C>	Selects Copy command
"Press <change> for file copy or move to start of block to copy"	Press <change>	Chooses to copy from another file
"Copy from which file?"	Enter [FORECAST.TXT] and press <ret>	Enters name of file to copy
FORECAST.TXT appears	Press <do>; then <down> to move to end of text; press	Highlights the block of text to copy
Main Window splits. "Select destination of text."	Use arrows to move cursor to end of third paragraph; press <do>	Copies text into REPORT.DOC

We have now successfully combined the report with the sales forecast information. Now we use a few additional Word Processing features to polish up the report.

Because the name of the product is stored as an abbreviation, we can easily add the name to a sentence in the report. Notice how the report is remargined when the name is added.

PROMPT	RESPONSE	EXPLANATION
Word Processor menu	Press <I>	Accesses Insert command
Insert Command window	Press <ret>	Formats chart
Insert Command window	Use arrow keys to move cursor to end of first sentence in third paragraph	Positions cursor
Cursor positioned on period	Enter [of OM]; press <space>, then press <do>	Enters text

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Now we reformat a paragraph to emphasize the quote contained within it. Notice how quick and easy it is to block margin paragraphs.

PROMPT	RESPONSE	EXPLANATION
Insert command window	Press <paragraph back> three times	Moves cursor to preceding paragraph
Cursor in second paragraph	Press <format>	Accesses format window
Format window	Press <B>	Selects Background
"Enter paragraph type:"	Press <C>	Selects paragraph style C

The paragraph has now been remargined according to paragraph parameters which have been previously set up in a table. You can include up to eight paragraph styles in the table, or set the margins and indentation at the time of margining.

Now that the report is properly prepared, we save it.

PROMPT	RESPONSE	EXPLANATION
Insert Command Window	Press <menu>	Returns to Word Processor menu
Word Processor menu	Press <F>	Selects File command
Save current changed file?"	Press <do>	Answers "yes" and saves the report file

The report is saved to a DOC text file on your disk. Next we read in the memorandum file. Because the Information Management Mailer cannot handle the special character attributes and formatting features used in the Word Processor DOC files, we must first copy the information into a TXT file and remove these special DOC file features. Then we can print the personalized memorandum with the Mailer.

For demonstration purposes, we have already copied the report into the memorandum file, adjusted it, and added some Mailer commands.

PROMPT	RESPONSE	EXPLANATION
"Read_ Old Create_ New"	Press <R>	Selects to read an existing file
"Name of old file:"	Enter [MEMO TXT] and press <ret>	Selects the file to read in

As the new text appears in the Word Processor window, notice the special Mailer substitution commands at the top of the file. They can be recognized by the "@:" symbol that precedes each command. These commands indicate where the name and title of a board member will appear in the memo during printing. The actual names and titles will come from an Information Management database file. Press <page down> to view the completed memorandum.

Now that our report is complete, we return to Information Management to print the personalized memorandum.

PROMPT	RESPONSE	EXPLANATION
Insert window	Press <menu>	Returns to Word Processor menu
Word Processor menu	Press <O>	Returns to Options window

3.6 Information Management Mailer

As the final step in this demonstration, we return to Information Management to print the personalized letters and reports. Each board member at Headquarters will receive a memorandum with his name and title inserted.

The letter to be sent to the board members uses the form that we just designed with Word Processor. We enter the data to be used in the form letter with the Mailer command.

PROMPT	RESPONSE	EXPLANATION
Options window open	Press <I>	Accesses Information Management
Insert Info_Mgmt disk and press <do>	Insert CODE2 Disk and press <do>	Accesses Database Operations Menu
Data Base Operations Menu	Press <M>	Accesses Mailer command
"From _____"	Enter [BOARDMEM], then press <do>	Enters data base file containing data for board members

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BOARDMEM contains the names and addresses of the board members to whom let-
ters will be sent. The Mailer command substitutes this information in the form.

PROMPT	RESPONSE	EXPLANATION
"Form letter file:"	Enter [MEMO] and press <ret>	Enters name of form to be used
"Processing records;" Output Device Selection window	Highlight CONSOLE; then press <do>	Selects CONSOLE as output device
First letter is displayed	Press <do> as prompted until menu reappears	Letters are processed

Because the name of the product is stored as an abbreviation, we can easily add
the name to a sentence in the report. Notice how the report is remargined when
the name is added.

The letters are displayed on the screen page by page. Notice that the data from BOARD-
MEM is substituted into MEMO for each report.

PROMPT	RESPONSE	EXPLANATION
Data Base Operations menu	Press <N> for New command	Clears data base of active files
Operations menu, no active files listed	Press · change ·	Accesses File Maintenance menu
Data Base File Maintenance menu	Press <O>	Accesses Options
Options window		

If you want to exit to the Operating System now, press <O> from the Options Window.

This concludes the demonstration. If you would like to quit at this time, remove
your disks from the drives and turn your computer off. Store your demonstration
disks safely. If you plan to finish the remaining tasks in the last section of this manual
at this time, simply leave your computer running and continue.

Even though we have only been able to touch the surface of Open Access, we have
seen that Open Access can, indeed, handle all of your office chores. From gathering
information, to manipulating both text and numeric data, to drawing charts, Open
Access does it all.

PART III
CONFIGURATION AND ADVANCED TOPICS

The chapters in PART III show you how to configure Open Access for your hardware system, tailor Open Access to meet your specific needs, and prepare to use Open Access on your own.

Some of the configuration tasks outlined in Part III may be unnecessary for your system. You can also delay reading the chapters that help you use Open Access on your own until you have read through the User's Manual.

A Guide to Part III

Are you using this exact system?

- IBM PC with monochrome monitor
- two floppy disk drives
- Hayes modem (or no modem)

Yes → Your system is already configured. You may turn directly to the User's Manual for step-by-step instructions to run Open Access.

No → Check the guidelines below to find the instructions to configure your system. After configuring, you may turn to the User's Manual.

Do you have a hard disk?

→ Chapter 4   is just for those who are using a hard disk. It shows you everything you need to do before you run Open Access on your system.

Do you need to change any configuration parameters?

→ Chapter 5   shows you how to change the date format, decimal character, scratch volume name, color monitor, modem, or appointment file owner.

Do you wish to create your own data disks? Are you using more than two floppy disk drives, a hard disk or advanced utility options?

→ Chapter 6   describes the process to create data disks and shows you how to specify volume name and search order, define function keys, and use the SIF interchange.

INSTALLING OPEN ACCESS ON HARD DISK SYSTEMS

To properly run Open Access on your hard disk system, you must complete three installation tasks.* These are: transferring Open Access to your hard disk, setting up the Volume Search Table and defining the Scratch Volume name.

(*) We assume you have already formatted and transferred MS-DOS to your hard disk. If not, please refer to your MS-DOS manual for instructions.

4.1 Transferring Open Access to Your Hard Disk

With a hard disk system, you must transfer the Open Access files to your hard disk. SPI provides a Hard Disk Installation Utility, called "HARDINIT," to automatically transfer these files for you.

NOTE: Please follow the instructions in sections 4.2 through 4.4 in one session, without stopping. If you must stop before sections 4.3 or 4.4, follow the directions in section 4.4 to boot up Open Access.

After "booting up" MS-DOS on your computer, place your back-up copy of the GETTING STARTED diskette into drive A and proceed as follows:

PROMPT	RESPONSE	EXPLANATION
C>	Enter [A:HARDINIT] and press <ret>	Selects the Hardinit utility and displays the Hardinit Main Menu.

Open Access Hard Disk Installation Utility
ᒡ Copyright Software Products International
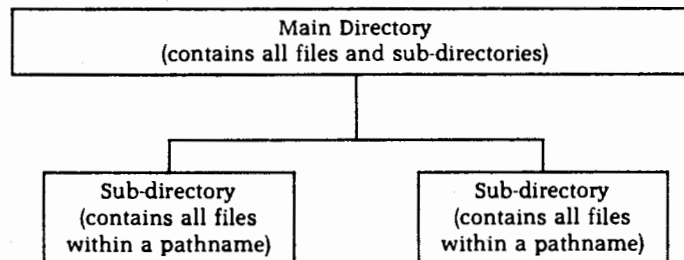
Enter selection:
<1-4> <Bs> <Ret>

1) Copy files from all SPI disks to hard disk path name.
2) Delete demo files not needed from hard disk path name.
3) Restore demo files to hard disk path name.
4) Exit to Operating system.

Press <1> then <ret> to select the copy files option, and continue as described below:

PROMPT	RESPONSE	EXPLANATION
Enter fixed drive letter	Press <C> then <ret>	Select C, the designation of your hard disk
Enter pathname:c:\	Enter [OA]*	Identifies a pathname

* A pathname is the name of a "sub-directory" within your main directory. (Your main directory is the list of files displayed whenever you enter C> dir). Your files are usually structured as follows:

```
                    ┌─────────────────────────────────────────┐
                    │            Main Directory                │
                    │ (contains all files and sub-directories) │
                    └─────────────────────────────────────────┘
                                      │
                    ┌─────────────────┴─────────────────┐
        ┌───────────────────┐              ┌───────────────────┐
        │   Sub-directory   │              │   Sub-directory   │
        │ (contains all files│             │ (contains all files│
        │ within a pathname) │             │ within a pathname) │
        └───────────────────┘              └───────────────────┘
```

Your sub-directory name should indicate what it contains. For example, the sub-directory you are in the process of creating will eventually contain Open Access. A good pathname for this sub-directory is "OA." You may, of course, use a different name. However, if the name is too long or if it contains "bad" characters, an error message will appear, indicating you must use a different pathname.

After you have entered a good pathname, proceed as follows to transfer the Getting Started disk:

PROMPT	RESPONSE	EXPLANATION
Enter pathname :C:/OA	Press <ret>	Transfer the Getting Started disk to your hard disk

As each disk is transfered to the hard disk, you are prompted to insert the next disk. Follow the HARDINIT prompts and insert the SPI disks as requested. When all of the disks have been transferred, complete the process as explained below:

PROMPT	RESPONSE	EXPLANATION
Copy process complete Press <ret> to return to the Main Menu	Press <ret>	Return to the Hard Disk Utility screen
Hard Disk Utilities Menu	Press <4>, then <ret>	Exits to the Operating System

4.2 Setting up the Volume Search Table

Before starting the Open Access Demonstration, you must include your hard disk in the Volume Search Table. This table establishes the order in which Open Access searches through volumes. To set up your table, follow the instructions below. (Note: Volume Searching is discussed in more detail in section 6.1. Please refer to this section if you have questions).

PROMPT	RESPONSE	EXPLANATION
C>	Enter [OA] and press <ret>	Initializes Open Access
Enter the date:	Press <ret>	Accepts the date

Notice the Options Menu window on your screen. It lists all of the Open Access modules. To select a module, simply press the first letter in the module's name. For example, to select Utilities, press <U>.

PROMPT	RESPONSE	EXPLANATION
Options window	Press <U>	Select the Utilites Option
Utilities window	Press <C>	Select Configure
Configuration Setup Menu	Press <V>	Select Volume Searching
Volume Name Position 1	Enter <C>	Enter your hard disk designation (C)
Volume-Searching Window	Press <do>	Access Configuration Setup Menu
Configuration Setup Menu		

4.3 Defining the Scratch Volume

Certain Open Access modules occasionally use main volume file space for temporary storage. As supplied, these temporary files (also called "scratch files") are directed to disk drive B. If you are using a hard disk, you will need to redirect the scratch files.

PROMPT	RESPONSE	EXPLANATION
Configuration Setup Menu	Press <M>	Select Misc-Parameters
Miscellaneous Parameters Window	Press <down> three times	Highlight Scratch Volume Name
Scratch Volume Name	Press <C> then <menu>	Set the Scratch Volume Name to your hard disk
Configuration Setup Menu	Press <R>	Replace the old misc. parameters with the new parameters.
Options Window	Press <O>	Exits to Operating System

4.4 Booting Up Open Access on your Hard Disk

After completing the preceding instructions, you are ready to boot up Open Access on your hard disk. Because you stored Open Access in a sub-directory (pathname), you must do the following each time Open Access is to be used.

PROMPT	RESPONSE	EXPLANATION
C>	Enter [CD C:\OA]* and press <ret>	Change to the "OA" pathname. ("CD" means change the directory)
C>	Enter [OA], then press <ret>	Accesses Open Access Options Menu
Open Access Today's Date:	Enter the date in mm-dd-yy format. Press <ret>	Accepts date; Open Access Options menu displayed

* If you assigned a name other than "OA", enter that name instead of OA. (Refer to Section 4.1).

Helpful Hint: In your main directory, you can create a Batch file called "oa.bat." Within this file, you should store two instructions:

Instruction #1	CD C:\pathname
Instruction #2	OA

This allows you to access Open Access from the Main Directory or a Sub-directory simply by entering [OA]. Refer to your MS-DOS system manual for information on creating a batch file.

4.5 Additional Hard Disk Utility Options

The Hard Disk Installation Utility contains two more useful options. One of these options deletes unneeded demonstration files from your disk. The other option restores previously deleted files to the hard disk from your backup floppies.

To delete a file from a pathname:

PROMPT	RESPONSE	EXPLANATION
C>	Enter [A:HARDINIT] and press <ret>	Accesses Hardinit Main Screen
Hardinit Main Screen	Press <2> <ret>	Select the Delete Files Option.
Enter fixed drive letter<C-E>	Press drive letter	Enters drive containing demo files to be deleted
Enter pathname /C:	Enter pathname and press <ret>, or press <ret> for default	Selects a pathname
Warning appears. Do you wish to continue (Y/N)?	Press <Y> or <N>	Press <Y> to verify the delete. Press <N> to return to Hardinit Main Screen and abort process
Please insert your Open Access BOOT press <ret> to continue	Insert BOOT disk in Drive A and press <ret>	Deleting process begins. When deleting process ends press <ret> to return to Main Menu

To abort the process and return to the main menu, press <N>, as prompted. Remember, only the demonstration files provided by Open access may be deleted.

The third option. "Restore demo files," restores previously deleted demo files.

To restore deleted demonstration files:

PROMPT	RESPONSE	EXPLANATION
Hardinit Main Screen	Press <3>, then press <ret>	Select Restore Files option
Enter fixed drive letter <C-E>,	Press drive letter, then press <ret>	Enters drive to contain restored demo files
Enter pathname /C:	Enter pathname and press <ret>, or press <ret> for default	Selects a pathname

You are then prompted for the various Open Access disks. When the deleted files are restored, you are returned to the Main Menu.

CUSTOMIZING OPEN ACCESS

This chapter introduces you to one of the Open Access Utility options. By following these instructions, you can customize Open Access to accommodate your own particular needs. Are you using a special printer or hardware system? Would you like to change the way dates or decimal points appear on your screen? Would you like to have your name automatically entered as "owner" of the Time Manager? If so, you can find out how by reading this chapter.

The instructions that follow show you how to modify the default settings for a number of different Open Access system parameters. Initially, the settings already reflect the needs of most Open Access users and, most of the time, do not require modification. However, if your particular hardware setup does not fit the Open Access "norm," you must reset the default values before your system can run properly.

To help you decide whether to change any of the "miscellaneous parameters," the following table lists the original default settings. If you are using the equipment or format described as the default, you should leave the settings as they are. If you are using equipment or formats that differ from the defaults, please refer to the chapter or section indicated in the table for instructions.

Open Access Default Parameter Settings

Parameter	Default	For additional instructions, first read sections 5.1 and 5.2. Then,....
Printer ID	Epson MX-80 IBM Dot Matrix	If you are using another printer, see section 5.3.
Screen ID	IBM PC Monochrome	If you are using a color monitor, Compaq or other compatible, please see section 5.7 to change the default.
Communications modem	Hayes 1200 SmartModem	If you are using a different modem, see section 5.8.
Scratch Volume	B	If you are using a hard disk see chapter 4. If you are using more than two disk drives, see section 5.6.
Date fields	mm dd yy	If you want to change the appearance of date entries (e.g. to dd-mm-yy or to mm.dd.yy), see section 5.4.
Decimal character	period (.)	If you want to change the decimal character to a comma (international), see section 5.5.
Time Mgmt Owner	none	If you want to enter a default owner's name. see section 5.9.

5.1 Configuring Your System

If your computer system varies from the "standard" (default) system, Open Access needs to know more about your system before it can run. The process of telling Open Access your system specifications is called "configuring." You configure Open Access for your system by using one or more of the options from the Configuration Setup Menu.

Configuring Open Access for your system changes the information stored in your Open Access BOOT disk. Before proceding, be sure that you are using the back-up BOOT disk (#1) and that you have removed the write-protect tab. Then insert the back-up BOOT disk (#1) in drive A and the GETTING STARTED disk (#5) in drive B. Boot-up Open Access if you have not already done so. Refer to Section 2.4 if you need help with booting up.

This procedure accesses the menu you need:

PROMPT	RESPONSE	EXPLANATION
Options window	Press <U>.	Accesses the Utilities menu.
"Configure" is highlighted.	Press <do>.	Selects Configure option.
Configuration Setup Menu		

The Configuration Setup Menu lists a number of different options, but only three of them — Replace, Misc-Parameters and Abort — are of interest at the moment. The other options are discussed elsewhere (check the table of contents).

Configuration Setup
Replace Misc-Parameters Function-Keys Volume-Searching
Printer-Parameters Abort
<do> <undo>

The Misc-Parameters option accesses the window where changes to parameters are made. Replace will complete the changes to the system parameters after you enter the changes (see section 5.10).

5.2 Changing the System Parameters

The Miscellaneous Screen Entries window lists the current values for the specific "miscellaneous" parameters. You have already checked the table in the introduction to this chapter and have determined that one or more of these parameters has to be modified to suit your particular equipment or formatting requirements. This section introduces you to the window from which the changes are made. Each of the parameters listed in this window are presented in detail in one of the sections that follow.

Please remember that you only have to change the default values that apply to your specific situation.

To access the window, follow this procedure:

PROMPT	RESPONSE	EXPLANATION
Configuration Setup Menu	Press <M>	Selects Misc-Parameters option
Miscellaneous Screen Entries window		

```
┌─────────────────────────────────────────────────────────────┐
│                  Miscellaneous Screen Entries                 │
│                                                               │
│           Default Printer ID    EPSNMX80                       │
│          Format for date fields      0                         │
│            Decimal character    . (period)                     │
│          Scratch Volume Name    B                              │
│           Screen Identification    IBM pc Monochrome           │
│         Communications Default    Hayes.LPR                    │
│        Time_ Mgmt owner default                                │
│                                                               │
│         <up> <down> <do> <undo> <menu> <search>               │
└─────────────────────────────────────────────────────────────┘
```

Take a moment, if you wish, to become familiar with operating the window. Press the <up> or <down> keys to highlight the parameter you want to change. The entries that now appear in this window are the default parameter settings. The following sections describe how to change these parameters in the order that they are listed in the window. Refer to the chart in the beginning of this chapter to determine which parameters you need to change and proceed to the indicated section(s).

After you have changed the necessary parameter settings, please turn to section 5.10 to replace your changes.

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5.3 Selecting a Printer (Default Printer ID)

The Default Printer ID tells Open Access which printer configuration to use. For most popular printers, the configuration specifications are already stored in the Open Access system. All you have to do is select your printer's identification from a supplied list.

You don't have to change the Default Printer ID parameter if you are using the default printer.

Do you need to change the Default Printer ID?
Yes → Please check Chapter Seven for complete details about printing.
No → Please continue.

5.4 Changing the Date Field Format

This parameter tells Open Access how to configure the Date fields, wherever they appear. For example, you have already seen one Date field next to the Options Window. Other Date field locations are:

— the Time Manager's appointment schedule entries
— the Spreadsheet's date function entries

The default date setting is MM-DD-YY, where MM is a two-digit month value (01 to 12); DD is a two-digit day value (01 to 31); and YY is a two-digit year value. The MM-DD-YY entries are separated by a hyphen (-) in the default setting.

Most users probably want to keep the default setting. However, if you are using Open Access in Europe or in the military, or if you are simply accustomed to writing the date in another format, you can select your own "standard" date format.

The available formats are number-coded. As you can see in the table below, you can change the order of MM-DD-YY and/or the separating character.

Number	Format
0	MM-DD-YY
1	DD-MM-YY
2	YY-MM-DD
10	MM.DD.YY
11	DD.MM.YY
12	YY.DD.MM
20	MM/DD/YY
21	DD/MM/YY
22	YY/DD/MM

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To set your own date field format:

PROMPT	RESPONSE	EXPLANATION
Format for date fields 0	Enter the code number that matches the desired format.	Selects new date format.

After you have changed and replaced this parameter, the date format you have just selected will replace the default setting in all date fields.

5.5 Changing the Decimal Character

This parameter indicates which character is to be used as the "decimal point" in all numeric fields and entries. In the United States, a period (.) is the standard decimal point while in many parts of Europe, the comma (,) is used.

The default decimal character is the period. To change the decimal character to a comma:

PROMPT	RESPONSE	EXPLANATION
Miscellaneous Screen Entries window	Press <up> or <down> to highlight Decimal character	Selects Decimal character parameter
Decimal character	Press <,>	Enters comma

After you have changed and replaced this parameter, the comma will appear as the decimal character in all numbers.

5.6 Defining the Scratch File Volume (Scratch Volume Name)

Although you never see it the scratch file is an important part of Open Access. It is used by most of the module programs to store information on a temporary basis. If there is no scratch file, or if it cannot be found, the procedures that use it will not function properly. The Scratch Volume Name parameter tells Open Access where to find the scratch file.

If you are using a hard disk, and have followed the instructions in Chapter Four, you have already set the default Scratch Volume Name; there is no need to continue reading this section.

The scratch file &SCRATCH must be defined on one of your disks (see section 6.5). The Scratch Volume Name parameter identifies the volume (disk drive) where the scratch file is located. For practical reasons, this should be the first volume listed on your Volume Search Table, i.e. where Open Access checks first for file information.

The default volume is B (the right floppy disk drive). To change the volume default, enter the new volume name instead (for a hard disk, the new name is usually C).

To set your own Scratch Volume Name:

PROMPT	RESPONSE	EXPLANATION
Miscellaneous Screen Entries window	Press <up> or <down> to highlight Scratch Volume Name	Selects Scratch Volume parameter
Scratch Volume Name B	Enter name of Scratch volume	Changes scratch volume

NOTE: If you change the Scratch volume name, you probably want to check your Volume Search Table to make sure that you have chosen the correct volume or to change the order in which volumes are searched. Please see section 6.1 for more details.

5.7 Using Color Monitors (Screen Identification)

The Screen Identification parameter tells Open Access which of several available screen configurations you are using. The default configuration is for a IBM PC with monochrome monitor. If you are using a color monitor, you need to change this parameter to one of the color screen configurations.

To change the Screen Identification default:

PROMPT	RESPONSE	EXPLANATION
Misc. Screen Entries window	Press <up> or <down> until Screen ID is highlighted	Selects Screen Identification parameter
Screen ID IBM PC Monochrome	Press <search>.	Accesses Screen ID Defaults window

The Screen Identification Defaults window list the names of all the available screen configurations. Each name references a configuration that is already stored by Open Access. To reset the default, all you have to do is select the name that refers to your screen setup (see your monitor's manual for specifications).

The table below lists each of the screen names and the corresponding color combinations. Check the list to determine which configuration you want.

IBM pc Color
IBM pc Monochrome
Compaq Computer
Black and White
Color Setup 2
Color Setup 3
Screen Identification Default <up> <down> <do> <undo> <page-up> <page-down>

Open Access provides three alternative color combinations for the IBM PC color monitor. Refer to the chart below to determine which configuration you want for your color monitor.

Screen ID	Frame/title	Outline	Menu/Data	Entry
IBM PC Color	Blue	Yellow	Green/ White	Amber
Color Setup 2	Blue	Grey	Purple/ Grey	Red
Color Setup 3	Blue	Grey	Amber/ Cyan	Purple

To select a Screen Identification configuration:

PROMPT	RESPONSE	EXPLANATION
Screen ID Default window	Press <up> or <down> until desired name is highlighted	Selects screen ID setting
Screen name	Press <do>	The window closes

After you have replaced the default configuration, your color monitor should have the proper color combination. If not, you may have chosen the wrong default setting.

5.8 Defining the Communication Default Modem

If you plan to use the Communication module, you have to make sure that Open Access is configured for the particular modem you are using. The configurations for a number of different modems are already stored by Open Access. If you are using the default modem, or no modem at all, your system is already configured.

Different modems require different sets of control signals. Open Access provides Logical Parameter files for some different modems which contain information necessary for the program to communicate with your modem.

To select the correct communication modem default:

PROMPT	RESPONSE	EXPLANATION
Misc. Screen Entries window	Press <up> or <down> until Communications Default is highlighted	Selects Communications Default parameter.
Communications Default	Press <search>	Opens selection window
List of modem-LPR files	Press <up> or <down> until your configuration modem is highlighted	Selects modem configuration
Modem highlighted	Press <do>	The window closes; your modem is the default.

If your modem is not listed, select the default file. In Volume II Communications, you will learn how to change this configuration for different communications setups.

5.9 Naming the Owner of the Appointment File (Time Management Owner Default)

The Owner's Name identifies the owner of the Time Management appointment files. The default is a convenience for the frequent owner who would like to have his/her name entered by Open Access. The default entry is entirely optional and can be left blank.

In the Time Manager module, the "owner's name" identifies whose appointment schedule is displayed and updated. There can be any number of different owners. The "current" owner is identified by entering a name in a prompt line. The Owner Default enters this name for you. The default entry can be overwritten, so that using the default does not limit your options.

To enter a default owner's name:

PROMPT	RESPONSE	EXPLANATION
Misc. Screen Entries window	Press <up> or <down> to highlight "Time__Mgmt owner"	Selects Owner parameter
Time_ Mgmt owner default	Enter your name.	Enters the default owner

After you REPLACE the changed parameters, your name will be entered in the Time Manager prompt whenever it appears.

5.10 Replacing the Default Settings

After you have changed any of the configurations, the new information must be stored on your Open Access BOOT disk. The REPLACE option is used to replace the old (default) information with your new specifications. The ABORT option discards any changes you have made and restores the default settings.

Replacing Changes. Before using REPLACE, please make sure that the write-protect tab has been removed from your boot disk. Attempting to REPLACE a file on a write-protected BOOT disk may cause a fatal system error. If you are using floppy disk drives, insert the back-up copy of your BOOT disk in Drive A before attempting to REPLACE. Follow the steps outlined below:

PROMPT	RESPONSE	EXPLANATION
Miscellaneous Screen Entries window	Press <menu>	Window closes
Configuration Setup Menu	Press <R>	Selects Replace option
Options menu		New configurations now stored on BOOT

Aborting Changes. If you make some changes in the existing configuration, and then decide that you do not want to REPLACE them on your BOOT disk, you can use ABORT to change your mind. The ABORT option discards your changes and keeps the existing system information intact. It is not necessary that you perform the steps below unless you want to discard all the changes just made.

PROMPT	RESPONSE	EXPLANATION
Configuration Setup Menu	Press <A>	Selects Abort option
"Replace Changes?"	Press <undo>	All changes made during this session are discarded
	OR	
	Press <do>	All changes made during this session are replaced.
Options Menu		

ADVANCED TOPICS

This chapter introduces you to five important tasks. The first section shows you how to set up your Volume Search Table to include additional volumes or disk drives. The next section teaches you to use the programmable function keys to automate frequently used string entries or tasks. The third section shows you how to convert files from outside sources to formats that are used in Open Access. The fourth section shows you how to examine and repair problem data base files. The last section of this chapter shows you how to create your own data disks.

Do you need to use one of the five utilities discussed in this chapter?

Yes → If you have more than two floppy disks or additional hard disk volumes, see Section 6.1.

Yes → If you want to automate entries and tasks with the programmable function keys, see Section 6.2.

Yes → If you are transferring data to or from sources outside Open Access, see Section 6.3.

Yes → If you need to examine or repair data base (DB3) files, see Section 6.4.

Yes → If you need to create your own data disks, see section 6.5.

No → If you cannot answer Yes to any of the above, this chapter is optional.

6.1 Setting Up Your Volume Search Table

If you have additional floppy disk drives, you need to set up an effective Volume Search Table. The Volume Search Table establishes the order in which Open Access searches through the volumes in your system to find information.

A volume is a medium that is able to contain data (e.g. floppy diskettes, RAM). Each volume in your system is placed into the Volume Search Table in order of most frequent use, so that the most important data is found first. Open Access finds information quickly and efficiently with an effective volume search order. If Open Access did not have a search order, data retrieval would be very slow.

To use the Volume Search Table, follow the prompts as instructed below:

PROMPT	RESPONSE	EXPLANATION
Open Access Options Menu	Press \<U\>	Utilities Window opens
Utilities Window	Press \<C\>	Configuration Setup Window opens
Configuration Setup Menu	Press \<V\>	Select Volume Searching option

The window on your screen resembles the following figure:

```
┌─────────────────────────────────────────────────┐
│              Volume Table & Search Order          │
│           Volume Name in Position 1 B             │
│           Volume Name in Position 2 A             │
│           Volume Name in Position 3 CON           │
│           Volume Name in Position 4 COM1          │
│           Volume Name in Position 5 COM2          │
│           Volume Name in Position 6 LPT1          │
│           Volume Name in Position 7 LPT2          │
├─────────────────────────────────────────────────┤
│    <up>   <down>   <do>   <undo>   <menu>         │
└─────────────────────────────────────────────────┘
```

There are at least two volume names listed in your table as defaults. These are the right floppy disk drive (B) and the left floppy disk drive (A). Drive B is listed first to allow the system to find that information on your data disk fast.

The first volume listed in the table is the default volume name for your system. For instance, if you enter a file name preceded by a volume name (e.g. A:INVEST) in response to a prompt in Word Processor, the file is retrieved from the indicated volume. If you enter the file name by itself (e.g. INVEST), the file is retrieved from the default volume, provided the file exists on that volume.

Notice that CON, COM1, COM2, LPT1, and LPT2 are also listed in the Volume Search Table. These are devices which your computer uses to output information. Since your computer must locate those devices to use them, they are listed in the table. DO NOT DELETE these names from the table.

There are three different ways to manipulate the contents of the Volume Search Window. The three options are: entering a new volume name, repositioning a volume name, and deleting a volume name.

New volume names include additional floppy drives or new volumes on the hard disk. To enter a new volume name (VOLNAME for example) into the Volume Search Table, follow these steps:

PROMPT	RESPONSE	EXPLANATION
Volume Search Window	Press <down> until position 3 is highlighted	Selects position for new Volume name
Position 3 is highlighted	Press <line-ins>	Inserts position for new volume name, renumbers volume names below
"Volume name in Position 3"	Enter [VOLNAME] and press <ret>	Enters new volume name

If you decide that this is not an effective search position for this volume, you can move the volume name. To reposition a volume name:

PROMPT	RESPONSE	EXPLANATION
Volume Search Window	Highlight "Volume name in Position 3"	Selects volume name to be moved
"Volume Name in Position 3 VOLNAME"	Press <line-del>	Temporarily removes VOLNAME, renumbers volume names below
"Volume Name in position 3 CON"	Press <down> until position 5 is highlighted	Selects new position for VOLNAME
Position 5 is highlighted	Press <line-ins>	Enters VOLNAME in position 5, renumbers volume names below

If you have a volume that you no longer want or need, you can delete it from the Volume Search Table. To delete a volume name:

PROMPT	RESPONSE	EXPLANATION
Volume Search Window	Use arrows to highlight VOLNAME	Selects the volume name to be removed
VOLNAME is highlighted	Press <line-del>	Deletes VOLNAME, renumbers volume names below

Before you leave the Configuration Setup Menu you must "Replace" any changes you have made in the Configure Utility. (See section 5.10)

PROMPT	RESPONSE	EXPLANATION
Volume Search Window	Press <menu>	Accesses Configuration Setup Menu
Configuration Setup Menu	Press <R> for Replace	Replaces changes, accesses Option Window

HARD DISKS USERS — If you change your Volume Search Table, please remember that you MUST also update your Scratch File Volume Name.

6.2 Defining Your Own Function Keys

This Configure option assigns a string of characters to any of the three programmable function keys on your keyboard, to reduce the number of keystrokes required to perform a task to just one keystroke. This saves time if you have frequent, repetitive tasks to perform.

To use this feature, access the User Definable Function Window as follows:

PROMPT	RESPONSE	EXPLANATION
Open Access Options Menu	Press <U>	Opens Utilities Window
Utilities Menu	Press <C>	Opens Configuration Setup Menu
Configuration Setup Menu	Press <F>	Opens User Definable Keys Window

The User Definable Function Key window appears, as illustrated below. These keys are called pf1, pf2, and pf3 for "programmable function" keys 1, 2, and 3, respectively. Please refer to Table 1.1 and the keyboard illustration in Section 1.2, Locating Key Names on Your Keyboard, for the operation and location of these programmable function keys.

User Definable Function Keys
User F-Key 1 Return String _____
User F-Key 2 Return String _____
User F-Key 3 Return String _____

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To assign a string of characters to one of the three function keys, enter that string next to the appropriate key name. For example, if you have a file called ORDERS, you can enter [ORDERS] in the space following "User F-Key 1 Return String". Later, when you want to enter this file name in response to a module prompt, press <PF1>. The string of characters is entered automatically. The table below illustrates this example starting from the User Definable Function Keys window:

PROMPT	RESPONSE	EXPLANATION
User Definable Function Keys Window	Enter [ORDERS] then press <ret>	String 1 entered as ORDERS
Function Keys Window	Press <menu> then press <R>	Returns to menu and replaces data
Options Menu	Press <I>	Info Management module accessed
Insert Info_Mgmt disk and press <do>	Insert your copy of the CODE2 disk into disk drive A then press <do>	Get the Info Management module
Data Base Operations Menu	Press <L> for List command	List command is selected
From _____	Press <pf1>	ORDERS appears, just as entered in Function Key Window
From ORDERS	Press <undo> then <change>. Then press <O>	Leaves command; opens Options Window
Options Menu	Press <U>	Utilities Window is opened

Command characters may also be used to define a function key. These characters represent functions such as <tab> or <menu> rather than simple letters or numbers. When a command character sequence is entered into Open Access, the function represented by those characters is immediately performed. The command characters are useful for fully automating the execution of macro files. (A table of command characters follows this example).

The following example assigns the execution of a macro file called MEND to the programmable function key <pf1>. This macro will list sales data on the screen. The character sequence is entered as [\"EMEND\N] and represents the following:

<div style="text-align:center">

\" - Automatically presses <macro> for Execute and Learn.
E - Selects Execute.
MEND - Enters the file name on the prompt line.
\N - Automatically presses <ret> to start the macro.
</div>

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PROMPT	RESPONSE	EXPLANATION
Utilities Window	Press <C>	Selects Configure Option
Insert Configure disk and press <do>	Insert BOOT Disk in drive A and press <do>	Configuration Setup Menu is displayed
Configuration Setup Menu	Press <F>	Selects Function-Key Option
Function Key Window is displayed	Highlight desired function key; enter [\"EMEND\N]	Enters the characters to be executed by the function key
Function Key Window; cursor on entry	Press <do>	Configuration Setup Menu reappears
Configuration Setup Menu is displayed	Press <do>	Replace option is selected (see Chapter Five) and Options menu is displayed

Once the character string is entered into the User Definable Function Keys window, you can execute the string by using the shifted function key. Suppose this is an Information Management macro that begins from the List command in the Operations menu.

PROMPT	RESPONSE	EXPLANATION
Options menu	Press <I>	Selects Information Management module
Insert Info__Mgmt disk and press <do>.	Insert your copy of the CODE2 disk then press <do>	
Data Base Operations Menu; List command highlighted	Press <pf1>	Macro file is fully executed

The table below contains a list of command characters that can be entered along with other characters in the User Definable Function Key Window.

The first character in each sequence is the backslash, designated <\>. The second character in the sequence is the designator for a non-printing key. For example, entering [\N] accesses the <ret> function. Remember, the brackets are NOT entered.

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FUNCTION	SEQUENCE	FUNCTION	SEQUENCE	FUNCTION	SEQUENCE
<do>	[\!]	<help>	[\?]	<ret>	[\N]
<undo>	[\X]	<menu>	[\M]	<tab>	[\T]
<up>	[\^]	<print>	[\H]	<backtab>	[\t]
<down>	[\v]	<search>	[\/]	<Alt> F5	[\g]
<left>	[\<]	<F5>	[\G]	<Alt> F7	[\s]
<right>	[\>]	<change>	[\~]	<Alt> F9	[\l]
<Jump U>	[\&]	<F7>	[\S]	<Line Ins>	[\I]
<Jump D>	[\V]	<calc>	[\R]	<Line Del>	[\D]
<Jump L>	[\{]	<F9>	[\L]	<bs>	[\B]
<Jump R>	[\}]	<Ins>	[\i]		
<Pg Up>	[\p] *	<Del>	[\d]		
<Pg Dn>	[\P] **	<macro>	[\"]		

* Lower case letter "p"
** Capital letter "P"

6.3 Converting File Types (SIF Interchange)

SIF files are interface text files that contain data which is written in a standard form. They are the means of transporting data between modules. They are also the means of transporting data into Open Access from other data sources. The SIF Interchange option converts the files from other software systems (such as dBaseII, standard DOS text, and DIF files) to SIF files. It also converts SIF files to DIF files. You can swap data between systems by converting between SIF and DIF formats.

The SIF Interchange converter is found within the Utilities option. If you have data stored in another software system, or you need to use your Open Access data in another system, you need to convert your data. The following conversion choices are available.

SIF to DIF -   Converts data from SIF file format to DIF file format for use with outside systems.

DIF to SIF -   Converts data from DIF file to SIF file format for use with Open Access.

Text to SIF -   Converts data from a standard DOS text (TXT) file to SIF file format. You can then use data from sources such as Dow Jones News Service or Compuserve with Open Access.

dBaseII to SIF -   Converts data from dBase II DBF file to SIF file format for use in Open Access.

For details on when to use the SIF Interchange to perform the conversions, refer to the Open Access Integration Guide.

If you intend to use the Text to SIF conversion, your file must be in a certain format. Details on the Array, Stream, and Dow Jones text formats are located in the Integration Guide. Please refer to this guide before using the Text to SIF converter.

You can write your data into a TXT file in an acceptable format within the Word Processor, or within any DOS text editing program that produces TXT files. You can then convert the resulting TXT file into a SIF file with the converter (refer to the Integration Guide for information on SIF file format).

The use of the SIF Interchange converter is illustrated in the following prompts:

PROMPT	RESPONSE	EXPLANATION
Open Access Options Window	Press <U>	Opens Utilities Window
Utilities Window	Press <S>	Opens SIF__Interchange Window
SIF__Interchange Window	Press <S>	Selects SIF to DIF conversion
Enter source:	Enter [NAME.SIF] and press <ret>	Enters the name of the of the SIF file to be converted
Enter destination:	Enter [NAME.DIF] and press <ret>	Enters the name of the resultant DIF file
"Working" then "Done"	Press <undo>	File is converted; SIF__Interchange Window returns
SIF__Interchange Window	Press <undo>	Accesses Options menu

If, during the conversion process, Open Access discovers that the source file is not in the format you specified, it lets you know that a syntax error exists. You must then use the Word Processor to manually convert the file format into the correct type and take care of the inconsistent format.

6.4 Repairing Data Files (FixFile)

If you experience hardware failure or a loss of power while working with data base files, you may also experience a loss of data and/or peculiar sorting results. To recover from such disasters, SPI provides the FixFile utility. FixFile examines your files for damage. If the files are damaged, FixFile attempts to repair them.

Fixfile has two options: CHECK and RECOVER. CHECK examines the integrity of your data base files to see if their structure has been damaged. RECOVER attempts to rebuild the data base file indices if CHECK indicates that the file is damaged.

FixFile is accessed from within the Utilities window. To access FixFile, follow the steps below:

PROMPT	RESPONSE	EXPLANATION
Open Access Options Window	Press <U>	Opens Utility Window
Utilities Window	Press <F>	Opens FixFile Window

FixFile examines and corrects structural problems in data base files found in the Information Management and Time Manager modules. To access CHECK or RECOVER from within the FixFile window, follow the steps below:

To CHECK a file:

PROMPT	RESPONSE	EXPLANATION
FixFile Window	Highlight "CHECK" and press <do>	Selects the CHECK option .
Which File:	Press <search>; select [filename], press <do>, then press <ret>	File selected from Search window; file entered
Checking: prompts	Press <do>	Checking each part of file for damage

At this point, the system is checking different parts of your file. If a problem is discovered, CHECK sends you a message which identifies the problem. There are four possible problems related to file structure. One or more of the following problems can occur at one time:

1. File header is incorrect.
2. Number of records found is incorrect.
3. Free space list is incorrect.
4. Index for key is incorrect.

If one or more of these messages appears, use the RECOVER option to attempt file repair. If there are problems with your index, you probably have to start using your backup copy. (See Chapter 15 in the Information Management User's Manual for details on file problems.)

If none of the messages occurs, return to Information Management or Time Manager and use the file again. If the file is still not working properly, the file directory may be incorrect. If this is the case, you must use your backup. Make a copy of this backup as insurance.

To RECOVER a file:

PROMPT	RESPONSE	EXPLANATION
FixFile Window	Highlight "RECOVER"and press <do>	Recovering files
Which File:	Press <search> and highlight suspected file; press <do>	File selected from Search window
Which File:[file]	Press <ret>	Executes RECOVER
Fixing File...	Wait for prompt to stop	File is fixed
FixFile Window	Press <undo>	Options Window appears

RECOVER attempts to fix the file indices once you press <ret>. The file is usually recovered when the FixFile Window appears. If the message, "File not okay - Press <do>" appears, the file cannot be repaired, and you must use your backup.

NOTE: the most effective means of preventing disaster is to always keep an up-to-date backup copy of your data base files. If something does go wrong, you still have a working copy.

6.5 Creating Your Own Data Disks

Is your data drive a floppy disk drive?
Yes → Read this section to create your own data disks.
No → You can skip this section.

Data disks contain the data files and "work files" used by Open Access. There are two data disks in your Open Access package. These are the TUTORIAL disk and the GETTING STARTED disk. Each of these disks contains demonstration data, pre-defined printer parameters, and other work files.

As you create your own work files, you store them on newly-created data disks. To create your own data disk, first format the disk [as described in your Operating System Manual] and then transfer the special Open Access work files from the TUTORIAL disk to your new disk. The following files must be located on each of your data disks:

PRTINFOD.SPI	— contains printer information
MISCALL.SPI	— contains miscellaneous parameter information
&SCRATCH	— used as a "scratch" file

In addition, special files are required for the data disks that you use with the Time Management module. These are:

LA.QRY	— contains system information
APP.DB3	— contains appointment file
CARDS.DB3	— contains address file
HOUR.DB3	— contains hour mask entries
REMDAY.DB3	— contains scratch pad

An ".LPR" file is also needed to use the Communications module. This is explained in more detail in the User's Manual.

You can transfer these files either of two ways. You can transfer only those files you need one file at a time. Or you can transfer all the files (except the ".LPR" file) at once.

To transfer the files one at a time use the MS-DOS command [COPY] to copy each file. To transfer all the files at once use the MS-DOS batch file "MAKEWORK.BAT" supplied by SPI. Makework automatically copies the required files from your backup of the TUTORIAL disk to your work disk. Remember that the Communications module requires an additional file that is not copied with Makework.

Make sure the TUTORIAL disk is in drive A. Follow the steps outlined below

PROMPT	RESPONSE	EXPLANATION
A>	Enter [MAKEWORK] and press <ret>	Enters file copy instructions
Insert disks prompt	Insert formatted disk in drive B	Copies files to data disk in drive B

The system copies the files from the disk in drive A to the disk in drive B. As each file is copied, its name appears on the screen. When the transfer process is complete, the system prompt appears. Remove your data disk from drive B and repeat the procedure for all the data disks you wish to create.

NOTE: Although floppy disks are generally immune to normal office hazards they are not indestructible. To prevent accidents and insure the integrity of your programs and data, you should periodically duplicate data disks. This duplication process is called "backing up" disks. Backing up a disk involves formatting a disk, copying the original disk and comparing the copy to the original. The procedures you use to do this are outlined in your Operating System Manual.

PART IV
ACCESSORIES

The chapters in PART IV show you how to select and configure accessories like printers, plotters and graphics cards for use with Open Access.

A Guide to Part IV

Are you using a printer other than an Epson MX-80 or IBM Dot Matrix?

→ Chapter 7   shows you how to select your printer from the list of pre-configured printers, set DIP switches, change existing printer configurations and enter the configuration for other printers.

Are you using a plotter?

→ Chapter 8   shows you how to print graphs with pre-configured plotters, setup the plotter print, change existing printer configurations and enter the configuration of other plotters.

Do you have one of the following graphics adapter cards?

        * Hercules Card
        * Colorplus Card

→ If you have one of these adapter cards, or any other peripheral or adapter card please contact SPI phone support.

| In California | 1-800-621-7490 |
| Outside California | 1-800-321-1047 |

PRINTING WITH OPEN ACCESS

Printing with Open Access is just a matter of pressing a few keys. For most popular printers, Open Access has already configured the printer parameters for you. All that is required of you is to select your printer to be the default printer (section 7.1), and check the switch settings of your printer (section 7.2) once. Thereafter, you simply press the <print> key to execute the Open Access Print function whenever you are ready to print out your file.

This is made possible by an internal Open Access utility called the "Printer Unit," which acts as an interpreter and translates Open Access's commands into language your printer can understand. You, the User, define the translation process. These translation definitions, called "printer configurations," are stored on your DATA disk in the file PRTINFOD.SPI. Procedures for configuring a printer are covered in section 7.3.

A Guide to Using this Chapter

Do you have an Epson MX-80 or IBM Dot Matrix printer?

Yes →   Please skip to section 7.2.

No →   Do you have another printer that is already configured?
(Check the list of configured printers provided below.)

  Yes →   Please continue to section 7.1.

  No →   Please read section 7.3 first.

Printers Configured for Open Access

EPSON MX-80	ENVISION
EPSON MX-100	OKIDATA 82
EPSON FX-80	OKIDATA 84
PRISM B&W	OKIDATA 92
PRISM COLOR	OKIDATA 93
NEC 8023	OKIDATA 2410
NEC 3510	TALLY SPIRIT 80
GEMINI 10X	BROTHER HR25
GEMINI 15X	TEXAS INSTRUMENTS 850
CITOH 8510	TEXAS INSTRUMENTS 855
	PRINTRONIX 150B

7.1 Selecting a Printer

In Chapter Six, you learned how to access the Miscellaneous Screen Entries window and select default settings. The default Printer ID is established in that window.

In this section, you will select your printer from the Output Device Selection Window and establish it as the default printer for your Open Access.

To begin, access the Configuration Setup Menu as described below (if you have already accessed this window, you may skip to the printer selection explanation).

PROMPT	RESPONSE	EXPLANATION
Options Window	Press <U>	Select Utilities
"Configure" is highlighted	Press <do>	Select Configure option
Configuration Setup Menu	Press <M>	Select Misc-Parameters from the Configuration Setup Menu. The Miscellaneous Screen Entries Window opens on your screen.
"Default Printer ID" is highlighted	Press <search>	Opens the Output Device Selection Window.

The Output Device Selection Window appears as below.

```
CONSOLE                  ·
PRINTER
DEMOFILE
CONLABEL
PRTLABEL
EPSON MX80
EPSON MX100
```
```
          Output Device Selection
     <up> <down> <do> <undo> <pages>
```

The first few names are generic names for output to the screen and for mailing labels, reports, etc.

If you do not have a printer, select CONSOLE for your default output device. If you want output to go to the disk, select FILE. When you later try to print to this "file," you will be asked for a disk file name. (If you choose a disk file, it must be an ASCII file or the other modules will not be able to read it. The computer identifies a file type by its extension, that is, the portion of its name to the right of the period. The extension for ASCII files is ".TXT.")

Now you can select the output device of your choice and establish it as the default device. Press <down> to scroll through the window and view the entire list.

PROMPT	RESPONSE	EXPLANATION
Output Device Selection Window	Press <up> or <down> to highlight your printer selection	Highlights the output device
Your printer selection is highlighted	Press <do>	Selects your printer as the default printer.
Miscellaneous Screen Entries window	Press <do>	Accepts the new default printer
Configuration Setup Menu appears	Press <R>	Replaces the changes

The default printer is now set to your choice. You will be able to override this default and pick another device while running Open Access, but unless you do, all printing will be directed to this device.

Please MAKE SURE that your printer is connected and on-line whenever you request Open Access to print to that device. Open Access supports both parallel and serial printers and allows for quick configuration changes.

If your printer is not listed in the Output Device Selection Window, you must add your printer to the list and set the printer parameters. These procedures are described in section 7.3, Adding an Unconfigured Printer.

7.2 Checking the DIP Switch Settings on Your Printer

Printers use switches to designate various default settings for their different options. You will need to check your printer documentation to determine where the switches are located and which direction on the switch is off, which is on.

These switches invariably come in banks called DIP's. The switch banks are called SW<n> where <n> is a number. The switches in the bank are also numbered. Thus, the first switch in the first bank is SW1-1. The third switch in the second bank is SW2-3.

Please find your default printer in the chart below and set the switches as indicated. "X" stands for ON, "-" means to set the switch OFF. (To help you locate the switches, a blank means that there is no switch of that number in the particular switch bank.)

Generally, these are the factory settings. That is, your printer will probably be correctly set already.

OPEN ACCESS PRECONFIGURED PRINTER HARDWARE SWITCH CONFIGURATION

PRINTER	SWITCH	1	2	3	4	5	6	7	8
IBM Dot Matrix	SW1	–	–	X	X	–	–	–	X
	SW2	–	–	–	–				
EPSON MX-80, MX-100	SW1	–	–	X	X	–	–	–	X
	SW2	–	–	–	–				
EPSON FX-80	SW1	–	X	–	–	–	X	X	X
	SW2	X	X	–	–				
GEMINI 10/15X	SW1	X	X	X	X	X	X	X	X
	SW2	–	–	–	–				
TI 850	SW1	X	–	–	–	–	X	X	X
NEC 8023 or	SW1	X	–	X	X	–	X	–	X
C.ITOH 8510	SW2	–	X	X	X	X	–	–	X
PRISM Color or B & W*	SW3	X	–	X	X	X	–	–	
	SW4	–	X	–	–	X	X	X	
NEC 3510*	SW1	–	–	–	X	–	X	X	X
	SW2	–	–	–	–				
	SW3	–	–	–	–				
	SW4	–	–	–	–				
OKIDATA	SW1	–	–	–	–	–	–	–	–

PTNX 150B
ENVISION   See printer's manual for configurations
and others

* These printer configurations are supplied for the first serial port (COM1). All other supplied configurations are for parallel printers, using the first parallel port (LPT1).

**Did you select your Default Printer ID
and
Check the DIP Switch setting on your printer?**

Yes → You are ready to print with Open Access. You may skip sections 7.3 and 7.4

No → If your printer does not appear in the Output Device Selection Window, then proceed to section 7.3. If your printer is listed, please review the preceding sections.

7.3 Adding A New Printer Configuration

If your printer is not among those that are already configured for Open Access (see the list in the introduction of this chapter) or if you want to define one or more alternate configurations for your printer, follow the instructions in this section and in section 7.4.

Open Access can print to any printer that you can connect to your computer, regardless of its make or command requirements. However, before Open Access can "talk" to your printer, you need to define a set of commands that directs your printer to behave in a particular way. This set of printer commands is called a "printer configuration."

You can add, change or delete printer configurations by selecting the Printer__Parameters option from the Configuration Setup menu. This option affects the information that is stored on your DATA (TUTORIAL) disk in the file named PRINTINFOD.SPI. If you have several different data disks, it is possible to have several different sets of printer configurations as well. To avoid confusion, we recommend that you copy the file PRINTINFOD.SPI to all of your data disks each time you add or change a printer configuration (see section 6.5 to copy data files).

To access the Printer__Parameters option:

PROMPT	RESPONSE	EXPLANATION
Options menu is displayed	Press <U>	Select Utilities
Utilities window is displayed	Press <C>	Select Configure
Configuration Setup Menu is displayed *	Press <P>	Select the Printer-Parameters option

* Floppy disk users: make sure that the TUTORIAL Disk or one of your work disks with the file PRTINFOD.SPI is in Drive B.

Now you can choose to add, change or delete a printer configuration.

Add a Printer Configuration as follows: first, insert a new printer name at the bottom of the list of configured printers; next, borrow a set of parameters from one of the existing printer configurations; and, finally, modify those parameters according to your printer's requirements.

To add a new printer name:

PROMPT	RESPONSE	EXPLANATION
Output Device Selection window is displayed	Press <pg dn> to end of list	Move the cursor to the end of the list
Cursor highlighting the last printer	Press <insert>	Add a new line
"Printer Identification"	Enter a name* for your printer and press <ret>	Enter a name
Output Device Selection window		

* Choose a name which makes the file identifiable and is no more than 8 characters long; "XYZ-1000" (a brand name) is better than "Dot-Matrix." This name is for your use only so it can be any sequence of printable characters. Spaces, however, are not allowed. This is the name which you will reference when setting a default or selecting a printer from the Output Device Selection window (discussed in Section 7.1).

To define a set of printer parameters, copy one of the existing printer configurations as a default configuration. If you are creating an alternate configuration for your printer, select the existing configuration for that printer as a default. If you are adding a new printer, select the existing printer configuration that is most similar to your own.

PROMPT	RESPONSE	EXPLANATION
Output Device Selection window	Press <up> or <down> to highlight an existing printer and press <do>	Select a default configuration
Output Device Configuration window	Modify parameters as directed in Section 7.4	Define a new printer configuration

To modify the parameters in your new configurations, follow the instructions in Section 7.4.

GS.IV.7

Change a Printer Configuration if you have already added a new configuration and have discovered that more changes are necessary. First, access the Output Device Configuration window according to the instructions below; then modify the parameters as instructed in Section 7.4.

PROMPT	RESPONSE	EXPLANATION
Output Device Selection window	Press <up> or <down>	Highlight the name of the printer configuration to be modified
Printer name is highlighted	Press <change>	Opens the Output Device Configuration window for the selected printer
Output Device Configuration window	Modify parameters according to instructions in Section 7.4	

7.4 Changing Printer Configurations

This section briefly explains the various options available and how you can change the setting for defining printer configuration parameters.

For each printer parameter the computer asks a question; you provide an answer. For instance, in response to the question, "Lines per page?" you would enter a number which corresponds to the number of lines per page for the particular paper you are using with your printer. In response to the question, "Using single sheets?" you would press <change> to cause a Y or N (for yes or no) to appear, depending on whether you are using single sheets or continuous forms.

To respond to some prompts you must enter a "sequence". A "sequence" is a command string, that is a series of characters sent to the printer to cause it to perform a function. For instance, the prompt "Bold Sequence," is asking, "What characters must I send to the printer in order to get it to switch to printing in a bold type face?" This information will be found in your printer manual. The characters sent in a sequence are of two kinds, printable and non-printable (also known as control characters).

To enter a printable character, <A>, <*>, <2>, or whatever, simply press that key on your keyboard. To enter a non-printing character, <Esc>, <Bell>, <Ctrl-A>, etc. you must enter its ASCII code in parentheses.

An ASCII code is a number, 1 to 127, that designates a particular key. All keys recognized by your computer have their own unique ASCII code. For instance, <Bell> has the ASCII code 7. Escape has the ASCII code 27. Your printer manual should have an ASCII table for you to use. Sometimes the table lists the codes in different number systems (Binary, Octal, Decimal, or Hex). FOR OPEN ACCESS, ALL ASCII CODES ARE ENTERED IN DECIMAL.

Follow the instructions in Section 7.3 to open the Output Device Configuration window. Then complete the changes as directed below.

PROMPT	RESPONSE	EXPLANATION
Output Device Configuration window is open	Press <up> and <down> and highlight the desired option	Move among the options and select the option to change
Desired option is highlighted	Enter the appropriate response or sequence and press <ret>, or press <change> to toggle between Yes and No	There are various types of options requiring different method of response.

A discussion of the various printer setup parameters is available by pressing <help>. Type over the parameters you want to change. You may use <left> and <right> to move non-destructively through the response if you want to change only a portion of it. Accept your change by pressing <ret>.

Change the information where your printer differs from the one you are using for a pattern. These changes will be reflected in the file PRTINFOD.SPI on your data disk. If you identify your OUTPUT DEVICE NAME in the printer parameters as a serial printer (COM1 or COM2), you must also answer the serial printer prompts. Access these by pressing <change> while COM1 or COM2 is highlighted.

When you have entered responses for the various prompts for all the parameters you need to change, press <do> to accept all of them and to save your printer configuration. If you decide to scrap these changes, press <undo> and confirm that you do, indeed, want to discard the changes. The changes are canceled and the configuration returns to being identical with the prior one you used as a pattern.

After accepting the new configuration, we recommend that you copy your changed PRTINFOD.SPI file to your other data disks. We think it is helpful if ALL of your data disks contain ALL of your printers. That way, you don't have to remember, when choosing a printer, if it's allowed for that disk. At the very least, you should back up this disk so you don't lose your work in the event of an accident.

WHEN YOU HAVE FINISHED SETTING UP YOUR CONFIGURATION, PRESS <DO> TO SAVE YOUR CHANGES TO THE FILE PRTINFOD.SPI ON YOUR DATA DISK. You should also follow the procedure given in Section 7.1 for changing the default printer to the one you just added.

7.5 Deleting a Printer

The Printer-Parameters option of Configure allows you to delete a printer name from the list of preconfigured printers stored on your Open Access DATA disk.

Note: You should not remove the "CONSOLE" entry.

PROMPT	RESPONSE	EXPLANATION
The Output Device Selection window is displayed	Press <up> or <down>	Highlight the name of the printer you wish to remove
Printer name to be removed is highlighted	Press <del>	Removes the name
"Delete this printer description?"	Press <do> to confirm or <undo> if you've made a mistake	Deletes the unwanted entry
Output Device Selection window	Press <do>	Replaces changes on data disk

Follow the procedure given in the Section 7.1 for changing your default if you removed the default printer.

USING A PLOTTER WITH OPEN ACCESS

Using a plotter with Open Access is as easy as using a printer. The printer parameters for the following popular plotters have been configured for you (for a RS232 serial port).

> HP7470A
> HP7475A
> Strobe 260

If your plotter is one of these pre-configured plotters all you have to do is identify your plotter as the output device when you "output the graph" in the Graphics module.

If you have a different plotter, you must first specify its configuration for Open Access in printer parameters just as you do for a printer. If the configuration of your plotter uses the same instruction set as one of the plotters list above, you can copy that configuration and modify it for your plotter.

A Guide to Use this Chapter

Do you have a pre-configured plotter?
Yes → You only need to read section 8.1.
No → Please read section 8.2 first.

8.1 Outputting A Graph to a Plotter

You can use a plotter to produce graphs from the Open Access Graphics module. First load your graph file and access the Chart Description Window, then follow these steps.

PROMPT	RESPONSE	EXPLANATION
Chart Description Window	Press <menu>	Accesses the Print/Slide Window
Print/Slide Window	Highlight the "Device" line and press <search>	Accesses the Output Device Selection Window
Output Device Selection Window	Highlight the name of your plotter and press <do>	Enters plotter name on the "Device" line
Print/Slide Window	Highlight the "Output the Graph" line and press <do>	Accesses the Plotter Window

The plotter window appears on your screen, as illustrated below.

Plotter
Plot   Set-Up
— Mount Colors —
Pen Position(s): 1,   2 / 1 Pen Color(s)   : 1,   3 / One color choice
Waiting   Working
<do>   <undo>

The window offers you two options "Plot" and "Set-Up". The window also displays directions to "Mount Colors" you should follow before selecting "Plot". The pen position and pen color numbers in this window depend on the pen positions for your plotter and the colors you have assigned your graph in the Graphics module. (Pen color numbers are the numbers assigned to the color bar in the View Window. Each color is numbered 0-n from bottom to top.)

If you wish to plot a graph without emphasis, a graph with all the colors assigned in the View Window, or a Windowed graph without overlapping windows then do the following.

PROMPT	RESPONSE	EXPLANATION
Plotter Window	Press <P>	Starts plot of graph "Working" is highlighted
"Waiting" and directions to mount the next pen colors appear	Mount the pens and press <do>	Makes the color(s) available, plot of graph continues

When the graph is completed the Print Slide window returns to the screen.

If you wish to plot a graph with emphasis, a graph in a single color, or a windowed graph with windows defined by yourself, you must first change the default options in the Plotter Setup Window. To access this window do the following.

| PROMPT	RESPONSE	EXPLANATION
Plotter Window	Press <S>	Accesses Plotter Setup Window

The Plotter Setup Window appears.

```
|              Plotter Setup                  |
|                                             |
| Windows :    Program       User            |
| Color   :    Multiple      Single          |
| Emphasis :   Off           On              |
|                                             |
|          <undo>     <arrows>               |
```

The options in this window are described below. Use the arrow keys to highlight your selections. To leave this window with your selections, press <undo>.

Windows: Choose between the "Program" windows or the "User" windows you design in the View window. The program windows are set up in rows and do not overlap one another. The set-up of these windows is defined in the chart on the next page. If you choose to use your own windows, remember that over-lapping windows do not have clipping: each window is drawn completely, regardless of the presence of another window above or below it. Make sure to design your windows so that they do not overlap.

Example: Two 4 level windowed graphs are pictured below.The graph on the left represents the user defined window selection, while the graph on the right represents program windows.

User Defined Windows
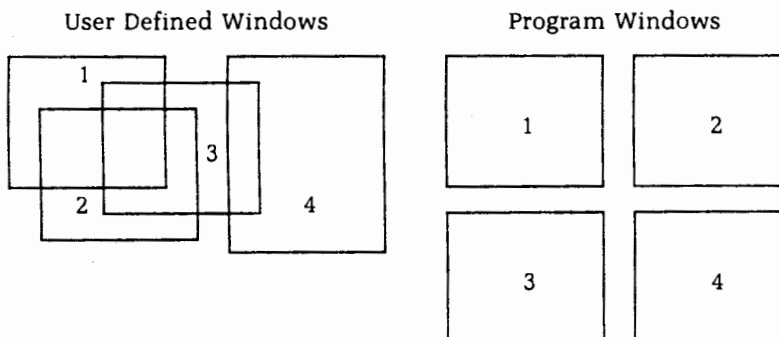
Program Windows

The following table defines the placement of program windows used by the Graphics module as determined in the Set-Up option. The number of horizontal panes refers to the number of windows across the page from left to right, and the number of vertical panes refers to the number of windows across the page from top to bottom. These windows do not overlap.

Table 2. Plotter Set-Up Program Windows

LEVEL NO.	NO. HORIZONTAL PANES	NO. VERTICAL PANES
1	1	1
2	2	1
3	3	1
4	2	2
5,6	3	2
7,8	4	4
9	3	3
10-12	4	3
13-16	4	4
17-20	5	4
21-24	6	4
25-30	6	5

For example, the table shows that the windows in a graph containing 5 levels would be placed as follows:


```
2 Vertical
  Panes
```

|------------ 3 Horizontal Panes -----------|
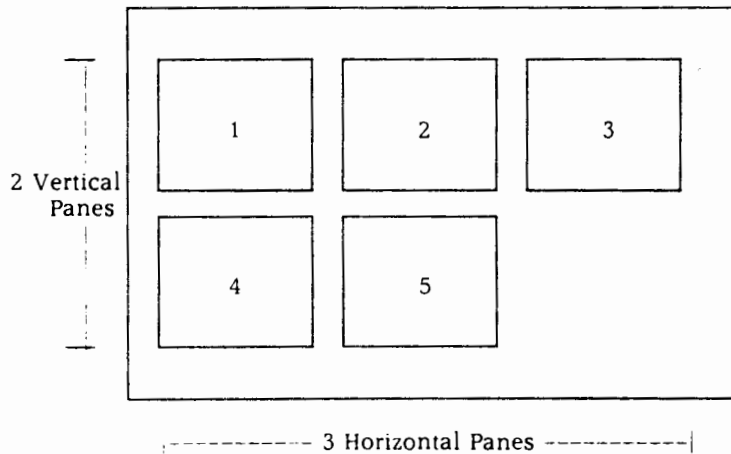
Color(s): You can select multiple colors or a single color. If you select multiple colors, all the colors defined in the Chart description are used in your plot. If you select single color, you will be prompted for "one color choice," and you mount one color in pen stall 1 on your plotter.

Emphasis: Emphasis is placed on the outlines of bars and columns by drawing lines of double thickness. If you want the lines drawn thicker, select ON. Select OFF if you do not want the emphasis. Data outlines and line graphs are effected by this option.

When you have made your selections in this window, return to the Plotter window by pressing <undo>. You are now ready to plot your graph with the new setup.

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8.2 How to Configure Your Plotter

If your plotter is not among those that are already configured for Open Access or if you want to define one or more alternate configurations for your plotter, read the instructions in this section.

Plotter configuration is similar to printer configuration. Your plotter is configured with the Printer_Parameters option in the Configure Utility. The prompts, however, do not have the same meanings and are interpreted differently for plotters.

If you need information on default values and range checks used with certain plotters, please refer to Table 1. Plotter Defaults and Range Checks in this section.

Prompts for Plotting Textures The first two prompts describe the appearance of the textures and lines used in your graphs.

> Printer prompt: SHADOWED PRINT SEQUENCE
> Plotter meaning: LENGTH OF CYCLE FOR DASH TEXTURES/LINES

This prompt represents the length of a cycle of dashed lines in plotter units. The length of the cycle can vary within the specified range of values for your plotter. The value for the length of the cycle is the default value if it is not within the specified range.

The number of dashed lines drawn per cycle is determined by the texture number. For example, a texture of 4 causes the plotter to divide the cycle into four segments, and draw dashed lines in every other segment. The texture number's effect on the cycle is shown in the following table.

| Texture #	Appearance
0	| (blank) |
1	|-----------------------------|
2	|----------------- |
3	|---------- ----------|
4	|--------- --------- |
	| ← Cycle → |
	| length |

> Printer prompt: USER DEFINED SEQUENCE #1
> Plotter Meaning: VERTICAL SPACING OF TEXTURES

This prompt determines the distance in plotter units between the lines of a texture. The example below shows three different settings for vertical spacing. Notice the difference in the amount of space which separates the horizontal lines.

Determining the Plot Window The next four prompts determine the size of your plot window. The size is specified by indicating the coordinates of the lower left and upper right corners of the window in plotter units.
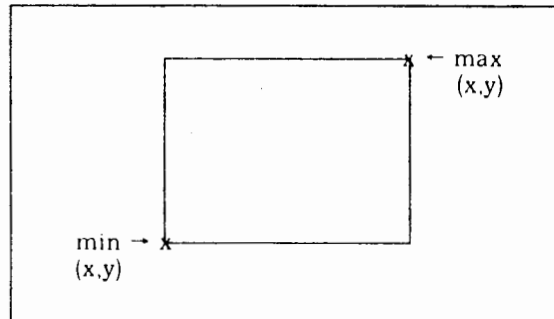
You may want your window to use only a portion of the paper. In this case, you want to determine the amount of space your window requires. There are limits to window size, based on the plotter default values in Table 1. The actual size of the window is determined by the difference between the maximum and minimum coordinates. For example, the lines on the top and bottom of the plot window are [(X-max) (X min)] units long, and the lines on the left and right are [(Y max) (Y min)] units long.

The range check for the size of the plot window is based on a value for the difference between the X and Y coordinates.

    X max X min >= minimum horizontal value
    Y max Y min >= minimum vertical value

This range check indicates the smallest possible size of the plot window, based on the values for your plotter.

NOTE: The plotter will default to its maximum window size for windowed graphs. This default is the size of your plotter paper.

    Printer prompt: USER DEFINED SEQUENCE #2
    Plotter Meaning: MINIMUM X PLOT

The minimum X plot is the X coordinate located at the lower left corner of the plot window.

> Printer prompt: USER DEFINED SEQUENCE #3
> Plotter meaning: MAXIMUM X PLOT

The maximum X plot is the X coordinate for the upper right corner of the plot window.

> Printer prompt: USER DEFINED SEQUENCE #4
> Meaning: MINIMUM Y PLOT

The minimum Y plot is the Y coordinate for the lower left corner of the plot window.

> Printer prompt: USER DEFINED SEQUENCE #5
> Plotter meaning: MAXIMUM Y PLOT

The maximum Y plot is the Y coordinate for the upper right corner of the plot window.

Determining Character Height and Width The following two prompts are used to determine the height and width of the space allocated for titles & labels. These numbers should be the best approximation of the size of the current character being used by the plotter.

Note: If you entered a sequence for character size in the prompts used to initialize the plotter you may wish to also change the default height and width of the space allocated for labels. Please refer to your plotter manual for specific information on character size.

Enter the number of plotter units for height and width in response to the following two prompts. Please remember that the printer prompts which appear in the Printer Configurations window correspond, or map, to the plotter meanings. The plotter meaning may not be obvious from the prompt which appears in the Output Configuration window.

> Printer prompt: SEQUENCE FOR COLOR #1
> Plotter Meaning: CHARACTER HEIGHT

This prompt determines the height of the characters used in labels and titles on your graph. You should determine the height of the characters relative to the initialization sequence entered to change the character size (refer to section E in this document). Enter the response for this prompt in plotter units.

> Printer prompt: SEQUENCE FOR COLOR #2
> Plotter Meaning: CHARACTER WIDTH

This prompt determines the width of the characters used in labels and titles on your graph. You should determine the height of the characters relative to the initialization sequence entered to change the character size (refer to section E in this document). Enter the response for this prompt in plotter units.

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Determining the Number of Pen Positions

Printer prompt: SEQUENCE FOR COLOR #3
Plotter Meaning: NUMBER OF PEN POSITIONS

This prompt determines the number of pen positions that are available with your plotter. For instance, an HP7470A plotter has two positions, and a Strobe 260 plotter has eight.

Plotter Initialization Sequences The next series of prompts listed in the Printer Configurations window are answered with the sequences used to initialize your plotter. The responses you enter consist of numbers and characters that allow your plotter to interpret the output from your computer. Any initialization sequence may be entered on a line designated for initialization purposes (Columns/page through Initialization sequence). Up to 54 characters in these sequences are used in initialization. Please refer to your plotter manual for specific character sequences that may be used to change your plotter configuration.

Printer prompt: COLUMNS/PAGE through INITIALIZATION SEQUENCE
Plotter Meaning: Used for initialization of the plotter; see your plotter manual for more information.

Table 1. Plotter Defaults and Range Checks

Plotter Device class			100	101
			HP7470A	STROBE260
Printer Sequence	Plotter Meaning	Range Check	HP7475A	
Shadowed Print	Length of cycle for dash lines	50 . 500	100	50
User Defined Seq.				
Sequence #1	Vertical spacing of textures	20 . 200	100	50
Sequence #2	Minimum X Plot	> = 0	0	0
Sequence #3	Maximum X Plot MAX MIN > = 2000	< = Default	10300	5000
Sequence #4	Minimum Y Plot	> = 0	0	0
Sequence #5	Maximum Y Plot MAX MIN > = 2000	< = Default	7650	3700
Sequence for Color				
Color #1	Character Height	25 . 500	150	75
Color #2	Character Width	25 . 500	125	60
Color #3	No Pen Positions	1 . 16	2	8
Columns/page through Initialization sequence	Initialize plotter			

Hardware Configuration Hardware configurations vary from plotter to plotter. The plotter may or may not have DIP switches. The following list contains the switch settings for those plotters used with Open Access that have DIP switches. In this list, "1" stands for ON and "0" stands for OFF. For further information concerning the switches on this plotter, or other plotter hardware configurations, please refer to your hardware manuals.

Plotter	Switches								
	S2	S1	Y	US	A3	B4	B3	B2	B1
HP 7470A	1	1	0	1	–	1	0	1	0
HP 7475A	0	0	0	0	1	1	0	1	0

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INFORMATION MANAGEMENT

VOLUME II — USER'S MANUAL

ADDENDUM TO WORD PROCESSOR USER'S MANUAL

Introduction

Since the production of the Open Access User's Manual, a new feature has been added to the Word Processor module. This new feature offers you an alternate way to save or update your work files. The procedure is fully explained below.

The best way to use this addendum is to glance through it before you begin the tutorial in the User's Manual. Then, as you work through the tutorial and encounter references to the File command, you can refer back to this addendum for supplementary information.

The Save Command

At the end of each chapter in the Word Processor module of the User's Manual, you are instructed to update your work by accessing the File command. After saving your file, The Word Processor File Selection Menu appears on your screen. At the beginning of each subsequent chapter, you are instructed to reload the file onto your screen.

With the implementation of the Save command, you can now update your work file without exiting to the File Selection Menu. After accessing the Save command, the Word Processor Main Menu reappears and you can continue working with the current file displayed on your screen. You will eliminate several keystrokes from each chapter in the tutorial if you use the Save command rather than the File command to update your work. Keep in mind however, that you must use the File command if you want to access a file other than the one you are currently working with.

To save your current workfile, press <menu> and then [SA] to access the Save command. The following prompt appears:

```
Options    (Save Current File):
           Save changed current file "[filename].DOC?"
```

To save your recent changes and overwrite the existing file, press <do>. The message, "Writing ...." appears. This indicates that the file is being saved. The Word Processor Main Menu is then displayed.

If you would like to save your updated file but do not wish to overwrite the original file, you can save the current work file to a different name. In response to the Save prompt illustrated above, press <change> and the following prompt appears:

```
Write to which file?
```

Enter a file name and press <ret>. The message, "Writing ...." appears to indicate that the file is being saved on your disk. The Word Processor Main Menu is then displayed.

To abort the Save command before you save your work file, press <undo> in response to the Save prompt.

OPEN ACCESS ADDENDUM

A few important new features, recently added to Open Access, are covered in this addendum. Please review it carefully before you begin using your Open Access package. and keep it with the package for future reference.

The Open Access System

Open Access now supports the use of plotters. The plotters configured for use with Open Access are the Strobe 200 eight pen plotter and the HP7470A two pen plotter. Both plotter configurations use a RS232 serial port.

Information Management

The report generator in Information Management, which prints a report with the format specified by a print mask file, now support 5 level breaks of totals. The previous limit was two level breaks.

Word Processor

In the Insert and Exchange command modes, the <delete> key removes the character on which the cursor rests. <delete> no longer accesses Delete mode from Insert mode. The Delete command mode is accessed through the Word Processor main menu.

You can toggle between Insert and Exchange command modes by pressing <line-ins> from within either command window. The <line-ins> key has been added to the function line in the menus of both commands.

Communications

In a Communication Configuration File, the entry for the "Break Key Sequence" field determines what happens when you press the <break> key. You can enter a command sequence that is sent when <break> is pressed. If you leave the field blank. a line break of approximately 150 milliseconds occurs when <break> is pressed.

Graphics

When view is selected for three-D graphs; the prompts "DATA GRIP COPY" appear. Using the copy command you can copy the outline color and texture from level 1 to all levels.

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VOLUME II

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CHAPTER 1 — INTRODUCTION TO OPEN ACCESS

INFORMATION MANAGEMENT

Before we jump into our tutorial we would like to introduce some of the more elementary database management system concepts. In most general terms, a database management system is a filing system that is computerized. It is very similar to the filing systems that you have in your own office — only it is much faster and more efficient. Information that once took thousands of sheets of paper to store now only takes a single diskette. Information that once took hours to find now only takes a few seconds. And if you remember how long it took to compile a report from all the data that was stored away in your filing cabinet, you will be impressed how easy it is to make a report with our Information Manager. These benefits, and a lot more, are available to you in our database management system.

Database File Structure

Now let us be a little bit more specific in our description of a database management system. The first and most basic unit of storage in a database is a RECORD. A record is a collection of information about an item. For instance, we may have a record which contains information about a customer such as the name, balance due, last date updated, if the payment is overdue, etc. The following would be a pictorial representation of a record.

NAME BALANCE UPDATED OVERDUE CUSTNUMBER

	smith	500.25	3-1-83	yes	315

record

field   field   field   field   field
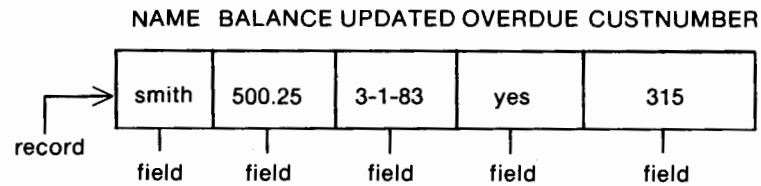
So, we see that a record consists of fields which contain particular information. Each field in a record has a *unique name*; e.g., the second field has the name BALANCE. Also, each field in a record has a *value*; e.g., the value of the BALANCE field is 500.25

Depending on what type of values a field can assume, we differentiate between types of fields. For example, the field BALANCE assumes values of type decimal (i.e., numbers with or without a decimal point) whereas the field UPDATED assumes values of type date. It would not make sense to insert the value 10-8-83 into the BALANCE field. Therefore, we have fields of different type as listed below.

TYPE	EXAMPLE	EXPLANATION
Alphanumeric (text)	NAME	a string of letters and numbers
Decimal	BALANCE	positive or negative number with or without decimal point
Date	UPDATED	calendar dates
True/False	OVERDUE	fields which can only assume two opposite values e.g., true or false, yes or no, too late or not too late.
Numeric	CUSTNUMBER	positive or negative whole numbers

A field has a certain *"length"*. The length of the value in the field NAME in the example record above is five *characters* or, in more technical terms, five *bytes*. The length of a field depends on its value or its type or both.

TYPE	LENGTH (in bytes/characters)
text	dependent on value
decimal	10
date	2
number	2
true/false	1

Because a record consists of a number of fields, we can define the *length of a record* as the sum of the length of its fields. Assuming a maximum of 20 characters for the NAME field, the length of our example record would be 35 bytes or characters (20+10+2+1+2).

In a database you want to store and retrieve many records. The collection of records in one named unit is called a *file* as shown below.

abrams	0.00	10-1-83	no	25
jones	250.00	8-15-83	yes	100
smith	500.25	3-1-83	yes	315

NAME   BALANCE   UPDATED   OVERDUE   CUSTNUMBER

FILE OF RECORDS

We can now assign a name to this collection of records. Let's call it a *customer file*. Note that the "record structure" is defined by its composition of fields. Because all records in a file have the same structure, a "file structure" is defined by the composition of any record in the file.

There is still another way we differentiate between fields in a record. In a large file we want to search for records with certain conditions, let's say we want to find all customers where the payment is overdue. To do this, we use a "key" to search with. In this case, the key is that a "yes" value should be in the OVERDUE field. If it is possible to apply key value(s) to field(s), we say that these fields are *key fields*. In most applications not all fields are key fields. That is, you cannot apply search criteria to all fields. Why? Well, to search for records satisfying certain criteria in its fields in a reasonable time requires very complex *table look up (indices)* procedures. These indices require additional space on your diskette which you later might want to use for the storage of your records. So, a compromise is necessary.

Let's look at our customer file. If we only want to get reports on those customers whose payment is overdue or find out information about their balance, we only have to make the fields OVERDUE and BALANCE key fields. All other fields are *data fields*; that is, cannot be used to search for information.

There is one more thing. We see in our example file that different customers are overdue in their payments; i.e., the same value in the OVERDUE field is present in both the SMITH and JONES customer records. If there is more than one record in a file which has the same value in a key field, then we call such a field a *"secondary key"*.

We know one thing for sure, there should not be two or more records with the same customer number. We would, therefore, at the creation of the record structure call such a field a *"primary key"*. A primary key is automatically a search key. The beauty of a primary key is that you can search on it *and* that the system does not allow the user to accidentally input two different customer records with the same number.

Query Languages

In order to retrieve records from a file, the user must communicate in some structured dialogue (to be typed into the computer by the user and displayed on the screen by the computer). Such a dialogue is called a *query language*. (In 5 years, we might be able to communicate with a computer in a natural language like English or German.)

The query language used in OPEN ACCESS is a slight derivation of a query language introduced by IBM on their mainframe computers. It is called SQL (Structured Query Language). Our query language is extremely easy and simple. It consists of four basic words, called clauses, and a little bit more. These four words are: FROM, SELECT, WHERE, and ORDER.

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A general description of a query is:

FROM   specify from what file(s) you want to retrieve records

SELECT   specify the field(s) you want to see

WHERE   state your search criteria here

ORDER   specify the field(s) you want the records sorted by

Note that all but the FROM clause are optional.

A few examples will demonstrate the power and ease of use of this query language.

EXAMPLE 1

We want to retrieve all customer records with all their fields. In this case, we would simply type;

        FROM CUSTOMER

to obtain

NAME	BALANCE	UPDATED	OVERDUE	CUSTNUMBER
smith	500.25	3-1-83	yes	315
jones	250.00	8-15-83	yes	100
abrams	0.00	10-1-83	no	25
thompson	1000.00	12-1-83	no	410

EXAMPLE 2

We want to retrieve all records from the customer file; but, we would only like to look at the NAME, BALANCE, and UPDATED fields. In this case, we would type:

        FROM CUSTOMER
        SELECT NAME,BALANCE,UPDATED

to obtain

NAME	BALANCE	UPDATED
smith	500.25	3-1-83
jones	250.00	8-15-83
abrams	0.00	10-1-83
thompson	1000.00	12-1-83

EXAMPLE 3

We want to find all records of those customers who have a balance greater than zero. Again, we are only interested to look at the NAME, BALANCE, and UPDATED fields of those customers who qualify. So, we would type:

```
FROM CUSTOMER
SELECT NAME,BALANCE,UPDATED
WHERE BALANCE>0
```

to obtain the following list:

NAME	BALANCE	UPDATED
smith	500.25	3-1-83
jones	250.00	8-15-83
thompson	1000.00	12-1-83

EXAMPLE 4

We now want to retrieve the same information as we did in example 3, but this time, we would like to sort the information alphabetically according to the customer's name. This will be helpful in case, for example, we would like to generate a report. To retrieve the information, we would type:

```
FROM CUSTOMER
SELECT NAME,BALANCE,UPDATED
WHERE BALANCE>0
ORDER NAME
```

to obtain the following list:

NAME	BALANCE	UPDATED
jones	250.00	8-15-83
smith	500.25	3-1-83
thompson	1000.00	12-1-83

Each of the four examples above has illustrated the use of each of the four cluases in our query language. By using combinations of these simple clauses, it becomes possible to retrieve just the right set of information that you need to work with.

The final example will demonstrate a little more complexity in the WHERE clause.

EXAMPLE 5

We want to retrieve all customers with a balance greater than zero and whose payments are overdue. In this example, then, we will search for customers based on more than one field. Again, we will just view the NAME, BALANCE, and UPDATED fields and we will sort the information by the customer name. We would type:

```
FROM CUSTOMER
SELECT NAME,BALANCE,UPDATED
WHERE BALANCE>0 AND OVERDUE='TRUE'
ORDER NAME
```

to obtain:

NAME	BALANCE	UPDATED
jones	250.00	8-15-83
smith	500.25	3-1-83

Multiple Files

There are many more things you can do which you will find out about by reading the user and reference manuals. But one extremely important item is the usage of multiple files simultaneously. We will explain the concept of a *multiple file* or *relational database* right now. These are big words but the concept is straight-forward and easy to understand.

Assume the following application. A company sells five products to 1,000 customers with orders averaging about 5,000 per month. The company wants to store all orders for one month in one file with each month's orders having its own file. the record structure of such a file is as follows:

NAME	BALANCE	UPDATED	OVERDUE	ORDERED	PRODNUMBER
smith	500.25	3-1-83	yes	10-1-83	3

...

QUANTITY	DESCRIPTION	TOTAL	UNITPRICE
10	chair	450.00	45.00

...

Note that the above two lines actually form one record which was illustrated on two lines due to insufficient room.

The record length is approximately 90 characters or bytes. If our orders file will contain about 5,000 records, then we can calculate the file size to be about 450,000 bytes.

ONE FILE IMPLEMENTATION = 450,000 BYTES

As you know, you could not implement this application without a hard disk. The question is, do you have to buy a hard disk or is there another solution?. The answer is that there is another solution if you use OPEN ACCESS' Information Management System. The solution is to implement three files, let's call them CUSTOMER, ORDERS, and PRODUCTS. These three files have the following record structures:

CUSTOMER file (1,000 record; approx. 40 bytes/record)

NAME	BALANCE	UPDATED	OVERDUE
abrams	0.00	10-1-83	no
jones	250.00	8-15-83	yes
smith	500.25	3-1-83	yes

TOTAL FILE SIZE = 40,000 BYTES

ORDERS file (5,000 records; approx. 50 bytes/record)

NAME	PRODNUMBER	ORDERED	QUANTITY	TOTAL
jones	3	7-31-83	5	225.00
smith	4	9-15-83	12	60.00
smith	3	10-1-83	10	450.00

TOTAL FILE SIZE = 250,000 BYTES

PRODUCTS file (5 records; approx. 40 bytes/record)

PRODNUMBER	DESCRIPTION	UNITPRICE
2	desk	125.00
4	calculator	5.00
3	chair	45.00

TOTAL FILE SIZE = 200 BYTES

With this implementation, we must allocate 40,000 bytes for the Customer file, 250,000 bytes for the Orders file and 200 bytes for the Products file. All together this adds up to about 290,000 bytes, a savings of almost 50% disk space. But, more importantly, with this implementation you can store your data on a floppy diskette system, saving you lots of money.

MULTIPLE FILE IMPLEMENTATION = 290,000 BYTES

It is not enough, however, to simply store information in different files. In order to be a useful system, you must also be able to retrieve information from multiple files simultaneously. For instance, what if we wanted to know the NAMES and BALANCES of of all customers who had orders which totalled more than $300.00. In addition, we want to see the TOTALS field from the Orders file. This means we will be viewing information from two files simultaneously. The information we want to view has the following structure.

NAME	BALANCE	TOTAL
smith	500.25	450.00

To retrieve this information, we would type:

```
FROM CUSTOMER,ORDERS
SELECT NAME,BALANCE,TOTAL
WHERE TOTAL>300 AND CUSTOMER.NAME=ORDERS.NAME
```

To retrieve information from several files simultaneously, it is necessary to establish a "relation" between them. In order to establish such a relationship, it is necessary to equate the values of one key field from one file to the values of a key field of a second file. That is why, in

the above query, we set the name field of the customer file equal to the name field of the orders file. The equal sign between the two fields from the two files which are being combined marks the special relationship between the two files. This has the effect of finding the customer information and the order information combined in one record structure for all those customers who ordered something. This relationship is represented graphically below.

Customer Record   Order Record

smith	500.25	3-1-83	yes	+	smith	3	10-1-83	10	450.00

NAME BALANCE UPDATED OVERDUE   NAME   PROD# ORDERED   QTY   TOTAL

smith	500.25	450.00

NAME   BALANCE   TOTAL

VIRTUAL FILE RECORD
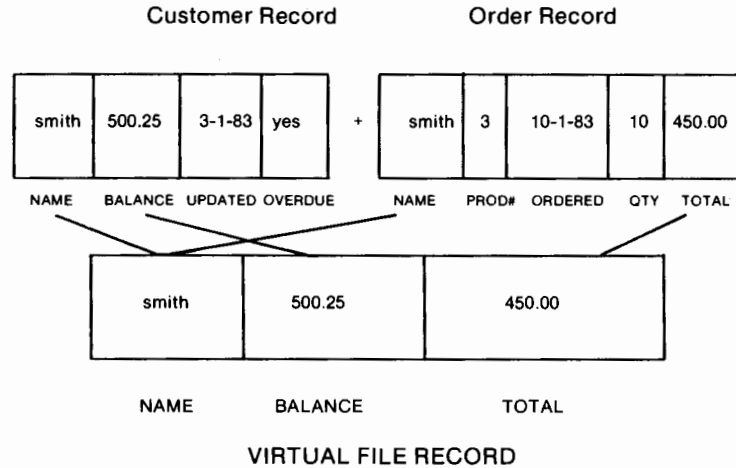
The above example represents an action which has traditionally been possible only on much larger, more powerful computer systems. But, as you can see, with OPEN ACCESS' Information Manager this action is not only possible but can be performed in a very easy, natural way. You are not forced to learn complex programming-like statements.

When we retrieve information from several files simultaneously (also known as *"joining"* files), the information is kept in a temporary file. This *temporary file* is known as a *"virtual"file* because it acts just as if it were a real database file, but it is not. However, if, for your application, you find that it would be useful to keep all this information from multiple files in its own separate *permanent file*, you may easily do this as you will learn later.

The reason it is not done automatically is that, for most applications, you just want to retrieve the information, perform some task such as printing a report and then you don't need the virtual file anymore so you discard it. If a permanent database file were automatically made then you would constantly be having to remove the ones you didn't need from the disk.

This virtual file is also the Information Manager's current *active work file.* This means you may give the commands to update information, produce a report,

generate personalized letters all without having to specify the information to include time and time again. The system will always know which information you want to include until you give the command which tells the system to discard the active file.

To illustrate the above points with a final example, imagine the following very typical situation. We would like to generate a report which contains the NAME, PRODNUMBER, QUANTITY, DESCRIPTION, UNITCOST, and TOTAL for each customer's orders. In addition, this report should be sorted by customer balance, the customer with the highest balance coming first.

Before we can produce such a report, however, we must make sure that all of the values from the TOTAL field of the Orders file have been calculated as the QUANTITY field from the Orders file multiplied by the UNITCOST field from the Products file. Normally, this would mean taking out your pocket calculator and going through each order individually. With the OPEN ACCESS Information Manager, we may calculate all of these values in one command, as we will show you right now.

Each line in the report would resemble the following structure. The field name is listed on top and the file(s) from which the field comes from is listed in parentheses underneath.

NAME	PRODNUMBER	QUANTITY	DESCRIPTION	UNITCOST	TOTAL
(CUST,ORDERS)	(ORDERS,PRODS)	(ORDERS)	(PRODS)	(PRODS)	(ORDERS)
smith	3	10	chair	45.00	450.00

To obtain this information, we would enter the following;

```
FROM CUSTOMER,ORDERS,PRODUCTS
SELECT NAME,PRODNUMBER,QUANTITY,DESCRIPTION,
UNITCOST,TOTAL
WHERE CUSTOMER.NAME=ORDERS.NAME AND
ORDERS.PRODNUMBER=PRODUCTS.PRODNUMBER
ORDER -BALANCE
```

By entering a minus sign before the field to sort, we may specify that we would like the records to be sorted in descending order. In this case, instead of sorting from the smallest balance to the largest balance, our records will be sorted from the largest customer balance to the smallest.

Once our information was retrieved, we would select the Update command and type the following

Orders.TOTAL=Orders.QUANTITY * Products.UNITCOST

This would update our TOTAL field in our Orders file for all records retrieved. It is important to stress the point that we are using fields from two different files to update the TOTAL as this is a very powerful and rare capability to find in microcomputer database management systems.

Lastly, we would like to outline the record structure for the sample files you will be using throughout this manual. This will give you an insight into the composition of these files and the information which they contain.

CUST file

Field Name	Field Kind	Field Type
NAME	KEY	TEXT
UPDATED	KEY	DATE
ADDRESS	NONKEY	TEXT
CITY	NONKEY	TEXT
STATE	NONKEY	TEXT
ZIP	KEY	TEXT
CONTACT	NONKEY	TEXT
PHONE	NONKEY	TEXT
DUE	KEY	DATE
PURCHASES	KEY	DECIMAL
PAYMENTS	KEY	DECIMAL
OVERDUE	KEY	TRUE/FALSE
BALANCE	KEY	DECIMAL

ORDERS file

Field Name	Field Kind	Field Type
INVOICE	UNIQUE KEY	TEXT
DATE	KEY	DATE
NAME	KEY	TEXT
PRODNO	KEY	NUMBER
QUANTITY	KEY	DECIMAL
TOTAL	KEY	DECIMAL

PRODUCTS file

Field Name	Field Kind	Field Type
PRODNO	UNIQUE KEY	NUMBER
UNITPRICE	KEY	DECIMAL
DESCRIP	NONKEY	TEXT

CHAPTER 2 — SCANNING FOR RECORDS

Goal: This Chapter will teach you how to retrieve records from a data base file with the Browse command. The Browse command is very useful if you don't know the exact value you are looking for, but only know an appoximate value.

NOTE: Browse is only used with a single file.

1. Scanning a File

EXAMPLE SITUATION: In this example, the Browse command is used to scan a list of records within a file. This is the simplest function of the Browse command. Any record can be easily found with the scanning function.

Suppose you need to know whether or not there is a record for Digital Designs in your customer file. You can use the Browse command to scan the records in the file and see if the record is indeed there.

IM: the Data Base Operations Menu appears on the screen.

USER: press <B>, or use the arrow keys to highlight the Browse command and press <do>.

IM: a prompt asks for the name of the file containing the records you want to scan.

```
   File:  _____
```

USER: enter [CUST], then press <ret> or <do>.

Note there is a feature which will be introduced later which you can use at this point - the Search window. The Search window, accessed by pressing the <search> key, will bring up a window with a file directory listing. This will inform you of the available files at this point so you do not have to leave the program to get a directory listing.

IM: the Browse window opens onto the screen as follows:

```
┌────────────────────────────────────────────────────────────┐
│ ┌──────────────────┐   ┌────────┐                           │
│ │ AA AEROSPACE     │   │ NAME   │    AA AEROSPACE           │
│ └──────────────────┘   └────────┘                           │
│   ASSOCIATED STEEL      UPDATED       10-10-83              │
│   BARRY'S BAR           ZIP           92121                 │
│   DIGITAL DESIGNS       DUE           12-31-83              │
│   FARKEL FUR FARM       PURCHASES     275088.00             │
│   FRED'S FARM MACHINES  PAYMENTS      274000.00             │
│   FRED'S TOWING         OVERDUE       FALSE                 │
│   JOE'S CAMPER SALES    BALANCE       1088.00               │
│   PAPER EMPORIUM        ADDRESS       4670 AERO DR.         │
│   PENGUIN POLARIS CO.   CITY          SAN DIEGO             │
│   SILICON PRODUCTS      STATE         CA                    │
│   WANDA'S ALFALFA       CONTACT       ORVILLE WRIGHT        │
│                         PHONE         (619) 571-5822        │
│                                                             │
├────────────────────────────────────────────────────────────┤
│                       CUST.NAME                             │
│ <arrows> <change> <make entry> <del entry> <menu> <search> │
└────────────────────────────────────────────────────────────┘
```

Notice that the Browse window is split into two different windows. The left hand window displays a list of all the values for a key field in the file. One of the values in this list is highlighted. The right hand window displays the entire record for the value highlighted in the left window. The record's fieldnames are listed along side of the record's data. The highlighted fieldname indicates which field is being indexed in the left hand window. Also note that the current filename and index fieldname are displayed above the options list for easy reference. Hence, you can see that the two windows work hand-in-hand to display both a file index and a referenced record.

The options available in the Browse window are described below. They are further described in the tutorial examples in this chapter.

left and right <arrows>   — shows all the values of each key field in the records. Does not show non-key field values
up and down <arrows>   — allows you to move through the record list.
<change>   — allows you to change the information in a record.
<make entry>   — allows you to enter new records by changing the information in copies of other records.
<del entry>   — removes a single record from the file.
<menu>   — returns to the previous window
<undo>   — erases the last change or entry you made.
<search>   — allows you to search for a certain field value quickly.

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USER: press the <down arrow> key three times until the words DIGITAL
DESIGNS are highlighted.

IM: the record for DIGITAL DESIGNS is displayed in the window on the
right side of the screen.

```
AA AEROSPACE
ASSOCIATED STEEL      | NAME |          DIGITAL DESIGNS
BARRY'S BAR             UPDATED         10-10-83
| DIGITAL DESIGNS |     ZIP             93324
FARKEL FUR FARM         DUE             11-1-83
FRED'S FARM MACHINES    PURCHASES       272056.00
FRED'S TOWING           PAYMENTS        257300.00
JOE'S CAMPER SALES      OVERDUE         FALSE
PAPER EMPORIUM          BALANCE         14756.00
PENGUIN POLARIS CO.     ADDRESS         6364 COMPLEX DR.
SILICON PRODUCTS        CITY            LOS ANGELES
WANDA'S ALFALFA         STATE           CA
                        CONTACT         HOWARD HUGHES
                        PHONE           (213) 445-9241



                        CUST.NAME
<arrows> <change> <make entry> <del entry> <menu> <search>
```

USER: Press right <arrow> to change the key field index from NAME to
UPDATED.

IM: The index list in the left window changes from names to dates as
follows:

10-10-83	NAME	DIGITAL DESIGNS
10-10-83		
10-10-83	UPDATED	10-10-83
10-10-83	ZIP	93324
10-10-83	DUE	11- 1-83
10-10-83	PURCHASES	272056.00
10-10-83	PAYMENTS	257300.00
10-31-83	OVERDUE	FALSE
10-31-83	BALANCE	14756.00
10-31-83	ADDRESS	6364 COMPLEX DR.
10-31-83	CITY	LOS ANGELES
10-31-83	STATE	CA
	CONTACT	HOWARD HUGHES
	PHONE	(213) 445-9241

CUST.UPDATED
<arrows> <change> <make entry> <del entry> <menu> <search>

As you can see, the UPDATED field values for the customer file are now listed in ascending order in the left hand window. The current record's date is being highlighted. Meanwhile, in the record window on the right, the current index fieldname has advanced from NAME to UPDATED. (The index fieldname has also changed in the display above the menu options.)

From this point, you can continue to use the right and left <arrow> keys to change the key indices. Or, you can continue to use the up and down <arrow> keys to change the record being displayed on the right. Thus you can see how easy it is to "browse" through the data base file.

USER: Press the left <arrow> once to go back to the key index NAME.

IM: The windows are updated back to the NAME index.

2. Searching for a Record

EXAMPLE SITUATION: Suppose we want to view the customer 'SILICON PRODUCTS'. We do not want to <arrow> through the whole file to access it. So, in this example, we will demonstrate the search function to directly access it.

USER: with the 'DIGITAL DESIGNS' record being displayed, press <search> to access the search function.

IM: a prompt, "Expression:" appears at the bottom left portion of the window.

The Search function within the Browse windows allows you to find a record quickly. It is very helpful when you only know an approximation of a value in a record. After the prompt, enter an expression that is close to the desired value. For instance, if you want to find a record for FARKEL FUR FARM, you could enter ['FARKEL'], or ['F']. For text fields, dates, or true/false, the value is in single or double quotes. For values that include apostrophes, such as "BILL'S," use double quotes around the name ["BILL'S"].

Search scans for the record that most closely matches the expression you enter. The first value that matches the value is found and highlighted in the search. For instance, if you enter ['F'] in this example, the search function finds the first occurrence of that letter in a name (FARKEL FUR FARM). If you enter ["FRED'S"], FRED'S FARM MACHINES is found. As you become more specific, so does the search.

You can use search to find a value in another field. Enter the name of the field you want to search, then set the field equal to the value you want to find. For instance, you could enter [PRODNO=444], or [DATE='10-31-83']. A list of the field you specified appears with the field value highlighted. Note that the field is highlighted in the screen mask on the right, too.

USER: enter ['SILICON PRODUCTS'] (Remember to use the apostrophes to delimit the value), then press <ret>.

IM: The highlighted cursor jumps to the SILICON PRODUCTS entry and the record display on the right is updated with the sought for record.

USER: press <search> again.

IM: the "Expression:" prompt appears.

USER: enter ['DIGITAL'] <ret> in order to search with a partial value.

IM: the windows are updated to the 'DIGITAL DESIGNS' record the closest approximation to 'DIGITAL'.

USER: press <menu> to return to the Data Base Operations Menu.

IM: the Data Base Operations Menu is displayed on the screen with no active files listed.

CHAPTER 3 — ENTERING NEW RECORDS

Goal: In this Chapter we will introduce you to the process of entering new records into a data base file. This will allow you to easily enter information when it is time to build your own applications. We will also teach you how to take advantage of the powerful Must Match field option.

1. Entry Command

EXAMPLE SITUATION: Your company has just acquired a new customer and you want to enter the customer's information into a file for future reference.

IM: the Information Management Data Base Operations Menu is displayed on the screen.

USER: press <E>, or use the arrow keys to highlight the Entry command and press <do>.

IM: the "FROM" prompt is displayed as follows.

```
┌─────────────────────────────────────────────┐
│                                             │
│   FROM _____       │
│                                             │
│                                             │
│      <do> <undo> <arrows> <edit keys> <search> │
└─────────────────────────────────────────────┘
```

USER: enter [CUST.SMK] and press <do>.

IM: a screen is displayed which contains the names of fields included in the record. The customer name field is in input mode (underlined or highlighted). Information can be entered one field at a time. The options available are listed at the bottom of the screen.

```
NAME _____    UPDATED    (SYSDATE)
ADDRESS
CITY              STATE              ZIP

CONTACT
PHONE                        DATE DUE 0- 0- 0

PURCHASES          0.00    OVERDUE   FALSE
PAYMENTS           0.00
_____
BALANCE            0.00



Text: <movements><do><undo><menu><print><calc><make ent>
```

The above screen is a blank form which can be used to enter new customer information. The way the fields are arranged on the screen depends on the screen mask file associated with this data base file. If a default screen mask is chosen when the file is created, the mask resembles a list of fields (this will be explained later in detail). The screen mask file used here was designed when the data base file was created. When you access the entry command, you can enter either the name of the data base file or the screen mask file.

   USER: enter [TMI INDUSTRIES] for the customer name field. Press <ret>.

   IM: the customer name is accepted. In this file, the field UPDATE is automatically given the system date (SYSDATE). The system date is entered when you start the system. The cursor skips over the UPDATE field and rests on the ADDRESS field.

If you make an error before you hit <ret> press <undo>. The field entry is removed and you can try again. If you have hit <ret> after the field entry or have hit too many returns, simply move the cursor back to the field with <up> or <down> and enter the correction over the mistake. If you want to start all over press <undo>. The prompt "Throw away values?" appears. Respond with <do> to clear the entire entry, or <undo> to return the values as they were.

   USER: Enter [1000 Fermi Way] and press <ret>. Enter [Oak Ridge] <ret> for the city and [TN] <ret> for the state. Enter [10000] <ret> for the zip and [Mr. Roentgen] <ret> for the contact. For phone, enter [(222) 333-4444] <ret>. Press <ret> three times to make no entry in the Date Due, Purchases, and Payments fields. Press <F> for "False" in the overdue field. The cursor jumps back to the Name field.

IM: your screen should appear as follows:

```
┌──────────────────────────────────────────────────────────────┐
│                                                              │
│                                                              │
│    NAME TMI INDUSTRIES        UPDATED    (SYSDATE)           │
│    ADDRESS 1000 FERMI WAY                                    │
│    CITY OAK RIDGE            STATE TN        ZIP 10000       │
│                                                              │
│    CONTACT MR. ROENTGEN                                      │
│    PHONE (222) 333-4444         DATE DUE 0- 0- 0            │
│                                                              │
│    PURCHASES            0.00   OVERDUE   FALSE              │
│    PAYMENTS             0.00                                 │
│    ─────────────────                                        │
│    BALANCE             0.00                                  │
│                                                              │
│                                                              │
├──────────────────────────────────────────────────────────────┤
│ Text: I <movements><do><undo><menu><print><calc><make ent> │
└──────────────────────────────────────────────────────────────┘
```

Note that you made no entries for the updated and balance fields. These fields are filled in automatically as a result of some options in the screen mask file. The updated field automatically reads the system date. The balance field is specified as a formula in the screen mask (i.e., purchases minus payments). If you make entries in the purchases and payments fields and press <calc>, the value in the balance field is calculated and entered automatically.

IM: now that all the field values are entered, note the options at the bottom of the screen.

<movements> —   up and down arrows to move cursor to different fields and left and right arrows, backspace and spacebar for movement within a field

<do>   —   enter this record as it is on the screen; confirms "Throw away values" prompt

<undo>   —   erases current entry; press <undo> again to clear screen - does not accept record

<menu>   —   return to the Data Base Operations Menu

<print>   —   print the record as it is on the screen

<calc>   —   recalculate all formulas in screen mask

<make ent> —   move to the first field in form mode (form mode is a field attribute)

USER: press <do> to store the new customer record into the customer file.

IM: the new record is stored in the file and a blank screen mask appears. You have the opportunity to enter another customer record.

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USER: press <menu> to indicate that you do not want to enter additional records.

IM: the Data Base Operations Menu is again displayed.

You will note at this point, immediately below the Data Base Operations Menu title, the display of "CUST.SMK". This is name of the file that is being used with your current query. Whenever you make a query, the files used in that query will be listed here. These will be known as the active files. The active file or files will be used with the various commands in the Operations Menu until they are cleared. In order to clear the active files, or query, you must use the New command.

USER: press <N> for the New command to clear the data base of active files.

IMPORTANT: The New command is used to clear the active query. By clearing the current query, you are able to enter a new query to retrieve a different set of information. The New command is also important if your are interchanging disks. If you do need to switch data disks, be sure that you access the New command to inform the program that you will be working with a new set of data.

IM: the Data Base Operations Menu reappears with no active files listed.

2. Must Match Fields

EXAMPLE SITUATION: This feature allows a field to cross reference a field in another data base file so that if an erroneous entry is made there, you are allowed to select from a list of valid values, or to make a new record into the referenced data base.

In this example, the ORDERS entry form (screen mask) has the customer's name field associated with the actual customers data base file. This means, when you enter a customer's name at that point, the customers file will be checked for that entry. If the entered name exists in the customers file, you will be allowed to proceed. If, however, the entered name does not exist in the customers file, the Must Match window will appear on your screen displaying an actual list of customer's names. At this point, you could automatically enter a new customer record into the customer file. Or, you could select a customer name from the list of names. One could also use the <search> key while entering the customer name in the order form to call up the Must Match window. You may also want to verify the product number, so you press <search> on the PRODNO field. The values from the PRODNO field in the PRODUCTS file appear in the must match window. If you make any typing errors in the NAME or PRODNO fields the must match window appears.

IM: the Data Base Operations Menu is displayed.

USER: press <E>, or use the arrow keys to highlight the Entry command and press <do>.

IM: the "FROM" prompt appears on the screen.

USER: enter [ORDERS.SMK] and then press <do>.

IM: the orders screen mask is displayed on your screen as follows.

```
                        -Orders-

        INVOICE
        DATE            (SYSDATE)
        NAME
        PRODNO          0
        QUANTITY        0.00
        TOTAL           0.00


Text <movements><do><undo><menu><print><calc><make ent>
```

The INVOICE field is in input mode. The date is today's date. The INVOICE field is a unique key field, and a unique value must be entered. The two must match fields are NAME and PRODNO.

USER: enter [10093] in the INVOICE field. Press <ret>.

IM: the cursor skips over the DATE field which shows the system date, and comes to rest on the NAME field.

USER: enter the name [Horowitz & Smith Inc]. Press <ret>.

IM: a window with a list of name entries appears on the right side of your screen as follows:

```
                                        AA AEROSPACE
                                        ASSOCIATED STEEL
                                        BARRY'S BAR
                    - Orders -          DIGITAL DESIGNS
                                        FARKEL FUR FARM
INVOICE                   10093         FRED'S FARM MACHINES
DATE          (SYSDATE)                 FRED'S TOWING
NAME  HOROWITZ & SMITH INC
PRODNO        0                         _JOE'S_CAMPER_SALES_
QUANTITY      0.00                      PAPER EMPORIUM
TOTAL         0.00                      PENGUIN POLARIS CO.
                                        SILICON PRODUCTS
                                        TMI INDUSTRIES
                                        WANDA'S ALFALFA

                                             CUST.NAME
Text <movements> <do> <undo> <menu> <print> <do> <make ent> <change>
```

This window is the Must Match window. The window appeared because
"Horowitz & Smith Inc." does not match any of the values in the NAME field in the
CUST file. It contains the values from the NAME field in the CUST file and places
the cursor on the value nearest to the name entered in the Orders screen. One of the
NAME field values from the CUST file must correspond to the Name field value
you are entering into the ORDERS file. You can select a name from the list in the
must match window. If the value you want to enter is not in the window, you can
enter a new record into the CUST file. In either case, a Name field value in the
ORDERS file "must match" a Name field value from a record in the CUST file.

You can also use the <change> key to call up the records within the Must Match
window. This enables you to change information within the Must Match record or
to simply view it if you need additional information about that record.

USER: press <make entry> to add a record to the CUST file.

IM: the screen mask for the CUST file appears on your screen. This is the
        same mask in which you entered TMI INDUSTRIES in the previous
        section.

USER: enter the following items into the customer's screen mask.

                NAME   —   [Horowitz & Smith Inc] <ret>
                ADDRESS   —   [1500 5th Avenue] <ret>
                CITY   —   [New York] <ret>
                STATE   —   [NY] <ret>
                ZIP   —   [00668] <ret>
                CONTACT   —   [Stan Horowitz] <ret>
                PHONE   —   [(603) 882-9165] <ret>

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```
DUE          —    <ret>
PURCHASES —      <ret>
PAYMENTS  —      <ret>
OVERDUE   —      [F]
press <do> to accept the record
```

1M: the new record is accepted into the CUST file, and the system returns to the Must Match window.

When you press <do>, the entries in the mask are accepted, and the Must Match window appears again. Notice the new addition to the name field, "Horowitz & Smith Inc." Now you can add that name to the new orders record.

USER: make sure the name "Horowitz & Smith Inc" is highlighted in the Must Match window. Press <do>.

1M: the name is inserted as the name field value.

USER: press <ret>.

1M: the PRODNO field is in input mode.

USER: press <search> to check the product number values.

1M: the Must Match window appears with product number values.

USER: enter the value [215] by using the down <arrow> to highlight the field value "215." Press <do>, then press <ret> to advance to the next field.

1M: the Must Match window disappears and the value "215" is displayed in the PRODNO field. The QUANTITY field is in input mode.

USER: enter [100], then press <ret>.

1M: the TOTAL field is in input mode.

USER: enter [31], then press <ret>.

1M: your order entry resembles the following screen.

```
                          -Orders-

          INVOICE       19903_
          DATE          (SYSDATE)
          NAME          Horowitz & Smith Inc
          PRODNO        215
          QUANTITY      100.00
          TOTAL         31.00


  Text <movements> <do> <undo> <menu> <print> <calc> <make ent>
```

USER: press <undo> once to erase this entry, as it is only an example for
        your new assistant. Press <do> to confirm that you do not want the
        entry.

IM: the record is erased from the screen, and a blank ORDERS mask
        awaits a new entry.

USER: press <menu> to return to the Data Base Operations Menu. To clear
        the data base of active files, press <N>.

IM: the Data Base Operations Menu reappears with no active file.

USER: press <B> for the Browse command.

IM: the Browse command is accessed, and a prompt for a file name is
        displayed.

USER: enter [CUST], then press <ret>.

IM: the Browse windows appear, as they did in Chapter 2. The list of
        values for the name field appears on the left, and the first record in the
        list is displayed on the right.

USER: press the down <arrow> seven times until the name "Horowitz &
        Smith Inc" is highlighted. Press <del entry>. Press <do> to confirm
        the deletion.

IM: the record for Horowitz & Smith Inc is deleted from the file. The list
        presents all other field values.

USER: press <menu> to return to the Data Base Operations Menu.

IM: the Data Base Operations Menu appears with no active files listed.

IM: the PAYMENTS field is changed and the cursor advances to OVERDUE.

USER: press <calc> to recalculate the BALANCE field.

IM: the BALANCE field recalculates to zero.

USER: press <do> to accept the record.

IM: the Browse windows return to the screen. The new record appears highlighted in the list. It is also displayed in the window to the right.

```
AA AEROSPACE
ASSOCIATED STEEL          NAME            DIGITAL DESIGNS MKT
BARRY'S BAR
DIGITAL DESIGNS           UPDATED         (SYSDATE)
                          ZIP             93324
DIGITAL DESIGNS MKT       DUE             11- 1-83
FARKEL FUR FARM           PURCHASES       0.00
FRED'S FARM MACHINES      PAYMENTS        0.00
FRED'S TOWING             OVERDUE         FALSE
JOE'S CAMPER SALES        BALANCE         0.00
PAPER EMPORIUM            ADDRESS         6364 COMPLEX DR.
PENGUIN POLARIS CO.       CITY            LOS ANGELES
SILICON PRODUCTS          STATE           CA
TMI INDUSTRIES            CONTACT         HOWARD HUGHES
WANDA'S ALFALFA           PHONE           (213) 445-9241



                          CUST.NAME
<arrows><change><make entry><del entry><menu><search>
```

USER: press <menu> to return to the Database operations menu.

IM: the Database Operations menu is displayed on the screen with no active files listed.

CHAPTER 4 — RETRIEVING RECORDS (QUERY)

GOAL: This chapter demonstrates how to retrieve information from files. Information can be retrieved in two different ways; either by using the Form Query command or by using the Query window accessed with the other operational commands.

1. The Form-Query Command

EXAMPLE SITUATION: The Form Query is the easiest way to retrieve only those records you need from a file. The Form Query is used to enter search conditions for records. The search conditions for each field are entered on a record template or "screen mask" of the file. Search conditions can be expressed as exact values to retrieve records with matching values. Search conditions can also be set for those records with values falling within a defined group of values. The group of values are defined by relational operators like greater than (e.g., ">").

In this example, you are viewing the orders file. The records retrieved should match the following conditions: invoice numbers greater than 10077, customers with names falling after the letter 'C', and product numbers greater than 600.

IM: the Data Base Operations Menu appears on your screen.

USER: press <F>, or use the arrow keys to highlight the FormQuery Command and press <do>.

IM: a prompt asks for the "Query display mask file:"

USER: enter [ORDERS.SMK], or press <search>, highlight ORDERS.SMK in the query search window and press <do>. Press <ret> after you enter the file name.

IM: ORDERS.SMK is displayed on the screen as follows.

```
                         -Orders-

        INVOICE_____
        DATE
        NAME
        PRODNO                          '
        QUANTITY
        TOTAL


    _____
Text <do> <undo> <help> <menu> <movements>
```

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The value or values to be searched for can be entered as an exact value or as a group of values specified by the following relational operators:

>   greater than a value
<   less than a value
>=   greater than or equal to a value
<=   less than or equal to a value
=   equal to a value
<>   not equal to a value

Selection criteria can be specified by entering the relational operator on the line next to the field label, then entering a value. Quotes are not permitted in a Form-Query for dates, true/false, and text fields. The following options are available within the Form-Query command.

<do>   —   Accepts the entries you put into the mask.
<undo>   —   Erases the last entry you put into the mask.
<help>   —   Displays directions to help you use Form Query.
<menu>   —   Returns to the Data Base Operations Menu without retrieving any records.
<movements>   —   These include the up, down, left, and right arrow keys, <ret>, <back space>, and <space>.

USER: enter [>10077] next to the INVOICE field label, then press <ret>. Press the down <arrow> once until the NAME field is in input mode. Enter [>C], then press <ret>. In the PRODNO field, enter [>600], then press <ret>. Your entries resemble the screen below.

```
┌──────────────────────────────────────────────────────┐
│  ┌────────────────────────────────────────────────┐  │
│  │ ─────────────────────────────────────────────  │  │
│  │                    -Orders-                     │  │
│  │                                                 │  │
│  │      INVOICE        >10077                      │  │
│  │      DATE                                       │  │
│  │      NAME           >C                          │  │
│  │      PRODNO         >600                        │  │
│  │      QUANTITY       ____                        │  │
│  │      TOTAL                                      │  │
│  │                                                 │  │
│  │ ─────────────────────────────────────────────  │  │
│  └────────────────────────────────────────────────┘  │
│  ┌────────────────────────────────────────────────┐  │
│  │Decimal <do> <undo> <help> <menu> <movements>    │  │
│  └────────────────────────────────────────────────┘  │
└──────────────────────────────────────────────────────┘
```

USER: press <do> to save the entries, and to see a list of the records.

IM: a list of the records retrieved with the Form-Query command is displayed. Notice that the records retrieved have invoice numbers greater than 10077, names that start with letters after C, and product numbers greater than 600.

INVOICE	DATE	NAME	PRODNO	QUANTITY
>10079	10- 4-83	FARKEL FUR FARM	601	1.00
>10080	10- 4-83	FRED'S FARM MACHINES	755	5.00
>10087	10- 8-83	PAPER EMPORIUM	750	30.00
>10089	10-10-83	PENGUIN POLARIS CO.	608	45.00

Record #1 of 4 records

(repeat factor) \<arrows> \<menu> \<change>

USER: press \<menu> to return to the Data Base Operations Menu.

IM: the Data Base Operations Menu reappears. The records entered in the Form-Query are still active. List is highlighted.

USER: press \<N> for the New command to clear the data base of the active file.

IM: the Data Base Operations Menu returns with no active file listed.

2. Retrieve All Records with all Fields (FROM clause)

EXAMPLE SITUATION: You want to find all customer records and list them on the screen to see who has the largest balance due.

IM: the Data Base Operations Menu is displayed on the screen.

USER: to access the List command, press \<L> or use the arrow keys to highlight the List command and press \<do>.

IM: the Query window with the "From" prompt is displayed. It asks for the names of files containing records to be retrieved.

USER: if you are not sure about which files are currently available, press \<search>. You now have the option to search for available files. Highlight the word "Files" and press \<do>. The search window will be displayed with any floppy drives and hard disk partitions listed along the left side and the data base, screen mask and print mask files for the first volume listed along the right side as follows:

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```
A
B
CON
COM1
COM2
LPT1
LPT2      ──→ PRODUCTS          DB3
              ORDERS            DB3
              APP               DB3
              REMDAY            DB3
              CUST              DB3
              CUSTBACK          DB3
              HOUR              DB3
              CUST              DB3

         <page> <jump> <up> <down> <undo>
                      <do>
```

USER: Move the pointer until CUST is highlighted and then press <do>. The
        CUST file name will automatically be entered into the From clause.
        Press <do> to retrieve all fields from all records in the Customer file.

        If the file you are looking for is not listed in the first volume, press <pg
        dn> to see the list of files contained on the next volume. You may use
        <pg dn> and <pg up> to list the files contained on all the volumes
        listed along the left side of the search window.

        When the list of files for a volume is displayed, you may press
        <search> again and the files will be categorically and alphabetically
        arranged for you.

        If you knew for sure that the CUST file was available and that it was
        the one you wanted, you do not have to use the search window.
        Instead, you could simply enter [CUST] and then press <do>.

1M: the List of the customer file appears on your screen with options at the
        bottom of the list.

NAME	UPDATED	ZIP	DUE	PURCHASES
>AA AEROSPACE	10-10-83	92121	12-31-83	275088.00
>ASSOCIATED STEEL	10-10-83	54902	12-12-84	135300.00
>BARRY'S BAR	10-10-83	30023	1- 8-84	3618.52
>DIGITAL DESIGNS	10-10-83	93324	11- 1-83	272056.00
>DIGITAL DESIGNS MKT	(SYSDATE)	93324	11- 1-83	0.00
>FARKEL FUR FARM	10-10-83	00234	10-31-83	28700.00
>FRED'S FARM MACHINES	10-10-83	88923	9- 9-83	28004.75
>FRED'S TOWING	10-10-83	96723	2- 2-84	0.00
>JOE'S CAMPER SALES	10-31-83	57007	2-28-83	1100.00
>PAPER EMPORIUM	10-31-83	06106	10- 1-83	200.00
>PENGUIN POLARIS CO.	10-31-83	99343	2- 4-84	6383.95
>SILICON PRODUCTS	10-31-83	92123	10- 1-83	137576.17
>TMI INDUSTRIES	(SYSDATE)	10000	0- 0- 0	0.00
>WANDA'S ALFALFA	10-31-83	82399	12-31-83	1590.50

Record #1 of 14 records

(repeat factor) <arrows> <menu> <change>

IM: the records you retrieved are listed on the screen, one record per row. The fields are listed in columns across the width of the screen.

The following options are available in List.

(repeat factor) —moves up and down or sideways through the list of records a certain number of places. (Press a number, then an arrow.)

up, down <arrows> —moves up and down the list of records.

left, right <arrows> —moves left and right across the fields of a record

<menu> —returns to the Data Base Operations Menu and save changes made in the data base; returns to the list from the screen presentation of a record.

<change> —retrieves the entire record and allows you to change information on the screen.

USER: press the right <arrow> 9 times to view all the information from the records listed, then press <menu>.

IM: the Data Base Operations Menu is redisplayed.

USER: press <N> for the New command.

The New command clears the work space. The Data Base Operations Menu has no active file listed. If your file is active, it is listed above the menu options in the Data Base Operations Menu.

3. Retrieve All Records with Selected Fields (FROM — SELECT clauses)

EXAMPLE SITUATION: This example is similar to the one above, except only the customer name and balance fields are retrieved. Not all of the fields from the file are retrieved.

IM: the Data Base Operations Menu is on your screen.

USER: press <L>, or use the arrow keys to highlight the List command and press <do>.

IM: the "FROM" prompt is displayed. It asks for the names of files containing records to be retrieved.

USER: enter [CUST] and press <ret>.

After the word "FROM" you listed the name of the file containing the records you want to use.

USER: enter [SELECT NAME,BALANCE]

The "Select" clause is the next statement in a query. It specifies which fields from your records are to be displayed. A Select clause is formed by the word "Select," followed by the names of fields to be retrieved. Field names are separated by commas. Be sure to leave at least one blank space before and after the word "Select."

Once again, if you were not sure of the fields available in the CUST file or their spelling, you could press <search> and then highlight "Key_Fields and press <do>. For the file(s) listed in the FROM clause, you would see a list of all of the fields. Once you found the field you were looking for, you could highlight it, press <do>, and it would automatically be entered into your Select clause.

NOTE: You could have put the FROM and SELECT clauses on the same line, for example: FROM CUST SELECT NAME,BALANCE.

USER: press <do>.

IM: the List command retrieves the customer name and balance fields for all records in the file and displays the records.

NAME	BALANCE
>AA AEROSPACE	1088.00
>ASSOCIATED STEEL	122556.45
>BARRY'S BAR	617.52
>DIGITAL DESIGNS	14756.00
>DIGITAL DESIGNS MKT	0.00
>FARKEL FUR FARM	1350.00
>FRED'S FARM MACHINES	4.75
>FRED'S TOWING	0.00
>JOE'S CAMPER SALES	100.00
>PAPER EMPORIUM	50.00
>PENGUIN POLARIS CO.	380.01
>SILICON PRODUCTS	176.17
>TMI INDUSTRIES	0.00
>WANDA'S ALFALFA	90.50

Record #1 of 14 records

(repeat factor) <arrows> <menu> <change>

USER: review the list and press <menu> when finished.

IM: the Data Base Operations Menu is redisplayed.

USER: press <N> for the New command to clear the active file.

IM: the Data Base Operations Menu displays "No Active File."

4. Retrieve Specific Records with all Fields (FROM - WHERE clauses)

EXAMPLE SITUATION: In this example, all customer records with balance values greater than zero are retrieved.

IM: the Data Base Operations Menu is on your screen.

USER: press <L>, or use the arrow keys to highlight List and press <do>.

IM: the "From" prompt asks for the files containing records to be retrieved.

USER: Enter [CUST] <ret> for the file name.

IM: the cursor drops to the next line.

USER: enter [WHERE BALANCE >0]

This query contains a "Where" clause. The "Where" clause is used to enter search conditions for the records retrieved. A "Where" clause is formed by the word "Where" followed by the search conditions used for record retrieval. A search condition is formed by entering a "key" field name, a relational operator, and a constant value, in that order.

A relational operator defines the relationship between two items. In this example, a key field is related to a constant value (i.e., BALANCE is a "key" field and "0" is a value). The relational operators used in search conditions are as follows.

=	equal to
<	less than
<=	less than or equal to
>	greater than
>=	greater than or equal to
<>	not equal to

A constant value is a set value; one that does not change. You cannot enter a field name, a relational operator, then another field name. The value represented by the field name must relate to the constant value. For instance, number field values relate with numeric constants and text field values relate with constants that consist of text values.

To enter a query which contains a "Where" clause, enter the name of the file containing your records after the "From" prompt (enter a Select clause if you want a specific group of fields). Then enter the "Where" clause and press <do> to retrieve the records.

Of course, if you are not sure of the key fields included in the file(s) listed in the From clause, you could press <search>, highlight "Key Fields", and then press <do>. Once you found the key field you were looking for, you could highlight it and then press <do> to have it automatically entered into your Where clause.

(NOTE: You could have put the FROM and WHERE clause on the same line, for example: FROM CUST WHERE BALANCE>0.)

USER: press <do>

IM: a list of all customers who have a balance greater than zero is displayed.

USER: as you view the list press the right <arrow> twice to verify that all customer records in the list show balances greater than zero. Then press <menu>.

IM: the Data Base Operations Menu is redisplayed.

USER: Press <N> for the New command to clear the active file.

IM: The Data Base Operations Menu shows that there is no active file.

5. Retrieve Records with Combined Search Conditions (FROM - SELECT WHERE clauses)

EXAMPLE SITUATION: In this example, an additional search condition is added to that of the previous example. Not only are records retrieved for customers with a balance greater than zero, but the customer's balance must be overdue to be retrieved. Information for contacting these customers in the name, balance, overdue and phone fields is retrieved by specifying that only those fields be retrieved.

IM: the Data Base Operations Menu is on your screen.

USER: press <L>, or use the arrow keys to highlight the List command and press <do>.

IM: the "From" prompt asks for the names of files containing records to be retrieved.

USER: enter [CUST] <ret> to specify the file from which the records are retrieved.

IM: the cursor drops to the next line.

USER: enter [SELECT NAME,BALANCE,OVERDUE,PHONE] <ret> to retrieve the Name, Balance, Overdue and Phone fields.

IM: the cursor drops to the next line.

USER: enter [WHERE BALANCE>0 AND OVERDUE='TRUE'] to retrieve records that show a value in Balance greater than 0 AND where the overdue status is 'true'. Note that the constant value for the second search condition is enclosed in single quotes. Constant values for text, date, and true/false field types must be enclosed in single or double quote marks.

The Where clause of this example contains two search conditions. The customer balance field must be greater than zero and the overdue field must be equal to TRUE. These search conditions are combined by the word "AND". This "AND" is a logical operator. Logical operators allow you to combine search conditions.

The three logical operators are AND, OR and NOT. If logical AND combines two search conditions, a record must satisfy both of the conditions for retrieval. If logical OR combines two search conditions, a record must satisfy either or both of the conditions for retrieval. If logical NOT is used all the records that don't meet the condition are retrieved.

In this example, a customer record must have both balance greater than zero and overdue equal to true for the record to be retrieved.

In any query for records, parentheses can be used to give greater priority to some search conditions.

USER: press <do>.

IM: the records which satisfy the requirements in the query are retrieved. Only the fields listed in the Select clause are displayed in the list of records. This list appears on your screen.

NAME	BALANCE	OVERDUE	PHONE
>FRED'S FARM MACHINES	4.75	TRUE	(505) 733-8899
>PAPER EMPORIUM	50.00	TRUE	(509) 723-5834
>SILICON PRODUCTS	176.17	TRUE	(923) 562-7362

Record #1 of 3 records

(repeat factor) <arrows> <menu> <change>

USER: view the list to verify that the search conditions entered in the query are satisfied for all records retrieved. When you are finished, press <menu>.

IM: the Data Base Operations Menu is redisplayed.

USER: press <N> for the New command.

IM: the Data Base Operations Menu appears with no active file listed.

6. Retrieve Records Within a Range of Values (FROM - WHERE clauses)

EXAMPLE SITUATION: This example demonstrates the retrieval of records which contain values within a specified range. The records for customers with names beginning with the letter 'D' or before, or customers with names that have the first letter in the range 'M' to 'T' inclusive are retrieved.

IM: the Data Base Operations Menu is on your screen.

USER: press <L>, or use the arrow keys to highlight the List command and press <do>.

IM: the "FROM" prompt appears and asks for the names of files containing records to be retrieved.

USER: enter [CUST] <ret> to specify the file.

IM: the cursor drops to the next line.

USER: enter [WHERE NAME <'E' OR NAME IN ('M':'U'>]. Remember the outer square brackets are not entered.

These conditions specify that the first letter of the customer's name must come before the letter "E" alphabetically, or it must be in the range "M" to "T". If either condition is satisfied, the customer record is retrieved.

The format used to specify a range search condition is to enter the key field name, then the word [IN], and the range. The range is specified by entering the first value, a colon (:), then the last value of the range. For instance, to specify certain product numbers from a product file, the following "Where" clause can be used.

WHERE PRODNO IN (600:800>

Both the first and last values of the range are enclosed in angle brackets or parentheses. The angle brackets are the characters "<" and ">". Angle brackets and parentheses can be mixed, as in the example above. The "<>" brackets indicate the value should NOT be included in the range, while the "()" parentheses indicate the value should be included in the range.

In your query, the last value of the range is specified as "U". It is also exclusive. If there is a customer by the name of "U", that customer is not included in the list of records retrieved. This guarantees that all customers with names beginning with the letter "T" are retrieved. Note that if the customer's name is "M", his record is correctly retrieved.

USER: press <do>.

IM: the records which satisfy the requirements are shown in the list on your screen as follows.

NAME	UPDATED	ZIP	DUE	PURCHASES
>AA AEROSPACE	10-10-83	92121	12-31-83	275088.00
>ASSOCIATED STEEL	10-10-83	54902	12-12-84	135300.00
>BARRY'S BAR	10-10-83	30023	1- 8-84	3618.52
>DIGITAL DESIGNS	10-10-83	93324	11- 1-83	272056.00
>PAPER EMPORIUM	10-31-83	06106	10- 1-83	200.00
>PENGUIN POLARIS CO.	10-31-83	99343	2- 4-84	6383.95
>SILICON PRODUCTS	10-31-83	92123	10- 1-83	137576.17
>TMI INDUSTRIES	(SYSDATE)	10000	0- 0- 0	0.00
>Digital Designs MKT	(SYSDATE)	93324	11- 1-83	0.00

Record #1 of 9 records

(repeat factor) <arrows> <menu> <change>

USER: view the List to verify that the search conditions are satisfied for all records retrieved. Press <menu> when you are finished.

IM: the Data Base Operations Menu is displayed.

USER: press <N> for the New command to clear the active file.

IM: the Data Base Operations Menu is shown with no active file listed.

7. Retrieve Records Through a Screen Mask File

EXAMPLE SITUATION: In the last example of this Chapter, records are retrieved using a screen mask file. The screen mask allows you to clearly view one record at a time. The Display and List commands allow you to view records through screen masks. To use a screen mask or print mask file (explained later) that you have previously created, enter the name of the mask file. In this example, you want to retrieve all customer records which have been updated since October 11,1983. You also want to display their records through the customer screen mask.

IM: the Data Base Operations Menu is on your screen.

USER: press <D>, or use the arrow keys to highlight the Display command and press <do>.

IM: the "From" prompt is displayed. It asks for the files containing records to be retrieved.

USER: enter [CUST.SMK] <ret> to specify a screen mask file.

IM: the cursor drops to the next line.

USER: enter [WHERE UPDATED>'10-11-83'] to retrieve the customer
        records that have been active since October 11, 1983.

Your entry specifies that all fields displayed in the customer screen mask file are retrieved for all customers whose records have been updated since October 11, 1983. The Display command retrieves all fields displayed in the mask file. A Select clause cannot be entered if a mask file name is used to answer the "From" prompt.

Search conditions can be included in the screen mask file. If there are search conditions included in the Where clause of your mask file, they are automatically included. The search conditions you enter in the query are combined with those in the mask file using a logical AND. In our example, there are no search conditions included in the mask file. The only search conditions are in the Where clause of the query.

To use a previously created screen or print mask, specify the name of the mask file to answer the From prompt. If the mask file is not specified, another prompt appears asking for the mask file name. When a mask file does not exist, the module allows you to create one in the Entry, Design, Display, and Format commands.

USER: press <do>.

IM: the records which satisfy the specified requirements are retrieved. The
        first of these records is shown on the screen as illustrated below.

```
+-------------------------------------------------------------+
|                                                             |
|   _____       |
|                                                             |
|   NAME JOE'S CAMPER SALES        UPDATED   (SYSDATE)        |
|                                                             |
|   ADDRESS 724 BUTTE AVE                                     |
|   CITY MISSOULA          STATE MT        ZIP 57007          |
|                                                             |
|   CONTACT JOE JOSEPHSON                                     |
|   PHONE (582) 993-8127              DATE DUE 2-28-83        |
|                                                             |
|   PURCHASES            1100.00   OVERDUE  FALSE             |
|   PAYMENTS             1000.00                              |
|   _____       |
|   BALANCE               100.00                              |
|   _____       |
|                                                             |
+-------------------------------------------------------------+
| Text <movements><do><undo><menu><print><calc><make ent>    |
+-------------------------------------------------------------+
```

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USER: view the records to verify that they meet the specifications. Use the <page down> and <page up> keys to view the other records. Return to this record to complete the example.

USER: press <make ent> to select the Form Mode option.

IM: the cursor jumps to the "purchases" field. This field is displayed in input mode.

USER: press <ret> to leave this field as it is.

IM: the "payments" field is displayed in input mode.

USER: enter [1100] <ret>.

IM: the "balance" field is automatically recalculated and the new balance is displayed.

<make ent> allows you to jump to fields marked as Form Mode fields. Form Mode fields contain values which change often. The <make ent> feature allows these fields to be easily updated. All formulas are automatically recalculated as the fields are updated. The fields are marked as Form Mode fields in the screen mask file. If fields are not designated as Form Mode fields you can use the <calc> key to recalculate those values in the record.

USER: press <menu>

IM: the Data Base Operations Menu is redisplayed.

USER: press <N> for the New command to clear the active file.

IM: the Data Base Operations Menu appears with no active file listed.

CHAPTER 5 — SORTING RECORDS

Goal: This chapter demonstrates how records are sorted or organized in a specific order. Records can be sorted during a query or with the Sort command. Sorted records can be in either ascending or descending order. You can sort records by up to 15 key fields.

1. Sort by Query

EXAMPLE SITUATION: A file containing orders from customers is used to demonstrate how to sort records. The order records are sorted by the product number.

IM: the Data Base Operations Menu is displayed on the screen.

USER: press <L>, or use the arrow keys to highlight the List command and press <do>.

IM: the "FROM" prompt is displayed. It asks for the names of files containing records to be retrieved and sorted.

USER: enter [ORDERS] <ret> to retrieve the file.

IM: the cursor drops to the next line.

USER: enter [SELECT PRODNO,NAME] <ret> to retrieve the fields PRODNO and NAME.

IM: the cursor drops to the next line.

USER: enter [ORDER PRODNO] to sort the retrieved records according to product number.

To sort records with a query, enter an ORDER clause before pressing <do> to start the query process. The ORDER clause MUST come after any SELECT or WHERE clause when they are included. The SELECT, WHERE and ORDER clauses are optional parts of the query.

PRODNO is a key field. Remember you can only sort on key fields. You can sort in ascending and descending order. The records in ORDERS will be sorted in ascending order by Prodno. If you had entered, FROM ORDERS SELECT PRODNO,NAME ORDER -PRODNO, then the records would be sorted in descending order, from 601 to 95.

USER: press <do>.

IM: the records specified are retrieved and sorted according to the product number field. The list of records is displayed on your screen as shown below.

```
  PRODNO      NAME

>      95     Farkel Fur Farm
>      95     Barry's Bar
>      99     Barry's Bar
>     107     Silicon Products
>     123     Barry's Bar
>     215     Wanda's Alfalfa
>     215     Paper Emporium
>     300     Barry's Bar
>     444     Wanda's Alfalfa
>     445     Penguin Polaris Co.
>     458     Joe's Camper Sales
>     600     AA Aerospace
>     600     Digital Designs
>     600     Associated Steel
>     601     Silicon Products

             Record #1 of 24 records

    (repeat factor) <arrows> <menu> <change>
```

USER: press <menu> to return to the Data Base Operations Menu.

2. Sort Command

EXAMPLE SITUATION: You can sort the retrieved records in a different fashion. This is done with the Sort command from the Data Base Operations Menu. The ORDERS file is still listed as active so you can continue to use it with the Sort command. Note that the rules that apply to the ORDER clause also apply to the Sort command, i.e., you can only sort on key fields, in either ascending or descending order, and on up to 15 key fields at one time.

In this example, the orders are first sorted by product number from the largest product number to the smallest. If more than one order exists for a specific product number, the orders are sorted by the customer name in alphabetical order.

IM: the Data Base Operations Menu is displayed with ORDERS as the active file.

USER: press <S> to select the Sort command.

IM: the order prompt appears. It prompts for the key field names by which to sort the records.

NOTE: If you press the <search> key, the search window appears displaying a directory of active files and their associated key fields. The search window can remind you what the key fields are.

USER: enter [-PRODNO,NAME]

Your response to the prompt indicates the records should be ordered with a two level sort. First the records are sorted by the PRODNO key in descending order, then the records with duplicate product number values are sorted by the Name key in ascending order.

USER: press <do>

IM: the records are sorted and the Data Base Operations Menu returns.

USER: press <L> to access the List command.

IM: the sorted records are displayed as follows:

```
PRODNO    NAME

>    755   Fred's Farm Machines
>    750   Paper Emporium
>    700   Penquin Polaris Co.
>    690   AA Aerospace
>    690   Digital Designs
>    608   Penguin Polaris Co.
>    603   Associated Steel
>    602   AA Aerospace
>    601   Farkel Fur Farm
>    601   Silicon Products
>    600   AA Aerospace
>    600   Associated Steel
>    600   Digital Designs
>    458   Joe's Camper Sales
>    445   Penquin Polaris Co.

            Record #1 of 24 records

(repeat factor) <arrows> <menu> <change>
```

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Note that the records with the same product number, e.g., 690,601,600, are sorted in ascending order by name. This is a simple two level sort. You can have up to a 15 level sort if there are 15 key fields available. You could have achieved the same result if you had entered the query:

> FROM ORDERS
> SELECT PRODNO,NAME
> ORDER -PRODNO,NAME

USER: when finished, press <menu> to return to the Data Base Operations Menu.

IM: the Data Base Operations Menu appears on the screen.

USER: press <N> for the New command to clear the data base of the active file.

IM: the Data Base Operations Menu appears with no active file listed.

CHAPTER 6 — CHANGING AND UPDATING RECORDS

Goal: This chapter explains how to keep information in your files up to date by changing the data contained in fields. Individual records are updated with the Browse command or with the Display and List commands. Multiple records are updated with the Update command.

1. Making Changes in a Record from Browse

EXAMPLE SITUATION: Browse allows you to change the information in individual records. In this example, the representative of Digital Designs pays you for this month, and you must update the record.

IM: the Data Base Operations Menu appears on the screen.

USER: press <B>, or use the arrow keys to highlight the Browse command and press <do>.

IM: a prompt asks for the name of the file containing the records you want to scan.

> File: _____

USER: enter [CUST], then press <ret> or <do> to use the CUST file.

Note that you can press <search> at this point to bring up the search window that displays the directory of available files.

IM: the Browse window opens onto the screen.

USER: press <down arrow> three times until the DIGITAL DESIGNS record is highlighted, press <change>.

IM: the record appears in screen mask form as follows.

```
┌─────────────────────────────────────────────────────┐
│  ┌──────┐                                            │
│  │ NAME │ DIGITAL DESIGNS    UPDATED    (SYSDATE)    │
│  └──────┘                                            │
│                                                      │
│  ADDRESS 6364 COMPLEX DR                             │
│  CITY LOS ANGELES        STATE CA        ZIP 93324   │
│                                                      │
│  CONTACT HOWARD HUGHES                               │
│  PHONE (213) 445-9241        DATE DUE 11- 1-83       │
│                                                      │
│  PURCHASES      272056.00   OVERDUE  FALSE           │
│  PAYMENTS       257300.00                            │
│  ─────────────────────────                           │
│  BALANCE         14756.00                            │
│                                                      │
│                                                      │
├──┬──────────────────────────────────────────────────┤
│Text│ <movements> <do> <undo> <menu> <print< <calc> <make ent> │
└──┴──────────────────────────────────────────────────┘
```

The options in this menu are listed below.

<movements>	—	includes the up, down, left, and right <arrows>, <ret>, <backspace>, and <space>.
<do>	—	accepts any changes made in the record.
<undo>	—	erases the last change you made.
<menu>	—	returns to the Browse windows.
<calc>	—	updates the dependent decimal, number and true/false fields in the record.
<make ent>	—	sends the cursor to form mode fields (if any are set) for changes, then automatically recalculates the results of those changes.

USER: press <ret> nine times until the PAYMENTS field is in input mode. Enter [257400.00], then press <ret>.

IM: the PAYMENTS field is now updated and the cursor jumps to the OVERDUE field.

USER: press <calc> to recalculate the record's values.

IM: The BALANCE field is updated to reflect the changes made in PAYMENTS.

After you make an entry or change in a field, press <ret> or <do>. The <ret> key accepts the entry. The <do> key accepts all the entries in the mask, and returns to the Browse windows. If you do not want the entry you just made, press <undo> to erase it.

USER: press <do> to return to the Browse windows, and to save the changes made in the record.

IM: the list of customer records appears in the window on the left, and the record for DIGITAL DESIGNS appears with its changes in the window on the right as follows:

```
┌─────────────────────────────┬──────────────────────────────────────┐
│ AA AEROSPACE                │                                      │
│ ASSOCIATED STEEL            │ ┌──────┐                             │
│                             │ │NAME  │   DIGITAL DESIGNS           │
│ BARRY'S BAR                 │ └──────┘                             │
│ ┌─────────────────────┐     │ UPDATED    (SYSDATE)                │
│ │ DIGITAL DESIGNS     │     │ ZIP        93324                    │
│ └─────────────────────┘     │ DUE        11- 1-83                 │
│ DIGITAL DESIGNS MKT         │ PURCHASES  272056.00                │
│ FARKEL FUR FARM             │ PAYMENTS   257400.00                │
│ FRED'S FARM MACHINES        │ OVERDUE    FALSE                    │
│ FRED'S TOWING               │ BALANCE    14656.00                 │
│ JOE'S CAMPER SALES          │ ADDRESS    6364 Complex Dr.         │
│ PAPER EMPORIUM              │ CITY       Los Angeles              │
│ PENGUIN POLARIS CO.         │ STATE      CA                       │
│ SILICON PRODUCTS            │ CONTACT    Howard Hughes            │
│ TMI INDUSTRIES             │ PHONE      (213) 445-9241           │
│ WANDA'S ALFALFA            │                                      │
│                             │                                      │
├─────────────────────────────┴──────────────────────────────────────┤
│                          CUST NAME                                  │
│  <arrows> <change> <make entry> <del entry> <menu> <search>         │
└─────────────────────────────────────────────────────────────────────┘
```

USER: press <menu> to return to the Database Operations menu.

IM: the Data Base Operations menu is displayed on the screen with no active files.

2. Updating a Single Record in a File

EXAMPLE SITUATION: Updating a single record can be done with the Display and List commands. In this example, the contact has changed for one of your customers, and the customer record is updated with the List command. The customer calls you again to have the old contact reinstated, and you update the file with the Display command.

IM: the Data Base Operations Menu is on the screen.

USER: press <L>, or use the arrow keys to highlight the List command and press <do>.

IM: the "FROM" prompt is displayed. It asks which files contain records to be retrieved.

USER: enter [CUST.SMK] and press <do> to select the CUST file and the CUST screen mask.

IM: The records from the customer file are retrieved, and the list of these records is displayed.

USER: use the down arrow key to move the cursor to the record for TMI INDUSTRIES. Press <change>.

IM: the screen mask for TMI INDUSTRIES is displayed on the screen as shown below.

```
NAME | TMI INDUSTRIES |   UPDATED    (SYSDATE)

ADDRESS  1000 FERMI WAY
CITY  OAK RIDGE          STATE TN       ZIP  10000

CONTACT  MR. ROENTGEN
PHONE  (222) 333-4444        DATE DUE 0- 0- 0

PURCHASES           0.00    OVERDUE   FALSE
PAYMENTS            0.00
                                        Computer
                                         Museum
BALANCE             0.00
```
Text <movements> <do> <undo> <menu> <print< <calc> <make ent>

USER: highlight the area next to the label for the CONTACT field. Enter [JOE BARNS] as the new field value. Press <ret>, then press <do> to save this entry. Press <menu> to return to the List. Use the right arrow key to scan the list until the CONTACT field appears. Note that the contact has changed. Press <menu> again to return to the Data Base Operations Menu.

IM: the Data Base Operations Menu is displayed with the CUST.SMK file listed as active.

USER: the customer has called to change his contact again. Press <D> to select the Display command.

IM: the Display command displays the screen mask for TMI INDUSTRIES
        just as it appeared when <change> was pressed in the List command.

CUST.SMK is the active file in the data base, and it is used when you enter the
Display command. In the List command, the cursor pointed to the record for TMI
INDUSTRIES. The cursor still points to this record when you leave the List
command and enter the Display command. Thus the record for TMI INDUSTRIES
appears when you enter the Display command.

USER: use the arrow keys to highlight the contact field value. Enter the name
        [MR. ROENTGEN] and press <ret>. Press <do> to save the
        updated record and then press <menu> to return to the Data Base
        Operations Menu.

Almost any of the fields in an individual record can be updated with the List or
Display commands. Some fields have attributes which make updating easy, such as
the form mode fields. Other fields are designed so that old entries cannot be
accessed. For more information on field attributes, refer to the Create command in
the Reference Section.

IM: the Data Base Operations Menu is redisplayed.

USER: press <N> for the New command to clear the work space.

IM: the Data Base Operations Menu is displayed with no active file listed.

3. Updating Field Values in All Records in a File

EXAMPLE SITUATION: In this example, the Update command is used to
retrieve a group of records and update two different fields, one at a time. The
Update command updates each field in all records found. For example, the
customer balance field is updated to be equal to purchases minus payments. The
formula is already specified for each record in the screen mask file, but the Update
command updates information for all records at once. Suppose that the
UPDATED field in the customer file specifies the next date customer records are to
be updated instead of the previous date. This example shows how to Update the
UPDATED field to the present date, then to a date two weeks from today.

IM: the Data Base Operations Menu is displayed on the screen.

USER: press <U>, or use the arrow keys to highlight the Update command
        and press <do>.

IM: the "From" prompt asks for the names of files containing records to be
        retrieved and updated.

USER: enter [CUST] <ret> to select the customer data base.

IM: the cursor moves to the next line.

USER: enter [SELECT NAME,UPDATED,BALANCE,PURCHASES,
        PAYMENTS] <ret> to retrieve the specified fields

IM: the cursor moves to the next line.

USER: enter [WHERE BALANCE <>0] to retrieve only those records that
        do not have zero value in the balance field. Press <do> to enter the
        query.

IM: all customer records are retrieved and the "Set" prompt appears. It
        asks you for a field to set equal to an expression.

USER: set the customer balance field equal to the purchases field minus the
        payments field. Enter [BALANCE=PURCHASES-PAYMENTS]
        and press <ret> or <do>. The "Set" prompt and your entry are
        shown below.

```
┌─────────────────────────────────────────────────────────────┐
│   ┌─────────┐                                                 │
│   │ Set:    │                                                 │
│   ├─────────┴─────────────────────────────────────────────┐  │
│   │ BALANCE=PURCHASES-PAYMENTS                             │  │
│   └───────────────────────────────────────────────────────┘  │
├─────────────────────────────────────────────────────────────┤
│                   <undo> <search>                            │
└─────────────────────────────────────────────────────────────┘
```

If you cannot remember the fields in your file, press <search>. A search window
with the files listed on the left and the fields listed on the right is displayed on the
screen. You can choose the fields from the search window or press <undo> to leave
the search window.

IM: the balances are updated for each of the retrieved records. The Data
        Base Operations Menu appears on your screen.

To update a field, enter the name of the field to be updated, an equal sign ("="), then
the expression by which the field is updated. The expression must produce a result
which matches the field type. For instance, you cannot set a numeric field equal to a
text or date value.

There are several options associated with the expression used to update the fields.
The result of the expression can be a constant value. A constant value updates all
field values to the same value in all retrieved records (e.g., "BALANCE=0",
"SALESMAN='JONES'"). Numeric and date fields can have values influenced by
formulas in expressions. The formulas can involve data base fields, numbers, and
mathematical operations (e.g., addition, multiplication). This example demon-
strates the use of these formulas. The expression can also be a conditional

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expression. For more details, refer to the Update command in the Reference Manual.

Note that all fields to be updated or involved in the update formulas must be included in the Select clause of your query.

USER: press <do> to select the Update command again. To set the UPDATED field equal to today's date, enter [UPDATED='(date)'] where (date) is replaced with today's date in the format MM-DD-YY. Press <ret>. For example, if today's date is December 25, 1983, the entry is [UPDATED='12-25-83'], <ret>. Your field is set equal to a constant value.

IM: the Data Base Operations Menu is displayed when all the records are updated.

USER: to view the results of the updates, press <L> or use the arrow keys to highlight the List command and press <do>.

IM: the customer records are listed. You can verify that the UPDATED field in all of the records shows today's date (the date you entered). The date 12-25-83 is used as an example.

NAME	UPDATED	BALANCE	PURCHASES	PAYMENTS
>AA AEROSPACE	12-25-83	1088.00	275088.00	274000.00
>ASSOCIATED STEEL	12-25-83	122556.45	135300.00	12743.55
>BARRY'S BAR	12-25-83	617.52	3618.52	3001.00
>DIGITAL DESIGNS	12-25-83	14656.00	272056.00	257400.00
>FARKEL FUR FARM	12-25-83	1350.00	28700.00	27350.00
>FRED'S FARM MACHINES	12-25-83	4.75	28004.75	28000.00
>JOE'S CAMPER SALES	12-25-83	100.00	1100.00	1000.00
>PAPER EMPORIUM	12-25-83	50.00	200.00	150.00
>PENGUIN POLARIS CO.	12-25-83	388.01	6391.95	6003.94
>SILICON PRODUCTS	12-25-83	176.17	137576.17	137400.00
>WANDA'S ALFALFA	12-25-83	90.50	1590.50	1500.00

Record #1 of 11 records

(repeat factor) <arrows> <menu> <change>

USER: press <menu> to return to the Data Base Operations Menu. Press <U> for the Update command, then enter [UPDATED= UPDATED+14] and press <ret>. This sets the value of the UPDATED field to a date two weeks from today.

IM: the updated field is changed for all records, and the Data Base Operations Menu is redisplayed.

USER: press <L> to select the List command. View the list to verify that the dates have been increased by two weeks.

NAME	UPDATED	BALANCE	PURCHASES	PAYMENTS
>AA AEROSPACE	01-08-84	1088.00	275088.00	274000.00
>ASSOCIATED STEEL	01-08-84	122556.45	135300.00	12743.55
>BARRY'S BAR	01-08-84	617.52	3618.52	3001.00
>DIGITAL DESIGNS	01-08-84	14656.00	272056.00	257400.00
>FARKEL FUR FARM	01-08-84	1350.00	28700.00	27350.00
>FRED'S FARM MACHINES	01-08-84	4.75	28004.75	28000.00
>JOE'S CAMPER SALES	01-08-84	100.00	1100.00	1000.00
>PAPER EMPORIUM	01-08-84	50.00	200.00	150.00
>PENGUIN POLARIS CO.	01-08-84	388.01	6391.95	6003.94
>SILICON PRODUCTS	01-08-84	176.17	137576.17	137400.00
>WANDA'S ALFALFA	01-08-84	90.50	1590.50	1500.00

Record #1 of 11 records

(repeat factor) <arrows> <menu> <change>

USER: when finished, press <menu> to return to the Operations Menu. Then press <N> for the New command to clear the work space.

IM: the Data Base Operations Menu appears with no active file listed.

The Update command is used to update all of the fields in a group of records in a data base file. The Display and List commands can be used to update individual records. Changes made in Update, Display, and List are made throughout the data base. Records can also be updated, one at a time, through the Browse command. These commands help you to keep your whole information system up to date.

CHAPTER 7 — DELETING RECORDS

Goal: You may remove records from your data base file using either the Browse command or the Purge command. The Browse command allows you to remove records one by one. With the Purge command, you can remove all or some of the records from your file because the Purge command uses the retrieval conditions specified in your query.

1. Removing A Record with the Browse Command

EXAMPLE SITUATION: Suppose, now, that Digital Designs Marketing fails, as does TMI Industries. Since these records are no longer needed, you can delete them with the Browse command.

IM: the Data Base Operations Menu appears on the screen.

USER: press <B>, or use the arrow keys to highlight the Browse command and press <do>.

IM: a prompt asks for the name of the file containing the records you want to scan.

```
┌────────────────────────────────────────────┐
│   ┌─────┐                                    │
│   │File:│  _____           │
│                                              │
└────────────────────────────────────────────┘
```

USER: enter [CUST], then press <ret> or <do>.

Note that you can press <search> at this point to bring up the search window that displays the directory of available files.

IM: the Browse window opens onto the screen.

USER: highlight the DIGITAL DESIGNS MKT record using the <arrow> keys, then press <del entry>.

IM: a prompt, "Delete record?" appears in the options window below, on the left.

```
AA AEROSPACE
ASSOCIATED STEEL      NAME          DIGITAL DESIGNS
BARRY'S BAR
DIGITAL DESIGNS       UPDATED       (SYSDATE)
                      ZIP           93324
DIGITAL DESIGNS MKT   DUE           11-1-83
                      PURCHASES     0.00
FARKEL FUR FARM       PAYMENTS      0.00
FRED'S FARM MACHINES  OVERDUE       FALSE
FRED'S TOWING         BALANCE       0.00
JOE'S CAMPER SALES    ADDRESS       6364 COMPLEX DR.
PAPER EMPORIUM        CITY          LOS ANGELES
PENGUIN POLARIS CO.   STATE         CA
SILICON PRODUCTS      CONTACT       HOWARD HUGHES
TMI INDUSTRIES        PHONE         (213) 445-9241
WANDA'S ALFALFA


_Delete record?_:
d4⁶arrows> <change> <make entry> <del entry> <menu> <search>
```

USER: press <do> to confirm the deletion of this record.

IM: the record is deleted from the file, and the next record is displayed on the screen.

USER: press <search>. When the prompt for an expression appears, enter ['TMI'], then press <ret>.

IM: the highlighted cursor in the left window jumps to the record for TMI INDUSTRIES.

USER: press <del entry>, then press <do> to confirm the deletion of TMI INDUSTRIES from the Customer file.

IM: TMI INDUSTRIES is deleted from the list of records, and the next record, WANDA'S ALFALFA, is displayed on the screen.

USER: press <menu> to return to the Data Base Operations Menu.

IM: the Data Base Operations Menu is displayed on the screen with no active files listed.

The Browse command, unlike the query commands List, Display, etc., does not create an active file. Hence, accessing the Browse command will not change the active files list if there is one. Also note that if changes are made within Browse on a file that is already active, those changes will be reflected in the active file. Consequently, current queries may be affected by changes within Browse.

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2. Purging Selected Records From a File

EXAMPLE SITUATION: The inactive customer file contains two records that you need to remove. FRED'S FARM MACHINES and FRED'S TOWING are customers that have become active after six months of inactivity. You are to purge them from the customer inactive file.

It is possible to use the Purge command to remove one record from a file. However, this is best accomplished with the Browse command. Purge is more useful when you need to remove groups of records from your files.

IM:	the Data Base Operations Menu is displayed on your screen.
USER:	press <P>, or use the arrow keys to highlight the Purge command and press <do>.
IM:	the "From" prompt asks you for the name of the file and the records that are to be purged.
USER:	enter [CUSTBACK] <ret> to specify the inactive customer file.
IM:	the cursor drops to the next line.
USER:	enter [WHERE NAME IN <"FRED":"GEORGE">] to specify the records whose values lie between FRED and GEORGE.
USER:	press <do> to retrieve the records.
IM:	a prompt asks you if you want to destroy all records found.

If you decide you do not want to remove the records, press <undo>. You are then returned to the Data Base Operations Menu with your records intact.

USER:	press <do> to remove the records specified in the query.
IM:	the records are removed after you press <do>. The Data Base Operations Menu is displayed with no active files listed. The New command is highlighted.

Whenever you use the Purge command, the Data Base Operations Menu reappears with no active file listed. The Purge command can be used to remove any number of records from a file. If all records are removed, they do not exist for use with another command. The Purge command automatically accesses the New command to insure that such files are not active in the data base.

3. Purging an Entire File

EXAMPLE SITUATION: Suppose it is another six months and it's time to purge

the whole customer backup file. In this example, all of the records from this file are removed. The information is returned to the customer backup file in another chapter when you learn how to append records.

IM: the Data Base Operations Menu is displayed on the screen.

USER: press <P>, or use the arrow keys to highlight the Purge command and press <do>.

IM: the "From" prompt is displayed. It asks for the names of files containing records to be retrieved and purged.

USER: enter [CUSTBACK] and press <do> to retrieve all the records in the file.

IM: a prompt asks you to verify that all the records retrieved in the query are to be permanently removed.

Destroy all records found?

If you decide you want to keep all the records, you can press <undo> to cancel the removal. The records are not removed and the Operations Menu is redisplayed.

USER: press <do> to confirm that all of the records in the customer backup file are to be removed.

IM: all records are removed and you are returned to the Data Base Operations Menu. The Data Base Operations Menu appears with no active files listed.

CHAPTER 8 — PRINTING

Goal: At different points in Information Management, you can print a single record, a report, or a form letter. This enables you to print copies of valuable information, to design and generate reports, and to print personalized forms and mailing labels. Sample printouts demonstrating the the printing potiential of Information Management are included in the Appendices.

1. Printing Single Records

The following summarizes the steps needed to print a single record as it appears on the screen.

1. Use the List, Display, or Browse to retrieve and display the entire record on the screen. (Remember to press <change> in the List and Browse commands to display the record.)

2. Make sure the printer is properly connected, plugged in, and paper and ribbon are ready.

3. Press <print>.

4. Select the output destination file from the Output Device Selection window. The record is printed just as it appears on the screen.

WARNING: If your printer is not connected properly, the output cannot be processed. If your printer is not connected when you press <print>, you must reinitialize the system and start again. The printer must be connected for printing to occur and for proper system function during printing.

2. Generating a Report

The appearance of a report is determined by a "print mask" or report format file. A print mask contains the layout for the report information. The information is in the database files. Text, formulas, totals and subtotals can be defined in a print mask file.

Information Management includes a very sophisticated Report command which is used with the Format command to design and generate a report. You use the Format command to create the print mask and the Report command to print the report. When you have no print mask file prior to selecting the Report command you can automatically access Format within Report.

In the Format command you design a print mask from a blank screen or work with a "default" print mask which simply lists the fields. You can edit a default print mask or accept it as is. Chapter 12 discusses the design of print masks in detail.

In this example you use a predefined print mask to print a report on orders for products recieved by a company on one business day. This report lists the invoice number, product number, quantity ordered, and total due for each order. The quanity ordered and total due for each product is subtotaled within the report, and grand totals are computed at the end.

IM: the Data Base Operations Menu is displayed on your screen.

USER: press <R>, or use the arrow keys to highlight the Report command and press <do>.

IM: the "FROM" prompt asks for the names of files containing the records to be used in the report.

USER: enter [ORDERS] <ret> to retrieve the file.

IM: the cursor drops to the next line.

USER: enter [WHERE DATE='10-10-83'] <ret> to retrieve the records for orders recieved on the tenth of October.

IM: the cursor drops to the next line.

USER: enter [ORDER PRODNO] to put the records in order by Prodno. Press <do> to accept the query.

IM: the prompt "Report format file?" appears with a default print mask name.

If you enter a data base file name after the prompt you automatically access the Format command to design a print mask file. If you want to use a print mask file which was previously created with the Format command, enter the name of the print mask with the distinguishing ".pmk" suffix.

USER: press <ret> to accept the default.

IM: The following prompt asks whether subtotals should be printed.

```
┌─────────────────────────────────────────────────────┐
│   ┌──────────────────────────────────┐               │
│   │  Print subtotals for PRODNO ?    │               │
│   └──────────────────────────────────┘               │
└─────────────────────────────────────────────────────┘
```

PRODNO is called a "levelbreak" field. Levelbreaks are the fields that are used to sort the file. If the file has not been sorted with an ORDER clause or the SORT command then the first key field found in the print mask is used as the levelbreak. Levelbreaks signal a print of subtotals whenever the value in the levelbreak field changes. If you did not want subtotals printed you would press <undo>.

USER: press <do> so that subtotals are printed.

IM: the message "Processing records_____: appears. Then the
report is sent to the device specified in the print mask, which in this
case is the Console. The report appears on your screen like this;

Page 1	INVOICE	PRODNO	QUANITY	(SYSDATE) TOTAL
	10080	107	3	76.17
TOTAL			3	76.17
	10090	600	2	270600.00
	10091	600	1	135300.00
TOTAL			3	405900.00
	10089	608	45	160.20
TOTAL			45	160.20
TOTAL			51	406136.37
Pause to change page press <do> to continue.				

Notice that a subtotal was printed just before the value in the levelbreak field,
PRODNO, changed, and that a grand total was printed at the end.

IM: the bottom of the screen prompts "press <do> to continue".

USER: press <do>

IM: the report is finished so the Data Base Operations Menu reappears.

USER: press <N> to clear the active file.

IM: the Data Base Operation Menu is displayed with no active file.

3. Generating Form Letters

EXAMPLE SITUATION: This example demonstrates the Mailer option, which
generates personalized forms and mailing labels. To use the Mailer option, you
must first enter the text of the form into a text file with a word processor or text
editor. For each record retrieved, one standard form is generated.

Field values from the data base file are inserted in the form letter template where indicated by a substitution character (the at sign "@"), and field name. The field value substitutions can be simple, conditional, or involve special functions like SYSDATE, PAGENUMBER or SEQNUMBER.

Suppose you were going to substitute values from the following fields; COMPANY, CONTACT, INTEREST, and SALESREP, in this form letter;

@:COMPANY	→ prints the COMPANY value
Dear @:CONTACT@','	→ prints the CONTACT value and a comma
As of @:SYSDATE	→ prints the System Date value
1. The interest charged on your account is now @:INTEREST+1 percent	→ prints the value in INTEREST plus 1
2. This year @?SALESREP<>'@+SALESREP@-'no one' has serviced your account.	→ prints the SALESREP value or if SALESREP is blank, prints 'no one'
3. From now on @?COMPANY<'M'@+'Mr. Jones'@-'Mr.Smith' will be your sales representative	→ if the value in COMPANY falls before 'M', 'Mr. Jones' prints, if after 'M' Mr. Smith' prints
- Miss Black, Sales Manager	
@:PAGENUMBER . @:SEQNUMBER	→ prints the oage number and sequence number

Example 3 uses a sample text file included with your Information Management program. This file contains the standard text necessary to produce overdue notices to customers who have not paid on time. When the data base records are retrieved, information from the records (e.g., customer name, address, etc.) is inserted into the standard form. The personalized form letters are produced from information in the data base file.

IM: The Data Base Operations Menu is displayed on your screen.

USER: press [M], or use the arrow keys to highlight the Mailer command and press <do>.

IM: The "FROM" prompt appears. It asks you From what file your records are to be retrieved.

USER: enter [CUST] <ret> to select the CUST file.

IM: cursor drops to next line.

USER: enter [WHERE OVERDUE = 'TRUE' AND BALANCE > 0] <ret> to retrieve those records with a 'true' status in OVERDUE and a value greater than 0 in BALANCE.

IM: cursor drops to next line.

USER: enter [ORDER NAME] to alphabetize the records by NAME. Press <do> to retrieve the records.

IM: a prompt asks for the name of the text file which contains the form template for the letter.

```
┌─────────────────────────────────────────────────────┐
│  ┌──────────────────┐                                │
│  │ Form letter file: │    _____     │
│  └──────────────────┘                                │
└─────────────────────────────────────────────────────┘
```

USER: enter [LETTER], then press <ret>.

IM: the "Output Device Selections" window appears. It contains the names of the output device files.

```
┌───────────────────────────────────────────────────────┐
│  ┌──────────────────┐                                 │
│  │ CONSOLE          │                                 │
│  └──────────────────┘                                 │
│  PRINTER                                              │
│  FILE                                                 │
│  CONLABEL                                             │
│  PRTLABLE                                             │
│  EPSONFX80                                            │
│  PRISMBW                                              │
├───────────────────────────────────────────────────────┤
│            Output Device Selection                    │
│   <up> <down> <do> <undo> <pages>                     │
├───────────────────────────────────────────────────────┤
│                                                       │
└───────────────────────────────────────────────────────┘
```

The output from Mailer can be sent to one of the following;

CONSOLE   —   prints to the screen

PRINTER   —   prints to a 'generic' printer. This output device selection can be adapted to your printer in the Configure Utility if your printer is not on the Output Device list.

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FILE   —   prints to a text file. The name of the text file must be entered in the Output Device Selection Window. The text file can be edited later with a word processor or text editor.

CONLABLE   —   prints mailing labels in 3 columns across the screen as a check before using PRTLABEL.

PRTLABEL   —   prints mailing labels in 2 columns on a printer. This option must be adapted in the Configure Utility for your printer.

EPSONFX80
PRISMBM
(others)   —   prints to the specific printer. Press <down><arrow> in the Output Device Selection Window to see all eleven printers that have their printing parameters preset for you.

You can change the Output Device configurations in the Configure Utility. Select the "printing parameters" option and highlight any listed output device. When you press <change> the Output Device Configuration window appears. In that window there are two settings which affect the way form letters and mailing labels are printed. The number after "Label Columns" sets the number of mailing label columns that are printed across the screen, page or form. A "Y" after "Using single sheets" determines that there should be a press <do> prompt to continue after each form letter or mailing label set is printed. An "N" indicates you are using continuous form paper.

USER: make sure the word "CONSOLE" is highlighted and press <do> to send the output to your screen. This example assumes that your output is sent to the console.

IM: your personalized form letters are sent to your screen one for each customer. Press <do> as prompted for page changes. Note which parts of the letter change and which remain the same for each letter. Once the letters are printed, you are returned to the Data Base Operations Menu.

USER: press <N> for the New command to clear the work space.

IM: the Data Base Operations Menu is displayed with no active file listed.

CHAPTER 9 - EXECUTE AND LEARN

Goal: The Execute and Learn function allows you to perform functions within the Information Management program automatically. Tasks involving repetitive steps that are performed on a regular basis can be recorded in procedures. The procedures reduce the amount of work you do to a few keystrokes.

1. The Execute and Learn Function

EXAMPLE SITUATION: Once a month, you have to write a letter to those customers with outstanding, overdue balances. To do this efficiently, you record the procedure into a monitor file, using the execute and learn function. When you need to produce these letters, you execute the monitor file.

In this example, the letters are sent to the screen. With slight modification, the same procedure can be used to send the letters to a printer.

IM: the Data Base Operations Menu is displayed.

USER: press <macro> to access the Macro window.

IM: the following window appears on your screen.

```
 _____
|                                           |
|        | Execute |     Learn              |
|                                           |
|_____|
```
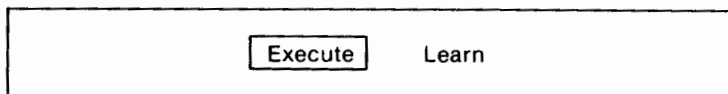
USER: press <L> for Learn.

IM: the prompt, "File name:" is displayed at the bottom of the window.

USER: enter [MONTHEND], then press <ret>.

IM: the message, "Macro command (volume name): MONTHEND.MON in Learn mode" appears.

USER: press <macro>

IM: the following window appears. The options for this window are described below. For details on the Execute and Learn function, refer to Volume I.

	Save	Pause	Message	Abort

Save   - Ends the recording process and saves your procedure in a monitor file.

Pause   - Halts the recording process and allows you to type in variable entries. Pause is not time dependent. You must press <macro> again to continue recording.

Message   - Allows you to enter a prompt for a user response.

Abort   - Ends the recording process without saving the procedure.

USER: press <M> to enter a message for the user. Enter [Start from DB Operations Menu - Press <macro> to cont] and press <ret>.

IM: the message "Pause mode, press macro to leave" appears.

USER: press <macro> to continue.

IM: the macro message disappears.

From this point in the program, any key you press is recorded into a procedure. The procedures are recorded in monitor or macro files. Macro files are distinguished from other files by the suffix,".MON."

USER: press <M> for the Mailer option.

IM: the "FROM" prompt appears.

USER: enter [CUST] <ret> to select the file.

IM: cursor drops to next line.

USER: enter [WHERE BALANCE > 0 AND OVERDUE = 'TRUE'] to select those records with a 'true' status in OVERDUE and a value greater than zero in BALANCE Press <do> to retrieve the records.

IM: the prompt, "Form letter file:" is displayed.

Form letter files are templates for form letters, mailing labels, or any type of written text with substitution characters. The substitution characters represent field values that are entered into the text form. Text forms are written with an editor utility or word processor, then used with the Mailer command to produce the forms. You are using a sample template with substitutions from the CUST file.

USER: enter [LETTER], then press <ret>.

IM: the Output Device Selections window is displayed. The CONSOLE
        file is highlighted.

USER: press <macro> to access the Macro window, then press <M> to enter
        a message.

IM: the message window comes up.

USER: enter [Highlight output device and press <macro>.] <ret> to enter a
        message.

IM: the message is accepted and you are in pause mode.

USER: be sure CONSOLE is highlighted, press <macro> to exit pause mode,
        then press <do> to select CONSOLE.

IM: Your letters begin to scroll down the screen. Press <do> as
        appropriate to move to the next page. When the last letter is displayed,
        the Data Base Operations Menu reappears on your screen.

USER: press <N> to clear the data base of the active CUST file.

IM: the CUST file is cleared from the data base.

USER: press <macro>.

IM: the following window appears.

```
┌──────────────────────────────────────────────┐
│    ┌───────┐                                   │
│    │ Save  │   Pause    Message    Abort       │
│    └───────┘                                   │
└──────────────────────────────────────────────┘
```
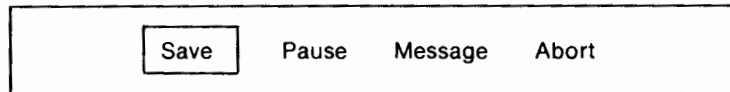
USER: press <S> to Save the steps in the macro file.

IM: the steps are saved in the macro file, and the prompt, "End of Macro
        Command" appears.

USER: press <macro> to access the Macro window.

IM: the Execute and Learn window appears on the screen.

USER: press <E> for Execute. Then enter [MONTHEND] after the prompt
        for a file name. Press <ret>.

IM: your macro or monitor file is executed. The prompt "start from DB Operations Menu" appears on the screen.

USER: press <macro> to continue with the monitor file.

IM: The steps you have recorded are performed at seemingly high speed. A message asks you to highlight the output device then to press < macro > .

USER: Highlight the Console output device then press <macro>.

IM: With the output device selected, the letters will begin to scroll to the screen. When the listing is done, the MONTHEND macro will clear the query automatically by accessing the New command. Finally, the macro will terminate leaving a message on the screen to that effect.

The next step in this example is to remove the monitor file from your disk. This action allows the next person to follow the tutorial the opportunity to create the same monitor file without receiving error messages.

USER: press <macro>.

IM: the Execute/Learn window appears on your screen.

USER: press <L>.

IM: the prompt, "File Name" is displayed.

USER: press <search>.

IM: the following window appears.

VOL 1 VOL 2 CONSOLE PRINTER	
	MONTHEND.MON
<page><jump><up><down><undo> <change> <line_ins> <line_del>	

USER: make sure that [monthend.mon] is highlighted and press <line_del>.

IM: the prompt ''Delete (volume name): monthend.mon?'' appears.

USER: press <do> to delete the monitor file.

IM: the search window reappears to confirm that the file is deleted.

USER: press <undo> to leave the search window and <undo) again to return to the Data Base Operations menu.

IM: the Data Base Operations Menu appears with no active files listed.

It is best to start the Learn functions from the same spot in the main menu. Then your monitor files are always executed from that spot. If you start to execute a monitor file from the wrong spot, the message "macro aborted" appears.

CHAPTER 10 - CREATING FILES

Goal: This Chapter will prepare you to create database files and screen mask files for your own applications by creating small example files which will demonstrate all of the available features.

1. Creating Data Base and Screen Mask Files

EXAMPLE SITUATION: Two types of files are set up in this example. These are the data base file and its corresponding screen mask file. The data base file stores the actual information in fields, while the screen mask file contains the screen presentation of the fields in the data base file. This example shows you how to set up an employee data base file and a screen mask file. The files are kept as small as possible for manageability, yet they still demonstrate all available options.

IM: the Data Base Operations Menu is displayed on the screen.

USER: press <change> to access the Data Base File Maintenance Menu.

IM: the Data Base File Maintenance Menu appears on the screen.

USER: enter [CR], or use the arrow keys to highlight the Create command and press <do>.

IM: the Create command prompts you for the name of your new file. This name is given to both the data base file and the screen mask.

```
┌──────────────────────────────────────────────────────┐
│                                                        │
│   ┌─────────────────┐                                  │
│   │ New file name:  │     _____     │
│   └─────────────────┘                                  │
│                                                        │
└──────────────────────────────────────────────────────┘
```

USER: enter [EMPLOYEE] for the name of the new file, then press <ret>.

Make sure you do not duplicate the names of your data base files. The search window can help you to choose a unique name. The file name should describe the file contents.

Data base file names can have up to eight characters. The first character must be a letter, and no blank spaces are permitted. The other characters can be letters, numbers, "_" (underscore), and "#" (pound sign).

IM: the Screen format & File design menu appears on your screen.

```
┌─────────────────────────────────────────────────────┐
│                                                     │
│          Screen format & File design menu           │
├─────────────────────────────────────────────────────┤
│     ‾‾‾                                              │
│     Exit      Edit    Whereline    New    Size       │
├─────────────────────────────────────────────────────┤
│                  <do> <undo>                         │
└─────────────────────────────────────────────────────┘
```

USER: enter [ED], or use the arrow keys to highlight the word "Edit" and
        press <do>.

IM: the Edit choices appear at the bottom of the window. The blank
        window is ready for you to design the screen mask.

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                 │
├─────────────────────────────────────────────────────────────────┤
│ <edit keys><make entry><move entry><del entry><change><menu><search> │
├─────────────────────────────────────────────────────────────────┤
│                Screen format & File design menu                 │
├─────────────────────────────────────────────────────────────────┤
│        Exit     Edit    Whereline    New    Size                │
│                 ‾‾‾‾                                            │
└─────────────────────────────────────────────────────────────────┘
```

This is a brief description of the options available for designing a screen mask. They
are also used in the Design and Modify commands. You will become familiar with
them when you design this screen mask.

<edit keys>   — the following keys are available to you.

<ins>   — inserts one character at the cursor location.

<del>   — deletes one character at the cursor location.

<line ins>   — inserts one blank line in order to avoid adjusting
                     all text by hand.

<line del>   — deletes one line at cursor location to avoid
                     adjusting everything by hand.

<jump down>   — advances to the next page in a screen mask.

<jump up>   — moves to the preceding page in a screen mask.

<make entry>   — positions a data base field entry at the current cursor
                     location. Can determine display width.

<move entry>   — moves a data base field to another location with the
                     arrow keys.

<del entry>   — removes a data base field entry at the current cursor location.

<change>   — accesses the Field Attribute Window to allow alteration of database field characteristics.

<menu>   — returns to the Screen format & File design menu.

<search>   — displays a window which lists the database fields which have currently been defined. The field name, field type, key status, and field length parameters are listed.

<arrows>   — allows you to move the cursor around the screen.

<back space>   — allows you to move the cursor back one space.

<ret>   — advances cursor to beginning of next line.

<do>   — accepts the screen mask file as it is; allows you to save the information in the windows; confirms information in Size command.

<help>   — displays on-line information regarding functions.

<undo>   — returns to the Data Base File Maintenance Menu without saving the screen mask file on disk. You must confirm this action.

USER: using the illustration below as a guide, use the arrow keys to move around the screen and type the characters shown. If you need to make adjustments, use the edit keys as listed above. This part of the screen mask contains the labels and the overall layout for the fields in the file.

```
┌──────────────────────────────────────────────────────────┐
│                                                          │
│   Name                    Social Security                │
│   Date Started            Employee Number                │
│   Salary                                                 │
│   Number of Dependents                                   │
│   Department              Security Clearance             │
│                                                          │
│                                                          │
├──────────────────────────────────────────────────────────┤
│ <edit keys><make entry><move entry><del entry><change><menu><search> │
└──────────────────────────────────────────────────────────┘
```

The word appearing immediately in front of the field is used as the field name by default. The field name can be up to 10 characters in length. The first character

must be a letter, and blank spaces are not permitted. The other characters can include letters, numbers, "_", and "#". A colon is not permitted in a field name, but it is ignored when it follows a field label and precedes the field display. The field name should remind you of the field contents.

Since a question mark is not permitted in field names, it cannot appear immediately in front of the field before attributes are assigned. If a question mark is placed in front of a field prior to attribute assignment, a default name, [Filename(N)] appears, where N is the number of the field created. This default name can be changed. It is easier, however, to place the question marks in front of the fields after all attributes are assigned. The same default name, [FILENAME(N)], occurs when a field label is larger than 10 characters, or contains other characters that are not permitted. When this occurs, an error message appears. The field still exists and you can enter a new field name in the field attribute window.

USER: When you finish entering the mask, place the cursor two spaces to the right of the NAME field. Press <make entry> three times, then <do>. Press <change>.

IM: The Field Attribute window appears.

```
Name        :  NAME
Kind        :  Unique-key   Key   Non-key
Type        :  Text   Date   Number   True/False   Decimal
Justify     :  Left   Center   Right   Repeat
Evaluated   :  Normal   Autodate   Form   Skip
               Dependent   Autoincrement   Range
Video mode  :  Normal   Mode-1   Mode-2   Mode-3
Must fill   :  True   False
Disp. width :       3
Duplicate   :  True   False
Must match  :  True   False

        < do >  < undo >  < up >  < down >
```

The <make entry> key can be pressed more than once to determine the display width. The prompt "Field Width:" informs you of the width of the field display. The display width can also be specified from within the Field Attribute window. The display width may differ from the actual data base field size.

The default values highlighted in the Field Attribute window are acceptable for most of the fields in this example. Changes are noted as they occur. The attributes in the window are briefly described below. For more information on these

attributes, refer to Create in the Reference Section. Each of the attributes listed below, with two exceptions, will be described with an example in this section. How to specify a dependency and a Range Check will be demonstrated in the next Chapter.

Justification — entry is to the right, left, center, or repeated across the field display.

Evaluated — Depending on the information in your field, you have the following options:

Normal — evaluated as a field with no specific dependencies or automatic features.

Autodate — does not allow the date value to be changed, displays system date.

Form — the cursor can jump to these fields to make quick changes and update dependent fields.

Skip — once a value is made in the field, that value cannot be accessed for changes or deletion.

Dependent — establishes a value dependent upon the values in other fields. Dependencies can be established only in the Design command.

Autoincrement — inserts a sequence number for the field value.

Range — establishes a range of values in which the entry must be located. Ranges can be established only in the Design command.

Video mode — involves the display on the screen, especially with color monitors.(eg. inverse video)

Must fill — a value must be entered. <ret> does not qualify as a value.

Disp. width — the width of the field as it is displayed on the screen

Duplicate — the value in the previous record is saved until you enter a new value.

Must match — matches the value in the field with a value in a field in another file.

USER: we will now specify the field attributes, one field at a time. The first field attribute is the field name. The Information Manager has automatically entered a default value for us, in this case the word NAME which is the last word before the field location marker. Since NAME is acceptable for our employee name field, we may leave this value as it is and press <down arrow> to move to the next line.

IM: the value of "Non-Key" is highlighted for the field kind attribute. The field kind determines if that field can be used to search for information or whether it can be used to sort records by.

There are three different field kind attributes. A "Non-Key" attribute means that this field CANNOT be used to search for records with or to sort records by. A "Key" value means that this field CAN be used to search for records with or sort records by. A "Unique Key" value means that this field also can be used to search and sort with, but it has a further limitation. If a record has a Unique Key field, then each record must have a value in this field which is different from the unique key field value in every other record. This means, the value in the Unique Key field must be unique. An excellent example would be the social security number field.

The total number of key fields permitted per file is 15, including Unique Key fields and Key fields. Each file must contain at least one key field for record retrieval. If you try to assign a field as the 16th key field, an error message is displayed and that field will default to a non-key field.

USER: highlight the word "Key" to make NAME a key field and press the down <arrow> to move to the next line.

IM: the cursor jumps to the next line, highlighting "Text". The type of field differs with the values contained in that field. The types of fields are described below.

Text	— letters, numbers, and/or characters
Date	— dates in the format MM-DD-YY or format set in Configure
Number	— numbers without decimal points in the range -32,000 to 32,000
Decimal	— any whole numbers or numbers with decimal points
True/False	— true or false

USER: since our first field will contain letters, the most appropriate selection for field type would be text, which was the default value. Now, we may press <change> to further limit the allowable characters.

IM: When <change> is pressed for a Text field, the following window appears on the screen. The size attribute will vary depending on the size of the text field with which you are working.

Upper Case	:	True		False
Lower Case	:	True		False
Blank	:	True		False
Numbers	:	True		False
Punctuation	:	True		False
Decimal	:	True		False
Size:	:	3		False

<do> <undo> <up> <down>

This window appears only for text fields. If the attribute is marked TRUE then the following values are allowed in the field.

Upper Case : allows upper case letters. If true and Lower Case is false, all entries are automatically upper cased.

Lower Case : allows lower case letters. If true and Upper Case is false, all letter entries are automatically lower cased.

Blank : allows blank spaces.

Number : allows numbers and minus signs.

Punctuation : allows punctuations marks.

Decimal : allows decimal points.

Size : is the actual size of the data base field. Note this may be different from the field's display width.

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USER: move through the menu using the up and down arrow keys. Highlight "True" for all the character sets except Numbers and Decimal. For Size, enter [20]. When you are finished, press <do>.

IM: the Field Attribute window returns to your screen. Continue to follow the instructions as you have previously. The cursor is on the line for Types of fields.

USER: move down the list and change the attributes so that it matches the following list.

Name	- Name
Kind	- Key
Type	- Text
Justify	- Left
Evaluated	- Normal
Video mode	- Normal
Must Fill	- True
Display width	- 20
Duplicate	- False
Must Match	- False

In this field, then, we have selected the Must Fill option. This means, we will not be able to enter an employee record in which the name field is blank, we must enter at least one character for the name field. When we have finished, press <do>. The window disappears and the screen mask shows a highlighted area where you entered the field. The highlighted area is larger than it was previously because of the change in the display width of the field. The field name, kind, type, and actual size are listed at the bottom of the screen as seen below.

```
Name _____        Social Security

Date Started               Employee Number

Salary
Number of Dependents

Department                 Security Clearance

Name:  NAME    Kind:  Key    Type:  Text    Size:  20


<edit keys><make entry><move entry><del entry><change><menu><search>
```

USER: move the cursor next to the words "Social Security", then press <make entry>. Press <do>, then press <change>.

IM: the Field Attribute window appears on the screen.

USER: enter [SOCSEC] for the name of the field, then press <ret>. Highlight the attributes and enter the changes so your attribute list matches that shown below. When you have finished press <do>.

Kind   — Unique Key
Type   — Text, then press <change>
                                    Upper case   — False
                                    Lower case   — False
                                    Blank (spaces) — False
                                    Numbers   — True
                                    Punctuation   — True
                                    Decimal   — False
                                    Size   — 11
                                    Press <do>.
Justify   — Left
Evaluated   — Normal
Video mode   — Normal
Must Fill   — False
Display width   — 11
Duplicate   — False
Must Match   — False

IM: Since this field is specified as a Unique Key, no two records will have the same social security number. The screen mask is redisplayed with a highlight next to the "Social Security" label, where the SOCSEC field is placed.

USER: move the cursor next to the words "Date started", then press <make entry>. Press <do> to accept the entry, then press <change>.

By now, you should start to see a pattern in the way fields are outlined. First press <make entry> in the position desired. You can press <make entry> until the highlighted area is the width desired for the field display area, or use the Display width option within the Field Attribute window to define the field display width.

Secondly, press <do> to confirm the field. Lastly, press <change> and then select the field attributes as they are appropriate for that field. If you want to use the default values for your field, omit this step.

IM: the Field Attribute window appears on the screen.

USER: select attributes as necessary to match the list below then press <do>.

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Name	— Date
Kind	— Key
Type	— Date
Justify	— Left
Evaluated	— Autodate
Video mode	— Normal
Must Fill	— False
Display width	— 8
Duplicate	— False
Must Match	— False

IM: this field contains a key date field. With the Autodate option on, the current system date will be automatically entered for you. The field appears highlighted in the screen mask.

USER: move the cursor so it is following the words "Employee Number" and make a field there. Once you have pressed <change> to display the Field Attribute window, match the options against the following list. Press <do> when you are finished.

Name	— Empnumber
Kind	— Key
Type	— Number
Justify	— Left
Evaluated	— Autoincrement
Video mode	— Normal
Must Fill	— False
Display width	— 5
Duplicate	— False
Must Match	— False

IM: In this field we have altered two options. We have set the display width to 5 and we have set the evaluation indicator to the Auto Increment option. Therefore, the first record entered will have a value of "1" in this field and each record entered afterward will have its value in the employee number field incremented by one.

USER: move the cursor so it is following the word "Salary" and press <make entry> then <do>. Once you have pressed <change> to display the Field Attribute window match the options against the following list.

Name	— Salary
Kind	— Key
Type	— Decimal
Justify	— Right
Evaluated	— Form
Video mode	— Normal
Must Fill	— False
Display width	— 12
Duplicate	— False
Must Match	— False

You can specify the precision of a decimal up to 15 places after the decimal. A decimal number can have up to 18 places.

USER: move the pointer to highlight "Decimal" and then press <change>. The default precision is 2. If you wanted to change then precision you would enter a number. In our case, you may press <do> to accept the default of 2 places.

In this field, we have altered the justification so that the salary will be right justified. We have also set the display width to be 12.

Lastly, we have set the evaluation indicator to Form. This means, when the record is displayed, we may press the <make entry> key and the pointer will automatically jump to the first field in the record with the evaluation indicator set to Form. You will then have a chance to enter a new value. Once <ret> is pressed, the pointer will jump to the next Form field. This will continue until all Form fields are accessed and then any dependencies (formulas) will be recalculated automatically. Thus, the Form indicator is useful for those fields subject to frequent change.

USER: press <do> when finished.

IM: the screen mask has reappeared with your new field.

USER: move the cursor so it is after the word "Dependents" and make a field. Enter the following attributes. When finished, press <do>.

Name	— Depend
Kind	— Non-Key
Type	— Number
Justify	— Left
Evaluated	— Normal
Video mode	— Normal
Full Fill	— False
Display width	— 2
Duplicate	— False
Must Match	— False

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IM: this field contains a non-key number. The screen mask is displayed with the "Dependent" field highlighted.

USER: move the cursor following the word "Department" and press <make entry> twice to create the field and press <do>. Then press <change> to access the Field Attribute window. When the Field Attribute window appears on the screen, enter the following attributes.

Name	— Dept
Kind	— Key
Type	— Text
Justify	— Left
Evaluated	— Normal
Video mode	— Normal
Must Fill	— False
Display width	— 2
Duplicate	— True
Must Match	— True, then press <change>
	Depart <ret>
	Code <ret>

IM: this field contains two new options which we may describe. The Duplicate option "carries over" the field value entered in the screen to the next record entry screen. This option is most useful if we will be entering many records in which one or more fields will have the same value again and again. Of course, you may override the default value at any time, but it certainly can be a convenience.

The second new option we have selected is the Mustmatch feature. By setting this to "true", we are saying that for every value we enter into the DEPT field, there must be an identical value (a "match") in a specified field of another file.

In our example, every time we enter a value for the DEPT field in the Employee file, there must be the same value in the CODE field of the Depart file. However, if there is not a match, but we want to enter a new record in the Depart file so that a match would exist, we also have that opportunity. Thus, the Mustmatch feature is another option which will greatly cut down on data entry errors while providing the maximum possible convenience at the same time.

USER: press <do> when finished. Move the cursor after the words "Security Clearance" and make a field. When the Field Attribute window appears, enter the following attributes.

Name	— Security
Kind	— Key
Type	— True/False
Justify	— Left
Evaluated	— Skip
Video mode	— Mode-1
Must Fill	— False
Display width	— 5
Duplicate	— False
Must Match	— False

IM: this field is a key field that has a true or false value. In the Security field we have again demonstrated two new selections. We have adjusted the evaluation indicator to the Skip option. This means that once a value is initially entered into this field, the cursor will not access the field again - it will simply skip over it. This is another way to ensure values from accidental change or deletion.

The second option we have chosen is the video mode. You may select one of three video modes. The benefit of this option is that it allows you to assign a video mode to a field so that it stands out from the others.

USER: press <do>

IM: After you press <do>, your screen mask and database entries are complete, as shown below.

```
┌─────────────────────────────────────────────────────┐
│ ─────────────────────────────────────────────────── │
│                                                       │
│  Name _____   Social Security_____ │
│  Date Started _____  Employee Number _____  │
│  Salary_____                               │
│  Number of Dependents ___                             │
│  Department _____   Security Clearance _____ │
│ ─────────────────────────────────────────────────── │
│ Name:  SECURITY Kind:  Key Type:  True/False Size:  1 │
├───────────────────────────────────────────────────────┤
│ <edit keys><make entry><make entry><del entry><change><menu><search> │
└───────────────────────────────────────────────────────┘
```

In this sample file, we have only entered eight fields. It is possible, however, to create a database file containing up to 55 fields. Also, in this short example, we have positioned all of our fields on only one screen mask page. For larger files, you may use up to eight screen mask pages.

USER: press <search> to view a list of the data base fields and their structure.

IM: a window appears with a list of the data base fields, their kinds, sizes, and types.

```
Name: Name       Kind: Key          Type: Text      Size: 20
Name: Socsec     Kind: Unique key   Type: Text      Size: 11
Name: Date       Kind: Key          Type: Date      Size:  2
Name: Empnumber  Kind: Key          Type: Number    Size:  2
Name: Salary     Kind: Key          Type: Decimal   Size: 10
Name: Depend     Kind: Nonkey       Type: Number    Size:  2

                  <do> <print> <undo>
```

Note that the sizes of the fields do not necessarily correspond to the display width of the field. The actual size of the field is determined by the system in all field types except for text fields. The only actual field size determined by you is the text field size. Text fields have the same display and actual sizes by default. The actual field sizes are listed below.

Field Type	Actual Size
Date	2
Decimal	10
Number	2
Text	User determined
True/False	12

Actual field sizes are measured in bytes. A byte is a unit of storage space in the system. A record in a file can have up to 1024 bytes. The field sizes can be added up to determine the number of fields of certain kinds and types that are possible in a record.

To view the remaining data base fields, press <do>. If there are more fields to view, they appear in the next screen. Once all fields are shown, press <do> or <undo> to leave the window.

If your printer is ready, you can print this list in the form that appears on the screen. Press <print> if you want a printout. Choose your output device and press <do>. When your printout is finished, press <do> to return to the screen mask.

USER: Press <menu> to return to the Screen format & File design menu. Then highlight the word "Exit" and press <do>.

IM: A prompt asks you how many records are to be stored in this file.

USER: press <ret> to accept the default value, 25 records.

There can be up to 32,000 records per data base file, provided enough room is available on your disk.

IM: the Data Base File Maintenance Menu appears on the screen. Congratulations! Your newly made data base file and screen mask are stored on the disk, awaiting your first entries.

Practice making entries into your new file by highlighting the word "Entry" in the Data Base Operations Menu, then pressing <do>. Enter [EMPLOYEE] after the "From" prompt and press <do>. Notice how the fields appear as you enter your information (Refer to Chapter 2 Entering New Records.)

NOTE: You MUST make entries into the EMPLOYEE file to follow the next example.

CHAPTER 11 - SCREEN MASKS (CONTINUED)

Goal: The previous Chapter taught us how to create a data base file and screen mask file at the same time. This Chapter will teach you how to alter an existing screen mask file, enter search criteria into a screen mask, and how to let the Information Manager create a default screen mask for you automatically.

1. Redesigning Screen Mask Files

EXAMPLE SITUATION: In this example, the employee screen mask file which we just created in the preceding Chapter, is altered using the Design command. We will add a Dependency field attribute to the SALARY field and a Range Check attribute to the social security field.

The Create command is used to create the primary screen mask file to be used with a data base file. The Design command can be used to alter the primary screen mask or to create additional screen mask files to be used with the same data base file.

In a screen mask file, the position of the fields in the mask and most of the attributes involving the screen display can be altered. The field name, type, and kind parameters as well as the length of text fields cannot be altered with the Design command. To alter these parameters, use the Modify command. Not all fields in a data base file need to be displayed in a screen mask.

IM: the Data Base Operations Menu is displayed on your screen. with no active files.

USER: press <change> to access the Data Base File Maintenance Menu, then press <D>, or use the arrow keys to highlight the Design command and press <do>.

IM: The "FROM" prompt appears. It asks for the name of the screen mask file or data base file containing the records to be retrieved.

USER: enter [EMPLOYEE.SMK] and press <do>.

If you enter a data base file name to answer the prompt, you are asked for the screen mask file name. The data base and screen mask file names differ by the suffix. The data base file name has a ".db3" suffix, while the screen mask file name has a ".smk" suffix. Information Management can distinguish between them.

IM: a prompt asks you for confirmation of the name of the screen mask file.

USER: press <ret> to specify the EMPLOYEE.SMK file.

IM: the Screen format & File design menu appears. The Size option is displayed but is not accessible. The associated data base file file is not affected by the Design command, only the screen mask.

USER: highlight the word Edit and press <do>.

IM: the EMPLOYEE screen mask appears on the screen with the same Edit line that appeared in the Create command.

Name _____   Social Security_____

Date Started _____   Employee Number _____

Salary _____
Number of Dependents ___

Department _____   Security Clearance _____

<edit keys><make entry><move entry><del entry><change><menu><search>

USER: move the cursor onto the field next to the words "Security Clearance" and press <change>.

IM: the Field Attribute window appears on your screen.

There are some limitations in this window. You cannot change the name, type, or kind of field in the Design command. These changes can be made only with the Modify command.

There are also attributes that can only be defined in the Design command. These are the Dependent and Range options. Each of these is established by choosing "Dependent" or "Range" and pressing <change>. Prompts then appear that allow you to establish a dependency, or to establish the high and low values of a range. Dependencies can be applied to any field, while ranges can only be applied to text and decimal fields.

USER: use the down arrow key to move the cursor to "Evaluated". Use the left or right <arrow> keys to highlight the word "Dependent". Press <change>.

IM: a prompt asks for an expression.

Dependent values are those based on an expression involving both field values and numbers. Any field can have a dependency placed on its values. For example, the Customer file which we have used throughout the manual has the value in the BALANCE field which is equal to the expression, PURCHASES minus PAYMENTS.

USER: for our employee data base file, enter the expression [SAL-ARY>20000] and press <ret>. Press <do> to return to the screen mask.

IM: when you enter a record, the Security field will reflect a TRUE value if the value for the Salary field is greater than 20,000. If Salary is less than 20,000, then the Security field value will be FALSE.

USER: move the cursor so that it follows the words "Social Security" and is located over that field. Press <change> to display the Field Attribute Window. Move the pointer to the How Evaluated attribute and then highlight the Range Check option. Press <change>.

IM: a prompt will ask for the lowest value of the acceptable range.

USER: enter ["000-00-0000"] and then press <ret>.

IM: a prompt will ask for the highest value of the acceptable range.

USER: enter ["999-99-9999"] and then press <ret>. Press <do> to return to the screen mask.

Now, when you enter values into the social security field, the system will check to make sure that you have entered the right number of characters and that the entry is within the specified range. This will help to cut down on the number of data entry errors.

USER: press <menu> to return to the Screen Format & File design menu. Then highlight the word "Exit" and press <do> to return to the Data Base File Maintenance Menu.

IM: the Data Base File Maintenance Menu appears.

USER: press <change> to access the Data Base Operations Menu, then press <N> for the New command to clear the data base of active files.

IM: the Data Base Operations Menu appears with no active files listed.

You can design up to eight picture pages per screen mask file for record storage. If you do not like the way this mask looks, you can change it by adding more characters, deleting fields, drawing pictures, etc. You can duplicate the display of fields that are already in the screen mask. You can reinsert fields that are part of the original data base file when you specify a .DB3 name in the Design query. However, if you want to add new fields to your screen mask, you must use the Modify command because the addition of new fields affects the data base file.

2. Wherelines in Screen Masks

EXAMPLE SITUATION: we would like to specify that our employee screen mask will ONLY be used to view those records of employees with a salary which is less than $60,000. Other restrictions may be added later but we know that this screen mask will not be used to look at those records of employees making $60,000 or more. To view those records, someone will have to use a different screen mask.

We can specify this limitation by including the condition in a Where clause to be included in our screen mask. That means, anytime the screen mask is used, this condition will be one of the conditions by which the system will look for records. If you do not specify any search conditions in the Where clause of your query, then this condition will be the only one met. If you specify search conditions in your query, they will be combined with the conditions included in the Whereline of your screen mask using the logical operator AND. So, both the conditions in your screen mask Whereline and the Where clause of your query must be met for a record to be retrieved.

IM: the Data Base Operations Menu appears.

USER: press <change> to switch menus, then press <D> to access the Design command.

IM: the "FROM" prompt asks you for the names of files containing records to be retrieved.

USER: enter [EMPLOYEE.SMK], then press <do>. To confirm [EM-PLOYEE.SMK]. press <ret>.

IM: the Screen format & File design menu and EMPLOYEE.SMK are displayed.

USER: highlight the word "Whereline" and press <do>.

IM: a blank line will be displayed allowing you to enter any valid search conditions.

USER: enter [SALARY<60000] and press <do> to save this condition into the screen mask. Now each time this screen mask is used, records corresponding to those employees making $60,000 or more will not be retrieved.

IM: the Screen format & File design menu with EMPLOYEE.SMK is shown on the screen.

USER: when you are finished viewing the screen mask, highlight the word "Exit" and press <do>.

IM: the Data Base File Maintenance Menu appears on the screen.

USER: press <change> to switch to the Operations Menu, then press <N>
for the New command to clear the work space.

IM: the Data Base Operations Menu reappears with no active file listed.

3. Default Screen Masks

EXAMPLE SITUATION: Imagine, for some reason, that you decided your
current employee screen mask was not at all the way you wanted it. Rather than
start from scratch, we will let the Information Manager build a default screen mask
for us.

Building a default screen mask will be most useful when you already have one
screen mask for a data base file, but, for some reason, you need another screen
mask as well. For example, you may want to omit some fields from one screen mask
so that certain people don't have certain information displayed in their screen
mask. When building additional screen masks, it will be easier to let the
Information Manager build a default mask rather than start from scratch again.

IM: the Data Base Operations Menu is displayed on your screen.

USER: press <change> to select the Data Base File Maintenance Menu, then
press <D> to access the Design command.

IM: the "FROM" prompt asks you for the name of the screen mask file
containing the records to be retrieved.

USER: enter [EMPLOYEE.SMK], then press <do>. Press <ret> to confirm
"EMPLOYEE.SMK".

IM: the Screen format & File design menu appears. The word "Exit" is
highlighted.

```
Screen format & File design menu _____

       Exit     Edit    Whereline    New    Size

              <undo> <do>
```

USER: highlight the word "New" in the menu and press <do>.

IM: a prompt asks you if you want to clear out current mask entries.

This prompt asks if you want to start again with a new, blank screen. If you press
<undo>, the Screen format & File design menu reappears. If you press <do>, the
current mask entries are cleared out for new entries.

<div align="center">IM.11.88</div>

USER: press <do> to clear out current mask entries.

IM: another prompt asks if you want to add in default entries.

If you press <undo> in response to this prompt, the screen will be blank when you return to Edit the mask. This allows you to start again completely. If you want to start with a list of the fields on the screen, press <do>. This list of fields is the default screen mask.

USER: press <do> to add in default entries.

IM: the Screen format & File design menu for the Design command appears on the screen, and the default screen mask appears in the window. You can use the screen editing functions to alter the default mask in the Edit window, or keep the mask as is.

```
┌─────────────────────────────────────────────────────────────┐
│  Name        _____                │
│  Socsec      _____                            │
│  Date        _____                                  │
│  Empnumber   _____                                      │
│  Salary      _____                                │
│  Depend      _____                                          │
│  Dept        _____                                      │
│  Security    _____                                      │
├─────────────────────────────────────────────────────────────┤
│              Screen format & File design menu                │
│      Exit      Edit     Whereline    New     Size            │
│                    <do> <undo>                               │
└─────────────────────────────────────────────────────────────┘
```

USER: press <undo> to abort the Design command , then press <do> to confirm that you want to abort and keep your original screen mask file.

If you want to keep the old screen mask, use <undo> to eliminate the changes just made. Press <do> to confirm this decision. The default mask can be saved by pressing <menu>.

IM: the Data Base File Maintenance Menu is returned to the screen.

USER: press <change> to use the Operations Menu, then press <N> for the New command to clear the work space.

IM: the Data Base Operations Menu appears with no active file listed.

CHAPTER 12 - PRINT MASKS

GOAL: To print a report using the information in a data base file, you need to create a print mask. The print mask determines the appearance of the report; it contains the report layout and defines additional text, formulas, totals and subtotals. A print mask is created in the Format command and is used to print a report in the Report Command

1. Print Mask or Report Format Files

WARNING: You MUST enter records into the EMPLOYEE data base file BEFORE you create the print mask! If you attempt to use a print mask to process a report, and the data base file contains no records, an error message results. Enter several records into the EMPLOYEE file before attempting this example.

EXAMPLE SITUATION: In this example, an employee report format or print mask file is created. The Format command allows you to design the layout and appearance of your reports. Your report is printed with the Report command. If you do not create a print mask, the Report command gives you the option of either making one, or accepting a default format.

The Format command specifies the header lines, footer lines, fields, and totals you want in your report. Mathematical expressions involving numbers and/or data base fields can be used. These expressions are calculated when the report is produced. The Format command also allows you to set up a few, specific printing parameters, such as the placement of totals and form feeds.

IM: the Data Base Operations Menu is displayed on your screen.

USER: press <change> to access the Data Base File Maintenance Menu.

IM: the Data Base File Maintenance Menu appears on the screen.

USER: enter [FO], or use the arrow keys to highlight the Format command and press <do>.

IM: The "From" prompt appears. It asks from which file the information for the print mask is to be retrieved.

USER: enter [EMPLOYEE], then press <do>.

IM: a prompt asks you for the name of the Report Format File (print mask file).

USER: enter [EMPLOYEE] and press <ret>.

IM: The "Output Device Selections" window appears on the screen as follows;

IM.11.90

```
┌─────────────────────────────────────────────────────────┐
│  ┌──────────────┐                                        │
│  │ CONSOLE      │                                        │
│  └──────────────┘                                        │
│  PRINTER                            Computer             │
│  FILE                                Museum              │
│  CONLABEL                                               │
│  PRTLABEL                                               │
│  EPSONFX80                                              │
│  PRISMBW                                                │
├─────────────────────────────────────────────────────────┤
│              Output Device Selection                    │
│     <up> <down> <do> <undo> <pages>                     │
└─────────────────────────────────────────────────────────┘
```

USER: make sure the name CONSOLE is highlighted and press <do>.

IM: the Report format menu appears on your screen, as shown below.

```
┌─────────────────────────────────────────────────────────┐
│                                                         │
│                  Report format menu                     │
├─────────────────────────────────────────────────────────┤
│ ┌────┐                                                  │
│ │Exit│ Printer_info Header Footer Record Totals Where_line New │
│ └────┘                                                  │
│                    <do> <undo>                          │
└─────────────────────────────────────────────────────────┘
```

This menu contains features involved in the design of a report format or print mask file. The options in this menu are briefly described below.

Exit	—	Returns to the Data Base File Maintenance Menu and saves the information in the report format file (.pmk).
Printer_info	—	Contains information used at the time of printing the report, such as formfeeds after totals or output file names.
Header	—	Format for the top of report pages, including page numbers and titles.
Footer	—	Format for the bottom of report pages, such as page numbers or other information.
Record	—	Format for the body of the report. Contains the field values and information.
Totals	—	Includes sums or balances of values from all numeric fields, and defines their location in the report.
Where_line	—	Contain record search conditions when the same group of records is used with the print mask. The number of search conditons are limited by the length of this Where_line.
New	—	erases the current printing layout and allows you to redesign the print mask file. Header, Footer, Record, and Totals are blank, or include default information.

IM.11.91

USER: press <P>, or use the <arrow> to highlight Printer@Info and press <do>.

IM: the window containing the printer configuration information appears on the screen. The words "Output Config:" are highlighted, and the file name CONSOLE appears in the highlighted area next to the Output configuration file prompt.

```
┌────────────────────────────────────────────────────────────┐
│   └Output Config:__┘      └CONSOLE__┘                       │
│   Line between records:      └_True_┘      False            │
│   Formfeed after records:      True      └_False__┘         │
│    Formfeed before Totals:      True      └_False__┘        │
│   Formfeed after Totals:      └_True_┘      False           │
│   Blank duplicates:      True      └_False__┘               │
│                                                             │
├────────────────────────────────────────────────────────────┤
│              <do> <undo> <search>                           │
└────────────────────────────────────────────────────────────┘
```

The "Printer_info" option allows you to enter information about your printing device and printing format into the print mask file. The device can be the screen, a text file, or a printer. The information used to configure (set up) the printing device and the printing format is stored in an output configuration file. The name of this file is used to answer the "Output configuration" prompt.

For details on how to set up an output configuration file, refer to the information on the Configure utility in Volume 1. Below is a brief description of Printer_info window options. These are specified in each print mask, and you need not go to the Configure utility to enter this information.

Output config   — Sends the report information to printer, console or text file according to the contents of the output configuration file.

Line between records   — If 'true' places a line between each record.

Formfeed after records   — If 'true' places a printer formfeed after each record; each record is on a new page.

Formfeed before Totals   — If 'true' places a printer formfeed before totals; totals appear on the page following each record.

Formfeed after Totals   — If 'true' places a printer formfeed after totals; totals appear on the same page as the record.

	Blank duplicates	—	If 'true' places blank spaces for duplicated field values when printing in rows.

USER: press <search>. Highlight the name CONSOLE in the printer configurations list, then press <do> to return to Printer_info. Press <do> to return to the Report Format Menu.

1M: the Report Format Menu appears on the screen.

USER: the top of each report page contains header information. To design the report header, press <H>, or highlight the word "Header" and press <do>.

1M: the left portion of the default report header format is displayed below. To view the other 80 columns located to the right in any part of the mask, scroll to the right with the arrow keys.

```
Page. (P).........Data base fields......... (SYSDATE          ).
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................
...............................................................

Current Entry:   'Page'                          ( 0, 0)
```

<movements> <change> <make entry> <move entry> <del entry> <menu>
Report Format Menu

Exit	Printer_info	I	Header	I	Footer	Record	Totals	Where_line	New

The width of a print mask depends on the output configuration selected. A console is 80 columns wide. Another configuration may set the print mask at up to 160 columns. As you move the cursor notice that the position coordinates in the lower right hand corner of the screen indicate where the cursor is in columns and rows. The position coordinates can be very useful when placing entries in the print mask so that a header label, record field entry, and a totals entry line up under each other in the printed report.

Notice the two default entries, SYSDATE and PAGE. SYSDATE prints the System Date. PAGE (P) prints "Page" followed by the number of the page. 'Data base fields' is a default text entry.

A brief description of the options listed at the bottom of the screen is given below.

<movements> allow you to move the cursor with arrow keys, carriage return, and backspace. (Repeat factors are used with <arrow> keys by entering a number, then the appropriate <arrow> key.)

<change> displays the entry window, which contains the following information:

<arrows>	-	allows you to move from one line to the next.
Entry	-	enters text, a field or an expression. Text must be in single quotes. Formulas may have parentheses.
Width	-	specifies the width of an entry.
Justification	-	specifies position of the entry value to the left, center, right, or repeating across the entire entry width.
Precision	-	specifies the number of decimal places. Can be 1 to 15 places after the decimal. Up to 18 places can be displayed in a decimal number. Default Precision is 2 decimal places.
Thousands	-	includes commas in numeric entries more than +1,000 or less than -1,000.
Currency	-	adds a dollar sign.
Negative by ()	-	puts negative values in parentheses in decimal entries.
<do>	-	accepts the changes make in the window and returns to the format design window.
<undo>	-	returns to the format design window without accepting changes.

<move entry> permits you to move an entry anywhere on the dotted lines with the <arrow> keys.

<del entry> erases the contents of the entry where the cursor is currently located.

IM.11.94

<make entry> allows you to insert an entry at the current cursor position using the Entry window described above.

<menu> returns you to the Report Format menu.

USER: Move the cursor with the <arrow> keys and position it on the entry "Data base Fields". Press <change>.

1M: the following window appears on your screen.

```
 ┌─────────────────────────────────────────────────────────────────┐
 │                                                                   │
 │  └Entry_____:_┘  └'Data_Base_Fields'_____┘                 │
 │    Width          :            16                                 │
 │    Justification  :   [_Left_]   Right  Centered  Repeating       │
 │    Precision      :            0                                  │
 │    Thousands      :   [_Off_]  On                                 │
 │    Currency       :   [_Off_]  On                                 │
 │    Negative by ( ) :  [_Off_]  On                                 │
 │                                                                   │
 ├───────────────────────────────────────────────────────────────── ┤
 │              <arrows> <do> <undo>                                 │
 └─────────────────────────────────────────────────────────────────┘
```

USER: enter ['Monthly Personnel Report']. Press <do> to save the entry and return to the Header format window.

The single quote marks ARE NECESSARY as part of this entry. In the Format command, single quote marks distinguish text entries from data base fields or arithmetic expressions. The entry is printed just as it appears in this window because it is entered in these single quotes.

1M: the old entry is changed to the new entry.

USER: press <move entry>, the left <arrow> until the coordinates are (25,0) and press <do>.

1M: the entry is centered in the Header format window.

USER: the page number and system date entries remain the same. All changes necessary in the Header section are completed. Press <menu> to return to the Report Format menu.

1M: the Report Format menu is redisplayed.

IM.II.95

If you make errors in your print mask you can start over by selecting NEW in the Report Format Menu. Respond to the "Clear out current entires?" prompt with <do>. Respond to "Add back in default entries?" with <do> to work with default Header, Footer, Records, and Totals sections, or with <undo> to work with blank sections. However, be aware that if you clear out existing entries, all sections will be returned to their default state.

USER: press <F>, or highlight the word "Footer" and press <do>.

IM: the default Footer format is displayed with the same options listed in the Header format.

USER: move the cursor to "This report is currently unaudited." and press <change>. Enter ['Report compiled by Robert Peterson']. Press <do> to return to the Footer option, then <menu> to return to the Report Format menu.

IM: the Report Format menu is displayed.

Now that you have designed the top (header) and bottom (footer) of your report, the next step is to define the body or "records" part of the report. The record is a repeating part of a mask file. This part of the mask file is repeated for each record selected from your data base file.

USER: highlight the word "Record" and press <do>.

IM: the default Records format window is displayed as shown below.

IM.11.96

```
NAME .........    (NAME 15) .....................................
SOCSEC........    (SOCSED 3).....................................
DATE ..........   (DATE 7).......................................
EMPNUMBER ...     (EMPNUMB)......................................
SALARY .......    (SALARY 10) ...................................
DEPT ..........   (DEPT 2).......................................
SECURITY ......   (SEC)..........................................
DEPEND........    (DEPEND 2).....................................
...................................................................
...................................................................
...................................................................
...................................................................
...................................................................
...................................................................
...................................................................
...................................................................
...................................................................

Current Entry:  'NAME'                              ( 0, 0)
```

<movements> <change> <make entry> <move entry> <del entry> <menu>
Report Format Menu

Exit Printer_info	Header	Footer	Record	Totals	Where_line	New

This default Record format lists the fields vertically because there is not enough room on an 80 column CONSOLE configuration to list the fields horizontally. If an output device with more columns were selected, or if fewer fields were used, then the fields would be listed horizontally.

The default Records format can be modified as needed for the report. The repeat factor is used to move the entries quickly. If you press a number, then an arrow key, the cursor moves the number of spaces you entered in the direction of the arrow.

USER: position cursor on SOCSEC title and press <move entry>, then enter [40] and press the right <arrow> key. Then press the up <arrow> key once. The label for the social security field jumps 40 columns to the right and 1 row up. Press <do> to exit the move entry mode. Move the cursor to the first character of the social security field entry (i.e. the field in parenthesis) and repeat the same steps.

IM: the social security data base field and label are now on the right side of the screen as follows;

IM.II.97

```
NAME ......... (NAME            ) ..... SOCSEC....(SOCSEC   )..
 ..........................................................
(DATE ......... (DATE    )................................
EMPNUMBER ... (EMPNUM) ...................................
SALARY ........ (SALARY        ) ........................
DEPT ........... (DEPT)...................................
SECURITY ...... (SEC   ) .................................
DEPEND ........ (DEP) ....................................
 ..........................................................
 ..........................................................
 ..........................................................
 ..........................................................
 ..........................................................
 ..........................................................
 ..........................................................
 ..........................................................


 Current entry:  'SOCSEC'                      (52.0)
```

<movements> <change> <make entry> <move entry> <del entry> <menu>

Report Format Menu

| Exit Printer_info | Header | Footer | Record | Totals | Where_line | New |

The next entry in this mask includes a mathematical expression. Mathematical expressions can be entered in the Format file header, footer, or record layout sections. This expression can include numbers and/ or data base fields. Conditional expressions can also be involved. A name can be assigned to this expression by entering the name of the expression (e.g., BONUS) enclosed in double quotes, then a colon (":"). Next, enter the expression assigned to that name. Note: if the expression is not assigned to a name, the expression must be enclosed in parenthesis.

The name and the expression to which it is assigned can be used in further expressions. It is not a data base field, but it acts as if it is one. The name and its expression are called a "virtual field" because they behave as if they were an actual data base field.

   USER: to make the next entry, position the cursor at the coordinate (60,3).
           Press <make entry>

```
┌──────────────────────────────────────────────────────┐
│  ┌─Entry─────────┬─┐ ┌──────────────────────────────┐ │
│  └               ┴─┘ └──────────────────────────────┘ │
│   Width          :            0                        │
│   Justification  :  ┌─Left─┐   Right  Centered Repeating│
│   Precision      :                        0            │
│   Thousands      :  ┌─Off──┐ . On                      │
│   Currency       :  ┌─Off──┐   On                      │
│   Negative by ( ):  ┌─Off──┐   On                      │
│                                                        │
├──────────────────────────────────────────────────────┤
│            <arrows> <do> <undo>                        │
└──────────────────────────────────────────────────────┘
```

USER: on the Entry line, enter ["BONUS": 0.1*SALARY], then press <do>.
        Note that <do> places the virtual field into the print mask, not <ret>.

The virtual field, "BONUS" is calculated for each record when the report is produced. The expression computes 10% of the employee's salary and displays it as the BONUS.

USER: to demonstrate the use of a virtual field in an another expression, position the cursor at coordinate (60,4) and press <make entry>. Enter[(BONUS>500:2*BONUS:BONUS)], then press <do>.

The expression states that if the value of the actual BONUS is more than 500 (i.e., the salary is greater than $5,000), the bonus is computed as 20% of the salary (i.e., 2 times the current bonus of 10% of the salary). If the actual bonus was less than $500, then the bonus remains at its current value.

To enter a conditional expression into a print mask, enter the condition to be evaluated as true or false, followed by a <:>. Next, enter the result to be used if the condition is true and a <:>. Following the colon, enter the result to be used if the condition is false. This expression must be enclosed in parentheses.

USER: move the cursor to coordinate (45,4) and press <make entry>. Enter ['Final Bonus'], then press <do>. Move up one column to coordinate (45,3), press <make entry> and enter ['Begin Bonus'], then press <do>. Your entries are the labels representing the expressions for the bonuses. Press <menu> to return to the Report Format Menu.

IM: the Report Format Menu is redisplayed.

USER: highlight the word "Totals" and press <do>. Move the cursor onto the entry "sum(salary)". Press <del entry>.

IM: the entry is removed from the mask.

USER: move the cursor to the label for the removed entry. Press <del entry> to remove the label. To make a new entry, press <make entry>, then enter ['Maximum Salary'] and press <do>. Move the cursor to the right of this entry and press <make entry>. Enter [max(salary)]<do>.

The new entry in the Totals section prints out the highest value for the Salary field. This value is printed with the totals for all records included in the report.

There are five system functions that can be used in the Totals section of your report. They are as follows.

sum	—	adds up all of the values for that field for all records included in the report.
max	—	prints the largest value for that field for all records included in the report.
min	—	prints the smallest value for that field for all records included in the report.
mean	—	computes the average value for that field for all records included in the report.
count	—	displays the number of records included for that field.

USER: To change the DEPEND totals title, move to the left margin and press <change>. Enter ['Average salary']<do>.

IM: this entry labels the average salary figure.

USER: move the cursor to "SUM(DEPEND)". Press <change> to change that entry. Enter [mean(salary)], then press <do>. Press <move entry> and move to (16,3) and press <do>.

IM: This new entry figures the average salary for all employees in the report.

USER: position the cursor on the EMPNUMBER totals title. Press <change> and enter ['Minimum bonus']<do>.

IM: the entry title is changed.

USER: position the cursor on "SUM(EMPNUMBER)". Press <change> and enter [min(bonus)]. Press <do>. Press <move entry> and move to (16,1) and press <do>.

IM: this new entry prints the smallest value that occurs in the virtual field BONUS. You can specify systems totals on virtual fields.

USER: press <menu> to return to the Report Format Menu.

IM: the Report Format Menu is redisplayed.

USER: the layout for the header, footer, report and totals sections of your report is completed. To store the Report Format or Print Mask on disk and return to the Data Base File Maintenance Menu, highlight the word "Exit" and press <do>.

IM: the Data Base File Maintenance Menu is displayed.

USER: press <change> to access the Operations Menu, then press <N> for the New command to clear the data base of active files.

IM: the Data Base Operations Menu appears with no active files listed.

USER: Note that EMPLOYEE.DB3 must contain records for the report to be processed. If your EMPLOYEE file has no records, use the Entry command to enter the records, as you did in Chapter 3 of this Tutorial. (An error message is displayed if you attempt to process a report with a data base file which contains no records.)

To print a report, make sure you are using the Operations Menu, then highlight the word "Report." Press <do>. Enter [EMPLOYEE.PMK] and press <do>. Press <undo> for the prompt to print totals. The report is then printed to the screen. After the report is finished, you are returned to the Data Base Operations Menu. Press <N> for the new command to clear the work space and allow for a new file.

CHAPTER 13 - MODIFYING DATA BASE FILES

This chapter includes examples that show you how to modify a data base file. Data base modification most commonly will include the expansion of the file to allow for more records, adding and deleting fields from the file, changing the data type of a field, and the changing key specification of a field.

1. Expanding the File Size

EXAMPLE SITUATION: Suppose you have previously created an employees file assuming that there would only be 25 people in your company. Now your company has grown larger than you expected and you need more room in the file to add newly hired personel. In the following example, you will use the Stretch command to increase the size of the employees file.

IM: the Data Base Operations Menu is displayed.

USER: press <change> to access the Data Base File Maintenance Menu, then press <S>, or highlight "Stretch" and press do.

IM: the prompt, "File:" appears on the screen.

USER: press <search>.

IM: the search window is shown with the volume names listed on the left side of the window, and the file names listed on the right.

USER: use the down <arrow> key to highlight the file name EMPLOYEE.DB3, then press <do>.

IM: the file name appears on the prompt line.

```
┌─────────────────────────────────────────────────────────────┐
│  ┌───────┐                                                    │
│  │ File: │      [Vol Name:]  EMPLOYEE. DB3                    │
│  └───────┘                                                    │
└─────────────────────────────────────────────────────────────┘
```

USER: press <ret>.

IM: the following prompt appears.

```
┌─────────────────────────────────────────────────────────────┐
│                                                               │
│              Number of records:   (default)                   │
│                                                               │
└─────────────────────────────────────────────────────────────┘
```

You can enter the number of records you want the file to contain on this prompt line, or press <ret> to accept the default number. The default number is always 25 more than the current number of records. If you want to leave the Stretch command without expanding the file, press <undo>.

Files can hold up to 32,000 records, depending on the amount of space available on your disk. Choose a number of records that is practical for the use of the file. If your number is too small, you can stretch it again. If it is too big, the file takes up space that might otherwise be available for other files.

USER: enter [55], then press <ret> or <do>.

IM: the file is stretched, and the Data Base File Maintenance Menu reappears. No active files are listed.

Your file is not active because no query was made. The file was just made larger. If another file is active when you enter the Stretch command, it remains active after you exit the command. The file name entered in the Stretch prompt need not be the currently active file.

2. Adding and Deleting Fields to an Existing File

EXAMPLE SITUATION: Suppose when you originally created your employees data base file, you had not anticipated for certain additional information that should have been included in the file. Now you suddenly realize that you need that you need a field for the employees insurance plan. This modification can easily be handled by the Modify command in the Data Base File Maintenance Menu.

IM: the Data Base File Maintenance Menu is displayed on the screen.

USER: press <M>, or highlight the word "Modify," and press <do>.

IM: the "FROM" prompt appears. It asks for the names of files that contain records to be retrieved for a new file.

USER: enter [EMPLOYEE.SMK], then press <do>.

The screen mask file name you entered in the query is used by the Modify command to create the new data base file and screen mask. If you had entered a data base file name in the query instead of the screen mask name, the prompt "Screen mask file:" would subsequently appear . If the original mask file for this data base file exists, it is entered as a default entry on the prompt line. You can enter this name or enter the name of another compatible mask file. An incompatible mask file name will cause an error message.

IM: you are asked for the "Modified file output name," or the name of your new file. The search function can be used to help you choose a unique name.

> Modified file output name: _____

USER: enter [NEWEMP] and press <ret> or <do> to accept it.

The new file name must be unique. When the name of an existing file is entered, an error message is displayed which says the file already exists. This includes all screen mask file names. This is not a destructive error. If this error should occur, press <do> and enter a unique name.

IM: an exact copy of EMPLOYEE.SMK is displayed on your screen. Note that the menu is the same as that for the Design command.

You are now ready to modify the copy of the employees data base file and screen mask. You are actually modifying a copy of the file and screen mask so that the original can continue to be used. This also saves you from entirely re-entering the information by giving you a starting point.

USER: highlight the word "Edit" and press <do>.

IM: your screen mask is shown with the Edit options in a list below the mask.

USER: position the cursor to the right of the Dependents field and enter [Insurance Code]. Two spaces to the right of this word, press <make entry> ten times, then <do>. Your screen should resemble the one below.

```
 _____
    Name _____    Social Security _____
  · Date Started _____    Employee Number _____
    Salary _____
    Number of Dependents ___  Insurance code _____
    Department _____          Security Clearance _____
 _____

 Name:  CODE   Kind:  Nonkey   Type:  Text   Size:10
 <edit keys><make entry><move entry><del entry><change><menu><search>
```

At this point, as with the Create command, you can set the desired attributes of the field being added. You would merely press the <change> key and set the appropriate attributes and finally press <do> to accept those changes.

Now that you see how easy it is to add a field to the file, we will describe how to delete a field. This is done the same way you would delete a field in the Create command - simply position the cursor on the appropriate field and press <del entry>. The highlight denoting the field in the mask will then disappear. Be sure to space over any of the field's associated text headings.

3. Changing Key Specifications of a Field

EXAMPLE SITUATION: Suppose, again, because of your organization's fast growth, you realize that the DEPEND field should be a key field because you want to sort some of your employee reports by the number of dependents. This is also no problem as the following example will show.

USER: position the cursor on the DEPEND field and press <change>.

IM: the field attribute window pops up in the middle of the screen.

USER: press down <arrow> once to the Key field. Then use the left <arrow> to highlight the Key option. Finally, press <do> to accept the changes.

The DEPEND field has now been changed from a data field to a key field which can be sorted and searched on. Conversely, if you wanted to change a key field to a data field (or a unique field), you would simply repeat the above process highlighting the appropriate option.

4. Changing Type Specifications of a Field

Changing the Type specification of a field is as simple as changing the Type within the field attribute window. There are, however, some consequences which are not immediately apparent. If and when the data is transferred from the old data base file to the modified data base file, information will be lost. This is due to the incompatability of the different data types. This means if you change the EMPNUMBER field, which is a number, to a text field, say for reasons of adding a department letter code to the employee number, the data will not transfer. We would like to emphasize again that it is important to design your data base and application properly from the start.

USER: all your changes are complete. Press <menu> to save the changes in your file and return to the Screen format & File design menu. Highlight the word "Exit" and press <do>.

With the file and screen design complete, you need to actually create the data base onto your disk. Please be reminded that the original file and its data remain unaltered.

IM: a prompt asks for the number of records to be stored in the file.

USER: press <ret> to accept the default number of records, 25.

IM: your file is saved on the disk and you are returned to the Data Base
        File Maintenance Menu.

USER: press <change> then press <N> to clear the active file.

IM: the Data Base Operations Menu is displayed with no active files.

If you want this file for use with new employees only, use the Entry command to
enter the new records. If this file is a modification of an old file for use with all
employee records, use the Append command to copy the records from your old
files. The Append command will be demonstrated next.

CHAPTER 14 - APPENDING RECORDS

Goal: This chapter explains how to use the Append command. This command will be useful in posting a set of retrieved data to another data base. It also allows you to transfer data to a modified data base file.

---

1. Posting Retrieved Records

EXAMPLE SITUATION: Suppose your customer file is getting full and you suspect there are a number of customers who have not ordered in several months. These customers could be retrieved from your active customer file and then posted to a inactive customer file for later reference or retrieval. The posted customers could then be deleted from your active customer file to make more room for new customers.

IM: the Data Base Operations Menu is displayed on the screen.

USER: press <A>, or use the arrow keys to highlight the Append command and press <do>.

IM: the "FROM" prompt asks for the names of files containing the records to be retrieved.

USER: enter [CUST] <ret> to select the CUST file.

IM: the cursor drops to the next line.

USER: enter [WHERE UPDATED<'10-15-83' AND BALANCE=0] to select all the records which have not been updated since October 15th and which have zero balances. Press <do> to retrieve the records.

IM: all the records that match the selection criteria are retrieved. You are then prompted for the name of the file to which the records will be posted.

```
┌──────────────────────────────────────────┐
│  ┌──────────┐                             │
│  │ File:    │                             │
│  └──────────┘                             │
└──────────────────────────────────────────┘
```

USER: enter [CUSTBACK] after the "File:" prompt, or press <search>, highlight the file name "CUSTBACK.DB3 in the search window, then press <do>. Once the file name is inserted after the "File:" prompt, press <ret>.

IM: a prompt asks for "Default field associations".

You have the choice of using default field associations or not. To use default associations, both files must contain fields of the same name and type. If, however, the data bases have fields with varying names and types, you must set up the associations (this will be demonstrated later). In the current example, as you might expect, the CUSTBACK posting file has the same structure as the CUST file - so we will use the default associations.

USER: press <do> to use the default associations.

IM: the posting process begins when you see the words "Moving . . . " When the process is complete, the Data Base Operations Menu appears on your screen.

USER: press <N> for the New command to clear the work space.

IM: the Data Base Operations Menu is displayed with no active file listed.

2. Transferring Records to a Modified Data Base

EXAMPLE SITUATION: In an earlier example we created a modified data base from EMPLOYEE called NEWEMP. We now want to use the new data base but all of the information is still in EMPLOYEE. Since the information entered into the EMPLOYEE file is still good, all we need to do is transfer the data from EMPLOYEE to NEWEMP.

IM: the Data Base Operations Menu is displayed on the screen.

USER: press <A>, or use the arrow keys to highlight the Append command and press <do>.

IM: the "FROM" prompt asks for the names of files containing the records to be retrieved.

USER: enter [EMPLOYEE] <do> to retrieve all of the data out of the EMPLOYEE file.

IM: you are prompted for the destination file.

USER: enter [NEWEMP] <ret> to indicate that the retrieved information is to be put into NEWEMP.

IM: you are prompted with use "Default field associations?"

USER: press <undo> to indicate a negitive response.

By indicating that you do not want to use default associations, you are saying that you will manually set up from which field to which field information will be transferred.

IM: the following screen is displayed:

```
Field:          NAME          Text, size 20        Key

<undo>,  '1' . . '3',  <right> none,  <do>

    1)          NAME          Text, size 20        Key
    2)          SOC SEC       Text, size 11        Unique key
    3)          DEPT          Text, size 2         Key



```

The line at the top of the screen is the fieldname for the file (NEWEMP) that information is being copied to. It indicates that the field is text of 20 characters and is a key. On the lower part of the screen, a there is a list of fields from the file (EMPLOYEE) that information is being transferred from. Note that since the destination field is a text field, only text fields are listed. The default field to be copied from is starred at the left. In the middle of the screen there is a list of options. These options are described below:

Function Key	Purpose
<undo>	backs out of the Append command entirely
<numbers>	selects the field that the destination field should be associated with
<right arrow>	indicates no association should be made; if selected no data will be transferred from the source field
<do>	selects the default association, i.e. the starred fieldname
<left arrow>	(not shown) moves to the previous source field
<page>	keys (not shown) displays remaining destination names if they do not fit on the screen

USER: press <do> to select a default association between the EMPLOYEE's NAME field and the NEWEMP's NAME field.

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IM: the association is made and you are advanced to the SOCSEC field with a list of EMPLOYEE's possible field sources.

USER: press <do> to keep the default association.

Note: On an unique key field you must specify a field association.

IM: the default is accepted and the screen advances to the NEWEMP's DATE field.

USER: press <do> to keep the default association.   •

IM: the default is accepted and the screen advances to the NEWEMP's EMPNUMBER field.

USER: press <do> to keep the default association.

IM: the default is accepted and the screen advances to the NEWEMP's SALARY field.

USER: press <do> to keep the default association.

IM: the screen advances to NEWEMP's DEPEND field.

USER: press <do> to accept the default.

IM: the default is accepted and the screen advances to the NEWEMP's DEPT field.

USER: press <do> to accept the default.

IM: the default association is accepted and the screen advances to NEWEMP's SECURITY field.

USER: press <do> to keep the default association.

IM: the default is accepted and the screen advances to the NEWEMP's CODE field.

You now have a situation where there is no default association for the CODE field. You could select one of the fields if you wanted to transfer data from that field to the CODE field in NEWEMP. This, however, would have no functional benefit in our example.

USER: press right <arrow> to indicate no associations are to be made.

IM: with all of the associations being defined, the Append command transfers the data from the EMPLOYEE file to the NEWEMP file.

Upon completion you are returned to the Data Base Operations Menu.

USER: press <N> to clear the active files list.

CHAPTER 15 - DATA BASE FILE MAINTENANCE

Goal: This chapter describes data base file maintenance. Included in this catagory are file renaming, file deletion, and file recovery.

The Filer command saves you from leaving the Information Management program to use a file system utility for changing data base file names. When you use the Modify command to change a file, you can Append the records into the new file, then use the Filer command to delete the old file and rename the new file. The screen and print masks are updated when the file is renamed. Mask files do not necessarily have to be renamed or recreated.

1. Renaming Files with the Filer Command

EXAMPLE SITUATION: Suppose you want to rename the EMPLOYEE data base file to STAFF. In addition, you will want the screen mask file, EM-PLOYEE.SMK, to be updated for use with the STAFF file so that it is no longer associated with a file called EMPLOYEES.

IM: the Data Base Operations Menu is displayed.

USER: press <change>

IM: the Data Base File Maintenance Menu is displayed.

USER: enter [F1], or use the arrow keys to highlight the Filer command and press <do>.

IM: the Filer prompt is displayed, as illustrated below.

```
┌─────────────────────────────────────────────────┐
│  ┌─────────────────────────────────┐             │
│  │ <del line>   <change>   File name: │ _____ │
│  └─────────────────────────────────┘             │
└─────────────────────────────────────────────────┘
```

There are two ways to enter a name onto the Filer prompt line. You can enter the name in keystrokes, or press <search> and use the search capabilities within the Filer. When <search> is pressed from the Filer prompt, the search window appears.

The left part of the window contains volume names, while the right side contains file names. To enter a file name from the search window, use the down <arrow> key to highlight the desired file name in the right part of the window. Press <do>. The file name is then entered on the prompt line. To leave the search window without choosing a file, press <undo>.

Your files can be distinguished from each other by their suffix. The suffix designates the file as a data base, screen mask, print mask, monitor, text, or .SIF file. The suffixes are listed below.

.DB3	—	Data base file.
.SMK	—	Screen mask file.
.PMK	—	Print mask or Report format file.
.MON	—	Monitor file; contains procedures for automatic execution.
.TXT	—	Text file.
.SIF	—	Standard Interface Format text file.

USER: enter the file name [EMPLOYEE] and press <change> to use the rename feature.

IM: the prompt, "New name:" asks for the new name of the file.

USER: enter [STAFF] and press <ret>.

IM: the file is renamed, and the prompt "Mask to update:" appears.

Note that the EMPLOYEE mask files are NOT renamed, but updated to point or refer to the renamed data base file. By updating the mask file to point to the renamed data base file, you can then still use the EMPLOYEE.SMK file to get records from STAFF file without first specifying the data base file then the mask file. If you want to rename mask file, you must repeat the rename procedure.

Note that if you press <search> from the mask file prompt, a list of .SMK and .PMK files appears in the search window. You can choose a file to enter and press <do>, or press <undo> to leave the window.

USER: press <ret> to update the default mask file, EMPLOYEE.SMK

The Filer continues to prompt you for mask files to update. All mask files associated with the data base file are available to be updated.

USER: for the print mask file, enter [EMPLOYEE.PMK]. When both mask files have been updated, press <undo> to stop the update process. Press <undo> again to return to the Data Base File Maintenance Menu.

IM: the Data Base File Maintenance Menu appears with no active files.

It is a good idea to develop a habit of using the New command after using the Filer command. This prevents any attempt to use the old name of the data base file. If you try to use the old file name, or an active file that you have recently renamed or deleted with the Filer command, an error message tells you that the file cannot be found.

2. Deleting Files with the Filer Command

The Filer command also has a file deletion feature. This feature allows you to physically remove data base files, screen mask files, and print mask files from the disk. You must BE CAREFUL with this command to avoid accidentally destroying a file you want to keep. This would be a good time to remind ourselves of the importance of keeping backups to prevent accidental loss of important files. With this command, you can remove files from within the Information Management module. You need not exit the module to use a file system.

EXAMPLE SITUATION: In this example, all of the newly created files are removed from your disk. This way, the next person who follows the tutorial can enjoy creating the same files that you did without difficulty.

IM: the Data Base File Maintenance Menu is displayed.

USER: press [F1], or use the arrow keys to highlight the Filer command and press <do>.

IM: the Filer prompt line is displayed, just as in the last example.

```
<del line>   <change>   File name:   _____
```

USER: enter [STAFF.DB3], or use the search window to enter it. Press <del line>.

IM: a prompt asks you, "Delete STAFF.DB3?".

USER: press <do>. (If you did not want to delete the file, you could press <undo>.)

IM: the file is deleted and the Filer prompt returns.

USER: enter [EMPLOYEE.SMK], press <del line>, then press <do>.

IM: the file is deleted, and the Filer prompt appears.

USER: enter [EMPLOYEE.PMK], press <del line>, then press <do>.

IM: the file is deleted and the Filer prompt returns. The search window will no longer list this file.

USER: follow the same procedure above with [NEWEMP.DB3], [NEWEMP.SMK], [INV.DB3], [INV.SMK], [FORM.DB3] and [FORM.SMK]. If you get an error message saying that some of these

files cannot be found, don't be alarmed. It just means that either the last person through the tutorial did not complete all sections of the tutorial or you will still be creating these files in a later Chapter. When you have finished deleting the files, press <undo> to return to the Data Base File Maintenance menu, and press <change>.

IM: the Data Base Operations Menu is displayed with no active files.

NOTE: In this example, data base files were removed with the mask files that were associated with them. Whenever you decide to discard a data base file completely, the mask files will probably be useless. Remember to remove the print and screen mask files associated with a data base file if you are permanently removing the file.

3. Data Base File Recovery

At some point in time you may have a hardware failure or loss of power while working with a data base. Should this happen, certain internal data base maintenance procedures may not update information stored in the actual data base files. This could cause loss of data or lead to peculiar sorting results. In event of this happening, there are two utility programs that can check and possibly recover from such hardware failure. These utilities, Check and Recover are found in the Fixfile option of the Utilities window.

Fixfile is used to examine and correct structural problems in database files. Fixfile has two parts: Check and Recover. The two parts are described below with a brief explanation and are then fully explained in this section.

Utility	Explanation
Check	Checks the integrity of your data base files to see if their structure has been damaged.
Recover	Attempts to rebuild the data base file indices if Check indicates that the file is damaged.

We would like to reassure you that the probability of damage is extremely low, but there is always that small chance. If the system starts acting in an unexpected way, or you experienced a system failure (power outage, disk drive failure, soft boot at the wrong time, etc.), and you were in the program, you could conceivably have damage to a data base file structure. You should use the Check option of Fixfile to see if this is the case.

If Check discovers something wrong, use Recover to attempt to fix the problem. After you run Recover, use the data base file to make sure the problem was solved. If there is still an obvious problem, switch to your latest back up and reenter any changes since the time the back up was made.

Always keep a current backup copy of your data base files. If something goes

wrong with your working file, make another copy before you start to use the backup copy. Avoid using your last good copy of the data base file, if possible. It is always a good idea to keep a "grandfather backup" of your files. This is an additional, third copy of your files that is periodically updated. Its purpose is to backup the backup copy in emergencies. In general, you cannot have too many backup copies.

THE MOST EFFECTIVE MEANS OF PREVENTING DISASTER IS TO ALWAYS KEEP AN UP-TO-DATE BACKUP COPY OF YOUR DATA BASE FILES. IF SOMETHING DOES GO WRONG, YOU STILL HAVE A WORKING COPY.

Accessing Fixfile

From the Options Window, use <down> to highlight the UTILITIES option; press <do>. The Utilities window will open up. Use <down> to highlight FIXFILE; press <do>. The fixfile window will open. (It may be necessary, depending on where you are, to switch code disks in Drive A. If so, you will be prompted to do it.) To access Check, choose that option.

Check:

Check examines the internal structure of the data base file to determine whether or not the file structure is internally consistent. All data base files have special codes to tell the program how and in what order to retreive the data from the disk. Check verifies that these are in order and do not contradict themselves. Check will tell you about any discrepancies it discovers since the problem's symptom (the discrepancy) might be a clue to solving the problem. If Check discovers a problem, use Recover to attempt to fix it.

If you decide not to use Check (perhaps you pressed the wrong key and entered Fixfile accidentally), press <undo> to exit. If you do want to run Check on a data base file, highlight the word "Check" and press <do>. You are prompted for a data base file.

Enter the name of the suspect file after the prompt. You may use <search> to enter the file name. Press <ret>. The following message appears.

Checking file header . . .

If there are no problems with the file header (the first portion of the file), another message appears.

Checking records . . .

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The program examines the internal structure of the data base file. When it finishes checking the file, it sends you a message about the condition of your file. This message indicates that everything is in order, or that one of several problems exists. The following messages can occur:

      1.   File header is incorrect.

      2.   Number of records found is incorrect.

      3.   Free space list is incorrect.

      4.   Index for key incorrect.

If there are multiple discrepancies, more than one message may appear. If you see any of these messages, run Recover to try to correct the problem(s). If there are problems with the index, probably the only solution will be to start using your backup copy.

If there appears to be a problem with the free space list, your program is confused about the number of records it thinks the file contains. An easy way to solve this problem is to increase the size of your file with the Stretch command in Information Management. Try increasing the size of your file 20% and check for any improvements.

There can be a problem with the file even if Check indicates that the files are good. If this is true, it is possible that the "directory" for the file is incorrect. Select the Modify command of Information Management and enter the file name. Press <search>, then highlight the words "All Fields" and press <do>. A list of all the fields in the file appears. If this information is distorted, then the "directory" within your data base file is also distorted. If you have this problem, you must start to use your backup copy of the data base file. Make another backup of it immediately, and use the backup.

If all else fails, call your dealer for support.

Recover:

Recover is the second part of the Fixfile Utility. Information Management and Time Management maintain data structures with indices pointing to locations on your disk where data records are stored. These structures make Open Access fast and efficient at retrieving data. If something is wrong with the indices, symptoms such as disappearing records or garbage data are likely to occur. Recover is designed to attempt the reconstruction of the indices from the actual data records. If Check spotted something wrong with the indices, Recover can be used to try and correct the problem.

Highlight the word "Recover" by pressing <right>; press <do>. If you decide not to use Recover, press <undo> to leave Fixfile. The prompt, "Which file:" appears. Enter the name of the data base file to be recovered and press <ret>. The message shown below appears.

Fixing file . . .

Recover attempts to repair all the file indices once <ret> is pressed. The message, "File not okay - press <do>" indicates that the file is still not functioning properly. In this case, use a backup copy. If the file is all right you are returned to the Fixfile Utility menu.

When you are finished with the Recover utility, you are returned to the Fixfile Utility menu. Press <undo> to exit the utility. To be sure that your problem is solved, use the data file in question. Generally, if you can access the file and the first few records appear OK, the file is good.

Remember, the best way to avoid disaster is to keep at least one backup copy of your data base files at all times. Your information is too valuable to risk. However, if the same problem continues to occur, call your supplier for help. A recurring problem indicates that something, either your computer or your procedure is wrong.

Remember, too, you will, in all probability, not have to use this utility. It is merely provided as insurance. Follow instructions, work carefully, keep a backup, and you will have no worries. But, should something happen, it is reassuring to know that there is a utility designed to help you out of a tight spot.

Chapter 16 - IMPORTING AND EXPORTING
DATA BASE INFORMATION

GOAL: The data exchange commands, Import, Export and Context, are used to convert and send information to and from the Information Manager for use by other Open Access modules or other packages.

1. Exporting a Data Base File

NOTE: The retrieved information to be used by other Open Access modules and other packages or user programs, must be converted into a special text file. The text file uses a special format, called Standard Interface Format, or SIF. SIF files are explained in detail in Volume II, Open Access Shell.

EXAMPLE SITUATION: Suppose an associate wanted to use the data from your customer file to make calculations for an annual report. The information from the Purchases, Payments, and Balance fields can be made available to a spread sheet module with the Export command. Since the information is being transferred to another machine to be used at a different time, we will use the Export option rather than the Context option (to be described later in this Chapter).

IM: the Data Base Operations Menu is displayed.

USER: press <change> to access the Data Base File Maintenance Menu.

IM: the Data Base File Maintenance Menu appears on the screen.

USER: press <E>, or use the arrow keys to highlight the Export command and press <do>.

IM: the "FROM" prompt is displayed. It asks for the conditions used to retrieve specified records.

USER: Enter [CUST] <ret> to select the file.

IM: cursor drops to the next line.

USER: enter [SELECT PURCHASES,PAYMENTS,BALANCE] to select the PURCHASES, PAYMENTS, and BALANCE fields. Press <do> to retrieve the data.

IM: the following prompt asks for the output destination.

Output to:

USER: enter the name [CUST] after the prompt, then press <ret>.

IM: a prompt, "Include file definition header?" appears on the screen.

USER: press <do> to include a file definition header.

The information is retrieved and converted to a SIF text file. The text file has the name specified in the "Output to:" prompt.

A file definition header, if present, is the first record in the SIF text file. The file definition header is composed of field names and field kinds, such as key or non-key designations. Header information must be included if a SIF text file is to be entered back into Information Management at another time. Header information might be required to move the SIF file to another file management system. Since the definition header is counted as an extra record, you export the number of records in your file plus one. If you are sure the information is not needed, press <undo> to exclude it.

IM: the message "Moving (#) records" is displayed. The text file is written onto the disk, and is accessible to the spread sheet program. The Data Base File Maintenance Menu reappears on the screen.

USER: press <change> to access the Data Base Operations Menu and press <N> for the New command to clear the data base of active files.

IM: the Data Base Operations Menu appears with no active file listed.

2. Importing to a Data Base File

The Import command creates an Information Management data base file which contains information from a SIF text file. Information from another module in Open Access, such as the spread sheet module, can be written to a SIF file, then converted into an Information Management data base file. SIF text files are explained in Volume II, Open Access Shell.

EXAMPLE SITUATION: Suppose you have a DIF file that has a table of employee payroll information and you feel that it is more appropriate to have that information stored as a data base as opposed to a spreadsheet. This is easily done using the SIF Interchange option in the Utilities menu and the Import command in the Data Base Maintenance Menu.

IM: the Data Base Operations Menu is displayed on the screen.

USER: press <undo> to go to the Options menu.

IM: the Options menu appears.

USER: press <U> to select the Utilities option.

IM: the Utilities menu appears.

USER: press <S> to select the SIF Interchange option.

IM: the SIF Interchange Operations Menu appears.

USER: enter [DI] to select the DIF to SIF option.

IM: you are prompted for the name of the DIF file which is to be converted to a SIF file. Note that you could use the Search window at this point to select the file.

USER: enter [PAYROLL.DIF] <ret> to select the PAYROLL file.

IM: you are prompted for the destination SIF file name.

USER: enter [PAYROLL] <ret> for a destination file name.

Upon pressing the <ret> key the program will attach a ".SIF" suffix to PAYROLL and begin the conversion of the DIF file to SIF file format.

IM: when completed, the source name prompt will return.

USER: press <undo> twice to return to the Options menu. Press <I> to re-enter the Information Management module.

USER: press <change> to access the Data Base File Maintenance Menu.

IM: the Data Base File Maintenance Menu appears.

USER: press <I>, or use the arrow keys to highlight the Import command and press <do>.

IM: a prompt asks for the name of the SIF file to be imported.

```
┌─────────────────────────────────────────────────────────┐
│  ┌──────────┐                                            │
│  │ SIF file:│   _____                         │
│  └──────────┘                                            │
└─────────────────────────────────────────────────────────┘
```

USER: enter [PAYROLL] and press <do> or <ret> to specify the PAYROLL SIF file.

IM: an error will be reported indicating there is no file header information.

This error arises out of the fact that there is no record header information. The system recovers from this error by creating a default header. It will assign field names for as many fields as there are and then make the first field a key.

USER: press <do> to acknowledge the error.

IM: a prompt asks for the name of a new data base file.

The text file you import will then be converted into a data base file. A new name must be entered.

USER: enter [PAYROLL], then press <ret>.

IM: the message "Moving_____ " appears on the screen as the SIF text file is converted into a data base file with the name PAY-ROLL.DB3. The Data Base File Maintenance Menu appears.

USER: press <change> to access the Data Base Operations Menu.

IM: the Data Base Operations Menu appears.

USER: press <L>, or highlight List and press do.

IM: the "FROM" prompt appears.

USER: enter [PAYROLL] and press <do>. View the Payroll records in the List command then press <menu>.

IM: the Data Base Operation Menu appears

USER: press <N> to clear the active file.

IM: the Data Base Operations Menu appears with no active files listed.

3. Use of the Context Command

After a set of information is retrieved, the Context command provides a direct link to another Open Access module. By using this command, your insure that the rest of data processing applications are up to date. You can use the same data with different applications.

EXAMPLE SITUATION: In this example. the name. address. contact. and phone of customers with names that start with the letters M through S. and with balances of greater than 0 are sent to the Spreadsheet module. The Options window is automatically accessed, and you exit Information Management to the Spreadsheet module. The data base information can be viewed there.

NOTE: The Context command is used with the SPI integrated package. This command can only be used if you have more than one module involved in your system.

USER: press <change> from the Data Base Operations Menu.

IM: the Data Base File Maintenance Menu is displayed on the screen.

USER: enter [CO], or use the arrow keys to highlight the Context command and press <do>.

IM: the following windows appear on your screen;

AI	A2	A3	A4
>Clow, Samuel	7.50	35.00	100.00
>Dillon, John	6.50	40.00	20.00
>North, David	8.35	45.00	0.00
>Willians, Robert	6.5	40.00	0.00

Data Base File Maintenance Menu

— No active file —
Stretch Desing Create Modify Format Import Export Filer
Options Context

<do> <undo> other menu: <change>

USER: use the down <arrow> to highlight the Spreadsheet option and press <do>.

IM: the following prompt appears;

Enter Destination Model Name (if desired):

The Spreadsheet module uses Financial Model files. Only in contexting to Spreadsheet will you be prompted for a model name.

USER: press <ret> to enter no model name.

IM: The "FROM" prompt is displayed.

USER: enter [CUST] <ret> to select the CUST file.

IM: cursor drops to next line.

USER: enter [SELECT NAME,ADDRESS,CITY,STATE,ZIP,PHONE, CONTACT] <ret> to select out those fields.

IM: cursor drops to next line.

USER: enter [WHERE NAME IN ('M':'S') AND BALANCE > 0] to select the records where the value in NAME is between the letters M and S AND where the value in BALANCE is greater than zero. Press <do> to retrieve the records.

IM: the message "Moving 3 records" appears on the screen. As the records are written, the following line of dots appears.

        < |>................

SS: data is read into the spreadsheet cells. The Spreadsheet tutorial explains how to widen the columns so all the data is displayed.

USER: to exit the spreadsheet press <Q>.

SS: the options "After@Saving" and "Without@Saving" appear.

USER: press the left <arrow> to highlight "Without@Saving" and press <do>.

SS: the options :Model Selection@Menu", "Options" and "Context" appear.

USER: press <O> for the Options Window.

SS: the Options Window appears.

USER: make sure "Information Management" is highlighted and press <do>.

IM: the Data Base Operations Menu is shown with no active files listed.

CHAPTER 17 - JOINING DATA BASE FILES

Goal: The "joining" of data base files occurs when you combine parts of two or more data base files. You can work with the combined files to perform all the operations which are possible with a single data base file. Essentially, you are extracting information from two or more data base files and creating a new temporary file.

1. Joining Three Files to Form a Temporary Invoice File

EXAMPLE SITUATION: Suppose your boss wants you to design an invoice to be included with each order shipped to a customer. You can use the multiple file join operation to combine the CUST, ORDERS, and PRODUCTS files to form an invoice.

The join operation can be used wherever a query can be performed. Up to five data base files can be joined into one large, temporary file. All of the functions available with permanent files can be used with this temporary file. When a new query is entered, the temporary file no longer exists. For these reasons, the temporary file is called a "virtual" file.

NOTE: In order to join two (or more) data base files, the files must have at least one key field in common. One of the data base files must contain a field with the same designated kind (key) and type of information (Text, Number, etc.) as that of a field in a second data base file. Not all of the fields in the two files must be the same, but at least one key field must be of the same type.

IM: the Data Base Operations Menu is displayed.

USER: Press <L>, or use the arrow keys to highlight the List command and press <do>.

IM: the prompt for a query appears on the screen.

This prompt asks for the names of files to be joined to produce one virtual file. In the join procedure, all the names of files to be joined must be entered. The file names should be separated by commas. If you are not sure which data base files are stored on the disk, press <search> and highlight the word "Files" to display a list of eligible files. Press <undo> to return to the query line.

USER: to answer this prompt, enter [CUST,ORDERS,PRODUCTS], then press <ret>.

IM: the cursor advances to the second line of the "From" prompt.

One of the key fields in the CUST file stores the customer name. The ORDERS file has a key field for the names of customers who want to purchase products from you. Since these two files have a key field in common, they can be joined.

> USER: Enter the following:
> [SELECT NAME,ADDRESS,CITY,STATE,ZIP,PRODNO,
> QUANTITY, UNITPRICE] then press <ret>.

WARNING: If two or more files have a field with the same name and you want to include that field in the Select line, it is wise to enter the name of the file and a '.' preceding the field name to fully designate the file from which data is taken. For example, if one file contains a decimal field called CREDIT and another file contains an text field called CREDIT, you might not get the field you want in the virtual file. By default, if there is a field name which is used in two files and that name is entered in the Select line, the system enters the field from the file listed first in the "From" prompt.

If the field name you want is unique to one file, or it is located in the first file listed in your From line, you do not need to specify the file name in the Select line. When you cannot choose the field by default, or the location and uniqueness of the field are ambiguous, use the "file name.field name" format. When in doubt, this format retrieves the desired field.

> IM: the cursor advances to the next line in the "From" prompt.

> USER: enter the following clause: [WHERE CUST.NAME=ORDERS.
> NAME AND ORDERS.PRODNO=PRODUCTS.PRODNO]

The Where clause is the key to joining files. There is a specific format for the join condition. When file names are entered, each one is followed by a '.' and the field name which is common to both files. The file names are joined in the condition by an '='. Briefly, the join condition is entered in the following format.

> file1 name.field name = file2 name.field name

You do not need to enter the name of the file if the field is unique to its file, or the file is the first file in the list following the From prompt. In cases where the field location appears ambiguous, or the file is not chosen by default, always use the file names in join conditions. Remember that data base files can only be joined on common key fields. If you join only two data base files, the only relational operator that applies is the "=" operator. You must set the key field in one data base file equal to the same key field in another data base file.

When you specify the conditions for joining three or more files, you must combine join clauses. The join clauses are combined in pairs with a Logical AND. A Logical AND between two join clauses retrieves the intersection of the records specified by those clauses.

In our example of joining three files, two clauses are combined with a logical AND. For details concerning the use of relational and logical operators when joining files, refer to Query in Volume III, the Reference Manual.

IM: the query should resemble the illustration below. These conditions produce a virtual file containing the fields listed in the Select clause. There is one record for each customer's order.

```
FROM CUST,ORDERS,PRODUCTS
SELECT NAME,ADDRESS,CITY,STATE,ZIP,INVOICE,QUANTITY,UNITPRICE
WHERE CUST.NAME=ORDERS.NAME AND ORDERS.PRODNO=PRODUCTS.PRODNO

            <arrows>   <edit keys>   <search>
```

USER: press <ret> to advance to the next line of the query. Enter [ORDER NAME].

An Order clause is used to sort the file. The file can be sorted by any key field. All of the guidelines for the single file Sort operation apply to the multiple file Sort. The values can be sorted in ascending or descending order. Further information on sorting files can be found in the Query and Sort commands in the Reference Manual.

USER: press <do>.

IM: your data base files are joined together. The records retrieved by the query are displayed with one record per row. You can move up and down within the list with the arrow keys.

NAME	ADDRESS	CITY
>AA AEROSPACE	4670 AERO DR.	SAN DIEGO
>AA AEROSPACE	4670 AERO DR.	SAN DIEGO
>AA AEROSPACE	4670 AERO DR.	SAN DIEGO
>ASSOCIATED STEEL	1445 INDUSTRY RD.	CHICAGO
>ASSOCIATED STEEL	1445 INDUSTRY RD.	CHICAGO
>BARRY'S BAR	823 MUNICH AVE.	MILWAUKEE
>BARRY'S BAR	823 MUNICH AVE.	MILWAUKEE
>BARRY'S BAR	823 MUNICH AVE.	MILWAUKEE
>BARRY'S BAR	823 MUNICH AVE.	MILWAUKEE
>DIGITAL DESIGNS	6364 COMPLEX DR.	LOS ANGELES
>DIGITAL DESIGNS	6364 COMPLEX DR.	LOS ANGELES
>FARKEL FUR FARM	156 BEAVER LN.	BUFORD
>FARKEL FUR FARM	156 BEAVER LN.	BUFORD
>FRED'S FARM MACHINES	255 MAPLE ST.	FARMINGTON
>JOE'S CAMPER SALES	724 BUTTE AVE.	MISSOULA

Record #1 of 24 records

(repeat factor) <arrows> <change> <menu>

Bear in mind that any changes you make in the data contained in the virtual file affect the data contained in the original data base files. The data is essentially the same. For example, suppose you change the price of an item and recalculate the total cost of the order while in the virtual file. You can return to the orders and products files to see that the total cost of the order in the orders file and the price in the products file have changed.

USER: when you finish viewing the virtual file within the List command, press <menu> to return to the Data Base Operations Menu. Note the list of three active files. Then press <N> for the New command to clear the data base.

IM: the Data Base Operations Menu appears with no active files listed.

2. Screen Masks for Virtual (Temporary) Files

EXAMPLE SITUATION: With Information Management you have the option of creating an Input or Output mask before you produce your virtual file. As long as the mask file contains the appropriate fields and a Whereline with join conditions, the mask file uses the file names, field names, and join conditions automatically. Note that the data base fields included in the mask must be "on-line" when you create the mask for your virtual file.

In this example, the same virtual file you used in the preceeding example is used to form a screen mask for an invoice. When the mask is used, its name is entered as the only element in the "From" clause, but all the information is retrieved.

Note that you may create a Print Mask file for a virtual file in a very similar way to how we will create a Screen Mask file for a virtual file, so we will not explicitly go through an example.

IM: the Data Base Operations Menu is displayed on the screen.

USER: press <change> to access the Data Base File Maintenance Menu.

IM: the Data Base File Maintenance Menu appears.

USER: press <D>, or use the arrow keys to highlight the Design command and press <do>.

IM: the "From" prompt appears.

USER: enter the following query, then press <do>.

[FROM CUST,ORDERS,PRODUCTS] <ret>;
[SELECT NAME,ADDRESS,CITY,STATE,ZIP,PRODNO,
QUANTITY,UNITPRICE] <ret>;
[WHERE CUST.NAME=ORDERS.NAME AND ORDERS.
PRODNO=PRODUCTS.PRODNO] <ret>;
[ORDER NAME]

IM: a prompt asks you for a new mask file name.

```
Mask File Name:        _____
```

It is a good idea to give the screen mask a name which reminds you of the information to be displayed. This screen mask will display the virtual file resulting from the three joined data base files. We suggest you name the screen mask in a way that reminds you of the purpose of joining the files.

USER: since this is an invoice file, enter [INV], then press <ret>.

IM: the file is now called "INV.SMK". The next prompt is displayed as follows.

```
                Add in default entries?
```

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Default entries are fields chosen from your joined data base files. If default entries are chosen, they are displayed in list form on your screen when you press <do>. If a totally blank screen is desirable, you can press <undo>.

USER: press <do> to view the default entries in the Screen format & File design menu.

IM: the default screen mask appears as illustrated below.

```
NAME          _____
ADDRESS       _____
CITY          _____
STATE         _____
ZIP           _____
PRODNO        _____
QUANTITY  _____
UNITPRICE _____



_____
              Screen format & File design menu
_____
          Exit    Edit    Whereline    New    Size


                    <undo> <do>
```

NOTE: The Edit option can be used to design the screen mask. You must NOT delete the NAME or PRODNO fields as these are the two key fields that join your files together!

When your screen mask is designed, the system assumes that the fields in the mask are entered in the Select clause of your Query. If you want certain fields in the original files to be updated whenever you work with the screen mask, you must include those fields in the screen mask. If you want a field updated, but do not want it to show, you must create two mask files: one with the field and one without.

USER: move the highlighted area to the word "Whereline" and press <do>.

IM: the following prompt appears:

```
Whereline:


_____
         <arrows> <do> <undo>
```

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When a screen mask is created for a virtual joined file, it must have the Whereline included. The Whereline contains the join conditions that are used for retrieving the records in the virtual file. These are the same conditions entered into the Where clause of your query. You need not enter join conditions in the Query each time the mask is used, provided the Whereline is written into the mask.

USER: enter the following join conditions, then press <do>. [CUST.NAME= ORDERS.NAME AND ORDERS.PRODNO=PRODUCTS. PRODNO]

IM: the Screen format & File design menu reappears. Once the join conditions are entered, the mask is complete.

USER: To save the screen mask, use the arrows to highlight the word "Exit" in the Screen format & File design menu, then press <do>.

IM: the Data Base File Maintenance Menu returns to the screen.

USER: press <change> to access the Data Base Operations Menu, then press <N> for the New command to clear the data base of active files.

IM: the Data Base Operations Menu appears with no active files listed.

USER: press <D> for the Display command. Press <do>.

IM: the "From" prompt is displayed.

USER: enter [INV.SMK], then press <do>.

IM: the first record retrieved with the join conditions is displayed in INV.SMK.

USER: press <menu> to return to the data base operations menu.

The Select and Where clauses do not need to be entered. The system checks the files used to create the mask and automatically enters the appropriate fields from those files into the mask. The Where clause is not necessary because the join conditions are written into the mask. If you want to place further restrictions on the records used in the mask, you can enter more conditions in the Where clause of your Query. For instance, you can enter [Where NAME>'M'].

3. Creating a Permanent File from a Join File

EXAMPLE SITUATION: In the preceeding example, we created a screen mask from a virtual file. Suppose you want to keep it as a permanent invoice data base file. This task is accomplished with the Modify and Append commands. In this example, the screen mask created with the Design command is used to create a data base file. We will use the Modify command to create the data base file from the virtual file by the assembled screen mask. Data is appended to your new file from the original data base files with the Append command.

Until now, your joined file has been temporary. You can add information into the joined file, but the information appears only in the original data base files. Once New is pressed, the data base is cleared and the joined file no longer exists. The only way to save the structure of a joined file is to make a separate, permanent data base file from it. Data entered into this joined file does not affect the other files.

IM: the Data Base Operations Menu is displayed.

USER: press <change> to access the Data Base File Maintenance Menu. Then press <M>, or use the arrow keys to highlight the Modify command and press <do>.

IM: the "From: prompt does not appear because Modify uses the active file which is INV.SMK.

IM: a prompt asks for the name of the new output mask file.

```
Modified file output name:          _____
```

USER: enter [FORM], then press <do>.

IM: a copy of the mask, INV.SMK, appears on the screen. INV.SMK does not exist for use with a virtual file.

```
NAME       _____
ADDRESS    _____
CITY       _____
STATE      _____
ZIP        _____
PRODNO     _____
QUANTITY   _____
UNITPRICE

          Screen format & File design menu

     [Exit]    Edit    Whereline    New    Size

              <undo> <do>
```

The same Screen format & File design menu that appeared in the Design command now appears in the Modify command. The difference between the Design and Modify commands is the amount of changes that are possible. The Design command affects only the outward appearance of the data on the screen. The

Modify command allows you to change the structure of the data that is present, and add new fields to hold new information. For example, you can change the invoice field from type number to type text to allow for both numbers and letters. You can also add a date field to the file.

USER: press <do> to use the Exit option and save both the data base structure and screen mask.

IM: a prompt, "Number of records: 25" appears on the screen.

This prompt asks you for the number of records you want the new file to hold. The default value is 25 records. If you do not want that number of records, enter the best estimate for the number of records you think you need. You can always make a file larger by using the Stretch command.

USER: enter [30] for the number of records you need, then press <ret>.

IM: The Modify command now displays the prompt, "Writing file . . . ". When this process is complete, you are returned to the Data base main menu. "INV.SMK is listed as active, however the old default mask no longer exists. If you go to a command that requires a screen mask, you are prompted for one.

Now that the data base file structure exists for FORM, the next step is to move some of the data from the original customer, products, and orders files into the new data base file.

USER: press <change> to use the Data Base Operations Menu, then press <A> for the Append command.

IM: the Data Base Operations Menu is shown, then the Append command is accessed and the prompt, "File:" appears.

```
File:       _____
```

USER: enter the name [FORM]. Press <ret>.

IM: the next prompt asks, "Default field associations?"

If you have added additional fields to your mask or altered the fields significantly, you can press <undo> to match the fields from the original file into your new file. For further information, see the Chapter on Appending Records.

USER: press <do> to use the default associations.

IM: The Append command begins to move data into your new file when you see the word "Moving . . . . ". The numbers (eg< 1 > . . .) allow you to keep track of the number of records appended. When the process is finished, the Data Base Operations Menu appears on your screen, and your new, permanent file is complete.

USER: Press <N> for New to clear the data base for a new query.

IM: the Data Base Operations Menu appears with no active file listed.

SUMMARY: The join operation is a very powerful application of a query. Since you can join files temporarily, you don't need to make files that are rarely used. The information you retrieve can be exactly what is needed at the appropriate time. Your data base can be designed such that your files are small and modular. This is true information management!

CHAPTER 18 - RECURSIVE SQL

Goal: This chapter will demonstrate how you can use one of the most advanced features of the Information Manager.

So far, we have seen that you may ask questions (queries) on a single database file or you may combine database files together using the join feature and then ask queries on the combined (joined) files. Recursive query allows you to retrieve records from a database file based on search criteria which is not limited to that database file. In other words, you may specify search conditions on fields in database files other than the one in which you are retrieving records.

In order for this feature to make any intuitive sense, there must exist some relationship between the file(s) you are retrieving records from and the other file you are specifying search criteria from. For example, if you have a customer file and an employee file, it doesn't make any sense to ask a query such as "find me all customers who have a salary of 18,000". However, if you have a customer file and an order file, it can be very useful to ask a query such as "find me all customer names and phone numbers who have an order for product number 600". In this example, we are retrieving records from the customer file, but the field we are searching on, product number, is not in the customer file, it is in the order file.

Perhaps you have noticed that this last query could have been accomplished by joining the customer file with the order file across the name field and then adding the search condition that product number must be equal to 600. In this case you would only have specified the customer name and phone fields in the Select clause. However, in the resulting virtual file, the customer name and phone number would be repeated for as many orders for product #600 as the customer had. If you used recursive SQL, the customer name and phone would only be repeated once no matter how many orders for product #600 the customer had. This is because we are retrieving information from one database file rather than joining files together and then retrieving records.

Let's now illustrate the format which the recursive SQL uses. We will use the example above to illustrate this format.

    IM: the Data Base Operations Menu is displayed.

    USER: press <L> to select the List command.

    IM: the query window appears with the "FROM" prompt.

    USER: enter [CUST] <ret> to select the customer file.

    IM: cursor drops to the next line.

USER: enter [SELECT NAME,PHONE] <ret> to select out the two needed fields.

IM: cursor drops to the next line.

USER: enter [WHERE NAME IN SELECT NAME FROM ORDERS WHERE PRODNO=600].

First you enter a key field which is common to a key field in the file you are getting the search conditions from. Next you enter the word "IN". After this, enter the word "SELECT" followed by the key field which is common to the key field listed just before the word "IN". Enter the word "FROM" followed by the file which includes the field just listed after the last "SELECT". Lastly, enter the word "WHERE" followed by the search conditions you wish to use from the file just entered after the "FROM".

In this inner WHERE line you may include any of the procedures available on the main WHERE line including: search conditions using relational and logical operators, parenthesis, and range criteria; join clauses, and further recursive query clauses. This means, the recursive query clauses may be nested - you may have one within the other. You may nest the recursive query clauses up to five levels deep. This is, of course, because you can join up to five files at one time. The recursive query is actually performing join operations, only it is not evident to the outside world.

USER: press <do> to retrieve the records.

IM: the following records will be retrieved:

NAME	PHONE
>AA Aerospace	(619) 571-5822
>Associated Steel	(312) 883-4582
>Digital Designs	(213) 445-9241

record #1 or 3 records
(repeat factor) <arrows> <menu> <change>

USER: press <menu> to return to the data base operations menu.

We will give one or two more examples of what kind of queries we can construct with the recursive query and then we will leave it up to your own experimentation to see how you may use this feature in your own applications.

In this example, we would like to find all customers who have a product costing more than $1000. Now the orders file does not contain the product cost, only the product number. The product cost is contained in the product file. So, we must link all three files: customer, orders, and products together before retrieving the

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customer name and phone number. This means, we can use the recursive query twice in order to link the three files.

    FROM CUST
    SELECT NAME,PHONE
    WHERE NAME IN SELECT NAME FROM ORDERS WHERE PRODNO
      IN SELECT PRODNO
    FROM PRODUCTS WHERE UNITPRICE > 1000

Another way to ask this same query is to join the orders and products files within the first recursive query clause. This example is shown below.

    From CUST
    Select NAME,PHONE
    Where NAME in Select NAME From ORDERS,PRODUCTS
        Where ORDERS.PRODNO = PRODUCTS.PRODNO and
        UNITPRICE > 1000

The recusive query feature gives you the flexibility to structure your query in different ways depending on what your record retrieval needs are. It may not be often that you will make use of this feature, but sometimes it allows you to retrieve just the information you need without data duplication.

Leaving the Information Management Program

To exit the Information Management program use the Options command in the Data Base Maintenance Menu. Press <O> for Options. The Options Window appears. To access the Operating System, press <O> In the Options Window.

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SPREADSHEET

VOLUME II — USER'S MANUAL

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USER'S MANUAL

Introduction

Since the production of Open Access User's Manual, some new features have been added and other features have been enhanced in the Spreadsheet module. These new features are described in an order which follows the structure of the User's Manual. Each new feature is fully explained in the following pages.

The User's Manual was also thoroughly tested and evaluated for accuracy and clarity. As a result, we have included a section that elaborates on some of the functions/commands which we felt deserved more detailed explanation.

The best way to use this addendum is to first glance through it before you begin the tutorial in the User's Manual. Then, as you work through the tutorial and encounter the features or commands that have changed, you can refer back to this addendum for clarification.

New features

Pointer Movements (Chapter 3, SS.II.10)

Four additional pointer key movements can be used. They are the jump keys:

<jump> <up>	moves the pointer up one full screen.
<jump> <down>	moves the pointer down one full screen.
<jump> <left>	moves the pointer to the left one full screen.
<jump> <right>	moves the pointer to the right one full screen.

Row/Column References (Chapter 7, 16, 27)

When you Insert, Delete, or Order by rows or columns, you can reference entire rows or columns by simply entering the number of the entire row or the letter of the entire column rather than the starting and/or ending coordinates of the range.

Format: Attribute Options (Chapter 8, SS.II.21)

Date and Boolean (ie; values can assume only true or false) attributes are added as options in the Format: Attribute command. These two options (together with the comma) are stored in the 7th position, and they are represented by the letters D and B. To select the option and assign the attribute to selected entries, see Chapter 8. These attributes can only be assigned to numeric entries.

When the Date attribute is selected, the value of that entry is interpreted as the number of days since Dec. 31, 1947, and the contents of the entry are displayed in the format specified by the Open Access Configuration (the

default is month-day-year). For example, if the date attribute is on for a entry whose value is zero then 1-1-47 will be displayed.

When the Boolean attribute is selected, then that entry will be displayed as FALSE if the value of the entry is 0, and will be displayed as TRUE otherwise.

Entries with the Date or Boolean attribute will retain the format assigned when the model is SIFed or contexted to another module. Also, if dates or booleans are transferred into the spreadsheet then the date and boolean attributes will be set appropriately.

Date Function (Chapter 31, SS.II.80)
To enter the system date into your model, enter the function as follows: [+ DATE( )] and set the date attribute on for that entry.

To enter a date other than the system date, enter the function as follows: [+ DATE(mnth,day,yr)] and set the date attribute on for that entry. The date is expressed in the same format as the Open Access system data. If you have selected a different date field format in the Utilities Configure option, you should enter the date in the order that corresponds to your data format.

Time Function (Chapter 31, SS.II.87)
To enter the system time into your model, enter the function as follows: [+ TIME( )].

To enter a time other than the system time, enter the function as follows: [+ TIME(= "03:30:57")]. The time is expressed in the same format that appears when your boot up from MS-DOS (hours:minutes:seconds).

Math Functions (Chapter 8, SS.II.24)
Four more trigonometric functions are available:

Function	Result
Tan (x)	returns the tangent of x where x is expressed in radians
ATAN (x)	returns the arctangent of x
ASIN (x)	returns the arcsine of x
ACOS (x)	returns the arccosine of x

Saving Models (Chapter 11, SS.II.30)
The Quit command now includes a Save option. The Save option is used to store an updated backup file or a duplicate file on your disk. This option is most useful when you are working with a large model and would like to periodically save your work without exiting from the model. The

Quit command now appears in the menu selection window as Quit/Save. When you select this command, you get the following prompt:

```
****************************************************************
*   Quit: Model_Selection_Menu Options Context Save_Backup   *
*                     Save_New_Model                          *
****************************************************************
```

Save_Backup option allows you to periodically update your backup file without quitting your current data file. When your backup file is updated, you are returned to your working file. If by some accident, your data file is destroyed or ruined, your updated backup file will be used in its place. If you see the name of a data file listed twice in the Search window, once with the suffix .BCK, and once with the suffix .FMD, it is a good indication that your data file (.FMD) is bad. Select the backup file (.BCK) by entering the model name with or without the .BCK suffix since the backup will automatically be selected if the .FMD file is bad.

Save_New_Model options allows you to save your current data file to another name. When you select this option, you will get a prompt to enter a new name:

```
****************************************************************
*                 Save     Save to what model:               *
****************************************************************
```

Connect Windows (Chapter 22, SS.II.54)
When you connect one window to another, you are usually prompted for the scrolling direction. However, if you connect a new window to one that is already connected to another, the scrolling direction is automatically set and you will not be prompted for the desired direction. You can also connect windows in both directions. It is not necessary to disconnect windows before connecting them in a different direction or to a different window.

External Models (Chapter 24, SS.II.58)
To close an external channel between two models, select the Xternal command and enter the channel number in response to the prompt, "Xternal: Open/Close channel #.___". That external channel will then be available for another external model.

Inter-Model References (Chapter 25, SS.II.62)
You can reference external model entries in function arguments. Enter the coordinate(s) followed by a "#" and the channel number of the external model. For example, the entry [MEAN (A3:A10,D5 #2:E9 #2)] returns the mean of the designated values in the current model and the values in D5:E9 of channel model #2.

Sorting Rows or Columns (Chapter 27, SS.II.65)

The Order command sorts an area by a specified column OR row in ascending or descending order and adjusts the corresponding area of data accordingly. After entering the area you want to sort, specify if you want to sort by a column or by a row and enter the desired column letter or row number to sort by. (In the User's Manual, only column-sorting is mentioned.) There is no row limitation on the area to be sorted.

Added Notes

Text Data Entry (Chapter 4, SS.II.11)

A text entry may contain up to 255 characters. When entering a long string onto the input line, a " + " will appear when you can no longer view the entire entry on the screen. The " + " reminds you that the entry is longer than what you see.

Function Argument Lists (Chapter 8, SS.II.24)

When you use a period as the decimal character for numeric data, a comma is used to separate arguments in a function list, e.g. AVG(A3,A6,50). However, if you use a comma as the decimal character, you must use a semi-colon to separate the arguments in a function list, e.g. AVG(A3;A6;50). This applies to all math functions, business functions, and miscellaneous functions that require an argument list on which to operate.

Name Command (Chapter 28, SS.II.68)

After an area has been named, the name can be used in the following situations:

1. in place of coordinates in reponse to prompts such as: "Move to what area:," "Blank what area:," "Copy what area:," etc.

2. to reference an entry by its location in an named area, if the named area is a partial row or column. For example, the entry ['NAME[2]] refers to the second entry in the area NAME.

3. in place of coordinates in mathematical expressions.

You can no longer intersect one named area with another using the " ˆ " symbol.

Remember that all names must begin with a letter.

When you use a name in a mathematical expression, the name may refer to a particular coordinate in the area or it may refer to the entire named area depending on how the name is used. In general, if a named area that is a single partial row or column is used, then the position on the spreads-

heet of the entry using the named area determines which value in the named area is returned. For example, if you assign the name "REV" to column B, the entering [100 + 'REV] at coordinate F10 is equivalent to entering [100 + B10]. In other words, if the named area is a column, then the row position of the entry using the name determines the value returned.

There is an important exception of the rule stated above. This occurs when names are used in functions where areas can or must be used in the argument list (i.e. COUNT, MAX, MEAN, MIN, STDV, SUM, VAR). In that case, the name denotes the entire area. For example, suppose column B is named "REV" and column C is named "COSTS". The entry [+SUM('REV,'COSTS)] returns the sum of all the entries in column B and column C.

Goal Seeking (Chapter 29, SS.II.74)
To achieve greater accuracy with Goal Seeking, you can enter more decimal places into your target value to increase the precision. For example, instead of entering 50 as the target value, enter 50.00 or 50.00000000 depending on the desired degree of precision.

Goal Seeking can be used with external models. The main model and external models must appear on your screen before the Goal Seeking command is executed. Use < window > to move the pointer among the models and select the desired variables and values.

Target values, as well as dependent and independent variables, can be expressed as coordinate locations.

You may find Goal Seeking especially useful with functions. For example, you can find a specified internal rate of return using Goal Seeking and the IRR function.

Consolidation (Chapter 30, SS.II.79)
In order for Consolidation to work properly, each of the individual models must have the same format. This means that if Model A contains the dollar amount of January Sales at coordinate B9, Model B and Model C should also contain a dollar amount at B9. The consolidation process consists of locating an entry at a designated coordinate in each of the listed models and summing up the values at that location. The result is then entered into a final model at that same coordinate. A blank entry in any of the listed models assumes a value of zero.

The existing values in what is to be your final model have no effect upon the final values. Each existing entry merely severs as a marker for which to set the Consolidate attribute (remember that the Consolidate attribute should only be set in what is to be your final model). When the actual

Consolidation process begins, the values are automatically reset to zero although they retain attributes such as dollar signs and commas.

With ordinary consolidation, you can consolidate approximately 30 different models into one. Spreadsheet also has the ability to perform recursive consolidation. Recursive consolidation means that you can consolidate several models into one, and the consolidate that model with others, and so on. For example, suppose you would like to create a yearly expense report based on your weekly expense reports. You can set up Consolidation such that the weekly models will be consolidated into monthly models and then the monthly models will be consolidated into a final model, all at once. The month-to-year consolidation is referred to as the first consolidation level while the week-to-month consolidation is referred to as the second level.

When you set up your list of models to consolidate, you have the option of setting up an ordinary list or a recursive list. If you set up an ordinary list, the system will consolidate those models that have been listed for your main model, regardless of whether these models have their own consolidation lists. A recursive list will inform the system to search each model on that list for its own consolidation list and if one exists, the system will complete that second level consolidation before continuing with the first level of consolidation. Note that Consolidation is not limited to merely two levels.

Spreadsheet allows you to consolidate models from different data disks. Set up your list of models for your current data disk and after pressing <do> to return to the Setup window, insert another data disk. Press <search> and proceed as above to specifiy the models you wish to include. After pressing <do>, insert your original data disk again and press <do> to return to the Model Selection Menu. Be sure that your final model is on the original data disk.

Program Limitations

Maximum number of rows	3,000
Maximum number of columns	216
Maximum number of entries	648,000
Maximum number of spaces in a column	72
Maximum number of named areas	116
Maximum number of screen windows	6
Maximum number of simultaneous models on screen	4
Maximum number of channel associations	3
Maximum number of targets in one Goal Seek	5
Maximum number of levels in Consolidation	7
Maximum number of models in each Cons. level	30

Chapter 1 — Introduction To Spreadsheets

In this chapter we would like to introduce the basic concepts of spreadsheets. Anyone who is already familiar with another spreadsheet available on the market should proceed to chapter two (2).

Spreadsheets are remarkably powerful, flexible, versatile and yet easy to learn.

Assume the following situation: a small business owner needs to prepare a two quarter profit and loss statement report based on last quarter figures, in order obtain a bank loan. He is in the business of selling surfboards and hopes to expand his operation by allocating a larger advertising budget, which hopefully will result in greater sales.

After long hours of hard work the business owner has a profit and loss statement that looks as follows:

THE BEACH STOP		PROFIT AND LOSS STATEMENT	
Surfboard Price $50			
ACCOUNTS	4TH QTR 83	1ST QTR 84	2ND QTR 84
Sales Volume	300	360	432
Sales Revenue	15000	18000	21600
FIXED COSTS			
Payroll	3000	3000	3000
Rent	2000	2000	2000
VARIABLE COSTS			
Production	1500	1800	2160
Advertising	7500	9000	10800
TOTAL COSTS	14000	15800	17960
Profit before tax	1000	2200	3640
Tax	250	550	910
EARNINGS	750	1650	2730

Several Assumptions have been made:

a) Three hundred (300) surfboards have been sold through the fourth quarter of 1983.

b) Quarterly sales will increase by 20%.

c) Production cost is ten percent (10%) of sales revenues

d) Advertising cost is five percent (5%) of sales revenues

e) Taxes are 25% of profits

The store owner meets his banker to present him the profit and loss statement. He points out that the company will achieve sufficient profits within the next two quarters and this should be enough guaranty to obtain the loan he is requesting. However, the banker is not quite as optomistic and requests for a different projection based on a fifteen percent (15%) quarterly sales increase, not twenty percent (20%) as originally calculated.

The store owner has a bit of work to do. The monthly and total number of the boards being sold will change, which in turn changes the monthly revenues and therefore the advertising budget, production cost estimates and, ultimately the profits.

After one hour of recalculating and retyping the store owner can present the new report to the banker and hopes he will not ask for another report.

INTRODUCING THE SPREADSHEET:

With the use of a spreadsheet recalculating and new projections are much easier. A spreadsheet is a matrix of points one can address by using coordinates. The following chart represents the spreadsheet at start-up time:

Columns ————————▶

W1	A	B	C	D	E	F

1
2
3
4
5
6
7
8
9
10
11
12
13
13
14
16
17
18

Cell pointer at position A1
(indicates active cell)

Arrows keys →,↓,←,↑,
moves the pointer to any position
in the spreadsheet.

Command Cursor: select any command by
using the arrow keys, or by the first
character of desired command.

SPREADSHEET COMMAND SELECTION MENU

AUTO	BLANK	COPY	DELETE	EDIT	FORMAT	GOAL-SEEK
HELP	INSERT	LOCATE	NAME	ORDER	PRINT	QUIT
RECALC	SET UP	TRANSFER	UPDATE	WINDOW	EXTERNAL	

< arrows >   < do >   < undo >

On line help files for quick review of the spreadsheet
functionality. The "FI" key explains the usefulness
of the command which the cursor is high lighting.

All the points in this matrix can be uniquely addressed. These points are called cells. The cursor at "A1" can be moved around using the cursor keys up, down, left or right. This way, one can move around within the matrix to place values into cells and to reference cells in many ways. Note, what you see above is only a window of a much bigger matrix. By moving the cursor to the right past the "F"

column the window would scroll horizontally, that is moving column "B" into column "A", "C" into "B" and displaying column "E" at the position which previously was occupied by column "F". Similarly one can move the cursor down past row 18 to scroll vertically. In this manner one can move everywhere within the spreadsheet and the window will always display the columns, rows and coordinates which correspond to the position of the cursor.

To explain the spreadsheet "data entry" functionality, lets look at the profit and loss statement in a spreadsheet format.

W1	A	B	C	D	E
1	THE BEACH STOP		PROFIT AND LOSS STATEMENT		
2					
3	Surfboard Price $50				
4					
5	ACCOUNTS		4TH QTR 83	1ST QTR 84	2CD QTR 84
6					
7	Sales Volume		300	360	432
8	Sales Revenue		15000	18000	21600
9	FIXED COSTS				
10	Payroll		3000	3000	3000
11	Rent		2000	2000	2000
12	VARIABLE COSTS				
13	Production		1500	1800	2160
14	Advertising		7500	9000	10800
15	TOTAL COSTS		14000	15800	17960
16	Profit before tax		1000	2200	3640
17	Tax		250	550	910
18	EARNINGS		750	1650	2730
19					

MODEL C: PROFLOSS   99.9%   Pointer: B8   Current: B8   LR W1 # 0

NUM[R   0   —]   B7*B3
        INPUT: _____   Displays contents at   Pointer location

Type of entry: numeric or text
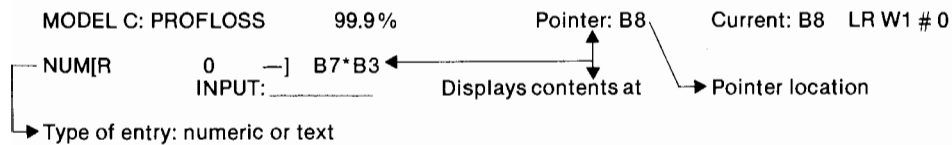
Every cell can assume values of different types. For instance, the cell "A5" has the value "ACCOUNTS" which is of type text. "B7" and "B8" contain values of type numeric. A cell with a numeric value can again be of two different kinds: "B7" and "B10" are constant numeric values, whereas "B8" although it is numeric its kind is a formula, as can be viewed on the above "content" line. "B8" contains the formula "B7*B3" which, after evaluated, results in sales revenues of "$15000", or surfboard price "50"* sales units "300".

The possibility to type formulas makes the spreadsheet powerful and very flexible. Assume you would move the cursor to location "C7" and type a new formula to increase sales by fifteen percent 15%. The formula would be "B7 + 15% B7"

meaning, take the value stored in cell "B7" and add 15% of "B7". Upon recalculation, the entire forecast will be updated in a matter of seconds. That is the speed and convenience only a computer can offer!

Let's continue working with our profit and loss statement to prepare our final report based on fifteen percent (15%) quarterly sales increase. Following are two reports created, by the spreadsheet. The first one, and do not be alarmed, displays the formulas which were typed into the spreadsheet, and the second report displays the values computed by these formulas.

Report # 1

WL	A	B	C	D	E
1	THE BEACH STOP			PROFIT AND LOSS STATEMENT	
2					
3	Surfboard Price $50				
4					
5	ACCOUNTS		4TH QTR 83	1ST QTR 84	2ND QTR 84
6					
7	Sales Volume		300	B7 + 15%B7	C7 + 15%C7
8	Sales Revenue		B7*B3	C7*B3	D7*B3
9	FIXED COSTS				
10	Payroll		3000	3000	3000
11	Rent		2000	2000	2000
12	VARIABLE COSTS				
13	Production		B8*.1	C8*.1	D8*.1
14	Advertising		B8*.5	C8*.5	D8*.5
15	TOTAL COSTS		SUM (B10:B14)	SUM (C10:C14)	SUM (D10:D14)
16	Profit before tax		B8—B15	C8—C15	D8—D15
17	Tax		25%B16	25%C16	25%D16
18	EARNINGS		B16—B17	C16—C17	D16—D17
19					

MODEL C: PROFLOSS   99.9%   ► Pointer: C7   Current: C7   LR W1 # 0

NUM[R   0   —]   B7 + 15%B7
                    INPUT: _____

Now, lets look at some of the formulas. In coordinate "C7" we have "B7 + 15%B7" meaning that sales units will increase by 15% of the previous quarter, and continuing along this row we see that it is the same for the following quarter. In coordinate "B14" we view advertisement being five percent (5%) of revenues "B8*.5" across all quarters. Total costs is the sum of "fixed and variable expenses" or, "SUM (B10:B14)". Taxes are simply 25% of profits or, "25%B16". And finally, "earnings" for the second quarter in "C18" is calculated by subtracting taxes from profits "C16—C17".

Report number two (2) displays the actual values.

This time the new values based on the fifteen percent (15%) quarterly sales increase, as requested by the banker, have been recalculated almost instantaneously with the spreadsheet.

WL	A	B	C	D	E
1	THE BEACH STOP			PROFIT AND LOSS STATEMENT	
2					
3	Surfboard Price $50				
4					
5	ACCOUNTS		4TH QTR 83	1ST QTR 84	2ND QTR 84
6					
7	Sales Volume		300	345	396
8	Sales Revenue		15000	17250	19800
9	FIXED COSTS				
10	Payroll		3000	3000	3000
11	Rent		2000	2000	2000
12	VARIABLE COSTS				
13	Production		1500	1725	1980
14	Advertising		7500	8625	9900
15	TOTAL COSTS		14000	15350	16880
16	Profit before tax		1000	1900	2920
17	Tax		250	475	730
18	EARNINGS		750	1425	2190
19					

MODEL C: PROFLOSS   99.9%   Pointer: C18   Current: C18 LR W1 = 0

NUM[R   0   —] C16—C17
INPUT: _____

Note, the "earnings" now have been reduced to $1, 425 and $2, 190 for the first and second quarters respectively, as oppossed to the first report which contained figures of $1, 650 and $2, 730, based on twenty percent (20%) quarterly sales increase.

The business owner is very confident of obtaining the loan, and since he has learned to use his spreadsheet, the banker can request to see the best, worse and average case analysis if wishes to. The business owner knows it is just a matter of entering new percentage figures into his spreadsheet and have the computer recalculate the new projections in seconds!

Chapter 2 — Creating a New Model

GOAL: Our objective in this tutorial is to construct a new model and thereby become familiar with the basic commands and functions of this module. In this chapter, we will access an empty spreadsheet in which to build our model.

EXAMPLE SITUATION — We would like to create a payroll model in which to record salary information for two of our employees. First we must access an empty spreadsheet.

SS: the Model Selection Menu screen is displayed as below:

```
┌──────────────────────────────────────────────────────────────┐
│                                                              │
│                  Open Access — Spreadsheet                   │
│                                                              │
│            © 1983   Software Products International, Inc.     │
│                                                              │
│              ┌───────────────────────────────────────────┐  │
│              │          Model Selection Menu             │  │
│              │                                           │  │
│              │      Select New Copy Delete Options       │  │
│  └───────────│      Consolidate Setup_Consolidation      │──┘  │
│              │                                           │  │
│              │    <search> <arrows> <do> <undo>          │  │
│              └───────────────────────────────────────────┘  │
└──────────────────────────────────────────────────────────────┘
```
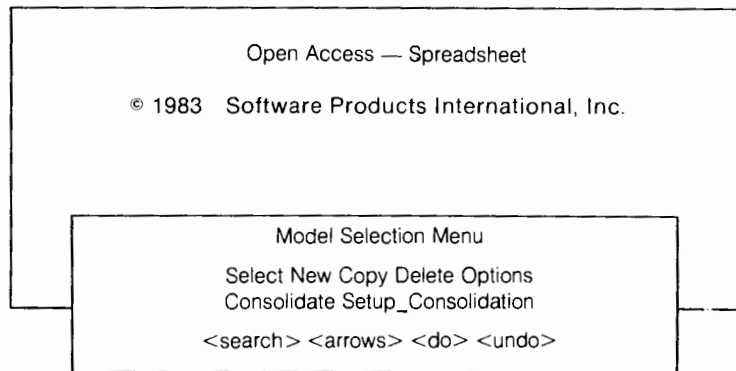
There is a number of options available to you at this point. These are described below. Press the <left> and <right> arrow keys to move among the various options. To select an option, highlight the desired name and press <do> (an option is "highlighted" when it appears in inverse video).

New: This option creates a new model on an empty spreadsheet. Highlight New and press <do>. You will be prompted for a name and a password (the password is optional). The empty matrix appears on your screen.

Select: This option loads an existing model into the Spreadsheet matrix. Highlight Select and press <do>. Enter the name of the model you want to work with. To see a list of existing models, press <search>.

Consolidate: This option is used to consolidate data from a number of different models. See Chapter 30: Consolidation.

Options: This alternative enables you to access available options outside the Spreadsheet module. When you highlight Options and press <do>, the list of available options appears at the righthand side of your screen. Use <up> and

<down> to highlight the desired option and press <do> or simply press the first letter of the option name. See the Getting Started manual for available options.

Copy: This option copies an existing model. To copy a model, highlight Copy and press <do>. Enter the name of the model you want to copy or press <search> to see the list of existing models. After you have selected the model to copy, you will be prompted for a new name and a password. The newly copied spreadsheet model is displayed on your screen.

Delete: This option removes a model from your disk. Highlight Delete and press <do>. Enter the name of the model you want to delete or press <search> to see the list of available models. You are then prompted to verify the delete by pressing <do>. If the model has a password, you must enter the password in order to remove the model.

Setup: This option is used to specify the models to be included in Consolidation. See Chapter 30: Consolidation.

USER: press <N> to select the New option. Before accessing the empty spreadsheet, it is necessary to assign a name to the model.

SS: the following prompt appears on your screen:

```
Name of model to be created:
```

A model name must be at least 1 and not more than 8 characters long. It should not contain the following characters: = ? , :

USER: since we are creating a payroll model, we will name this model accordingly. Enter [PAYROLL] followed by <enter>.

SS: the password prompt is displayed.

```
Enter password for new model (<enter> if none)
```

You now have the option of giving the PAYROLL model a password. A password will make the model accessible only to those who can identify it. The password may be a string of up to 11 acceptable characters. The characters will not appear on the screen as you enter your password.

USER: enter [SP1] and press <enter>.

SS: you are asked to enter the password again. This is to ensure that it was entered correctly. If the two entries are not identical, you will be prompted to start again.

USER: enter [SPI] again and press <enter>.

SS: the empty matrix is displayed on your screen. It should resemble the following diagram.

W1	A	B	C	D	E	F
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						

Model DATA:PAYROLL   100% Pointer: A1 Current: A1   LR   W:1 #0
      input: _

The matrix on your screen is set up in tabular form. When working with your model, all units of information are referred to by their coordinate locations. Each row in the matrix is labeled with a number and each column is labeled with a letter or two letter combination. Each unit of information (i.e. word or number) can be accessed by specifying the column letter and the row number of the item. A19, G27, and P3 are sample coordinate locations.

The upper left-hand corner of the spreadsheet is referred to as location "A1." The pointer is located at this coordinate whenever you enter a new model. Below the array, you will find the following information:

Model   The MODEL IDENTIFIER includes the name of the disk volume followed by a colon and the name of the model on the screen.

%   The PERCENTAGE indicates how much of the entire space in which to store the model is still available for expansion of the current model. As the model grows, the percentage will decrease. You may get a message informing you that there is no additional disk space left for further entries.

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Pointer The POINTER COORDINATE is the coordinate location of the pointer. As you move the pointer around the matrix, the Pointer coordinate will change. If you are in one of the command modes and move the pointer to another location, the displayed coordinate will reflect the move.

Current The CURRENT COORDINATE also displays the location of the pointer but does not change if the pointer is moved while in a command mode. This enables you to remember the location at which you executed the command. The Pointer and Current coordinates are usually the same.

+ The PLUS SIGN, which does not appear on your screen at this time, indicates that the Advance option is on. When Advance is on, the pointer will automatically jump to the next coordinate after an entry is made. To turn on or off the Advance option, see Setup:Advance.

LR The LR/TB (Left to Right/Top to Bottom) INDICATOR
TB describes the direction in which the pointer will move when <enter> is pressed. To change the current Order, see Setup:Order.

W:1 The WINDOW IDENTIFIER indicates which window the pointer is currently located in.

#0 The CHANNEL NUMBER IDENTIFIER indicates the channel number of the model in which the pointer is located. Channel associations are set up so that different models may be viewed on the screen simultaneously, and so that they may be referenced from one another.

input: The INPUT PROMPT appears below the model description line. As you enter data, the characters appear on the input line. Press <enter> and the data will appear at the pointer coordinate location.

SUMMARY — You now know how to access an empty spreadsheet in order to create your own model. You have also been introduced to the structure of the spreadsheet.

Chapter 3 — Working Within a Model

GOAL: In this chapter, we will demonstrate two of the basic features of this program that you should be familiar with before building an actual model: Help messages and pointer movement.

EXAMPLE SITUATION — Before entering data into our model, we would like to view information on the Format command by accessing one of the Help messages. We will then experiment with pointer movement within the matrix.

SS: the empty matrix appears on your screen.

USER: press <help>

SS: a window is displayed which lists the function keys used in Spreadsheet and their corresponding functions. Function keys are represented in broken brackets, e.g. <enter>, <do>, <menu>.

USER: press <help> again

SS: another window appears on your screen. This window lists the function keys as well as their specific keyboard representations. This window is accessible from any other Help window. Notice that whenever a window appears on your screen, the options available to you at that point are displayed along the "sill" or bottom of the window.

USER: press <undo> to close the second function key window. Press <undo> again to close the first function key window and to return to the input prompt. Press <menu> to access the Spreadsheet Command Selection Menu.

SS: the following window appears at the bottom of your screen:

```
┌──────────────────────────────────────────────────────────┐
│            Spreadsheet Command Selection Menu              │
│                                                            │
│   Auto    Blank   Copy     Delete  Edit     Format Goal Seek│
│   Help    Insert  Locate   Name    Order    Print  Quit    │
│   Recalc  Setup   Transfer Update  Window   Xternal        │
│                                                            │
│             <arrow>   <do>   <undo>                        │
└──────────────────────────────────────────────────────────┘
```

There are two methods that you may use for selecting among commands and command options throughout the program. One method is to use the arrow keys to

move among the choices until the desired one is highlighted and then press <do>. The other method is to simply press the first letter of the desired option. In this tutorial, we use the second method to make our selections. You may use whichever method you prefer.

If more than one option begins with the same letter, such as "Copy" and "Consolidate" in the Model Selection Menu, enter the letters needed to differentiate the commands from each other. To execute Consolidate, for example, enter [CON].

USER: you can obtain more detailed information on any of the commands by moving the cursor to the command in question and pressing <help>. Press <right> to move to "Format" and press <help>. .

SS: a new window appears on the screen which contains a brief description of the Format command

USER: press <undo> to return to the command menu. Press <H> to access the Help command.

SS: the following window appears at the top of your screen:

```
Spreadsheet Command Help Menu

Coordinate_Entry  Math Expressions/Functions  Window_Usage

     <arrows>   <do>   <undo>   <function keys>
```

To view information on any of these topics, use the arrow keys to highlight the desired topic and press <do>.

USER: press <undo> to return to the command mode. Press <S> to access the Setup command.

SS: the following prompt appears:

```
Setup:   Order   Advance   Attributes   Menu   Mode
```

The Setup command offers you two options regarding the command mode.

USER: press [ME] to access the Menu option

SS: prompts "Display_Menu Don't_Display"

USER: highlight "Don't_Display" and press <do>.

SS: the following prompt appears:

```
                    Command ('H' for list ):
```

As you can see, Setup:Menu offers you the option of viewing the entire command menu or viewing only a command prompt each time you press <menu>. As you become more familiar with the Spreadsheet commands, you may find it unnecessary to see the commands listed.

If you press <H> at this point, the following window will appear on your screen:

```
                Spreadsheet Command Help Menu

Coordinate_Entry  Math Expressions/Functions    Window_Usage
   Auto    Blank    Copy    Delete  Edit      Format  Goal_Seek
   Help    Insert   Locate  Name    Order     Print   Quit
   Recalc  Setup    Transfer Update Window    Xternal

            <arrows>  <do>  <undo>  <function keys>
```

This menu lists all of the spreadsheet commands in addition to several features of the program. To view a help window, highlight the option and press <do>. To leave, press <undo> and press <undo> again to return to the command prompt.

SS: you have now returned to the empty spreadsheet. The Command prompt is displayed.

USER: since you are not yet familiar with all of the commands, press <S> to access Setup and enter [ME] to select the Menu option. Highlight "Display_Menu" and press <do>.

SS: the Command Selection Menu now appears

USER: access the Setup command again by pressing <S> and select the Mode option

SS: prompts "Setup Mode: Input_mode Command_mode"

The Setup:Mode option enables you to choose the mode to which the system will return after executing a command. When you are working in a new model, the system automatically returns to the command mode (either the command menu or

the command prompt). To input data, you must then press <undo> to exit the command mode. This option enables you to return directly to the input mode (input prompt), if so desired.

USER: press <I> to return to the input prompt after each command

SS: the empty spreadsheet is again displayed on your screen.

Once you have accessed a particular command and find that you need help answering a prompt, simply press <help>. Help information will appear on the screen.

If you make an error while working with a command, an error window will appear in the upper left corner of your screen. The window contains a message informing you of the specific error. To resume your work, press <do> and make any necessary corrections.

SS: the pointer is at coordinate A1

USER: press <right> six times.

SS: the pointer moves to coordinate G1. Notice that the window moves to include column G. This is referred to as "scrolling" the window over the worksheet.

USER: press <tab>

SS: prompts "Move to what coordinate: A1." The coordinate A1 auto-matically appears in response to this prompt. This is referred to as the default. You may either enter another coordinate or accept the default by pressing <enter>.

USER: enter [HH3000]<enter> to move to the bottom right corner of the matrix.

SS: the matrix adjusts to view this coordinate on the screen.

USER: to return to the top left of the matrix, press <tab> and in response to the move prompt, press <enter> to move to A1.

There are a number of ways of moving the pointer within the worksheet. These are summarized below:

KEY   RESULT

<up>   moves the pointer to the row directly above its present location unless the pointer is in row 1, in which case there is no movement

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\<down\>	moves the pointer to the row directly below its present location unless the pointer is at the bottom row, in which case there is no movement
\<left\>	moves the pointer one column to the left from its present location, unless the pointer is in column A, in which case there is no movement
\<right\>	moves the pointer one column to the right from its present location, unless the pointer is in the last column, in which case there is no movement
\<enter\>	moves the pointer to the right one column when the Order is LR, and down one row when the Order is TB
\<tab\>	prompts "Move to what coordinate: A1" below the input line. Enter any coordinate followed by \<enter\> and the pointer will move to that location. If you want to move to A1, which is the default location, simply press \<enter\>.
\<carriage\>	moves the pointer to the beginning of the next row when the Order is LR; moves the pointer to the top of the next column when the Order is TB
\<window\>	moves the pointer from window to window in numerical order (this applies only when the screen is divided into two or more windows)

When the command menu is displayed (the Display Menu option of Setup:Menu has been selected), the pointer cannot be moved around the worksheet with the arrow keys, \<carriage\>, or \<enter\>. \<Tab\> and \<window\>, however, are still functional. On the other hand, if you have selected the Don't_Display option of Setup:Menu, you can use any of the pointer movement keys from the command mode.

SUMMARY — You have now learned how to access different Help messages using the \<help\> key and the Help command. You will find these messages quite useful while you are becoming more familiar with the program. Experiment with the various pointer movement commands to acquaint yourself with the setup of the matrix on your screen.

Chapter 4 — Text Data Entry and the Edit Command

GOAL: In this chapter, we will learn how to enter text data into a model. Text is defined as a sequence of characters beginning with anything other than "+," "-," or a number. We will also demonstrate use of the Edit command which allows you to make corrections and changes in an entry without having to re-enter the entire string.

EXAMPLE SITUATION — We will now begin entering the month columns into our PAYROLL model so that we can record monthly salary information for employees.

USER: move the pointer to B1 and enter [January].

SS: the entry appears below the array in the following form:

```
TXT[L           ]January
```

TXT indicates that the entry is text data rather than numerical data. The "L" inside the brackets tells us that the entry is left-justified. This means that the string (i.e. sequence of characters) will be positioned at the left of the column when entered into its location.

USER: press <enter> to enter the string into its location in the matrix.

SS: "January" appears at coordinate B1.

When text data is entered, it is automatically left-justified. To change the justification, use the <justify> key. Each time the key is pressed, the justification changes from Left to Center to Right as indicated by the letter in the brackets.

USER: we want the name "January" center-justified, so press <justify> until "C" appears inside the brackets. We will enter the next name incorrectly. Move the pointer to C1 and enter [Fevbuasy].

When you make a mistake while entering data and have not yet pressed <enter>, you may correct the error by using <delete> to erase one character at a time or you may use the Edit command.

USER: press <menu> to access the Edit command.

SS: the Edit prompt appears below the input line as follows:

Edit: <left> <right> <insert> <delete> <menu>/<enter>=exit

The options available in the Edit command are:

ACTION   EXPLANATION

<left>   moves the cursor one character to the left without erasing any
                characters (different from <delete>)

<right>   moves the cursor one character to the right without erasing any
                characters

<insert>   inserts one space before the character at which the cursor is
                currently located

<delete>   deletes the character currently at the cursor location

<menu>   exits the Edit command (note that <enter> must be pressed to
                enter the edited text into the array)

<enter>   enters the edited input into the array

USER: move the cursor to the "v" and press <delete>. The "v" has been
        deleted. Next move the cursor to the "u" and press <insert>. A space
        has now been inserted between the "b" and the "u". Enter <r>. Move
        the cursor to "s" and press <r> to replace it. The text now reads
        "February" as it should. Press <enter> and <justify> to center-
        justify the entry.

SS: "February" appears in the matrix at C1

The Edit command can also be accessed to use with existing entries. Move the
pointer to the entry you want to change and press <menu><E>. You may then
proceed as above to correct the entry.

USER: move the cursor to D1 and enter [March]<enter><justify>. Enter
        and center-justify [April] at E1 and [May] at F1 by moving the pointer
        to each coordinate and entering the name followed by <enter> and
        <justify>. Press <tab>.

SS: prompts "Move to what coordinate: A1"

USER: press <enter>

SS: the pointer moves to A1. Your screen should now look like the
        following:

W1	A	B	C	D	E	F
1		January	February	March	April	May
2						
3						
4						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						

Model DATA:PAYROLL   99% Pointer: A1 Current: A1 LR W:1 #0
input:

SUMMARY — You have now learned how to enter text data into the worksheet and how to make corrections in new and previous entries using the Edit command.

Chapter 5 — Setting Filler Characters
and Changing Column Widths

GOAL: In this chapter, we will make use of the Filler character option and the Width option of the Format command. The Filler character option enables you to fill an entry or number of entries with a character of your choice. The Width option allows you to widen or narrow a column to a desired width.

EXAMPLE SITUATION — We want to underline the column headings in our PAYROLL model. This can be done by filling row 2 with a dashed line. Then we will need to widen column A to ensure enough room for employee names. We will also enter a name and a list of payroll categories.

USER: move the pointer to B2 and press <menu><F> to access the Format command.

SS: prompts "Format: Width Attributes Filler_char Data_type"

USER: press <F> to access the Filler char. option

SS: prompts "Set filler to: "

USER: press <-> since we want to form a dashed line

SS: prompts "Format applies to area: B2"

USER: we want the line to extend from coordinates B2 to F2 so enter [:F2] followed by <enter>.

SS: a row of dashes appears in row 2 from column B to F.

If there had been any existing entries in the range B2:F2, the dashes would appear only on either side of the individual entries.

USER: we will now widen column A. Move the pointer to A1. Press <menu><F> and <W> to access the Width option.

SS: the following prompt is displayed:

> Set width of this column to: 12

(12 is the default value for column width)

USER: enter [16]<enter> to change the width from 12 to 16 spaces

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SS: prompts "Format width: Set how many columns to this width?: 1"

USER: since we want to widen column A only, press <enter> to accept the default value of 1.

SS: column A is now wider than the other columns

Columns may be anywhere from zero to 72 spaces wide. When creating columns with 0 widths, numeric entries previously in this column or those made into the column after it is adjusted will not be visible. The entries will still exist and can be referenced for use in equations although they cannot be seen. Text entries, on the other hand, will spill over into the column on the right. Remember that the pointer will disappear from the screen whenever it is moved to an invisible column.

The screen is capable of displaying up to 32 columns at one time; if, for example, you set the first 40 column widths to 1, then 32 columns will be displayed and the rest of the matrix will appear blank. Scroll the screen to view the remaining columns in your model.

USER: move the pointer to A3 and enter [Diane Williams] followed by <enter>. Press <justify> to center-justify the entry. Press <menu> <F> and <F> to access the Filler character option again.

SS: prompts "Set filler to:"

USER: press <*> to set the character

SS: prompts "Format applies to area: A3"

USER: we want to fill the empty spaces on either side of the name "Diane Williams" only, so press <enter>

SS: the entry at coordinate A3 should look like: "*Diane Williams*"

USER: move the pointer to A4 and we will continue to make entries in column A. Enter [NET SALARY]<enter>. Move to A5 and enter [GROSS SALARY]<enter>. Move to A6 and enter [TAX BRACKET] <enter>. Move to A7 and enter [TAXES OWED]<enter>. Move to A9 and enter [Al Cook]<justify><enter>. Using the Filler character option, highlight the name "Al Cook" so that it appears at coordinate A9 as "****Al Cook*****".

SS: the entries appear in column A

SUMMARY — You have now learned two options which can be used to make your spreadsheet models easier to read and work with. The Width option allows you to adjust columns to your own specifications. The Filler character option enables you to highlight titles and entries for easier reference.

Chapter 6 — Copying Text

GOAL: In this chapter, we will use the Copy command to copy entries from one part of a model to another. This command eliminates the need to re-enter the same data in more than one location. We will also describe how to reference different areas in the spreadsheet.

EXAMPLE SITUATION — We want to enter the same payroll categories listed for Diane Williams under the name Al Cook. Instead of entering each category name onto the input line, we can use the Copy command.

USER: move the pointer to A4. Press <menu><C> to access the Copy command.

SS: prompts "Copy from area: A4"

USER: enter [:A7] followed by <enter> since we want to copy the range A4:A7

SS: prompts "Copy to (base coordinate): A4"

The base coordinate is the first coordinate in a range. If you are copying a row of entries, enter the first coordinate of the row you are copying into and the system will automatically copy the entire row starting at that base coordinate.

USER: enter [A10] as the base coordinate

SS: the system will copy the entries in the range A4:A7 to coordinates A10:A13. The payroll categories now appear under the name Al Cook.

In response to command prompts which ask for an entry or range upon which to act, you can specify areas in a number of different ways. Listed below are example ranges followed by a definition of the area they encompass.

AREA	AREA DEFINITION
D	all of column D
12	all of row 12
F:I	all of columns F, G, H, I
4:5	all of rows 4 and 5
A3:A7	coordinates A3 through A7
B5:D11	the area of coordinates bounded by B5 at the upper left corner, and D11 at the lower right corner.

You may also use the arrow keys to specify a coordinate location. Instead of entering the coordinate in response to the command prompt, simply move the pointer to the desired location. The default coordinate displayed after each area prompt is the pointer coordinate; therefore the displayed coordinate will change as you move the pointer.

The <tab> key may also be used in response to area prompts to indicate the top left and bottom right coordinates of your model. If you press <tab> once, the top left coordinate will appear after the prompt. If you press <tab> again, the bottom right coordinate of your model is displayed.

If you would like to enter the entire area of your model in response to an area prompt, press <calculate/all> or <0><enter>. You will find this useful in commands such as Print and Recalculate.

SUMMARY — You now know how to copy entries from one area of a model to another and how to reference entries and ranges of entries in the array.

Chapter 7 — Inserting Rows and Columns

GOAL: Now we will demonstrate the use of the Insert command, which creates one or more empty rows or columns in the array. When you insert a row or column, the matrix will adjust by repositioning the existing entries.

EXAMPLE SITUATION — We would like to display total payroll expenses in our model, and have these monthly totals appear directly below the corresponding month. The Insert command will be used to add the necessary rows.

USER: move to coordinate A3. Press <menu><I> to access the Insert command

SS: the following prompt appears:

> Insert: Row Column

USER: press <R> to insert row(s)

SS: prompts "Insert: Row(s) starting at coordinate: A3"

USER: <enter> to insert row(s) at A3

SS: prompts "How many rows/columns?: 1." 1 is the default value.

USER: press <3> followed by <enter> to insert three rows and allow for spacing

SS: note the movement of the data located below Row 2. The name "*Diane Williams*" is now located at A6. We can now make our new entries.

USER: move the pointer to A4 and enter [TOTALS]. Press <justify> twice to right-justify the entry and then press <enter>.

SS: your screen should look similar to the following:

W1	A	B	C	D	E
1		January	February	March	April
2					
3					
4	TOTALS				
5					
6	*Diane Williams*				
7	NET SALARY				
8	GROSS SALARY				
9	TAX BRACKET				
10	TAXES OWED				
11					
12	****A1 Cook*****				
13	NET SALARY				
14	GROSS SALARY				
15	TAX BRACKET				
16	TAXES OWED				
17					
18					

Model DATA:PAYROLL   97% Pointer: A4   Current: A4   LR   W:1   #0
          input: —

When formulas are moved as a result of inserting rows and columns, the formulas will be adjusted relative to their new positions on the array.

Be aware of the fact that if data exists at the extreme edge of the matrix (column HH, row 3000), inserting rows and columns will cause a loss of data.

SUMMARY — You are now able to insert rows and columns into your spreadsheet model.

Chapter 8 — Numerical Data Entry
and the Format:Attributes Option

GOAL: In this chapter, we will learn how to enter numerical data into a model and will describe the different arithmetic operations and functions available in Spreadsheet, including the built-in calculator function. We will also make use of the Attributes option of the Format command which allows you to format entries to your own specifications.

EXAMPLE SITUATION — We are going to construct a tax table to use in conjunction with our PAYROLL model. At this point, we will enter the title and the salary figures and begin entering the tax percentages.

USER: move the pointer to A19 and enter [Tax Table for Payroll Records] followed by <enter>

SS: although this entry is longer than 16 spaces (the width of column A), it appears in its entirety in the array. The entry automatically finds additional room in the adjacent coordinate B19. You will find, however, that when you move the pointer to B19, there is no entry description on the input line. The program recognizes the entry at A19 only although part of it appears in B19.

USER: move the pointer to A21 and enter <1><enter>

SS: the entry at A21 appears as "1.00" and the entry description on the input line displays the following:

```
                    NUM [R    2 -] 1
```

A numeric entry is automatically right-justified and has two decimal places. "NUM" indicates that the entry is numeric. The "R" indicates right-justification and the "2" indicates that the entry is rounded to two decimal places (also referred to as 2 places of precision). The "-" means that negative numbers appear in the standard format (e.g. -2.5).

USER: we would like each entry in this column to contain commas and to be preceded by a dollar sign. Press <menu><F> to access the Format command and then press <A> to access the Attributes option.

SS: the following appears at the bottom of the screen:

```
NUM [R    2 -] 1
LCR [????????]  <left>  <right>  <change>  <do>  <undo>
```

The cursor is located on the first question mark in the brackets. Each question mark represents an attribute that can be set or unset. Press <help> if you want to see a brief description of the corresponding attribute to each question mark.

Use the <left> and <right> keys to move to a particular question mark and press <change> or <space> until the desired option character appears in place of the question mark. An explanation of each attribute follows:

?#	Attribute	Definition
?1	Justification	Justification has four options: Left (L), Right (R), Centered (C), and Padded (1). The Padded option left-justifies the entry while leaving one blank space at the left of the entry.
?2	Protection/ Invisible	set to P to protect important entries from being blanked, or changed; set to I to make entries invisible, invisible entries will automatically be protected
?3	Form mode/ Consolidation	set to F so that when Auto command is used the pointer will jump to the entry and wait for new input; set to C if entry is to be included in consolidation with other models
?4	Enhance/ Underline; Italic/ Shadow	set to E if you would like entry to be printed in enhanced or bold face type; set to U to have entry underlined when printed; set to I to print entry in italics; set to S to print entry with shadowing (these attributes are only available if they are supported by your printer)
?5	Precision	set Precision to 0 through 9 decimal places; or set to * to get a horizontal bar graph representation (not to exceed 63 *s)
?6	Money Sign/ Percent	Dollar sing ($), British pound sign (L), Deutsch mark (D), and Percent sign (%). Set to % if you want numeric entries to have the decimal point moved 2 places to the right and a percent sign placed at the end of the entry (0.45 would become 45.00%)
?7	Comma	set to "," if you want commas to be used with long numeric entries

?8	Negative/	set N/P to:	
	Positive	(:	to see negative numbers in parentheses
		- :	for standard negative format (-7.45)
		D :	to suffix negative nos. with "DR", and positive nos. with "CR"
		C :	to suffix negative nos. with "CR", and positive nos. with "DR"

USER: move the cursor to the sixth question mark by pressing <right> five times

SS: "$%" now appears left of the brackets

USER: press <change> or <space> until the "'$' is displayed. The Dollar Sign attribute is now on. Move the cursor to the next question mark.

SS: "," now appears left of the brackets

USER: press <change> once and a comma appears in place of the question mark. The Comma attribute is now on. Press <do> or <enter> to accept the attributes.

SS: prompts "Format applies to what area: A21"

USER: press <do> or <enter> since this is the coordinate upon which we want to apply the attributes

SS: the entry at coordinate A21 now appears as "$1.00" and the entry description below the matrix looks like: "NUM [R   2$,-] 1"

USER: we will now use the Setup:Attributes option to set these attributes for the remaining salary figure entries. With the pointer at A21, press <menu><S> to access the Setup command and enter [AT] to access the Attributes option

SS: prompts "Setup Attributes: Text Numeric"

USER: press <N> to apply default to numeric entries

SS: prompts "Setup Attributes: Get Attributes Default Attributes"

USER: since we want the next few entries to have the same attributes as the entry at A21, press <G> to get attributes from A21

SS: prompts "Setup Attributes: get attributes from coordinate: A21"

USER: press <enter>

SS: the system now knows that all of the following numeric entries are to have dollar signs and commas, if applicable

USER: move the pointer to A22 and enter [400]<enter>

SS: "$400.00" is displayed at A22

USER: move the pointer to A23 and enter [750]<enter>. Move the pointer to A24 and enter [1100]<enter>. Move the pointer to A25 and enter [1550]<enter>. Move the pointer to A26 and enter [2000]<enter>.

SS: we now have our column of salary figures complete with dollar signs and commas. Next to this column we will enter a column of tax percentages. This table will then be used to determine the employee's tax bracket according to gross salary. We no longer want to use the Dollar sign and Comma attributes because they are inappropriate with percentages. Therefore, we will restore the default characteristics.

USER: press <menu><S> and then [AT] to access the Attributes option again

SS: prompts "Setup Attributes: Text Numeric"

USER: press <N> since we are referring to the numeric entries

SS: prompts "Setup Attributes: Get_Attributes Default_Attributes"

USER: press <D> to return to normal numeric default attributes. Move the pointer to B21 and press <0>. Anyone earning less than $400.00 will owe no taxes. Press <enter>.

SS: "0.00" appears at coordinate B21 without a dollar sign.

A numerical expression may be entered into any location in the array. The terms of the expression may be:

1.   a number

2.   a coordinate reference - in which case the coordinate is replaced in the entry by the value stored at that coordinate

3.   a math function - an arithmetic operation which the system already knows how to execute, without explicit instructions

The MATH FUNCTIONS available in Spreadsheet are listed below. You must specify the function and the argument (values) on which the function is to operate. The argument must be entered within parentheses.

Function	Result
ABS(x)	returns the absolute value of x
INT(x)	returns the integer portion of x
NOT(x)	returns a 0 if x is true, and a 1 if x is false
SUM(list)	sums the values in an argument list
COUNT(list)	returns the number of values in an argument list
MEAN(list)	computes the average value of a list
MAX(list)	returns the maximum value in a list
MIN(list)	returns the minimum value in a list
SQRT(x)	returns the square root of x
PWR(x,p)	computes x to the power of p
EXP(x)	computes e to the power x
LN(x)	computes the natural log of x
SIN(x)	returns the sine of x where x is expressed in radians
COS(x)	returns the cosine of x where x is expressed in radians
MOD(x,y)	returns the remainder of x divided by y
STDV(list)	returns the standard deviation of the values in a list
VAR(list)	returns the variance of the values in a list

The values contained within the parentheses of a math function may be any of the following:

1. number
2. reference coordinate (F4) (J98)
3. range of reference coordinates (H6:H22)
4. numerical expression
5. other expressions within parentheses (B12>50) (N8/100)

The letters "x," "y," and "p" refer to single values while "list" refers to a series of values. A list may consist of a string of numbers or expressions separated by commas, a range of coordinates, or a combination of these (e.g. AVG(B8,35, A2:A6)).

Spreadsheet includes the following arithmetic operators which can be used with any of the numerical expressions listed earlier:

+	addition
-	subtraction
*	multiplication
/	division
%	percentage

The following BUSINESS FUNCTIONS are also included in this module. Additional information on each of the functions is provided in Chapter 31 of this manual.

APV = Annuity Present Value
DEPRD = Declining Balance Depreciation

DEPRY = Sum-of-the-Years'-Digits Depreciation
FV = Future Value
IRR = Internal Rate of Return
LNEST = Linear Estimate
MIRR = Modified Internal Rate of Return
PMT = Payment
PV = Present Value

If you enter an expression for which there is no solution, the system will display "?n?" to indicate that it cannot perform the operation.

SS: Before we continue entering data into our tax table, we will use the Calculator function to perform several arithmetic calculations without affecting the entries on the screen.

USER: enter the arithmetic expression [45+89] onto the input line and press <calculate/all>.

SS: the answer 134 is displayed below the input line.

USER: enter [PWR(5,3)] followed by <calculate/all>

SS: the answer 125 appears below the input line.

The calculator function is accessible at any time when working with a model. Simply enter an expression onto the input line and press <calculate/all>. You may use location coordinates as well as values in your expressions, as long as entries exist in the specified locations.

You may also access the calculator window from within one of the command modes. The calculator window functions just like a regular calculator.

USER: press <menu><F> and then <calculate/all>

SS: the calculator window appears on your screen

USER: enter any arithmetic expression followed by <=>. The result is displayed. Press <C> to clear. Press <undo> to return to the command mode. Press <undo> again to exit the Format command.

The window calculator is capable of computing arithmetic expressions only (i.e. addition, subtraction, multiplication, division). To perform calculations involving Spreadsheet functions (e.g. SUM, PWR, MAX), you must access the calculator function from the input line rather than from within a particular command mode.

SUMMARY — You now know how to enter and manipulate numerical data in the spreadsheet and how to format entries to your own specifications. You will find the calculator function extremely useful when you need to make calculations while working with a model.

Chapter 9 — Relative Copy

GOAL: This chapter discusses one of the options of the Copy command. When you copy numerical data from one part of the matrix to another, you have the option of copying Relative, Absolute, or Prompted. We will use the Relative option and return to the other options a little later. Relative copy causes the system to automatically adjust coordinate references in the copied expression with respect to the new location(s) of the expression.

EXAMPLE SITUATION   We will now enter the remaining tax percentages into our Taxtable. The tax percentage will increase by 6% for each salary bracket.

USER: move the pointer to B22 and enter [.06+B21]<enter>

SS: ".06" appears at B22

Note that we could have entered [+B21+.06] to obtain the same result. The "+" sign tells the system that the entry is numeric although it begins with a text character. We could have also entered [B21+.06] and then pressed <change> before entering. <Change> toggles the entry between text and numeric.

USER: we now want to copy the formula at B22 to enter the remaining tax entries. Press <menu><C> to access the Copy command.

SS: prompts "Copy from area: B22"

USER: press <enter> to accept the response of B22

SS: prompts "Copy to (base coordinate): B22"

USER: enter [B23:B26]<enter> to copy formula to remaining column coordinates

SS: since the entry at B22 is numeric, the system prompts "Copy: Values All"

USER: we have the choice of copying either the actual numeric value of the entry (V), or the formula that generates the value in the entry (A). Press <A> to copy the entire expression at B22 and not just ".06"

SS: prompts "Copy: math Relative Absolute Prompted"

USER: press <R> to copy the expression relatively

The Relative option copies the equation by making relative adjustments to the new coordinate references.

SS: the expression at B23 is ".06+B22", the expression at B24 is ".06+B23"
     and so on. If we had chosen the Absolute option, ".06" would have
     appeared at locations B22 through B26 because the formula for each
     would have been ".06+B21". The Prompted option is for copying
     expressions with more than one coordinate reference. We will use this
     later. The list of numbers from B21 to B26 should now be 0.00, 0.06,
     0.12, 0.18, 0.24, and 0.30. The tax table is now complete.

SUMMARY — You have now learned how to use the Relative option of the Copy
command to copy and adjust formulas to their relative position in the array.

Chapter 10 — Redrawing the Screen

GOAL: We will now demonstrate use of the Edge option of the Window command. The Edge option redraws the screen to your specifications by locating the pointer and moving the pointer coordinate to the upper left hand corner of the screen.

EXAMPLE SITUATION — We would like to isolate our tax table by positioning it in the upper left hand corner of the window.

USER: move the pointer to A19 and press <menu><W> to access the Window command.

SS: the following prompt appears:

```
Window:   Split Unsplit Connect Titles Edge View
```

USER: press <E> to access the Edge option

SS: your screen should appear as the following:

W1	A	B	C	D	E
19	Tax Table for Payroll Records				
20					
21	$1.00	0.00			
22	$400.00	0.06			
23	$750.00	0.12			
24	$1,100.00	0.18			
25	$1,550.00	0.24			
26	$2,000.00	0.30			
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					

```
Model DATA:PAYROLL   99%   Pointer:A17   Current: A17   LR   W:1   #0
TXT  [L          ] Tax Table for Payroll Records
```

USER: in our next chapter, we will continue entering data into our PAYROLL model. Now we want to return to the beginning of our model so press <tab> and <enter>.

SS.II.28

SS: the pointer is at coordinate A1

USER: enter [A21:B26]<enter> so that when the tax table is off the screen, the entry will serve as a reminder of its location.

SUMMARY — You now know how to isolate a portion of your model by designating the entry you want to appear in the top left corner of the screen and using the Edge option.

Chapter 11 — Saving Models

GOAL: In this chapter, we will describe how to save a model using the Quit command.

EXAMPLE SITUATION — We want to save our PAYROLL model and return to the Model Selection Menu. We will then return to our model so that we may continue working with it.

USER: press <menu><Q> to access the Quit command

SS: prompts "Quit: Model_Selection_Menu Options Context"

USER: press <M> to return to the Model Selection Menu

PAYROLL is a new model so it will automatically be saved. If the model was not a new model, the following prompt would appear after pressing <menu><Q>:

```
Quit:   After_Saving   Without_Saving
```

<A> will result in saving the updated model, while <W> will result in saving only the original copy of the model, ignoring the changes that have been made.

The following parameters, in addition to all data entries, are saved on a model when applicable:

Format: Attributes, Filler chars, Column widths, Data type
Setup: Order, Advance, Default
Xternal: Channel associations
Window: Titles, Screen splits, Screen connects

USER: to return to PAYROLL from the Model Selection Menu, highlight "Select" and press <do>

SS: prompts "Select what model: "

USER: press <search>. Here we could have simply entered the name "PAYROLL" followed by <enter>. The <search> key enables you to view all of the existing model names in case you forget the exact name of the model you wish to select.

SS: the volume directory window appears in the middle of your screen

```
B
A
CON
COM1
COM2
LPT1
LPT2
           =>   DEMO        FMD  <=
                PROFIT      FMD
                CONSOL1     FMD
                CONSOL2     FMD
                PAYROLL     FMD




<page> <jump> <up> <down> <undo>
               <do>
```

USER: highlight "PAYROLL" using the arrow keys. Press <do>.

SS: the window disappears and the name "PAYROLL" appears after the Select prompt

USER: press <enter> to accept. When prompted for the password, enter [SP1] followed by <enter>.

SS: the model is once again displayed on your screen.

Each time you select an existing model, that model is automatically copied to another part of your disk as a back-up. This allows you to retain your original or existing model without saving the current changes, if so desired. In the rare event that Spreadsheet crashes while you are working with an existing model, the current changes will be lost. You will, however, be able to access the back-up file the next time you run Spreadsheet.

When selecting a model, you may find that there is not enough room on the disk for a back up copy of the model. When this occurs, the following message appears: "No room to copy model. All changes made to the model will be saved. Press <do> to continue." Pressing <undo> will return you to the Model Selection Menu.

SUMMARY — You are now familiar with the Quit command which is used to exit from a model and save the model if so desired. Remember that when you choose to save an updated model, the original model will be overwritten.

Chapter 12 — Specifying Pointer Movement
Directed by <enter>

GOAL: In this chapter, we will discuss the Order and Advance options of the Setup command. These options control the direction in which the pointer moves when the <enter> key is pressed.

EXAMPLE SITUATION — We would like the pointer in our PAYROLL model to move from top to bottom to make our data entry somewhat easier. We also want the pointer to automatically jump to the next coordinate after an entry has been made.

USER: press <enter> and notice the direction that the pointer moves.

The current order is left-to-right as indicated by the LR symbol in the model description line below the array. Each time <enter> is pressed, the pointer moves one coordinate to the right. To change the current order, we can use the Setup:Order option.

USER: press <menu><S> to access the Setup command. Press <O> to change the order to top-to-bottom.

SS: the current order symbol LR has been replaced by TB. The Setup command options are still displayed.

The Order option is a toggle, which means that each time you press <O>, the order changes between LR and TB.

USER: enter [AD] to toggle the Advance option to on.

SS: a "+" appears to the left of the Order symbol, indicating that Advance is on. This option is also a toggle.

When the Advance option is on, the pointer will automatically move to the next entry position after data has been entered. The direction of advance is dependent on the current order.

USER: to leave the Setup command, press <undo>.

SUMMARY — The Order and Advance options of the Setup command allow you to control pointer movement for easier and more efficient data entry.

Chapter 13 — The Table Function

GOAL: In this chapter, we will make use of the Table function. This function searches a table for a value and retrieves a corresponding value from a tabular set of expressions.

EXAMPLE SITUATION — Now we will begin entering salary data for Diane Williams into our model. In this example, we will make entries for January and February.

USER: move the pointer to B8. Enter [650]<enter> for Diane's gross salary in January.

SS: the entry at B8 appears as "650.00". The pointer should automatically have moved to B9.

USER: we want to enter tax information based on the gross salary. All tax information is in our payroll tax table located at A21:B26. To determine the tax percentage we should apply to a gross salary of $650.00, we can use the Table function. Enter the following expression at B9: [+TABLE(B8,A21:B26)] Press <enter>.

The explanation of this entry appears below:

NOTATION	EXPLANATION
+	indicates a numeric entry
TABLE	the Table function is to be used on the arguments within the parentheses
( )	contains the argument to be acted upon
B8	the first variable is the value we want to look up in the table
.	separates the value to be looked up from the table boundaries
A21:B26	defines the area of the table with the first coordinate as the top coordinate of the index column, and the second as the bottom coordinate of the look up column

SS: "0.06" appears at B9. The pointer is now at B10.

USER: here we want to enter the amount of taxes Diane actually owes. This can be calculated by multiplying the gross salary times the tax rate. Enter [+B8*B9]<enter>.

SS: "39.00" is displayed at B10

USER: to calculate Diane's net salary in January, we subtract the amount of taxes owed from her gross salary. Move the pointer to B7 and enter [+B8-B10]<enter>.

SS: "611.00" is displayed at B7. Continue on to February. We are going to increase Diane's salary by 25% every month beginning with February.

USER: move the pointer to C8 and enter [+B8+25%B8]<enter>.

SS: "812.50" is displayed at C8. This is the gross salary for February. The pointer moves to C9.

USER: enter [+TABLE(C8,A21:B26)]<enter> to find the tax rate

SS: "0.12" is displayed at C9. Pointer moves to C10.

USER: enter [+C8*C9]<enter> to calculate taxes owed

SS: "97.50" appears at C10

USER: move to C7 and enter [+C8-C10]<enter> to calculate net salary

SS: "715.00" appears at C7

SUMMARY — You should now be familiar with the Table function. It is extremely useful when you are working with large models or retrieving data from tables within a spreadsheet.

Chapter 14 — Prompted Copy

GOAL: In this chapter, we will make use of the Prompted option of the Copy command. The Prompted option allows you to choose between Relative copy and Absolute copy for each variable within an expression that makes a coordinate reference.

EXAMPLE SITUATION — We will now fill in the data for March, April, and May by copying the formulas from February. The Gross Salary and Taxes Owed variables need to be copied relatively since they are based on the previous month's figures. The tax table range remains constant for each period, so these variables should be copied absolutely.

USER: move the pointer to C7 and press <menu><C>

SS: prompts "Copy from area: C7"

USER: enter [:C10]<enter> to copy column of expressions

SS: prompts "Copy to (base coordinate): C7"

USER: enter [D7:F10]<enter> to copy to columns D through F

SS: prompts "Copy: Values All"

USER: press <A> to copy formulas rather than values

SS: the following prompt appears:

```
Copy:   math  Relative  Absolute  Prompted
```

USER: press <P> for Prompted option

SS: Notice that the expression to be copied appears under the matrix with the coordinate reference "C8" highlighted. You will be prompted for each variable in the expression with the following: "Copy: this reference Relative Absolute." As each variable is highlighted, we will enter the appropriate response by pressing <A> for absolute copy and <R> for relative copy. In our model, we want to copy everything relatively except for those values in the tax table (A21 and B26).

USER: when the following coordinates are highlighted, enter the appropriate response:

C8:	press <R>
C10:	press <R>
B8:	press <R>
B8:	press <R>
C8:	press <R>
A21:	press <A>
B26:	press <A>
C8:	press <R>
C9:	press <R>

The system will continue to prompt you in the same way for columns E and F. Use the same responses as above.

SS: after the copying is complete you will notice that the net salary entries in columns D, E, and F are "0.00." This is because the values for gross salary and taxes owed were not known when the expressions were copied since these entries are calculated after net salary. We will remedy this situation in the next chapter.

SUMMARY — You now know how to copy expressions that include both relative and absolute coordinate references by using the Prompted option of the Copy command.

·

Chapter 15 — Recalculate Command

GOAL: In this chapter, we will introduce the Recalculate command, which allows you to recalculate equations when data changes have been made. The expressions being recalculated may contain variables located throughout the worksheet.

EXAMPLE SITUATION — We will calculate the net salaries for March, April, and May using the Recalculate command. Then we will enter data for Al Cook.

USER: press \<menu\>\<R\> to access the Recalc command

SS: the following prompt apppears:

> Recalculate equations over area: C7

USER: enter [:F7]\<enter\> to recalculate D7, E7, and F7

In response to the above prompt, you can enter a range of coordinates as we just did, or you may press \<0\> or \<calculate/all\> to recalculate the entire model.

SS: all the net salary figures are now entered. Your screen will look like the following:

W1 A.	B	C	D	E
1 A21:B26	January	February	March	April
2				
3				
4 TOTALS				
5				
6 *Diane Williams*				
7 NET SALARY	611.00	715.00	893.75	1041.02
8 GROSS SALARY	650.00	812.50	1015.63	1269.53
9 TAX BRACKET	0.06	0.12	0.12	0.18
10 TAXES OWED	39.00	97.50	121.88	228.52
11				
12 ****Al Cook*****				
13 NET SALARY				
14 GROSS SALARY				
15 TAX BRACKET				
16 TAXES OWED				
17				
18				

Model DATA:PAYROLL 99% Pointer: A2 Current: A2 +TB W:1 #0

USER: use the following chart to make the necessary entries for Al Cook

COORDINATE	ENTRY	RESULT
B14	[1000]<enter>	1000.00
B15	[+TABLE(B14,A21:B26)]<enter>	0.12
B16	[+B14*B15]<enter>	120.00
B13	[+B14-B16]<enter>	880.00
C14	[+B14+10%B14]<enter>	1100.00
C15	[+TABLE(C14,A21:B26)]<enter>	0.18
C16	C+C14*C15]<enter>	198.00
C13	[+C14-C16]<enter>	902.00

SS: January and February salary information for Al Cook appears in the matrix

USER: access the Copy command and copy the expressions in C13:C16 to D13:F16. Press <A> and then <P> to access the Prompted option. In response to the prompts for each variable coordinate, do the following:

C14: press <R>
C16: press <R>
B14: press <R>
B14: press <R>
C14: press <R>
A21: press <A>
B26: press <A>
C14: press <R>
C15: press <R>

Press <menu><R> to recalculate the area [D13:F13].

SS: after all the information for Al Cook is entered, our PAYROLL model looks like the following:

W1	A	B	C	D	E
1	A21:B26	January	February	March	April
2					
3					
4	TOTALS				
5					
6	*Diane Williams*				
7	NET SALARY	611.00	715.00	893.75	1041.02
8	GROSS SALARY	650.00	812.50	1015.63	1269.53
9	TAX BRACKET	0.06	0.12	0.12	0.18
10	TAXES OWED	39.00	97.50	121.88	228.52
11					
12	****Al Cook*****				
13	NET SALARY	880.00	902.00	992.20	1091.42
14	GROSS SALARY	1000.00	1100.00	1210.00	1331.00
15	TAX BRACKET	0.12	0.18	0.18	0.18
16	TAXES OWED	120.00	198.00	217.80	239.58
17					
18					

Model DATA:PAYROLL   99%   Pointer: A2   Current: A2   +TB   W:1   #0

Do not attempt to recalculate self-referencing formulas such as the following:

$$E3=2*G3 \qquad G3=A3/6 \qquad A3=E3+34$$

Where there is no constant at which the recalculation process can begin, the recalculation will be halted and the expressions involved in the loop will be displayed. At this point, you will be prompted for the number of times you would like the expressions recalculated. You may recalculate as many as 25 times at once. If you did not intentionally enter a set of self-referencing equations, but need to make changes in the formulas, respond <0>.

SUMMARY — The Recalculate command is a very important feature of this program because it allows you to adjust your model for any changes in the data. It can also be used in conjunction with the Update command to make hypothetical projections. We will discuss this in a later chapter.

Chapter 16 — Erasing Entries and Deleting Rows and Columns

GOAL: In this chapter, we will introduce two different commands that delete entries or ranges of entries from a spreadsheet model. The Blank command erases entries in any given area of the array. The Delete command erases one or more rows or columns from the array. Unlike the Blank command, however, Delete readjusts the matrix after a row or column has been removed.

EXAMPLE SITUATION — Now that we have finished entering tax data into our model, we no longer need the entry at A1 as a reminder. We will remove this entry by using the Blank command. Then we will enter monthly payroll totals in row 4.

USER: move the pointer to A1. Press <menu><B> to access the Blank command.

SS: prompts "Blank what area: A1"

USER: press <enter> to erase the entry at A1

You may blank a single entry, a range of entries, one or more rows or columns, or an entire model by defining the appropriate range. To blank an entire model, press <0> in response to the prompt "Blank what area: "

We do not want to delete anything from our model at this time so we will not make use of the Delete command. We will, however, describe the steps for deleting. First move the pointer to any coordinate in the row or column you wish to delete. Press <menu><D> to access the Delete command and you will be prompted with the option of deleting row(s) or column(s). After indicating your choice, you can then specify the starting coordinate and the number of rows or columns you wish to delete. The worksheet will adjust accordingly.

SS: we are now ready to enter the monthly salary totals. First we must combine the gross salaries of Diane and Al for January, and then copy the formula relatively for February through May.

USER: move the pointer to B4 and enter [+B8+B14]<enter>

SS: "1650.00" appears at coordinate B4

USER: press <menu><C> to access the Copy command

SS: prompts "Copy from area: B5"

USER: enter [B4] to copy expression

SS: prompts "Copy to (base coordinate): B5"

USER: enter [C4:F4] for the entire row

SS: prompts "Copy: Values All"

USER: press <A> to copy entire expression and then press <R> to copy
        relatively

SS: the monthly totals on your screen should agree with these:

January	February	March	April	May
1650.00	1912.50	2225.63	2600.53	3051.01

        The next step is to put in dollar signs and commas using the
        Format:Attributes option.

USER: press <menu><F> and <A> to access the Attributes option

SS: the Attributes prompt appears

USER: press <right> to move to the sixth question mark and press
        <change> to set the "'$'. Press <right> again to move to the seventh
        question mark and press <change> to set the ",". Press <do> to
        accept the attributes.

SS: prompts "Format applies to area: B5"

USER: enter [B4:F4]<enter>

SS: the totals now have dollar signs and commas

SUMMARY — You should now be able to erase entries from the worksheet either
by using the Blank command for a specified area or by using the Delete command
for a number of rows or columns. Remember that when you delete data, the matrix
will readjust.

Chapter 17 — Locating Text

GOAL: In this chapter, we describe the Locate command. The Locate command searches a model for a specified string of characters and highlights its location on the screen. The string may consist of part of a text entry or the entire entry.

EXAMPLE SITUATION — We would like to search for the word "TAX" in our PAYROLL model.

USER: move the pointer to A1 and press <menu><L> to access the Locate command

SS: prompts "Locate what: "

USER: enter [TAX] followed by <enter>

SS: the pointer jumps to coordinate A9 where the first occurrence of "TAX" appears. The prompt "Locate what: TAX" still appears.

When you enter the string you wish to locate, make sure to use the same case (upper or lower) as is used in the entry. The program then searches the area of the model bounded by the pointer coordinate and the bottom right corner of your model. The order of the search depends on the order indicated under the array (left-to right or top-to-bottom). To search the entire model, move the pointer to the top left entry when you begin.

USER: to find the next occurrence of "TAX", press <enter>

SS: the pointer jumps to A10 where the second occurrence is found

If you enter the string incorrectly, the following message appears: "There are no further instances of that text."

USER: to exit the Locate command, press <undo>

If there are no more occurrences of the specified text, an error message will appear informing you of that fact. Press <do> to continue with your work.

SUMMARY — The Locate command is especially useful when you are trying to find some information but cannot recall the coordinate of that entry. Remember to enter the text you are looking for exactly as it appears in the worksheet.

Chapter 18 — Automatic Form Mode

GOAL: We will now introduce you to the Auto command. This command makes it more convenient to edit entries that are highly subject to change. The Auto command is used in conjunction with the Form mode attribute which is set in Format:Attributes.

EXAMPLE SITUATION — We are going to change several of the gross salary figures in our payroll model in order to demonstrate the Auto command. Then we will recalculate the entire model to adjust for the changes.

USER: First we must set the Form mode attribute ON for the entries we want to change. Move the pointer to B8 and press <menu><F> and then <A>. When the Attributes prompt appears, press <right> twice to move to the Form mode attribute. Press <change> so that the "F" appears, indicating that the attribute has been turned on. Press <do> and <enter> to accept the setting. Move the pointer to B14 and repeat the steps above.

SS: the Form mode is now set for coordinates B8 and B14, the gross salary figures. We have the opportunity of changing the monthly gross salaries of our two employees using the Auto command

USER: press <menu><A> to access the Auto command

SS: the pointer automatically jumps to coordinate B8 which is the first entry at which the Form mode is set. The following message appears at the bottom of your screen: "Auto Forms mode . . . enter data for this cell"

USER: enter [500]<enter>. We have just entered a new salary figure for Diane.

SS: "500.00" appears at B8. The pointer now jumps to B14. "Auto Forms mode" prompt reappears. The system searches for Form mode entries in the order that is indicated under the array.

USER: press <enter> since we do not want to change Al's gross salary

SS: the following message appears: "Searching for next Form entry." The computer beeps when the Auto search is complete.

When you are working in other models and you would like to abort the Auto command before you have finished entering information for all form mode locations, you may press <undo> and the following window will appear:

```
Auto Forms mode ABORTED
PROBLEM                        Press <do> to continue
```

SS: now that we have changed Diane's salary in January, the rest of her salary figures are incorrect. Remember that her salary increases by 25% each month. To correct the model, do the following.

USER: press <menu><R> to access the Recalculate command

SS: prompts "Recalculate equations over area: "

USER: press <calculate/all> to recalculate the entire model. The message " . . . working . . . please wait" appears until the recalculation is completed. The model now resembles the following:

W1	A	B	C	D	E
1		January	February	March	April
2					
3					
4		TOTALS $1,500.00	$1,725.00	$1,991.25	$2,307.56
5					
6	*Diane Williams*				
7	NET SALARY	470.00	587.50	687.50	859.38
8	GROSS SALARY	500.00	625.00	781.25	976.56
9	TAX BRACKET	0.06	0.06	0.12	0.12
10	TAXES OWED	30.00	37.50	93.75	117.19
11					
12	****Al Cook*****				
13	NET SALARY	880.00	902.00	992.20	1091.42
14	GROSS SALARY	1000.00	1100.00	1210.00	1331.00
15	TAX BRACKET	0.12	0.18	0.18	0.18
16	TAXES OWED	120.00	198.00	217.80	239.58
17					
18					

```
Model DATA:PAYROLL 98%   Pointer: B14   Current: B14   +TB   W:1   #0
```

SUMMARY - You now know how to use the Auto command in conjunction with the Form mode attribute. The Auto command makes it very convenient to edit entries that often need updating by jumping directly to those designated entries when the command is executed.

Chapter 19 — Locking First Column and/or Row

GOAL: In this chapter, we discuss the Titles option of the Window command. This option is useful when you are working in areas of the array where you cannot see column and row headings. With this option, you can "lock in" the first row and/or column of your model. As a result, the first row or column will always be visible for your reference. This ensures that changes and entries are made in the proper places.

EXAMPLE SITUATION — We will use the Titles option to lock in the first row and column of our PAYROLL model.

USER: press <menu><W> to access the Window command. When the Window options prompt appears, press <T> to select the Titles option.

SS: the following prompt appears:

Window:	No_titles	Row_titles	Column_titles	Both

Row titles locks in the first row; Column_titles locks in the first column; Both locks in both the first row and the first column, and No_titles unlocks previously locked titles.

USER: press <B> to lock in row 1 and column A. Press <tab> and enter [A19].

SS: the pointer moves to coordinate A19. Notice that the months row remains on the screen. No matter where you move the pointer on the screen, the entries in the locked-in rows and columns will be displayed.

USER: since our model is not really large enough to make the Titles feature important, we will now unlock the titles we just set. Access the window command again and press <T>. Then press <N> to unlock the first row and column.

SUMMARY — The Titles option of the Window command should be used when you are entering or editing data in a large model where row and column titles cannot always be seen.

Chapter 20 — The Update Command

GOAL: Now we will introduce you to the Update command, which enables you to make hypothetical projections of the data in your model. With the Update command, you can apply an expression to one or more constant numerical entries and then recalculate the entire model to reflect the changes. Once you have viewed the changed model, you can access Update again to restore your original values.

EXAMPLE SITUATION — We would like to increase employee taxes by 20% and note the effects on our model.

SS: The Update command is only applicable to constant numeric entries. Because the tax percentage entries in the Tax Table consist of relative entries, we must first change the entries located at B22 through B26 to constants. This can be done using the Copy command to copy the values.

A constant entry is one that does not have an associated relative expression, such as "45." "+B7*2.5" is not a constant entry and the Update command cannot be used on entries such as this.

USER: press <menu><C> to access the Copy command. Enter [B22:B26] and <enter> in response to the "Copy from" prompt. Enter [B22] <enter> in response to the "Copy to" prompt. When prompted with "Copy: Values All," press <V>.

SS: the entries at B22:B26 now contain only values and do not have associated formulas because we copied the values over the pre-existing formulas. Now we can update the tax entries.

USER: move the pointer to B21 and press <menu><U> to access the Update command

SS: prompts "Update values over area: B21"

USER: enter [B21:B26]<enter> to update tax percentages

SS: prompts "Update expression (= restores):= "

USER: enter [!*1.2]<enter> to increase each entry by 20%.

The Update expression contains the character "!" to represent the previous value of the entry you are updating.

SS: the new tax table appears as follows:

REVISED TAX TABLE

$1.00	0.00
$400.00	0.07
$750.00	0.14
$1,100.00	0.22
$1,550.00	0.29
$2,000.00	0.36

USER: To see how these new tax rates affect the net salaries of our two employees, we will use the Recalculate command. Press <menu><R>. When prompted for area to recalculate, press <calculate/all>.

SS: all entries in the TAX BRACKET, TAXES OWED, and NET SALARY rows will now reflect the tax percentage changes. Move to coordinate A1. Your screen should look like the following diagram:

W1	A	B	C	D	E
1		January	February	March	April
2					
3					
4	TOTALS $1,500.00		$1,725.00	$1,991.25	$2,307.56
5					
6	*Diane Williams*				
7	NET SALARY	464.00	580.00	668.75	835.94
8	GROSS SALARY	500.00	625.00	781.25	976.56
9	TAX BRACKET	0.07	0.07	0.14	0.14
10	TAXES OWED	36.00	45.00	112.50	140.63
11					
12	****Al Cook*****				
13	NET SALARY	856.00	862.50	948.64	1043.50
14	GROSS SALARY	1000.00	1100.00	1210.00	1331.00
15	TAX BRACKET	0.14	0.22	0.22	0.22
16	TAXES OWED	144.00	237.60	261.36	287.50
17					
18					

Model DATA:PAYROLL   98%   Pointer: A2   Current: A2   +TB   W:1   #0

Now we want to restore the original entries in the model.

USER: press <menu><U> to access the Update command. In response to the prompt "Update values over area:", enter [B21:B26]<enter>.

SS: prompts "Update expression (= restores): =". The default "=" restores the entries to their original values.

USER: press <enter> to restore previous tax percentage values

SS: the values should now be as they were before we originally executed the Update command. To return all employee records to their original values, use the Recalculate command.

USER: press <menu><R> and then press <calculate/all> in response to the area prompt

SS: the model appears as it did before we updated it

SUMMARY — You now know how to make temporary changes in your data and have the changes reflected throughout the entire model. Unlike the Recalculate command, the Update command allows you to restore original values if you wish to do so.

Chapter 21 — Printing Reports

GOAL: In this chapter, we will demonstrate how to print out your Spreadsheet models and reports. Make sure that you have configured your printer properly before you attempt to print (see Installation section in Getting Started manual).

EXAMPLE SITUATION — We would like to print out the results of our work on the PAYROLL model.

USER: press <menu><P> to access the Print command

SS: prompts "Print area: A1"

USER: we would like to print the entire PAYROLL model excluding the tax table portion so enter [A1:F16] followed by <enter>

SS: a window similar to the following appears on your screen:

```
┌─────────────────────────────────────────────────┐
│  CONSOLE                                         │
│  PRINTER                                         │
│  FILE                                            │
│  CONLABEL                                        │
│  PRTLABEL                                        │
│  EPSONFX80                                       │
│  PRISMBW                                         │
│                                                  │
├─────────────────────────────────────────────────┤
│            OUTPUT DEVICE SELECTION               │
│     <up>   <down>   <do>   <undo>   <pages>      │
│                                                  │
└─────────────────────────────────────────────────┘
```

This window displays the available output files. The default printer is highlighted. Use <up> and <down> to move among the options.

USER: move to "PRINTER" or the name of your printer and press <do> since we want to print our report out on paper

SS: the window disappears. The system prompts "Print: Heading Print_ area Equation_dump"

USER: press <H> so that we can title our report

SS: prompts "Title: "

USER: enter 15 blank spaces followed by [Company Payroll Records] and <enter>. The blank spaces are entered so that the title will be centered rather that left-justified.

SS.11.50

SS: prompts "Title: " again. This allows you to enter more title lines.

USER: to insert blank lines between the title and the body of the report, press <enter> in response to the Title prompt. Press <do> to leave the Heading option.

SS: prompts "Print: Heading Print_area Equation_dump"

USER: press <P> to print out your model

SS: the printer now begins printing your report. The finished print-out should resemble the following:

	Company Payroll Records			
	January	February	March	April
TOTALS	$1,500.00	$1,725.00	$1,991.25	$2,307.56
Diane Williams				
NET SALARY	470.00	587.50	687.50	859.38
GROSS SALARY	500.00	625.00	781.25	976.56
TAX BRACKET	0.06	0.06	0.12	0.12
TAXES OWED	30.00	37.50	93.75	117.19
****Al Cook*****				
NET SALARY	880.00	902.00	992.20	1091.42
GROSS SALARY	1000.00	1100.00	1210.00	1331.00
TAX BRACKET	0.12	0.18	0.18	0.18
TAXES OWED	120.00	198.00	217.80	239.58

To print a report without adding titles, simply press <P> for Print area when the Print option prompt appears.

Models that are too large to fit on a single sheet of paper will automatically be segmented onto different pages.

The Equation_dump option allows you to print out the internal representation of a Spreadsheet model. Pressing <E> results in a printed copy of all the formulas and specifications for each entry. We will dump a segment of our model to the console.

USER: press <menu><P> to access the Print command again

SS: prompts "Print area: "

USER: enter [C1:C16]<enter>.

SS: the output file window appears on your screen

USER: move to the Console name and press <do>

SS: the window disappears and the Print option prompt is displayed

USER: press <E> in response to the Print option prompt

SS: prompts "Print Dump: Equation_cross-reference No_cross-reference"

The cross-reference feature includes a list of coordinates that refer to each dumped entry.

USER: press <E> to see equation cross-references

SS: your Dump print-out appears on the screen as the following:

```
C1   TXT[C            ]     February
C2   TXT[L            ]
C4   NUM[R    2$,  -]   +C8+C14=       $1,725.00
C7   NUM[R    2    -]   +C8-C10=         587.50
C8   NUM[R    2    -]   +B8+25%B8=             625.00
     C4,C7,D8,D8,C9,C10
C 9  NUM[R    2    -]   +TABLE(C8,A21:B26)=          0.06
     C10
C10  NUM[R    2    -]   +C8'C9=         37.50
     C7
C13  NUM[R    2    -]   +C14-C16=       902.00
C14  NUM[R    2    -]   +B14+10%B14-          1100.00
     C4,C13,D14,D14,C15,C16
C15  NUM[R    2    -]   +TABLE(C14,A21:B26)=         0.18
     C16
C16  NUM[R    2    -]   +C14'C15-       198.00
     C13
```

SS: prompts "Press <do> to return to spreadsheet."

USER: press <do> and model reappears on screen

The Dump feature is an additional way of backing up your models. In the event that anything happens to your disks, a current hard copy Dump of your model will enable you to reenter all of the data and formulas.

To abort printing at any time, press <undo>.

SUMMARY — You are now capable of printing your Spreadsheet models using the Print command.

Chapter 22 — Splitting the Screen and Connecting Windows

GOAL: In this chapter, we demonstrate how to divide the screen into as many as six separate, independent windows using the Split option of the Window command. The ability to split the screen is very useful when working with large models because you can view different sections of the model as well as other models at the same time. We will also discuss the Connect option, which is used to scroll windows together.

EXAMPLE SITUATION — We would like to divide our PAYROLL model into two windows and then connect them.

USER: move the pointer to C1. Press <menu><W> to access the Window command. Press <S> to access the Split option.

SS: prompts "Window: Horizontally Vertically"

USER: press <V> to split the model vertically

SS: prompts "Window Split: at what coordinate: C1"

USER: press <enter>

SS: the screen should now be split into two windows with the pointer in window 2 as shown in the following:

W1	A	B	W2	C	D	E
1		January	1	February	March	April
2			2			
3			3			
4	TOTALS	$1,500.00	4	$1,725.00	$1,991.25	$2,307.56
5			5			
6	*Diane Williams*		6			
7	NET SALARY	470.00	7	587.50	687.50	859.38
8	GROSS SALARY	500.00	8	625.00	781.25	976.56
9	TAX BRACKET	0.06	9	0.06	0.12	0.12
10	TAXES OWED	30.00	10	37.50	93.75	117.19
11			11			
12	****Al Cook*****		12			
13	NET SALARY	880.00	13	902.00	992.20	1091.42
14	GROSS SALARY	1000.00	14	1100.00	1210.00	1331.00
15	TAX BRACKET	0.12	15	0.18	0.18	0.18
16	TAXES OWED	120.00	16	198.00	217.80	239.58
17			17			
18			18			

Model DATA:PAYROLL   99%   Pointer: C1   Current: C1   +TB   W:2   #0

Note that the pointer does not have to be located at the coordinate where you want the model split. The top left-hand corner of the new window is the entry at which the pointer was located before you executed the Window:Split option.

Both windows contain the PAYROLL model. Any changes made to the model will be reflected in both windows. Either window can be split again.

> USER: move the pointer in Window 2 to Row 10. Press <menu><W> and <S> to access the Split option again. Press<H> to split horizontally and press <enter> to split at coordinate C10.

> SS: there are three windows on the screen and each scrolls independently of the others.

> USER: now we want to put Windows 2 and 3 back together. The pointer is in Window 3. Press <menu><W> and <U> to access the Unsplit option

When a window has been split more than once, the windows that were last split must be put back together first. If you try to do otherwise, the following error window will appear:

```
Can't unsplit.   Window was never split or was split again.
PROBLEM                      Press <do> to continue
```

> SS: the screen is now back to two windows. We would like to connect these windows.

> USER: move the pointer to Window 1 using<window>. Press<menu><W> and <C> to access the Connect option.

> SS: prompts "Window Connect: to which window: 0." Since the pointer is in Window 1, the system knows that you are connecting Window 1 to another window.

> USER: press <2> followed by <enter> to connect to Window 2

> SS: prompts "Horizontally Vertically Both"

> USER: press <H> so that the windows will scroll the pointer to move the model in Window 1 and observe the movement of Window 2.

If you would like to connect the windows so that they scroll vertically, you must first disconnect the windows by entering a "0" in response to the "which window" prompt. You cannot connect windows both horizontally AND vertically.

SUMMARY — You now have the ability to divide a model into windows and connect these windows so that they scroll together. The Window command is an important feature of this spreadsheet module, as you will discover in the next few chapters.

Chapter 23 — Viewing Equations on the Screen

GOAL: As you have seen, the results of a numeric formula appear on the array while the actual equation appears only on the entry description line below the worksheet. In this chapter, we will introduce the View option of the Window command which makes it possible to view all of the equations associated with a model in a given window.

EXAMPLE SITUATION — We will view the equations used in our model in one of the windows.

USER: move the pointer to Window 2 and press <menu><W> to access the Window command. Press <V> to access the View option.

SS: prompts "Window View: Equations Xternal channel"

USER: enter [EQ] to have equations appear on the screen in Window 2. Your screen should look like the following:

W1	A	B	W2	A	B
1		January	1		January
2			2		
3			3		
4	TOTALS	$1,500.00	4	TOTALS	+B8+B14
5			5		
6	*Diane Williams*		6	*Diane Williams*	
7	NET SALARY	470.00	7	NET SALARY	+B8-B10
8	GROSS SALARY	500.00	8	GROSS SALARY	500.00
9	TAX BRACKET	0.06	9	TAX BRACKET	+TABLE(B8,A
10	TAXES OWED	30.00	10	TAXES OWED	+B8*B9
11			11		
12	****Al Cook*****		12	****Al Cook*****	
13	NET SALARY	880.00	13	NET SALARY	+B14-B16
14	GROSS SALARY	1000.00	14	GROSS SALARY	1000.00
15	TAX BRACKET	0.12	15	TAX BRACKET	+TABLE(B14,
16	TAXES OWED	120.00	16	TAXES OWED	+B14*B15
17			17		
18			18		

Model DATA:PAYROLL   99%   Pointer: A1   Current: A1   +TB   W:2   #0

All formulas associated with numeric entries are displayed at their coordinate locations in Window 2. As you can see, at locations B9 and B15, only part of the equations are displayed. The column is not wide enough to display the entire formula. You can widen the column if you wish to see the whole expression.

USER: now we would like to display the equation results once again. Make sure the pointer is in Window 2 and enter <menu><W><V> and [EQ].

SS: the equation results are once again displayed in Window 2. The View:Equations option is a toggle. Entering [EQ] will turn on and off the option.

USER: press <menu><W> and <C> to access the Window:Connect option. We no longer want the windows to scroll together.

SS: prompts "Window Connect: to which window: 1"

USER: press <0><enter> to stop the windows from scrolling together. The "0" indicates that the window should not be connected to any other.

SS: now we want to unsplit the window and quit the model

USER: press <menu><W> and <U> to access the Unsplit option

SS: the matrix consists of one window again

USER: press <menu><Q> to quit the model

SS: prompts "Quit: After_Saving Without_Saving"

USER: press <A> to save the model for later use

SS: prompts "Quit: Model_Selection_Menu Options Context"

USER: press <M> to return to Model Selection Menu

SS: the Model Selection Menu appears on the screen

SUMMARY — In this chapter, you have learned how to view entry equations on the screen. It is not necessary to divide the screen into windows to view the equations although we did so for the sake of illustration.

Chapter 24 — Working With Multiple Models

GOAL: Thus far we have worked with a single model to demonstrate the features of our spreadsheet. Now we will work with multiple models to describe some of the more advanced features of the program. The Xternal command is used to establish channel associations between a main model and up to three other channel models. We can then use the Window:View option to view these models on the screen simultaneously. When you have more than one model on the screen, you can also make use of the Copy command to copy information from one model to another. In this way, you can merge parts of different models to produce reports or to create a new model entirely.

EXAMPLE SITUATION — We are going to create a new model named TAXTABLE and establish a channel association between it and our PAYROLL model so that we may view both models at the same time.

SS: the Model Selection Menu is displayed on your screen

USER: press <N> to create a new model. In response to the name prompt, enter [TAXTABLE]<enter>. Enter [SPI] for the password.

SS: an empty worksheet appears on the screen

USER: move the pointer to A1 and enter [Tax Table for Payroll] <enter>. Move the pointer to A3 and enter [GROSS SALARY] <enter>. Move the pointer to B3 and enter [Tax %] <enter>. Press <justify> to right-justify the last entry. Press <menu><F> and <F> to access the Format:Filler option.

SS: prompts "Set filler to: "

USER: press <-> for filler character

SS: prompts "Format applies to area: B3"

USER: enter [A4:B4] to underline the column headings. Instead of having to re-enter the tax table again, we are going to copy the data from the tax table in our PAYROLL model to our newly created model. The first step in this process is to split the screen into two windows. Move the pointer to C1 and enter <menu>, <W>, <S>, <V> and in response to the prompt "Split at what coordinate: C1," press <enter>.

SS: the screen is now divided into two windows with the pointer in Window 2. We will establish a channel association between the two models. TAXTABLE is the main model.

USER: press <X> to access the Xternal command

SS: the following prompt appears:

Xternal Open channel #: 1

The main model is referred to as channel #0, and the channel models are referred to as channels #1, #2, etc.

USER: press <enter> since we want to open channel #1

SS: prompts "External: To model: "

USER: enter [PAYROLL]<enter> to open channel #1 to the PAYROLL model

SS: prompts "Enter password for model DATA:PAYROLL.FMD"

USER: enter [SPI] to access the model. Press <enter>.

SS: the following message appears on your screen:

Channel opened to model PAYROLL. Press <do>.

This confirms that the association has been set up. PAYROLL is now channel #1 to the main model TAXTABLE (channel #0).

USER: press <do>. With the pointer in Window 2, press <W> and <V> to access the Window:View option

SS: prompts "Window View: Equations External channel"

USER: enter [EX] to access the External option

SS: the following prompt appears:

Window External: View which model channel in this window?: 0
0=TAXTABLE   1=PAYROLL

USER: press <1><enter> to view PAYROLL

SS: the TAXTABLE model appears in Window 1 and the PAYROLL model appears in Window 2. We can now copy the tax table information into the new model.

USER: make sure that the pointer is in Window 2 and press <C> to access the Copy command

SS: prompts "Copy from area: A1"

USER: enter [A21:B26]<enter> to copy tax table data from Window 2

SS: prompts "Copy to (base coordinate): A1"

USER: press <window> to move the pointer to Window 1. Enter [A6:B11] <enter> to copy into correct area.

SS: prompts "Copy: Values All"

USER: press <V> to copy values

SS: the values appear in Window 1. Now that we have a separate tax table model, we can remove the tax table in our payroll model. The pointer is now located in Window 2.

USER: press <B> to access the Blank command. Enter [A19:B26] <enter> for the area to blank. Press <do> to verify.

SS: your screen should look like the following:

W1		B	W2	A	B	C
1	Tax Table for Payroll		1		January	February
2			2			
3	GROSS SALARY	TAX %	3			
4			4		TOTALS $1,500.00	$1,725.00
5			5			
6	$1.00	0.00	6	*Diane Williams*		
7	$400.00	0.06	7	NET SALARY	470.00	587.50
8	$750.00	0.12	8	GROSS SALARY	500.00	625.00
9	$1,100.00	0.18	9	TAX BRACKET	0.06	0.06
10	$1,500.00	0.24	10	TAXES OWED	30.00	37.50
11	$2,000.00	0.30	11			
12			12	****Al Cook*****		
13			13	NET SALARY	880.00	902.00
14			14	GROSS SALARY	1000.00	1100.00
15			15	TAX BRACKET	0.12	0.18
16			16	TAXES OWED	120.00	198.00
17			17			
18			18			

Model DATA:TAXTABLE 85% Pointer: A1 Current: A1 TB W:2 #1

USER: press <Q> to quit the model and return to the Model Selection Menu

Upon quitting from a model where channel associations have been set, the channel associations are also saved. When you select to work with the main model again, the system remembers the associations that were established previously.

SUMMARY — You now know how to view more than one model on the screen as well as how to transfer data from one model to another. Before you work with multiple models, remember that a channel association must be established using the Xternal command. Once an association is established, it will be saved when you quit the model.

Chapter 25 — Inter-Model References

GOAL: After establishing channel associations, you can reference one model from another without viewing both models on the screen. In this chapter, we demonstrate two methods for referencing other models.

EXAMPLE SITUATION — Now we will return to our PAYROLL model and set up an association with the TAXTABLE model. After setting up this association, we can then access information from TAXTABLE while working in PAYROLL.

SS: the Model Selection Menu is displayed

USER: highlight "Select" and press <do>. Enter [PAYROLL]<enter> in response to the prompt. Enter [SPl] in response to the password prompt.

SS: the PAYROLL model appears on your screen

USER: press <m··· · ·X> to access the Xternal command

SS: prompts X : nal Open channel #: 1"

USER: press · enter to open this channel

SS: prompts "Xternal: To model:"

USER: enter [TAXTABLE] to open channel #1 to TAXTABLE model. Press <enter>.In response to the password prompt, enter [SPl]<enter>.

SS: we have now established TAXTABLE as channel model #1 to the main model #0, PAYROLL. We can now put TAXTABLE on the screen.

USER: press <do>. Move the pointer to column C. Press <menu>, <W>, <S>, <V>, and <enter> to make a vertical window. The pointer is in Window 2; use the External option of Window:View to view channel #1 on the screen.

SS. now we will change the tax bracket entries in the PAYROLL model to reflect the new position of the tax table. To reference coordinates from open channel models, suffix the coordinates with the channel number of the model in which the entries are located.

USER: move the pointer to B9 in Window 1 and use the Edit command to change the entry to [+TABLE(B8,A6#1:B11#1)].

SS: the new entry tells the system that the table is at [A6:B11] in channel #1

USER: use the Copy command to copy the entry from B9 to C9:F9. Use the All:Prompted option. Copy B8 relatively; copy the table range A6#1:B11#1 absolutely. Move to B15 and change the entry to [+TABLE(B14,A6#1:B11#1)] and copy the entry to C15:F15 in the same manner as above.

SS: you can now make a change in the tax table, and then recalculate the PAYROLL model to reflect the change.

USER: move the pointer to coordinate B8 in Window 1. Change the gross salary to $800.00. Press <menu><R> to access the Recalculate command and then press <0> and <enter> to recalculate the whole model.

SS: the PAYROLL model will now reflect the change in gross salary. Notice that the tax bracket percentage has changed to reflect the higher salary. Remember that when you work with more than one model at a time, you must recalculate each window individually when a change in one model affects the results in other models.

The EXTRN function enables you to reference coordinates from other models directly, without having to establish channel associations. To access a particular entry, enter the function and parameters as follows:

```
+EXTRN("modelname", coordinate)
```

To reference a coordinate from a model on a different disk, prefix the model name with the disk volume name. (The second disk must be on-line) The EXTRN function can be used to reference numeric as well as text entries. When working with text entries, however, only the first nine characters of text will be brought into the new model.

SUMMARY — You are now familiar with two methods for referencing entries from another model. Channel models can be referenced directly by suffixing the reference coordinate with the channel number. To reference an entry in any of the models on-line, use the EXTRN function.

Chapter 26 — Substitution Expressions

GOAL: In this chapter, we introduce substitution expressions. Substitution expressions can be used to define your own functions within a model.

EXAMPLE SITUATION - To demonstrate the use of substitution expressions, we will create a function that calculates each month's salary based on the previous month (remember that we increased Diane's gross salary by 25% each month).

USER: move the pointer to window 1 and move to coordinate A19. Enter the expression [=1.25*!]<enter>. This equation calculates the new salary level.

SS: "?n?" appears at A19. This occurs because we have not yet entered a value to be calculated using the expression.

A substitution expression may include any of the standard arithmetic expressions: addition, subtraction, multiplication, division, and percent. The expressions may also include numeric constants, coordinate references, and math functions.

The first character in a substitution expression is always "=". This informs the system that the entry is just such an expression. The "!" represents each occurrence of the variable.

USER: with the pointer at A19, enter [1000]<enter>

SS: the value 1250.00 appears at A19

USER: any value entered at A19 will automatically be evaluated using the substitution expression. Enter [1550]<enter>.

SS: the value 1937.50 appears at A19

USER: the remaining chapters in this manual do not make use of the PAYROLL model so press <menu><Q> to quit the model. Press <A> to save your work and return to the Model Selection Menu.

SUMMARY — You should now know how to create your own substitution expressions. You will find this feature handy when you enter expressions for which you frequently need to calculate one value given another.

Chapter 27 — Sorting Columns

GOAL: Now we will demonstrate the Order command, which enables you to sort data by columns in either ascending or descending order. This command is useful when you want to arrange columns and data in various orders for different purposes.

EXAMPLE SITUATION — We will use the DEMO model to demonstrate the Order command. This model consists of an accounts receivable table. We would like to rearrange the table several different ways for reference purposes.

SS: the Model Selection Menu is displayed

USER: highlight "Select" and press <do>. Enter [DEMO]<enter> in response to the Select prompt.

SS: the DEMO model appears on your screen and should look similar to the following:

W1	A	B	C	D	E	F	G	H	I	J	K
1	ACCOUNTS RECEIVABLE FOR XYZ PEN COMPANY										
2											
3	cust		units		price		sale		paid		due
4											
5					0.49						
6	Sssss		5,000				$2,450.00		2000.00		450.00
7	Bbbbb		18,000				$8,820.00		0.00		8820.00
8	Mmmmm		400				$196.00		196.00		0.00
9	Ppppp		1,200				$588.00		500.00		88.00
10	Aaaaa		15,000				$7,350.00		2500.00		4850.00
11	Ttttt		2,000				$980.00		980.00		0.00
12	Jjjjj		800				$392.00		300.00		92.00
13	Rrrrr		8,000				$3,920.00		0.00		3920.00
14	Xxxxx		12,000				$5,880.00		5880.00		0.00
15	Yyyyy		20,000				$9,800.00		8000.00		1800.00
16	Kkkkk		1,500				$735.00		700.00		35.00
17											
18	Total		83,900				$41,111.00		21056.00		20055.00

Model DATA:DEMO   81%   Pointer: A1   Current: A1   LR   W:1 #0
     input:

USER: press <menu><O> to access the Order command

SS: the following prompt appears:

```
┌─────────────────────────────────────────────────────┐
│           Order Sort over area:   A1                  │
└─────────────────────────────────────────────────────┘
```

USER: enter [A6:O16]<enter> to sort over entire range of entries in the table

SS: prompts "Order Sort by which column?"

USER: we would like to arrange the table by the dollar amount of sales in descending order. Press <G> followed by <enter> to sort by sales (column G).

SS: prompts "Order: Sort Ascending Descending"

USER: press <D> to sort in descending order

SS: the model will now be rearranged to look like the diagram below:

W1	A	B	C	D	E	F	G	H	I	J	K
1	ACCOUNTS RECEIVABLE FOR XYZ PEN COMPANY										
2											
3	cust		units		price		sale		paid		due
4											
5					0.49						
6	Yyyyy		20,000				$9,800.00		8000.00		1800.00
7	Bbbbb		18,000				$8,820.00		0.00		8820.00
8	Aaaaa		15,000				$7,350.00		2500.00		4850.00
9	Xxxxx		12,000				$5,880.00		5880.00		0.00
10	Rrrrr		8,000				$3,920.00		0.00		3920.00
11	Sssss		5,000				$2,450.00		2000.00		450.00
12	Ttttt		2,000				$980.00		980.00		0.00
13	Kkkkk		1,500				$735.00		700.00		35.00
14	Ppppp		1,200				$588.00		500.00		88.00
15	Jjjjj		800				$392.00		300.00		92.00
16	Mmmmm		400				$196.00		196.00		0.00
17											
18	Total		83,900				$41,111.00		21056.00		20055.00

Model DATA:DEMO   81%   Pointer: A1   Current: A1   LR   W:1   #0
        input:

Now we will sort the table in alphabetical order by customer name.

USER: press <O> to access the Order option again. In response to the area prompt, enter [A6:O16]<enter>. Press <A><enter> in response to the column prompt to sort by customer name (column A). Press <A> again to sort in ascending order.

SS: the model will now be set up so that "Aaaaa" is the first customer in the list, and "Yyyyy" is the last.

USER: press <Q> to leave the model

SS: prompts "Quit: After Saving Without Saving"

USER: press <W> to retain the original model. Press <M> to return to the
            Model Selection Menu.

SUMMARY — You have now learned how to use the Sort command to arrange a
table by columns. This enables you to reorganize data in alphabetical as well as
numerical order.

Chapter 28 — Naming Areas of the Worksheet

GOAL: In this chapter, we discuss the Name command. The Name command is used to assign names to areas of the array. The names can then be referenced, used in equations, or used in response to any prompt which asks "What area?".

EXAMPLE SITUATION — We will name several areas of the PROFIT model and then view the names and their corresponding areas of the worksheet.

USER: the Model Selection Menu is displayed on your screen. Press <do> for "Select" and choose the PROFIT model.

SS: the PROFIT model appears on your screen.

USER: press <menu><N> to access the Name command.

SS: prompts "Name What name:' "

USER: enter [YEAR]<enter> to assign the name 'YEAR

SS: prompts "Name What area: "

USER: enter [A5:A9]<enter> to assign the name 'YEAR to the entries in column A

SS: a message informing you that the name 'YEAR has been set appears. Press <do> to continue.

A name may be up to nine characters long, and may be a combination of letters and numbers. The named area may be a row, a column, a single entry, a partial row or column, or an area defined by a top left and a bottom right coordinate. You may establish up to 100 names per model. Whenever a name is referenced, it must be preceded by an apostrophe.

USER: press <N> to acess the Name command again. In response to the appropriate prompts, make the following entries:

[REV]	[B5:B9]	(Revenue)
[EXP]	[C5:C9]	(Expenses)
[PBT]	[D5:D9]	(Profit before taxes)
[GR]	[B11]	(Growth rate)

SS: we would now like to index the Revenue entries and the Profit Before Taxes entries. Indexes identify an association between a variable and its relative position in a list of variables. Our variables will be indexed by year.

USER: press <N> to access the Name command again. In response to the prompt "Name What name :"' enter [REV]<enter>.

SS: the following message appears:

Name: Name in use: Change Unset Index

The Change option enables you to assign a new area to the 'Name, while the Unset option eliminates the 'Name-area association all together. The Index option allow you to assign an index to the entries in the named area.

USER: press <I> to select the Index option

SS: prompts "Name Index: Index by which name: "

USER: enter [YEAR]<enter>. REV is now indexed by YEAR. Press <do> to continue. Repeat the sequence of events to index PBT by YEAR.

SS: both REV and PBT are indexed. Now we can refer to the entry at B5 as 'REV [1983]. The index value is entered in square brackets.

USER: to see all the names that have been set for this model, press <N> to access the Name command again. When the "Name What name:"' prompt appears, press <search>.

SS: the following Name window appears in the middle of your screen:

Name	Area	Index
YEAR	A5:A9	
REV	B5:B9	YEAR
EXP	C5:C9	
PBT	D5:D9	YEAR
GR	B11	
	<do> <undo> <up> <down>	

When using the 'Name command to define a named row or column, you need only enter the row number, or column letter to the prompt "Name What area:".

USER: press <undo> to return to the Name command

The 'Names can be used in a variety of ways. First, you can use <tab> to move to a named entry.

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Secondly, you can reference an entry by its location in a named area, if the named area is a partial row or column. 'YEAR is a partial column containing 5 entries. The entry at A5 is at location #1, and the entry at A9 is at location #5. Therefore, by entering ['YEAR[3]], the entry at A7 will be displayed.

Thirdly, you may intersect one area name with another area name to refer to a particular entry or range of entries. For example, if row 6 was named 'YR1984, you could refer to 1984 operating expenses by making this entry: ['YR1984 ∧ 'EXP].

Lastly, named areas can be used in mathematical equations. If you assigned the name 'REV to column B and 'EXP to column C, then the figures in column D could be calculated by the following expression: " 'REV-'EXP"

In reponse to command prompts, you may refer to named areas in either of the following two ways:

1. enter the name reference preceded by an apostrophe

2. press <search> to access the Name window. Highlight the appropriate Name and press <do>.

USER: press <undo> to exit the Name command

SUMMARY - The Name command is used to assign names to designated areas of the model which can then be used for reference purposes.

Chapter 29 — Goal Seeking

GOAL: Now we will introduce you to Goal Seeking. This is an advanced option that enables you to specify target values or "goals" for one or more variables and then obtain values for the spreadsheet entries which achieve these goals. A goal is set for the dependent variable, whose value is a function of a specific independent variable. Goal Seeking computes the value of the independent variable which will achieve your specified goal.

EXAMPLE SITUATION — We will demonstrate several examples of Goal Seeking using the PROFIT model. The model projects a company s gross profits over the next five years. Revenue and operating expenses are expected to increase by 5% each year. Profit before taxes is simply revenue minus expenses. We will use the Goal Seeking command to calculate variable values corresponding to the target values set for Profit before taxes.

USER: to activate the Goal Seeking command, press <G>

SS: your screen should now resemble the following:

W1	A	B	C	D	E
1	PROFIT				
2			OPERATING	PROFIT	
3	YEAR	REVENUE	EXPENSES	BEFORE TAXES	
4					
5	1983	$1,000.00	$800.00	$200.00	
6	1984	$1,050.00	$840.00	$210.00	
7	1985	$1,102.50	$882.00	$220.50	
8	1986	$1,157.63	$926.10	$231.53	
9	1987	$1,215.51	$972.41	$243.10	
10					
11	GROWTH RATE		1.05		
12					

Model DATA:PROFIT	87%	Pointer: A1	Current: A1	LR	W:1 #0

GOAL SEEKING

DEPENDENT Variable	TARGET Value	INDEPENDENT Variable	REQUIRED Value
A1			

USER: the coordinate in the DEPENDENT Variable column is the current location of the pointer in the PROFIT model. Move the pointer to D9 or enter [D9], which is the location of PBT[1987]. Press <enter>.

SS: Notice that the coordinate in the DEPENDENT Variable column changes as you move the pointer. The next entry to be made is the TARGET value.

USER: enter [300] followed by <enter>.

SS: prompts "Enter another variable?"

USER: press <undo> to indicate that we want to calculate this goal only

SS: the pointer automatically moves to the INDEPENDENT Variable column

USER: move the pointer to B11 and press <enter>. Our independent variable is the Growth Rate.

SS: the program will now proceed to compute a series of five iterations to determine the value required of the independent variable. If the process requires more than 5 iterations, it will ask you if you want another series of iterations. In our example, a solution appears after three iterations. The bottom half of your screen should resemble the table below:

GOAL SEEKING				Iteration = 3
DEPENDENT Variable	CURRENT Value	TARGET Value	INDEPENDENT Variable	REQUIRED Value
D9	300.0000	300.0000	B11	1.1066
Save Independent Variables?				

USER: press <undo> since we do not want to save the new values in our model

SS: prompts "Do you wish to Goal Seek again?"

USER: press <do>. This time we will enter the names of the variables rather than their coordinates. Either method can be used in Goal Seeking. Enter the data as follows:

DEPENDENT Variable:	['PBT[1987]]<enter>
TARGET Value:	[250] <enter>
Enter another variable?	<undo>
INDEPENDENT Variable	['REV[1983]]<enter>

SS: after the Goal Seeking process is complete, the bottom half of your screen should resemble the following:

GOAL SEEKING				Iteration = 1
DEPENDENT Variable	CURRENT Value	TARGET Value	INDEPENDENT Variable	REQUIRED Value
'PBT[1987]	249.9999	250.0000	'REV[1983]	1005.6756
		Save Independent Variables?		

USER: in response to the save prompt, press <undo>. In response to the prompt "Do you wish to Goal Seek again?" press <do>.

SS: we will work through one more example of the Goal Seeking command. This time we will enter two goals which the program will run simultaneously.

USER: enter the data as follows:

DEPENDENT Variable:	[D5]<enter>	(PBT[1983])
TARGET Value:	[50]<enter>	
Enter another variable?	<do>	
DEPENDENT Variable:	[D9]<enter>	(PBT[1987])
TARGET Value:	[225]<enter>	
Enter another variable?	<undo>	
INDEPENDENT Variable	[B5]<enter>	(REV[1983])
INDEPENDENT Variable	[B11]<enter>	(GR)

SS: after the Goal Seeking process has been executed, your screen will resemble the following:

GOAL SEEKING				Iteration = 5
DEPENDENT Variable	CURRENT Value	TARGET Value	INDEPENDENT Variable	REQUIRED Value
D5	50.0000	50.0000	B5	850.0000
D9	224.9999	225.0000	B11	1.4564

Save Independent Variables?

USER: respond with <undo> to the next two prompts and press <Q> to leave the model. Do not save your work; return to the Model Selection Menu.

NOTE:

The Goal Seeking option is most useful when you understand the underlying mathematical models. The program uses Newton's algorithm to obtain solutions. The method may be described as follows: Our goal is to obtain a desired target value for a dependent variable by choosing an appropriate value for a independent variable. The program is initiated by a value for the independent variable given by the program user. The algorithm uses this value to compute the corresponding value of the dependent variable. If the result is within .001 of the target value, the target is considered achieved and the procedure ends. If the result differs by more than .001, the procedure is repeated until the goal is reached.

There are some cases where the goal seeking procedure may fail to reach the desired target. Some of these circumstances are discussed below.

1) Models for which the target value has no feasible solution

In such cases, models may be inadvertently chosen such that the target value cannot have a mathematical solution. This may happen if the independent variable and the dependent variable are, in fact, unrelated. Other times, the model may restrict the dependent variable to a set of values which do not include the target value. Such restrictions might occur through the use of conditional statements in the dependent variable or in the function that affects the dependent variable. If an impossible target value is chosen, the program will not reach a desired goal and may repeat estimates for the independent variable.

2) Inappropriate initial values for the independent variable

Goal Seeking works most effectively if the initial value for the independent variable is close to the final calculated value. In some models, it is possible that the initial value of the independent variable will result in no feasible solution. To change the initial value of the dependent variable, return to the Spreadsheet model and change the value assigned to the independent variable. Goal Seeking will then use this new value for the initial estimation.

SUMMARY — You should now be familiar with the capabilities of the Goal Seeking command as well as with its limitations. Goal Seeking provides a valuable tool for making projections and assessing hypothetical situations.

Computer Museum

Chapter 30 — Consolidation

GOAL: The Consolidation command allows you to consolidate the numerical data from a number of specified Spreadsheet models and display the final data in a separate table. The consolidation process consists of locating an entry at a specified coordinate in each of the listed models and summing up the values at that location. Therefore, each of the models accessed must be set up in exactly the same format.

EXAMPLE SITUATION - The CONSOL1 and CONSOL2 models contain revenue and profit data for two divisions of a particular company. We would like to consolidate these two models into one so that we may work with the total revenue and profit figures for the company. To make use of the Consolidation feature, we will first create a model entitled CORP into which the consolidated data will be entered. We will then proceed with the various steps necessary to create our consolidated model.

SS: the Model Selection Menu is displayed on your screen

USER: move to "Copy" and press <do>. We are going to copy one of the existing CONSOL models to ensure the proper set-up and then make some minor changes in the new model.

SS: prompts "Copy what model: "

USER: enter [CONSOL1] followed by <enter>

Here you could have chosen either CONSOL1 or CONSOL2 since the format of each model is identical.

SS: prompts "Copy DATA:CONSOL1.FMD to what model (new name):"

USER: enter the name [CORP] followed by <enter>

SS: prompts "Enter password for new model (<enter> if none): "

USER: press <enter> since a password is not necessary

SS: the CONSOL1 model appears on the screen with the new name CORP in the model description line.

USER: we want to change the title located at coordinate A1. With the pointer at A1, enter [CORPORATION] followed by <enter>.

SS: the new title appears in the model

USER: move to coordinate B6. This is the first of the entries we would like to consolidate. In order to specify to the system precisely which entries we wish to consolidate, we will set the Consolidation attribute on for

those entries. Remember that this attribute must be set in the model that will contain the final consolidated data. Press <menu><F> and <A> to access the Attributes option of the Format command.

SS: the Attributes prompt appears

USER: press <right> to move to the third question mark and press <change> until the "C" appears in place of the "?" Press <do> to accept the attribute.

SS: prompts "Format applies to what area: B6"

USER: enter [:D11]<enter> because we want to consolidate this range of entries

SS: the Consolidation attribute is set for entries B6:D11

USER: press <menu><Q> to leave the new model

SS: prompts "Quit: Model_Selection_Menu Options Context"

USER: press <M>

SS: the Model Selection Menu is once again displayed on your screen

USER: move the cursor to "Setup_Consolidation" and press <do>

SS: prompts "Setup consolidation list for what model: ". This prompt asks you for the name of the model in which to consolidate your other models.

USER: enter [CORP] followed by <enter>

SS: the following window appears in the top right-hand corner of your screen:

Consolidation Setup
Model: CORF.FMD
ordinary list
<search> <delete> <change> <do> <undo>

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You have two options in Consolidation Setup: "ordinary list" and "recursive list." In our example, we will set up an ordinary list. <Change> toggles between the two options.

USER: press <change> until "ordinary list" is highlighted. We are going to set up the list of models to consolidate into CORP. Press <search>.

SS: the volume directory appears on your screen

USER: press <up> and <down> to move among the model names. Highlight CONSOL1.FMD and press <change>. Move the cursor to CONSOL2.FMD and press <change>. Notice that the two model names are now highlighted; this means that they have been included in the Setup list. Press <do> to return to Setup window and press <do> to accept the list.

SS: Model Selection Menu reappears

USER: move cursor to "Consolidate" and press <do>

SS: prompts "Consolidate what model: CORP.FMD." The name CORP automatically appears because we just set up the consolidation list for this model.

USER: press <enter>

SS: the following message appears on your screen:

```
Consolidating: . . . please wait . . . DATA:CORP.FMD
```

The consolidation process works as follows: the system locates the first entry in the Consolidate "to" model for which the attribute is set. In our model, this entry is at coordinate B6. The system then sums up the entries at B6 in each of the included models. The total is entered into the final model, CORP. This process is repeated for each entry set for consolidation. The previous entries in CORP are automatically overwritten when Consolidation begins.

SS: when Consolidation has been completed, the new model will appear on your screen. It should resemble the following:

W1	A	B	C	D
1	CORPORATION			
2	Quarterly Data			
3				
4	Quarter	Revenue	Expenses	Net Income
5				
6	1	29,000.00	18,900.00	10,100.00
7	2	28,100.00	19,400.00	8,700.00
8	3	34,300.00	19,800.00	14,500.00
9	4	42,500.00	21,000.00	21,500.00
10				
11	Total	133,900.00	79,100.00	54,800.00
12				
13				
14				
15				
16				
17				
18				

Model DATA:CORP   78%   Pointer: B5   Current: B5   +LR   W:1   #0
Input:

USER: press <menu><Q> to leave the model and press <M> to return to
the Model Selection Menu

If you have set up a consolidation list for a particular model and wish to delete it,
access the Setup Consolidation option and enter the name of your model. When the
Setup window appears, press <delete>. A prompt appears asking you to verify the
delete. Press <do> and the existing list will be cleared.

Although it was not demonstrated in this chapter, Spreadsheet is also capable of
performing recursive consolidation. Recursive consolidation enables you to
consolidate models that are themselves the result of consolidation, all in one series
of steps. Refer to the Consolidation chapter in the Spreadsheet Reference Manual for
more information.

SUMMARY — You are now capable of consolidating a number of similar models
into one.

Chapter 31 — Business Functions and Miscellaneous Functions

GOAL: In the next two chapters we will describe some additional functins and features of this spreadsheet module but will not work through guided examples. In this chapter, we describe a number of functions commonly used when constructing spreadsheet models.

There are two ways in which to use the following functions. You may view a solution below the matrix by entering the function on the input line and pressing <calculate/all>. To enter the solution directly into the matrix, move the pointer to the desired location, enter the function preceded by a " + " on the input line and press <enter>.

ANNUITY PRESENT VALUE

ENTRY: APV(payment,interest rate,no. of periods)

Annuity Present Value measures the present value of a future fixed income stream by discounting the future dollars back to the present at a given rate of compound interest. The user can then determine whether or not the investment is worthwhile.

For example, consider a project that costs $10,000 now and provides a return of $1200 a year for the next 10 years. Assume the market rate of interest is 13.5%.

$$APV(1200,.135,10) = 6382.42$$

The value of receiving $1200.00 a year for 10 years in today's terms is $6383.42. This particular project should not be undertaken since the cost is greater than the actual value.

DATE

ENTRY: DATE(="string")

The Date function allows you to enter the date into a coordinate location. To enter the system date, move the pointer to the coordinate where you would like the date to appear and enter the following: [+DATE()] <enter>. Do not enter a space between the parentheses.

To enter a different date into your model, move the pointer to the desired location and enter the date function with a specific date enclosed in quotation marks. The date may be of any form, but may not exceed nine characters. For example, to date your model October 25, 1983, enter [+ DATE (= "10-25-83")] and press < enter >.

Once you have entered a date into your model, you may enter it at other locations by positioning the pointer at the desired coordinate and entering [+DATE()] <enter>. This will access the last date that you entered, regardless of whether it was the system date or your own date.

You can update your date entries with the Recalculate command. Move the pointer to any one of the date entries and change that entry to the correct date. Press <menu><R> to recalculate and all date entries within the specified area will be updated.

DEPRECIATION

Depreciation is the process of allocating the cost of an asset to the periods in which service is rendered from the asset. This allows one to account for the decreasing value of the asset over its years of use.

There are a number of methods for calculating depreciation; this program includes the Double-Declining-Balance method and the Sum-of-the-Years'-Digits method. Each of these methods is an accelerated depreciation method in which larger proportions of the asset's cost are deducted in the early years of use. For each subsequent year of use, less and less is deducted from the current value until the salvage value is reached. (The second method deducts less depreciation in the early years than the first method) Both functions return the book value of the asset, which is the original value minus accumulated depreciation.

Double-Declining-Balance

ENTRY: DEPRD(cost,salvage value,total periods,period#)

In this method, the depreciation rate of the asset is its current book value divided by the number of periods it is expected to last. The asset is depreciated down to its salvage value.

Suppose we buy a $10,000.00 business car with an estimated life of 5 years and a salvage value of $800.00. The depreciation function will return the book value of the car after any given period. The following chart shows the book value returned by the function after each period, and also shows how the depreciation expense is calculated for each period.

period	expression	* book value *	depreciation
1	+DEPRD(10000,800,5,1)	6000.00	10000-6000= 4000
2	+DEPRD(10000,800,5,2)	3600.00	6000-3600= 2400
3	+DEPRD(10000,800,5,3)	2160.00	3600-2160= 1440
4	+DEPRD(10000,800,5,4)	1296.00	2160-1296= 864
5	+DEPRD(10000,800,5,5)	800.00	1296- 800= 496

Sum-of-the-Years-Digits

ENTRY: DEPRY(cost,salvage value,total periods,period#)

This method is calculated by applying a decreasing fraction to the asset's current value in each succeeding period. The fraction is based on the remaining periods of life of the asset at a particular time period.

Refer back to the $10,000 business car as an example. Now the salvage value of the car is $1,000. This method will return the following book values after each period:

period	expression	* book value *	depreciation
1	+DEPRY(10000,1000,5,1)	7000.00	10000-7000= 3000
2	+DEPRY(10000,1000,5,2)	4600.00	7000-4600= 2400
3	+DEPRY(10000,1000,5,3)	2800.00	4600-2800= 1800
4	+DEPRY(10000,1000,5,4)	1600.00	2800-1600= 1200
5	+DEPRY(10000,1000,5,5)	1000.00	1600-1000= 600

FUTURE VALUE

ENTRY: FV(present value,interest rate,no. of periods)

The Future Value function calculates how much a certain amount of money today will be worth at a particular time in the future if is invested at a given rate of compound interest.

Suppose you have $5,000 to invest, and there are two investment options available. The first option is to deposit the money for 4 years at a rate of 11% compounded quarterly. The second option is to deposit the money for 4 years at 12% interest compounded annually.

Using the Future Value function, we find the following:
$$FV(5000,.11/4,16) = 7717.55$$
$$FV(5000,.12,4) = 7867.60$$

In the first formula, the interest rate is compounded quarterly, so we divide the annual interest rate, .11, by 4. The "no. of periods" variable refers to the number of times the interest is compounded, which is 16 (4 years x 4 quarterly periods per year).

One can see that the second option is the better investment scheme.

INTERNAL RATE OF RETURN

ENTRY: IRR(initial estimate,investment range,return range)

The Internal Rate of Return is the interest rate at which the present value of the cash returns on an investment equals the present value of the cash outlays on that investment. It is often useful for comparing investment projects and determining if they are profitable.

The IRR function requires an initial estimate of the interest rate, the range of investments or cash outlays, and the range of returns or cash incomes (the investment range and return range come from your worksheet). An initial estimate of IRR is required because under certain circumstances, an investment scheme may

have more that one rate of return. For the initial estimate, enter 0 if you have no idea what it might be. If you expect the rate to be positive, enter 1. If you expect it to be negative, enter -1.

The example below demonstrates this function for an investment of \$400 which returns \$100 each year.

	A	B	C	D	E	F
1	investment	400.00	0.00	0.00	0.00	0.00
2	return	100.00	100.00	100.00	100.00	100.00
3						
4	IRR =	.0793				

The formula entered at B4 is: IRR(1,B1:F1,B2:F2)

LINEAR ESTIMATE

ENTRY: LNEST(range of entries,2nd rage (optional),project to)

The linear estimate function computes the best estimate of a predicted value based on a given value, or computes the best estimate of the necessary value by entering a hypothetical predicted value.

The first range of entries consists of values for the dependent variable, and the second range consists of values for the independent variable. If a second range of entries is not entered, it is assumed that the independent variable is a sequential range with values from one to the number of entries in the dependent range. The "project oo" value is the independent variable that the projection is based on.

The illustration below, where we have sales figures for the months of Jan, Feb, March and April, at coordinates C3, D3, E3, and F3, will serve as our example.

		A	B	C	D	E	F
1	MONTH:			JAN	FEB	MAR	APR
2							
3	SALES:			9000.00	9800.00	10200.00	9900.00
4							

To project sales for May, the fifth period, we would enter this expression:

LNEST(C3:F3,5)   = 10500.00

If we did not have sales information for the month of March, but wanted to project sales in June based on the sales figures for Jan, Feb, and April, we would have to give the system additional information. We must let the program know for what

periods we do have sales figures, or it will assume the amounts are for consecutive periods. The following table clarifies this point.

		A	B	C	D	E	F
1	MONTH:			JAN	FEB	APR	
2	PERIOD:			1	2	4	
3	SALES:			9000.00	9800.00	9900.00	
4							

To project sales for June based on this data we would enter the following formula:

LNEST(C3:E3,C2:E2,6) = 10535.71

This second range of entries lets the system know that Jan is period 1, Feb period 2, that period 3 is missing, and that April is period 4. The "project to" variable of 6 tells the system to project sales for June.

Variable ranges must be located in consecutive columns or rows. In other words, Jan and Feb sales figures cannot be located at F4 and F6 if the LNEST function is to be used.

LIST

ENTRY: LIST(index value,index location)

List is a vector look-up function that will return a value in a list given its location in that list.

	A	B	C	D	E	F	G	H	I
1									
2		'3	4	1	21	13	9		
3		3							
4		2							
5		5							
6		6							
7		7							

In the above simplified diagram of the Spreadsheet matrix, there is both a horizontal and a vertical list. In both lists the number 3 located at coordinate B2 has an index value of 0. If we move to the right one column along the horizontal list, our position has an index value of 1; if we move down one row along the vertical list, our position has an index value of -1. Thus, positive numbers indicate a horizontal list and negative numbers indicate a vertical list. The index location is the coordinate where the list begins, which, in the case of the diagram above, is B2. In effect, what we are doing when we use the LIST function is finding the beginning of a list and then locating the value at the nth position in that list. The following examples should be self-explanatory.

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LIST(0,B2)	=	3
LIST(-3,B2)	=	5
LIST(2,B2)	=	1

MODIFIED INTERNAL RATE OF RETURN

ENTRY: MIRR(initial estimate,investment range,return range,discount rate)

Modified Internal Rate of Return can be used instead of IRR, when there are periods in which you have a negative return on your investment. MIRR discounts negative cash returns at the current discount rate rather than at the calculated internal rate of return. Along with your initial estimate, the investment range, and the return range, this function requires you to enter the current discount rate. The following is an example:

Suppose you invest $75.00 in year 1 and receive $100.00 at the end of the year. In year 2, the project incurs a loss of $100.00 while in year 3, it returns $150.00. We have calculated MIRR for 10% and 20% interest rates.

	A	B	C	D
1	investment	75.00	0.00	0.00
2	return	100.00	100.00	150.00
3				
4	MIRR	(.1 discount rate)=		.2466
5	MIRR	(.2 discount rate)=		.3035

The formula at D4 is: MIRR(1,B1:D1,B2:D2,0.1)
The formula at D5 is: MIRR(1,B1:D1,B2:D2,0.2)

PAYMENT

ENTRY: PMT(value,interest rate,no. of periods)

The Payment function calculates the amount of the monthly, quarterly, yearly, etc., payments that must be made on a loan at a given interest rate, and over a certain period of time.

Say, for instance, you need to borrow $6,000 to help pay for a new car. You want to compare the amounts of your monthly payments at an interest rate of 16% when the payments extend over 3 years and when the payments extend over 4 years. Use the PMT function to calculate the monthly payments.

| 3 years: | PMT(6000,.16/12,36) | = 210.94/month |
| 4 years: | PMT(6000,.16/12,48) | =170.04/month |

To find out how much quarterly payments would be, the formulas would look like this:

| 3 years: | PMT(6000,.16/4,12) | = 639.31/per quarter |
| 4 years: | PMT(6000,.16/4,16) | = 514.92/per quarter |

PRESENT VALUE

ENTRY: PV(future value,interest rate per period,no. of periods)

Present Value measures how much an amount of money in the future is worth today by discounting that future amount back to the present at a given compound rate of interest. The function will calculate how much you must invest today at a specified rate of interest to attain a certain amount of money at a given time in the future. "No. of periods" refers to the time periods from now to the specified future date.

For example, suppose you would like to have $10,000 in 5 years. At an interest rate of 13% compounded quarterly, the following is calculated:

$$PV(10000,.13/4,20) = 5274.71$$

Since the interest rate generally refers to an annual rate, the interest rate to be used in the calculation is divided by 4 for the 4 quarterly periods in a year and the number of years is multiplied by 4 to represent 20 quarterly periods. Therefore, it is necessary to invest $5,275 today to earn $10,000 in 5 years at 13%.

TABLE

ENTRY: TABLE(key value,key column:look-up column)

The Table function searches a table for a (possibly discontinuous) value and retrieves a corresponding value from a tabular set of expressions.

The following table is a small example of a payroll tax table. The values on the left are ranges of weekly salaries, the values in column E are tax rates for single employees, and the values in column F are tax rates for married employees.

	D	E	F
	salary	single	married
4	0.00	.10	.08
5	100.00	.20	.17
6	200.00	.27	.24
7	350.00	.31	.27

If you wanted to use this table to look-up the tax rate for a single employee earning $150.00 a week you would enter:

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TABLE(150,D4:E7)

and a value of .20 will be entered at the coordinate where the pointer is located.

To look-up the tax rate for a married employee earning $300.00 per week, type:

TABLE(300,D4:F7)

and a value of .24 will be entered at the coordinate where the pointer is located.

The TABLE function will also look-up a text entry, as long as the key column is made up of numeric entries. Nine characters of text can be retrieved. If your text entries are longer than nine characters, only the first nine will be recognized.

TIME

ENTRY: TIME(="time")   .

To enter the time into your array, move the pointer to the location where you want the time to appear and enter the time function with a specific time enclosed in quotation marks. The time may be expressed in any format but should not exceed nine characters. For example, to set the time to 11:45 a.m., enter [+TIME(="11:45 am")] and press <enter>.

If you would like to enter the same time into another location in your model, move to the desired coordinate and enter [+TIME()]. There should be no space between the parentheses.

To reset the time, move the pointer to one of the time entries and correct the time. Use the Recalculate command to update the remaining entries by pressing <R> and then indicating the area of the model which contains those time entries.

Chapter 32 — Conditional Expressions

GOAL: In this chapter, we discuss conditional expressions. These expressions can be used in the same way we use the various arithmetic expressions.

This spreadsheet program makes use of conditional statements that take the form:

IF		THEN		ELSE
Condition	|	statement to execute if condition is true	|	statement to execute if condition is false

where the "|" is used to divide the expression into its three parts.

This means that IF a condition you establish is true, THEN execute the first statement, ELSE execute the second statement. Below is a further explanation of each part of a conditional expression.

Condition

A Condition may include numerical values and coordinate references. The values may be operated on by relational operators, logical operators and arithmetic operators, or any combination of these three.

Relational Operators:

    $<$ less than
    $<=$ less than or equal to
    $=$ equal to
    $>$ greater than
    $>=$ greater than or equal to
    $<>$ not equal to

Logical Operators:

    *   AND: the intersection of 2 values; both values must be true for the entire expression to be true

    +   OR: the union of 2 values; only one of the 2 values must be true for the entire expression to be true

Arithmetic Operators:

    + - * / %

For numerical manipulation of conditions evaluated to be true or false, the true condition will assume a numerical value of 1, and the false condition will assume a value of 0.

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Statement to execute if condition is true

After the first vertical bar (|), you may enter the statement you would like to be executed if the condition is true. This statement will be executed only if the condition is true. The statement may be a number, a coordinate, a formula involving any combination of both, or a string of nine or less characters enclosed in double quotes (e.g. "raise").

Statement to execute if condition is false

After the second vertical bar, you must enter a statement that you would like executed if the condition is evaluated to be false. The statement may be a number, a coordinate, a formula involving any combination of both, or a string of nine or less characters enclosed in double quotes.

EXAMPLES

Below is a list of example conditional expressions followed by an explanation of each. For reasons of clarity we will say the entry in each case is being made at coordinate H8.

$$H6>10$$

If the value of H6 is greater than 10, then the condition is true and a value of 1 will be displayed at H8. If the value of H6 is less than 10, the condition is false and a 0 will be displayed at H8.

$$D8>50|10\%D8|5\%D8$$

If the value at D8 is greater than 50, then the condition is true and 10% of D8 will be entered at H8. If the value at D8 is less than or equal to 50 then the condition is false and 5% of D8 will be entered at H8.

$$(B4<(2*F4))+(L4<100)|20|0$$

If the value at B4 is less than 2*F4 OR if L4 is less than 100, then the condition is true and 20 will be placed at H8. If neither part of the conditional expression is true, then the whole expression is false and a 0 will be placed at location H8.

$$100<=C3|"NO"|1.5*C3$$

If 100 is less than or equal to the value at C3, then the condition is true and the string 'NO' will be put at H8. If 100 is not less than C3, then the condition is false and the result of 1.5*C3 will be entered at H8.

Nested Conditional Statements

You also have the ability to create nested conditional expressions, where each part of the conditional statement (if| then| else) can be a conditional statement, and each

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part of this secondary conditional expression can be another conditional expression, and so on. This allows for more sophisticated categorizing.

Assume that you wanted an expression that would evaluate a list of sizes ranging from small, medium, large and X-large, when:

$$x<=6 \quad \text{small}$$
$$6<x<12 \quad \text{medium}$$
$$12<x<16 \quad \text{large}$$
$$x>16 \quad \text{x-large}$$

The following expression will complete this task. We will say that one of the numbers in this list is located at A4.

$$A4>6|(A4<12|\text{"Med"}|(A4<16|\text{"Lg"}|\text{"X-lg"}))|\text{"Sm"}$$

Suppose the value at A4 is 13. Let's walk this number through this expression. The first condition is whether 13 is greater than 6. It is obvious that this condition is true. If it were false we could have gone to the false statement of the expression which is "Sm".

13 is greater than 6 however, so we will go on to the true statement which then asks if 13 is less than 12. Again it is obvious that this condition is false. If it were true, we would go on to the true statement "Med".

13 is not less than 12 so we go on to the false statement which asks if our number 13 is less than 16. This condition is of course true, so we move onto the true statement which tells us that 13 is a size large. If our number had been greater than 16 at this point it would have evaluated to a size "X-large".

Chapter 33 — SIF Files

GOAL: In this chapter, we introduce Standard Interface Format files, more commonly referred to as SIF's. SIF's are text files which provide a means for passing information between different SPI modules and/or programs. We will demonstrate how to export data from a model to a SIF file for use by other programs, and how to read a SIF file into a Spreadsheet model by using the Transfer command.

EXAMPLE SITUATION — We are going to store the PROFIT model in a SIF file and then transfer that SIF file back to the screen.

USER: select the PROFIT model from the Model Selection Menu

SS: the model appears on your screen

USER: press <menu><F> to access the Format command and press <D> for the Data type option.

SS: prompts "Set data type to Numeric Text"

USER: press <T> for text

SS: prompts "Format applies to area: "

USER: enter [B5:D9] followed by <enter>

SS: the expressions associated with each of the numeric entries are displayed in place of the values

SIF files store only raw data and do not include model-specific information. Raw data refers to the data that appears on your screen. This means that all numeric entries will be stored as numbers and their corresponding expressions will be lost. By changing the numeric values to text with the Format:Data type option, we are able to store the expressions and later retrieve their corresponding values.

USER: press <T> to access the Transfer command

SS: prompts "Transfer: Export_data Import_data"

USER: press <E> to export the model to a SIF file

Exporting a file refers to converting a Spreadsheet model into a SIF text file. The information in your file is automatically written into standard format for use by other programs.

SS: prompts "Transfer: Enter data filename:"

USER: enter the name [SIFPROF] followed by <enter>

SS: prompts the following:

Transfer: Data records are spreadsheet   Rows   Columns

This prompt asks whether you would like the data exported by row or by column.

USER: press <R> to export data by rows

SS: the following prompt appears:

Transfer: Save what area of spreadsheet model:

USER: enter [A1:D11]<enter>. These are the top-left and bottom-right coordinates of our model.

SS: the program begins exporting data from coordinate A1 and exports data from left to right, row by row. When the export process is complete, the file is stored and can be accessed from other SPI programs.

USER: now we would like to import a SIF file into a Spreadsheet model. You may import a file into a new model or into an existing model. We will import the file we created above back into a new model. First we will restore the values to the screen. Press <menu><F> and <D> to access the Data type option. Press <do> to set the type to Numeric.

SS: prompts "Format applies to area: A1"

USER: enter [B5:D9]<enter>

SS: the values are restored into the model along with the appropriate dollar signs and commas

USER: press <menu><Q> to leave the model and press <A> to save the changes. Press <M> to return to the Model Selection Menu.

SS: the Model Selection Menu is displayed

USER: press <N> to access the New option. In response to the model name prompt, enter [XPROFIT] followed by <enter>. Press <enter> in response to the password prompt.

SS: the empty worksheet is displayed on your screen

USER: press <menu><T> to access the Transfer command and press <I>
       to import data.

SS: prompts "Transfer: Enter data filename:"

USER: enter [SIFPROF]<enter>. When the row/column prompt appears,
       press <R> to import the data by rows.

SS: the next prompt is:

```
Transfer: Load to coordinate (top-left):
```

USER: enter [A1] followed by <enter>. Remember that in order for the
       coordinate references to be interpreted correctly, they must be loaded
       in the same position as the original model.

SS: the system will enter the data into the array starting at coordinate A1
       and continuing by row. The imported data on your screen should
       resemble the following:

W1	A	B	C	D	E
1	PROFIT				
2					
3	YEAR		OPERATING		PROFIT
4		REVENUE	EXPENSES		BEFORE TAXES
5					
6		1983 1000.00	800.00		+B5-C5
7		1984 +B5*B11	+C5*B11		+B6-C6
8		1985 +B6*B11	+C6*B11		+B7-C7
9		1986 +B7*B11	+C7*B11		+B8-C8
10		1987 +B8*B11	+C8*B11		+B9-C9
11	GROWTH RATE		1.05		
12					
13					
14					
15					
16					
17					
18					

Model DATA:XPROFIT   82%   Pointer: A1   Current: A1   LR   W:1 #0

All numeric entries that have been imported are right-justified and all text entries
are left-justified. Numeric entries are stored exactly as they appear on the screen.
Therefore, if the number "565.3333" is contained in coordinate D7 but appears as
"565.33," it will be stored with only two places of precision.

Data imported from a SIF file have only default characteristics; in other words, attributes and adjusted column widths will not transfer over. If you export by rows and import by columns, or vice versa, the axes of your model will be reversed. The axes should be reversed only if your model contains no special text (such as /, *, -, and +) because it may change.

USER: to retrieve the numeric values in our imported PROFIT model, access the Data type option again by pressing <menu> <F> and <D>.

SS: prompts "Set data type to Numeric Text"

USER: press <N> because we would like to have the expressions interpreted as numerical entries

SS: prompts "Format applies to area: "

USER: enter [B5:D9] followed by <enter>

SS: the values appear on your screen without the dollar sign and commas.

USER: when you are ready to leave, press <menu><Q>. Press <M> to return to the Model Selection Menu.

SUMMARY — You now know how to import data from and export data to SIF files. You will find this feature extremely helpful if you have access to a number of different SPI programs in which to exchange data.

Chapter 34 — Exchanging Data with Other Modules

NOTE: The Context feature discussed in this chapter applies only to the Spreadsheet program as a module of the Open Access integrated package. If your version of Spreadsheet is a separate, stand-alone program, disregard this chapter.

GOAL: In this chapter, we discuss the Context feature of this program, which is accessible from the Quit command. With Context you can send data directly to the other available program modules.

Context files differ from SIF files in that you can send information directly to another program module with Context. SIF files merely store information.

Sending Context Data

When you want to send Spreadsheet model data to another program, press <menu><Q> to access the Quit command. The system prompts "Quit: Model Selection_Menu Options Context".

Press <C> to access the Context option. The following prompt appears:

```
┌─────────────────────────────────────────────────────────┐
│                                                          │
│        Context: Enter context by Rows Colums             │
│                                                          │
└─────────────────────────────────────────────────────────┘
```

Indicate whether you want to send data by rows or columns by pressing <R> for rows or <C> for columns. The next prompt is:

```
┌─────────────────────────────────────────────────────────┐
│                                                          │
│        Context: Get context data from what area?         │
│                                                          │
└─────────────────────────────────────────────────────────┘
```

Enter the appropriate range and press <enter>. An options window listing the available destinations for your data appears on the righthand side of the screen. To select a destination, highlight the name and press <do>.

You will then be prompted for the name of the file in which to enter the context data. If you do not want to enter the data into an existing file simply press <enter>.

After the context data has been stored, the model on your screen will be replaced by the main menu of your destination module. Refer to the Integration section of this manual for further information.

Receiving Context Data

The following message appears when Context data has been sent to Spreadsheet from another program.

> Context data has been sent from another option.
> Enter data into what model: _____

Enter the model name. If the model has a password, you will be prompted for it. You may enter the data into a new or existing model. When the model appears on your screen, you are prompted with the following:

> Context: Load to coordinate (top-left): A1

Enter the coordinate in the top left corner of the area in which you want the data to appear and press <enter>. The system will proceed to load the data into your model.

As with SIF files, non-default entry formats, such as attributes and column widths, are not retained in Context.

SUMMARY — You should now understand how to transfer data to and from Spreadsheet to other program modules.

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VOLUME II — USER'S MANUAL

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SAMPLE GRAPHS

INTRODUCTION

In this section, we will lead the first time Graphics user on a guided tour of all the features and commands included in the Graphics module. The tour will be planned so that you will be introduced to the basic techniques of how to generate a graph on the screen and then proceed to more sophisticated methods of presentation and modification.

The Graphics tutorial is divided into four chapters which revolve around the powerful commands in this module. In addition, there is a Sample Graph section. The beginning tutorial chapters that follow introduce you to the main features of the Graphics module. Once these steps are mastered, you can then proceed to the intermediate sections where special features will be introduced to assist you in your final goal, creating your own graph.

Whether a complete novice or experienced software user, you will find the beginning chapters informative. Although we attempt to reach the inexperienced user, all readers will progressively gain expertise in the concepts of each chapter. By designing the Graphics tutorial in this way, we present a sequential flow of instructions leading to steps of greater complexity. This will ensure that if you do not have time to go through the entire tutorial at one time, you may return later and continue with the next lesson. However, it is important that you follow the sequence of chapters, do each exercise on your computer, and do not advance to a new one unless you feel comfortable with the current one. If for some reason you need to EXIT from the module, please see the Integration Package on "Options".

Graphics is a module for business users who need a variety of graph making abilities at the office. In order to provide a comprehensive framework for organizing the material, we have created a fictitious business situation. The user is Mr Wilson, manager of the "Good Earth Health Care Products, Inc." Mr. Wilson is presented with a number of tasks that are used to illustrate the procedures in working with the Graphics module.

Finally, if you need a reminder on a specific topic or run across areas where you need assistance, please consult the alphabetically arranged Reference Manual.

CHAPTER 1

CHART DESCRIPTION WINDOW AND GRAPHING

GOAL: In this chapter, we will introduce you to the main command window of Graphics and the Chart Description Window. We will demonstrate how to use the Load command to access an already existing Graph file. We will also demonstrate how to draw each of the types of graphs included in the Graphics module. Finally, we will describe items in the Chart Description Window and demonstrate how to alter the appearance of graphs by altering their items.

A unique feature of Graphics is the window concept. The large chart is the Chart Description Window. This window contains a description of the characteristics which identify the current graph file you are working with. These items may be modified to tailor the graph to fit your presentation needs as you enter each pop-up window. These windows each have a help window specific to itself.

We will explain the purpose of all of the characteristics listed on the screen in the course of this chapter. All of these features serve a specific purpose and are layed out in an easy-to-understand format.

If you have just accessed the Graphics module from Context (see Integrated Getting Started package) or Options the following screen will be presented. It is the initial Graphics screen.

```
┌─────────────────────────────────────────────────────────────┐
│  ┌─────────────────────────────────────────────────────┐    │
│  │                                                     │    │
│  │            Open Access — Graphics                   │    │
│  │      (c) 1983 Software Products International Inc.   │    │
│  │                                                     │    │
│  │                                                     │    │
│  │                                                     │    │
│  │                                                     │    │
│  │                                                     │    │
│  │                                                     │    │
│  │                                                     │    │
│  └─────────────────────────────────────────────────────┘    │
│                 Graphics Operations Menu                     │
├─────────────────────────────────────────────────────────────┤
│    Load Save Levels Import/Data View Print/Slide Graph Options │
├─────────────────────────────────────────────────────────────┤
│      <do> <undo> <arrows> <change> <help> <calc>            │
└─────────────────────────────────────────────────────────────┘
```
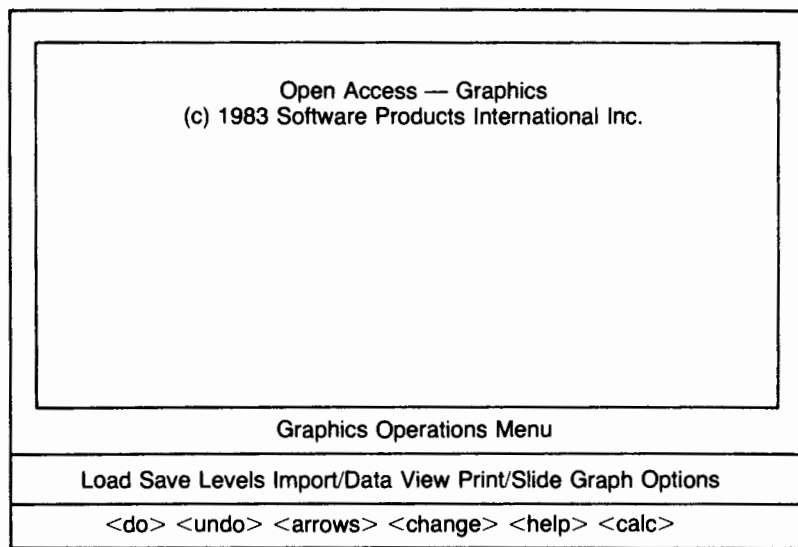
USER: press <change> to receive the Chart Description window resembling the figure on the following page.

```
Chart Name
Graph Type              Overlay   Windowed   Three-D   Simple
Total Levels            <1..30>      1
Total Positions         <1..30>     12
Current Level Number                 1
Current Level Name
Current Level Type                 Bar       Line      Pie
           Graph Titles                    Foreground    Background
Top                                          3 □              0
Side                                         3 □          .   0
Bottom                                       3 □              0
Desired Maximum                               Data Maximum
Desired Minimum                               Data Minimum
Axis Division           <1..10>    10

Palette                 <0..2>      2 □ □ □
Screen Color            <0..15>     0
```

```
<do> <undo> <arrows> <move keys> <menu> <graph> <ret> <help>
                          <calc>
```

Chart Description Window Parameters

EXAMPLE SITUATION — Mr. Wilson, being a resourceful manager, is about to use his Graphics module for the first time. In this exercise he learns how to display the main Chart Description window and then he is introduced to some general concepts necessary for understanding the Graphics module. If you have just entered the Graphics module, the illustration above will resemble your screen. It is the Default state of the screen. The first item you would notice is the Chart Name which is used for identification purposes. In the default state, the Chart Name is blank. Thus, the user cannot alter this field directly from the keyboard.

GR:
```
Graph Type:  Overlay   Windowed   3-D   Simple
```

USER: press the <left arrow> three times to select "Overlay", then press <ret> or <down arrow> to move to the next line.

The first letter of the "Graph Types" will also move the cursor, for example, entering <O> for "Overlay".

GR:
```
Total Levels <1 . . .30>  1
```

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USER: press <right arrow> two times to increase the "Total Levels" to "3". Press <left arrow> twice to decrease the "Total Levels" to "1". Now press <jump right> to increase the "Total Levels" to "30", then the <jump left> to decrease to "1".

The <move> keys allow you to move quickly to maximum or minimum numbers, rather than pressing the <arrow> keys for each consecutive number.

GR: | Total Positions (1 . . .30)   12 |

USER: press <ret> to get to "Total Positions". Use the same steps described for "Total Levels" for changing "Total Positions" numbers.

GR: the largest number that Graphics allows for "Total Levels" and "Total Positions" is "30", and the smallest number is "1". So for "Total Levels" you could have up to "30" graphs within one chart. Each level can be a Bar, Line, or Pie graph.

A Level is a collection of information consisting of a set of positions. A Position is an element of a Level. See the figure below. Further details of these two parameters can be found in the Glossary Section of the Reference Manual.

Sample Set of Data
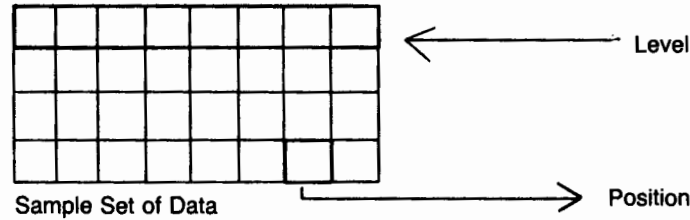
USER: press <ret> to go to the following three lines of the Chart Description window.

GR:
```
Current Level Number    1
Current Level Name
Current Level Type    Bar    Line    Pie
```

When "Simple" Graph Type is chosen, the Graphics module will draw a "Simple" Bar, Line, or Pie graph of the level number which corresponds to the one at "Current Level Number". Thus, only the Current Level will be graphed. The maximum attained by "Current Level Number" depends on the "Total Level" number set previously.

USER: let's suppose you have set the "Total Levels" number to "5", press <jump right>.

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GR: | Current Level Number 5 |

USER: press <left arrow> two times and notice that "Current Level Number" has decreased to "3". Now press the <ret> key.

GR: | Current Level Name |

USER: use the keyboard to enter a name for this "Current Level Number" (should be three). Fifteen characters are allowed for the "Current Level Name" field. Enter a name, then press <ret> to continue.

GR: | Current Level Type   Bar   Line   Pie |

USER: press <right arrow> once to highlight "Line", then press <right arrow> again to have "Pie" highlighted or enter <B>, <L>, <P> respectively to highlight "Level Types". Press the <menu> key to display the menu window.

The extreme lower portion of your screen is the main menu or command line. It's where the selection process occurs and serves you in the same way as a menu in a restaurant in that it provides you with a specific selection to choose from. These selections, as well as other aspects of the Chart Description window, will be discussed through out the remainder of this tutorial.

GR: the following figure should be displayed on your screen after pressing the <menu> key to access the main menu or command line.

```
┌──────────────────────────────────────────────────────────────────┐
│ Chart Name                                                         │
│ Graph Type          Overlay   Windowed   Three-D    Simple         │
│ Total Levels        <1..30>      1                                 │
│ Total Positions     <1..30>      12                                │
│ Current Level Number             1                                 │
│ Current Level Name                                                 │
│ Current Level Type            Bar        Line       Pie            │
│         Graph Titles                    Foreground    Background    │
│ Top                                        3 □           0          │
│ Side                                       3 □           0          │
│ Bottom                                     3 □           0          │
│ Desired Maximum                        Data Maximum                │
│ Desired Minimum                        Data Minimum                │
│ Axis Division       <1..10>    10                                  │
│                                                                    │
│ Palette             <0..2>     2 □ □ □                             │
│ Screen Color        <0..15>    0                                   │
│                                                                    │
│                                                                    │
├──────────────────────────────────────────────────────────────────┤
│                     Graphics Operations Menu                       │
└──────────────────────────────────────────────────────────────────┘
   ┌──────────────────────────────────────────────────────────────┐
   │ Load Save Levels Import/Data View Print/Slide Graph Options    │
   ├──────────────────────────────────────────────────────────────┤
   │ <do>   <undo>   <arrows>   <change>   <help>   <calc>          │
   └──────────────────────────────────────────────────────────────┘
```

At this point, you have eight different commands to choose from. These commands are the backbone of Graphics and will be discussed throughout the tutorial. NOTE that while in Graphic Operations Menu window, pressing <undo> will always return you to the Options window.

Special Functions

EXAMPLE SITUATION — Mr. Wilson, who values time, needs assistance in his Graphics module, but does not have his manual for reference.

From the main Chart Description window there are two auxiliary windows which contain information helpful to the user who may be without his manual. The first is the Help window which contains a built in reference directory when assistance is necessary for each individual command. After following the prompt directed below, the Chart Description help window will be displayed.

    USER: press the <help> key to receive the help window on your screen.

The second auxiliary window (the calculator) is also accessible at any time you desire. For example, if you need to make a few fast computations, follow the prompts below.

    GR: the Chart Description window is displayed on your screen.

    USER: press <help> key.

<div align="center">GR.II.6</div>

GR: the Help window opens.

USER: press <down arrow> to scroll the window. Then press the <help> key
        again and note the key associated with the <calc> function. When fin-
        ished, press <undo> twice to close the window.

GR: the Chart Description window is displayed on your screen.

USER: press the <calc> key and enter [505*506 =] to calculate the product of
        505 times 506. Then enter [/24 =] to divide the product by 24.

GR: number 10,647.08 is displayed on your screen.

USER: press <help> key.

GR: a Help window for the "calculator".

The Help window and the Calculator window can be accessed almost everywhere and
anytime. Note that when you open the Help window followed by opening the Calculator
window, you cannot open the Help window specific to the Calculator. Furthermore,
neither window is accessible whenever the "Graph" command is executed or in the
"Print/Slide" window while in a Graph mode. Notice at the bottom of each window
there is a display of the keys which can be used within that window depending upon the
effect you desire. Remember that the Help window is different for each command
selected.

USER: press the <undo> key twice to get back to the Chart Description
        Window.

Another special function of the Graphics module occurs when the Macro file is accessed
(see the integrated Getting Started package). When the module is in Graphics Mode
(drawing a graph onto your screen) the Macro mode is temporarily suspended as
opposed to text mode. To activate, press <undo> to abort the Graphics Mode. Remem-
ber that any key pressed while in the Graphics mode is not remembered by the Macro
file.

The Load Command

EXAMPLE SITUATION — Mr. Wilson would like to enter information into the
Chart Description window via the Load command. This can be pre-existing information
or new. One way of accomplishing this task is to access the Load window. Load is the
first command in the menu of the Chart Description Window. When selected, the user
has two options. He can Load the file name of his choice or he can use the <search>
key to locate a pre-existing one.

GR: the Load command is the only place in the Graphics module where a data
        disk exchange can take place.

The menu window is used to activate any command in the menu. This window may be initiated by first pressing <menu> and then entering the first character of the command word. In this case, where the first character (L) appears more than once, both the first and second characters would then be entered.

GR: the Graphics main Chart Description Window is displayed.

USER: press <menu>. The menu window pops up. Then enter [LO] for Load and press <do>.

GR: at this time we will Load a previously existing graph file into the Chart Description Window. Follow the steps outlined below. Your screen will resemble the display shown below.

```
Load File: _ _ _ _                    Windowed   Three-D   Simple

Current Level Number              1
Current Level Name
Current Level Type           Bar        Line        Pie
            Graph Titles            Foreground   Background
Top                                   3 []          0
Side                                  3 []          0
Bottom                                3 []          0
Desired Maximum                      Data Maximum
Desired Minimum                      Data Minimum
Axis Division        <1..10>   10

Palette              <0..2>     2 [] [] []
Screen Color         <0..15>    0


<do><undo><arrows><move keys><menu><graph><ret><help><calc>
```

You now have the option to type in the name of the chart that you would like to load into the scratch file, followed by <do>. It must be a pre-existing file name. If you are unsure about the contents of your disk, use the <search> key to open up the directory of pre-existing charts. If you do decide to enter your own file name remember that the character length cannot exceed "8" characters. It is not necessary to enter the "CHT" file suffix.

GR: at this point, a data disk change can occur. For example, if you wanted to Load a chart from another disk you could either enter a name from a pre-existing file and <do> or press the <search> key and <do> for your selection. Please remember that the Load window must be the currently active window for a successful change to take place. ONLY in the active Load window can a data disk exchange occur.

USER: press the <search> key, use <down arrow> to highlight "**GRAPHDEM.CHT**" and press <do> twice. Then press the <graph> key to see what this chart looks like.

GR: the "**GRAPHDEM.CHT**" is Loaded onto the Chart Description window. Graph Type must be selected. Notice that the "Total Levels" and "Total Positions" have changed from the Default Chart.

Chart Name: **GRAPHDEM.CHT**

Graph Type	Overlay	Windowed	Three-D	Simple
Total Levels	<1..30>	4		
Total Positions	<1..30>	8		
Current Level Number		1		
Current Level Name				
Current Level Type		Bar	Line	Pie

	Graph Titles	Foreground	Background
Top	— GRAPHICS for YOU —	2 ☐	0
Side	Demonstration Package	1 ☐	0
Bottom	Software Products International, Inc.	2 ☐	0

Desired Maximum   Data Maximum 500
Desired Minimum   Data Minimum 100

Axis Division	<1..10>	10
Palette	<0..2>	2 ☐ ☐ ☐
Screen Color	<0..15>	0

<do><undo><arrows><move keys><menu><graph><ret><help><calc>

Remember that if you would like to see the files which are on a volume other than the one displayed in the File window, press <page arrow> while the File window is displayed on the screen. This allows you to select from a number of volumes on which you would like to look for different Graphics files. We will go into detail concerning the Load command in Chapter 4.

The Save Command

EXAMPLE SITUATION — The Save command is the second option in the menu. Its purpose is to store information entered into a chart for later use. It provides you with two options; you can Save information under an already existing Chart Name or store the information under a new one.

In the Graphics module, there is a confirmation protection device that prevents the same file name from being inadvertently erased.

GR: your screen should now display the main Chart Description Window. The **"GRAPHDEM.CHT"** is already loaded.

USER: please press the <menu> key and enter <S> to access the Save command. The following window will appear:

```
┌─────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────────┐  Windowed  Three-D  Simple │
│  │ Save as GRAPHDEM.CHT             │                             │
│  └──────────────────────────────────┘                            │
│  Current Level Number              1                              │
│  Current Level Name                                               │
│  Current Level Type           Bar       Line        Pie          │
│              Graph Titles            Foreground    Background     │
│  Top       — GRAPHICS for YOU —         2 []          0          │
│  Side      Demonstration Package        1 []          0          │
│  Bottom    Software Products            2 []          0          │
│            International, Inc.                                    │
│  Desired Maximum                      Data Maximum 500           │
│  Desired Minimum                      Data Minimum 100           │
│    Axis Division        <1..10>   10                             │
│                                                                  │
│    Palette              <0..2>    2 [] [] []                     │
│    Screen Color         <0..13>   0                              │
└─────────────────────────────────────────────────────────────────┘

<do> <undo> <arrows> <move keys> <menu> <graph> <ret> <help> <calc>
```

USER: to Save the new information press <do> and **GRAPHDEM.CHT** is saved. If you are familiar with the name already, type in your desired name without exceeding "8" characters, then press <do> to confirm. Do not enter the "CHT" suffix.

GR: you can update an old chart by saving the altered chart under the same name as before. To avoid deleting accidently any pre-existing chart, use <search> to open the directory.

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When using this feature to save new information, try and use model names that reflect the application of the chart so that you can easily recall them when you Load them into the window. From this point on, the tutorial is based on the **GRAPHDEM.CHT**. Hence, Load the **GRAPHDEM.CHT** on to the Chart Description Window if you have not already done so.

Graph Commands with Graph Types

EXAMPLE SITUATION — Mr. Wilson has Loaded and Saved **GRAPHDEM.CHT** into the Chart Description Window. He wants to practice graphing this chart in various Graph Types allowed by Graphics.

The Graph Type selection allows you four different options of display. The Graph Types are Overlay, Windowed, Three-D and Simple. To give you a better idea of the different appearances of these graphs, we will summarize and <Graph> each of them.

> GR: to do this, we will use the Graph command which is the seventh option appearing in the lower right portion of the menu window. It is the only command without a help window. This command allows you to output to the screen a graph, according to the parameters set in the Chart Description Window. Since this command is used frequently, Graphics contains a separate <Graph> key that will allow you to enter the Graph command mode directly while you are in the Chart Description Window. Below the four Graph Types used in this command are described.

Graph Type	Explanation
Overlay	A two dimensional graph displaying superimposed levels. Only the Bar and Line types may be used in an Overlay presentation.
Windowed	Each level is represented as a two dimensional graph in its own separate window. These windows may overlap each other with different graph types in different windows.
Three-D	This graph is composed of one level where a Three-Dimensional bar graph represents all levels.
Simple	This Graph Type allows you to graph the "Current Level" in Bar, Line or Pie Graphs. Thus it is a display of only one level at a time.

When graphing remember the following restrictions, negative numbers cannot be used in Pie or Three-D. Three-D can only use Bar Level Type, Overlay and Three-D cannot use Pie Level Type. Although throughout the remainder of this tutorial, pressing the <menu> key and entering <G> is used to access the Graph command, PRESSING THE <GRAPH> KEY WILL IMMEDIATELY GRAPH YOUR CHART WHILE IN THE CHART DESCRIPTION WINDOW.

A) Simple Type

GR: move the cursor to the "Graph Type" field.

USER: enter <S> to highlight the "Simple" Graph Type. Now press <ret> five times to move the cursor to "Current Level Type". Enter <B> to highlight "Bar" Level Type. Press <menu> followed by a <G> to select the Graph command from the menu.

GR: a display of the "Simple" Bar graph is on your screen.

USER: press <undo> to return to the Chart Description Window. The cursor should be at the "Current Level Type". Enter <L> to highlight the "Line" Level Type, then <menu> and enter <G> to Graph.

GR: display of "Simple" Line graph resembling figure 1 in the Sample Graph chapter in this tutorial.

USER: press <undo> to return to the Chart Description Window and enter <P> to highlight the "Pie" Level Type. Press the <menu> key and then execute the "Graph" command.

GR: display of the Pie graph with one level.

We have seen a Single level displayed in terms of a Bar graph, a Pie graph, and a Line graph. However, you may have noticed that this chart example has more than one level. In fact, according to the Total Levels indicator, it has four levels. We have only been viewing the first level of data. We may now proceed to demonstrate how you can view four levels at the same time, but with different techniques.

USER: press <undo> to return to the Chart Description Window.

B) Three-D Type

EXAMPLE SITUATION — In this example of the "Three-Dimensional" graph, each of the levels is graphed in terms of a bar graph so that by combining all of the levels you form a multi-layered graph. Thus, by adding depth to a bar graph all Levels and Positions are viewed at once, without superimposition.

GR: the main Chart Description Window is on your screen. The cursor must be at the Graph Type level. If it is not, use the <up arrow> to move the cursor to that level.

USER: enter <T> to select the "Three-D" Graph Type, then press <menu> to access the menu window followed by <G> for Graph.

GR: the "Three-D" Bar graph is displayed on your screen with each of the "4" Levels and "8" Positions drawn on your screen from last level to the first with the last level in front. The graph should resemble Figure 7 in the Sample Graph chapter. Take note that negative numbers cannot be used with Graphing this particular Graph Type.

USER: after inspecting this Graph Type, press <do> then <undo> twice to restore the Chart Description Window on your screen.

C) Windowed Type

EXAMPLE SITUATION — Mr. Wilson would like to have several different Level Types displayed simultaneously on his screen. With the "Windowed" type of graph, each of the levels (up to 30) is graphed inside of its own separate window on the screen. After following the steps outlined below, this Graph Type will become a practical tool for generating graphs.

GR: the main Chart Description Window is on your screen.

USER: after highlighting the "Windowed" Graph Type press the <menu> key and enter <G> or <Graph> key for Graph.

If you would like to pause between display of each Level for the WINDOWED graph, press <do>; or else press <undo>.

**CONFIRM: <do> confirms <undo> cancels
<up> <down>**

The window above offers you the option to pause between screens by pressing <do>, and then ANY other key with the exception of the <undo> key to continue displaying each chart. A maximum of "30" is allowed. This is a beneficial feature when window size in each level is the same causing them to overlap.

USER: Press <undo> to see all windows at once.

GR: "Windowed" Type is displayed on your screen resembling Figure 4 in the Sample Graph chapter. Inspect the graph and press <undo> to continue to the next Graph Type.

Note that when you reduce the size of the data area by decreasing either Positions or Levels, you will lose the data in the space beyond these boundaries.

D) Overlay Type with the Levels Command Explanation

EXAMPLE SITUATION — The "Overlay" option, as the name implies, superimposes one graph upon another creating a single graph. The most effective appearance would involve combining a Bar with a Line graph. This being so, Pie was not designed to be used in Overlay. In this example, we will take a look at a combination of Bars and Lines in the Overlay mode.

GR: here, we must enter the Levels Window which can be accessed by selecting the third command in the command menu, "Levels". This window allows you to assign a name to each level and define its type.

By providing a window that allows you easy access to Level Name and Type changes, the user reduces the amount of time because you do not have to access the Chart Description window manually. Changing levels manually is advantageous when doing short, uninvolved procedures. Finally, Levels will be used throughout the remainder of the tutorial.

GR: the main Chart Description Window is displayed on your screen with **GRAPHDEM.CHT** loaded.

USER: make sure that "Overlay" is highlighted and press <menu>. Then enter [LE] for Levels.

GR: your screen should display the figure below. It is the Levels Window with **GRAPHDEM.CHT** data loaded in.

Level	Name	Type		
1	CA	Bar	Line	Pie
2	NY	Bar	Line	Pie
3	TX	Bar	Line	Pie
4	MN	Bar	Line	Pie

Levels Window
<arrows>   <move keys>
<do> <undo> puts window away

USER: press <ret> to jump from the "Name" column to the "Type" column. If the type specified for this level is different from the "Line" or "Bar" (i.e. if Pie if highlighted), then use the <arrow> keys to select "Bar" or "Line". After alteration, press <down arrow> to go to the next line within the "Type" column. Use arrows to change whenever "Pie" is highlighted. No level should have "Pie" Type highlighted. Press <undo> to close the Levels Window.

GR: the Chart Description window is displayed on your screen.

USER: press <menu> and enter <G> for Graph.

GR: on your screen is a display of a Bar and Line graph resembling Figure 2 in the Sample Graph chapter. If you see Figure 3 in the Sample Graph chapter you will notice that the "Overlay" type can superimpose Bar Level Types. Figure 6 depicts several different Level Types. The last level is ALWAYS drawn first on your screen.

USER: press <undo> to return to the Chart Description Window.

Entering Labels

EXAMPLE SITUATION — Mr. Wilson wants to enter new labels for his graphs in order to identify his graph and to change the color of the title display.

Please look at the middle part of your screen. You will see three rows under "Graph Title" called "Top", "Side" and "Bottom". These rows are used to title the graphs. Once you enter titles in the Chart Description Window, the system will automatically enter them into the graphs in their corresponding locations. The titles are displayed in each graph.

GR: notice in the main Chart Description Window the "Foreground" and "Background" headings. The "Foreground" feature changes the color of the characters and the "Background" changes the color behind those characters.

Foreground	Background
2 ☐	0
1 ☐	0
2 ☐	0

Colors are adjusted by changing the numbers in the columns. The numbers used range between "0 and 3". The square beside each number is the sample of the shade of the title and its background chosen.

Let's experiment with changing the colors of the titles. A unique advantage in doing this experiment is that as soon as you change the number, the corresponding color also changes. This avoids having to access <Graph> just to see how the selected colors will appear on the screen. The following page lists the steps to change colors.

A) Graph Title

GR: the main Chart Description Window is on your screen.

USER: use <arrows> and/or <ret> to place the cursor at the "Top" row. Enter [Inventory results]. Now press the <down arrow> once.

GR: the "Side" row is highlighted.

USER: enter [in thousands] and press <down arrow> once.

There is a maximum of "39" characters that can be entered for the Top and Bottom rows, with a maximum of "22" characters for the Side row.

GR: the "Bottom" row is highlighted.

USER: enter [prepared by Mr. Wilson], press the <menu> key and enter <G> for Graph.

GR: notice the new titles on Top, Side, and Bottom of the screen.

USER: enter <undo> to return to the Chart Description Window.

With Graphics, you can automatically place titles along the axes as well as at the Top, Side or Bottom of your page. It is easy to manipulate legends and use floating titles to label anything, anywhere on your display.

B) Foreground and Background

To move from column to column (i.e. from "Graph Titles" to "Foreground") use the <ret> key. To move within columns, use the <up arrow> or <down arrow> keys.

USER: use the <ret>, <up arrow> or <down arrow> to move the cursor to the "Foreground" column. Use the <right arrow> or <left arrow> to change the index number in the "Foreground" column.

When the number is changed, the shaded square beside the number also changes its color. This index number can range from "0" to number "3".

USER: use the <arrow> keys to move through the various selections until you obtain the number "1". The keys <jump left> or <jump right> may also be used, press <ret> to jump to Background column. Now use the <arrow> keys to change the index to "2". Press <menu> and enter <G> to Graph.

GR: please note the change in the color of the title.

USER: press <undo> to return to the Chart Description window. If you desire, practice changing the various shades of "Foreground" and "Background" of Side and Bottom titles.

Entering Maximum/Minimum and Axis-Division

EXAMPLE SITUATION — In this example, we would like to give you a brief description of the "Desired Maximum/Minimum" entry and the "Data Maximum/Minimum" entry located in the Chart Description Window.

Both entries serve as boundaries for your chart. The Data Maximum/Minimum row displays the boundaries of your data. The Desired Maximum/Minimum row allows you to proportion the scale to the data. It also takes precedence over the Data Maximum/Minimum option. The figure below resembles the Desired Maximum/Minimum row in the Chart Description Window.

GR: | Desired Maximum/Minimum |

These two options allow you to introduce cut-off points to the graph and take precedence over the following entry.

GR: | Data Maximum/Minimum |

These numbers display the maximum/minimum of the data set and cannot be altered directly when you are within the Chart Description Window.

USER: remember when entering numbers in the "Desired Maximum/Minimum" row that Maximum MUST be entered first. Enter number [7] for the Desired Maximum and number [3] for Desired Minimum, now press <menu> and enter <G>.

GR: the graph has number "7" as a maximum, and "3" as its minimum.

USER: press <undo>, <ret> to move to the Axis-Division row which ranges from number "1" up to number "10". To change the present number, use the <right arrow> or <left arrow> in the same fashion as you did with "Total Levels" and "Total Positions".

GR: | Axis Division <1 .. 10> |

Axis-Division is used to change the number of segments that the ordinate axis of the graph has. Default setting is number "10" and number "1" is the minimum.

USER: Press <left arrow> to alter the Axis Division. Press <graph> key, then reset "Axis-Division" to number "10". Press <menu> followed by a <G> to Graph the display.

GR: notice the divisions on the vertical axis. The Axis Division factor is governed by rounding off factors because of the built-in divider.

USER: press <undo> to return to the Chart Description window.

Changing Palette and Screen Color

EXAMPLE SITUATION — "Palette" controls the three tones available for changing the Foreground and Background appearances of Graph Titles and is more applicable to a user with a color monitor. There are two color schemes in the Palette. The number "0" has no shade. "Screen Color" (only applicable to user with a color monitor) is used to change the shade of the screen and together with Palette, provides a means of achieving color contrast on the screen. You have a choice of fifteen different shades to choose from. The View command (Chapter 3) always uses a black screen color.

GR: there are three tones available for changing the Foreground and Background appearances of Graph Titles, and for modifying the color of the graph itself.

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As with every entry in the Chart Description Window, both Palette and Screen Color are changed using the left and right <arrow> keys.

GR: the main Chart Description window is still on your screen.

USER: press the <down arrow> key to proceed to the "Palette" and "Screen Color".

GR:

Palette <0 . . 2>	0 ☐☐☐
Screen Color <0 . . 15>	2

USER: with the "Palette" row highlighted, use the <left arrow> once to get the number "1". Now use <down arrow> once to advance the cursor to "Screen Color". Press <right arrow> five times to select number "5", then press <menu> and enter <G>.

GR: inspect your graph, press <undo>, and repeat the process to alter color contrast again, then <undo> to return to the Chart Description window.

When setting the "Palette" and "Screen Color" for your graphics requirements, please take note that when "Palette" is set to "0", the color of the graph will be determined by the setting of the "Screen Color". Therefore, if "Palette" is "0" and "Screen Color" is "0" a graph will be produced with a black foreground and background. To avoid this situation, when "Palette" is "0", be certain that "Screen Color" is set to something other then "0".

We recommend that if you are using a monocrome monitor please make sure to set screen color to "0". The other numbers in Screen Color will only change the shade of the screen, thus creating a unclear graph.

We now have completed the first chapter of the tutorial. At this time you should understand that Graphics can produce all standard graphs using Lines, Bars, 3-D, Pie charts or area graphs, and you can use almost any combination of these formats within the same chart. If not, take some time to review what you have learned. If you feel comfortable with the topics discussed up to this point, continue on to Chapter 2.

You should now be able to:

* Access the main Chart Description Window
* Select a command from the Menu Window
* Load your GRAPHDEM.CHT onto the Chart Description Window an Save it
* Enter and Exit from a command window
* Understand the overall mechanics and functions of the Graphics module

If at this point you would like to exit from Graphics, press <menu> and enter <0> for Options.

CHAPTER 2

THE PRINT/SLIDE COMMAND

Goal: This command is the sixth option in the menu. When selected, a window will appear that provides you with options to print a graph, create slides and ASCII Files. We will demonstrate the various options available in the Print/Slide window such as actual printouts and slide shows.

Loading Files for Printing

EXAMPLE SITUATION — Mr. Wilson, manager of the "Good Earth Health Products" line, would like to take a few slides of various graphs in order to organize a slide show depicting the growth of the company and to have an actual printout for members of the board. To do this, he must first access the Load command in order to select a chart for his slides.

GR: the Graphics main Chart Description window is displayed.

USER: press <menu> and enter [LO] for Load. If **GRAPHDEM.CHT** is not already loaded onto your screen, type it in or use the <search> key and press <do> twice.

GR: you have now loaded **GRAPHDEM.CHT** onto the main Chart Description Window. You are not ready to enter the Print/Slide window.

Drawing a Graph

EXAMPLE SITUATION — Mr. Wilson has decided that he wants to see what an actual print-out looks like.

USER: if your screen displays the main Chart Description Window, select <menu> and enter <P> to access the Print/Slide window which would resemble the figure below.

Slide		
Carousel		
ASCII		
Device		
Hardcopy	Normal	Double

Options Selected by pressing <do>

| Draw the graph |
| Take a slide |
| Output the Graph |
| Display Slide Show |

Slides in Carousel

1	
2	
3	
4	
5	
6	

Print/Slide Setup

	<up>	<down>	<move keys>
	<do>	<undo>	<search>

This is the Print/Slide Setup window which is often used when outputting graphs to printing devices. The first option in the middle portion of the screen, "Draw the Graph", displays the current Graph Type. This prevents you from having to go back into the Chart Description Window just to see what the current information is. To "Draw the Graph" . . .

GR: make sure that the Print/Slide setup window is on your screen.

USER: press the <down arrow> five times to advance the cursor to the "Draw the Graph" line and press <do>.

GR: your graph is displayed. Press <undo> to bring back the "Print/Slide Setup" window. If this is not the graph you want to print, press <undo> to return to "Chart Description Window". If this is the correct graph to print, press <ret> twice to advance the cursor to the "Output the Graph" option, then press <do>. Be certain that you specify a printer device as shown in the "Output to Printer" section below before executing the "Output the Graph" option.

All options, except "Output the Graph" are independent of the printer. The system will draw the graph before it will start printing it. Note that whenever a process is interrupted for any reason (e.g. abort in the middle of the "Take a Slide" process), you can press <undo> twice to get back to the former screen setup.

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Taking a Slide

EXAMPLE SITUATION — Mr. Wilson has decided that he needs to have a selection of different charts saved to be used at a later time. To do this he has decided to "Take a Slide". This feature is used to take a photograph of an existing graph for the purpose of saving it as a slide. In this example, we will create slides for you to use later in this exercise.

To "Take a Slide", you must first give it a name. At this time your main window is on your screen with **GRAPHDEM.CHT** loaded. Make sure that your "Simple" Graph Type is highlighted because we are going to name the first slide "Simple" If you would like, you may "Draw the Graph" to see that it is a "Simple" type, and that this is the slide that you want.

USER: press<up arrow> five times to advance the cursor to "Slide" line and enter [SIMPLE]. You CANNOT exceed "8" characters. Now advance the cursor to the "Take a Slide" line and press <do>. Please wait until the light on your drive stops blinking. A beep will announce the completion of the process.

GR: you have just taken a "Simple" slide, press <undo>. The main Print/Slide setup window is on your screen. Move the cursor to "Slide" and use the <search> key to see if the new slide has been entered. If the slide name has been entered, press <undo> twice to return to the main Chart Description window. Now enter <T> to select "Three-D" Graph Type followed by <menu>. Enter <P> in order to return to the Print/Slide window.

USER: the cursor is located at the "Slide" line, enter [ThreeD]. Then move the cursor to the "Take a Slide" line and press <do>.

GR: repeat the same process for both "Windowed" and "Overlay" Graph Types. You now have four different slides saved to be recalled later for "Displaying a Slide Show".

Output to Printer

EXAMPLE SITUATION — When choosing this print option, the system will produce a hard copy of a graph from the current settings in the Chart Description Window. We are going to print a Three-Dimensional graph. Please follow the prompts listed below.

Before we can "Output the Graph" to a printing device, the user must make sure that he has a compatible printer or plotter available and that your output device is "On Line".

USER: move the cursor to the "Device" line.

GR:
```
Device
```

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With the cursor placed on the "Device" line, press the <search> key. The following figure represents a sample listing of available printing devices that the Graphics module will support at the present time.

```
EPSONFX80
PRISMBW
PRISMCOL
TI800
NEC-8023
GEMINI10X
GEM INI1SX
```
Output Device Selection
<up>   <down>   <do>   <undo>   <pages>

USER: use <arrows> and <do> to make your printer selection and return to the Print/Slide Setup window. Press the <down arrow> to go to the "Hardcopy" row. Press <arrows> to select the size of your output. "Double" is the larger of the two available output sizes.

GR: | Hardcopy   Normal   Double |
      | --- |

USER: upon making your "Device" selections, press the <down arrow> to "Output the Graph" line and press <do>. Press <undo> when the process is complete.

Output to ASCII File

EXAMPLE SITUATION — This allows you to store displays into a separate file so that you may print it at a later time without having to execute Graphics. To write it to an ASCII file you would simply enter a name on the "ASCII" line. The system will automatically transfer it to an ASCII file of the name entered upon selecting "Output the Graph". The process is similar to outputting directly to the printer with the exception of entering a ASCII name. To print to an ASCII file . . .

GR: your screen should now display the Print/Slide setup window.

USER: press <ret> to move the cursor to the "ASCII" prompt and enter a [NAME] of your choice. You cannot exceed "8" characters. An "IMA" suffix is added to the file name. Press <ret> to move the cursor to the "Device" prompt, then press the search key to produce a listing of the graphic printers. Use <arrows> to move the cursor up and down the list until the desired printer is highlighted. Make sure your printer is "on line". Press <do> to select the printer. Press <ret> four times to advance the cursor to the "Output the Graph", then press <do>.

If a user has more than one Graphic printer, it is helpful to include a symbol in each ASCII file name to indicate the printer that is used for outputting that particular ASCII file. In the example below, the ''/'' character followed by ''E'' designates the Epson printer type.

GR: | ASCII yours/E.IMA

There is a built-in protection feature in Graphics that prevents you from saving a graph under a pre-existing ASCII file. A beep will indicate that the graph is stored.

Press <undo> to restore the Print/Slide setup window. If you press <undo> before the beep, the ASCII file will be aborted, although, its name is still in the ASCII file listing. Thus, if the process is aborted in the middle, you have to delete that ASCII file.

USER: press <up arrow> to advance up to the ''ASCII'' name line. Now use the <search> key and note the files listed in the directory, press <line-del> followed by <do>, then press <undo> to exit the file listing.

Displaying a Slide (Carousel) Show

EXAMPLE SITUATON — You are allowed a collection of slides to be shown on your screen. The slides are shown as they were originally sequenced when they were taken and put into a Carousel. They can be accessed by calling up the ''Carousel'' name. We are now ready to call up a Carousel.

The Carousel is the means of displaying a slide show. It functions in the same way as an actual slide carousel in that it allows you to sequence a series of slides in any order. The only requirement is that the slide files name you are selecting must already exist and the number of slides in one Carousel cannot exceed ''32''.

GR: your screen should display the Print/Slide setup window.

USER: press <down arrow> once to advance the cursor to the ''Carousel'' name line. Now use the <search> key to call up the Carousel directory and <do> to select YOUR.SSH.

GR: the figure below should resemble the <search> window.

B A CON LPT1 COM1	YOUR SSH
<page> <jump> <up> <down> <undo> <change> <line-ins> <line-del> <do>	

GR.II.23

The system will automatically prefix Carousel Name with a volume number. You can type in YOUR at the "Carousel" row instead of using <search>.

USER: Press <do>.

GR: if you will look down at the "Slides in Carousel" section of the Print/Slide window, you can see that the Slide Names that make up the YOUR.SSH carousel have been listed. There is a maximum of Thirty-two slides per one carousel. There is a protection device that prevents you from saving the same slide name. We are now ready to Display the Slide Show pre-existing in YOUR.SSH. The figure below is the display on your screen.

```
Slide
Carousel          YOUR.SSH
ASCII
Device
Hardcopy          Normal      Double
─────────────────────────────────────
      Options selected by pressing <do>
─────────────────────────────────────
Draw the graph
Take a slide
Output the Graph
Display Slide Show
─────────────────────────────────────
              Slides in Carousel
─────────────────────────────────────
1 SALES1.PHO
2 SALES2.PHO
3 SALES3.PHO
4
5
6
─────────────────────────────────────
              Print/Slide Setup
─────────────────────────────────────
      <up>    <down>    <move keys>
         <do>    <undo>    <search>
```

USER: press <ret> seven times to move the cursor down to the "Display Slide Show" line and press <do>.

GR: press <right> to have the next slide displayed. Press <left> to have the previous slide displayed. Press <undo> to restore the Print/Slide window.

GR.II.24

Printing a Slide

EXAMPLE SITUATION — You may print any pre-existing slide. Slides within a Carousel may be printed consecutively or at random without ever exiting the Print/Slide window. Mr. Wilson is now going to use the four slides he loaded in "Take a Slide" to create his own Carousel.

GR: it is now time to recall the four slides you created earlier. This can be accomplished by recalling the four slides that you saved in the "Take a Slide" part of this exercise by pressing the <search> key and <do> in the positions following "Slides in Carousel".

For the slides to be Saved, a name must be entered in the Print/Slide Setup window after the "Carousel" line entry, enter [MYFIRST]. You CANNOT exceed eight characters. A SHO suffix is added.

USER: move cursor to the first "Position" of the Slides in Carousel window, press the <search> key and <do> to load in your first slide. Then proceed to load in the other slides in the same fashion.

GR: the figure below should resemble the figure on your screen after all four slides are loaded in.

Slide		
Carousel	MYFIRST. SHO	
ASCII		
Device		
Hardcopy	Normal	Double

Options Selection by pressing <do>

Draw the graph
Take a slide
Output the Graph
Display Slide Show

Slides in Carousel

1. SIMPLE.PHO
2. THREE-D.PHO
3. WINDOWED.PHO
4. OVERLAY.PHO

Print/Slide Setup

<up>   <down>   <move keys>
<do>   <undo>   <search>

GR.II.25

USER: press the <up arrow> until the cursor is positioned on the "Display Slide Show" line and press <do> to activate. Now use the <right arrow> to go through the slide show.

GR: each time the <right arrow> is pressed, a new slide will appear. After going through the series, it will start at the beginning. The system will first display the slide on the screen, then you have the option to print it. Again, you must have a printing device that is supported by Graphics.

Make sure that your printer has been selected and that your printer is "on line". To print the entire Carousel, the steps above would be repeated by pressing the <print> key for each consecutive slide as it is displayed.

USER: press <undo> twice, first to exit from the Slide display, and a second time to go back to the Chart Description Window.

This completes the exercise on the tour of the Print/Slide command. You are now familiar with the Print/Slide setup window and all of the various options that developed from accessing this window. As a result, you now understand that by creating your own slide show and receiving an actual printout, you have a great deal of flexibility and power when making presentations. This concludes Chapter 2.

You should now be able to:

* Access the Print/Slide Setup window
* Draw a Graph
* Take a Slide or Slides
* Take a pre-existing or new Slide(s) and Display a Slide Show
* Print a graph or ASCII file
* Print your own Slide Show

If at this time you would like to exit from the module, press the <menu> key in your main command window and enter <O> for Options.

CHAPTER 3

THE VIEW COMMAND

GOAL: The purpose of this chapter is to introduce the user to the View command in the Graphics Main Menu. We will demonstrate how you can alter the size, shape, color and location of graphs. Upon completion of this section, you will understand that the View command is an important aspect of the Graphics module.

Graph Alteration with "mouse" Explanation

EXAMPLE SITUATION — Mr. Wilson, being the manager of a large international company, has a presentation to give for a board meeting using several charts to display company growth. In this example, Mr. Wilson has decided to access the fifth command of the main menu, the View command, in order to tailor the charts before printing them.

We will explain how to change the appearances of each of the Graph Types in the same order as we first <Graph>ed them. The order of introduction will be as follows: Simple, Three-D, Windowed, Overlay. Because the forms of the graphs differ, the View window options are specific to each graph type. Make sure the **GRAPHDEM.CHT** is loaded onto your screen.
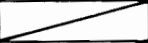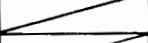
GR: the main Chart Description window is on your screen. Make sure the Graph Type is set at "Simple" and your Current Level Type is set at "Bar". Press <menu>, the <V> to access the View window. Your screen should resemble the figure below.

GR.II.27
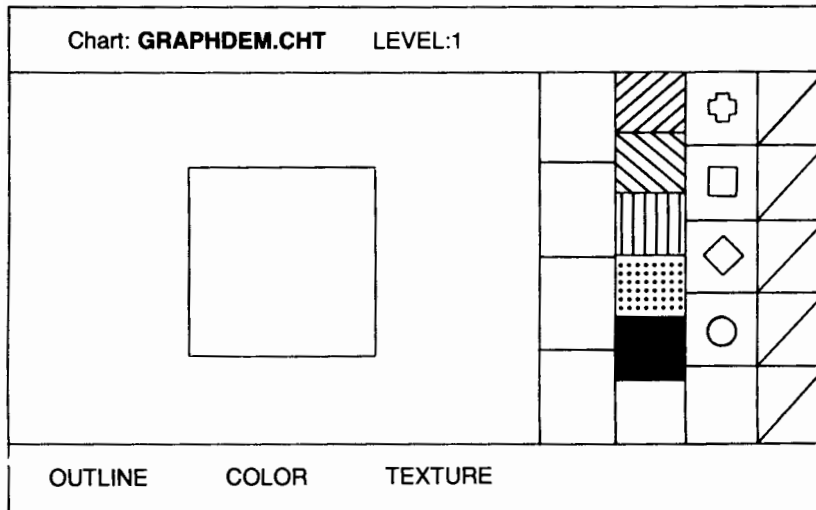
GR: at this point, we would like to introduce the concept of the joystick com-
patible "mouse". The mouse or joystick are instruments that allow you to
communicate with the Graphics module. The mouse or joystick may be
used ONLY in the View window. The "mouse" can maneuver the cursor
with great ease with both <do> and <undo> capacity. The <PgUp>
and <PgDn> keys are NOT capable of being used with the mouse.

The window above provides you with information on the current status of your graph.
At the top of the window, the Chart Name and the Current Level Number are included,
the middle of the window shows you the present appearance of that level; at the bottom
of the screen, options to alter the window are shown.

On the right-hand side of the window are four columns that contain the various formats
you will be using. The columns (from left to right) will be referred to as "Column 1",
"Column 2", "Column 3", and "Column 4". See the figure below.

Column 1	Column 2	Column 3	Column 4
Color/Outline	Texture	Symbol	Dash

The main function in this window is pointing. Therefore, the cursor will be referred to
as a pointer. The pointer is manipulated using the directional arrows, "mouse", or the
compatible "joystick".

GR: your screen now displays the View Window. The first option on the lower
left section of the screen is the "Outline" option. This feature defines the
color of the boarder of the bars in Bar and Three-D type, and color of the
grid in Three-D. After the change is made, the Bar in the center of the
window will show you the new format.

In this window there are two optional function keys to reduce hand movement. The
< – > key has the same function as the <undo> key and the <+> key functions in
the same way as the <do> key while you are in the View window. We suggest you use
these time saving keys for graph tailoring while in the View window because they
reduce your hand movement.

USER: make sure that the cursor is under "Outline" and press <do>. Now press
<down arrow> once to advance cursor down to change the shade. Press
<do> to select the shade option.

GR: new "Outline" is displayed with new shade. The second option is the "Color" selection. It defines the color of the bars in Bar, of lines in Line, of each panel in Three-D Bar, and of each panel of the grid in Three-D Bar. There are four different shades to choose from. To change it . . .

USER: press <right arrow> three times to point the cursor to "Color" and press <do>. Press <up arrow> three times to move the cursor up and press <do>.

GR: the bar is redrawn with A New shade. "Texture" is the third option and determines the texture of bars in Bar, and each panel of grid in Three-D.

USER: press <right arrow> until the cursor is under "Texture" and press <do> to select "Texture". Press <up arrow> three times to move cursor up and press <do>. Notice the previously selected texture has been changed. Press the <undo> key to return to the main Chart Description window.

Changing to Simple-Line

EXAMPLE SITUATION — We will now change the Current Level Types for another View dimension. Be certain you have loaded in the **GRAPHDEM.CHT** before proceeding.

GR: the main Chart Description Window is now on your screen. Notice that number "4" is entered in the Total Levels row.

USER: with the <up arrow> make sure that the Graph Type is set at "Simple" and the Level Type is set at "Line". Press <menu>, and then enter <V> to View the Simple Line graph.

GR: your screen should now display the Line Window resembling the figure for Level 1 as seen before. Press <PgDn> twice to go to Level 3. The figure below should resemble your screen.

Chart: **GRAPHDEM.CHT**   Level: 3

Color   Symbol   Dash
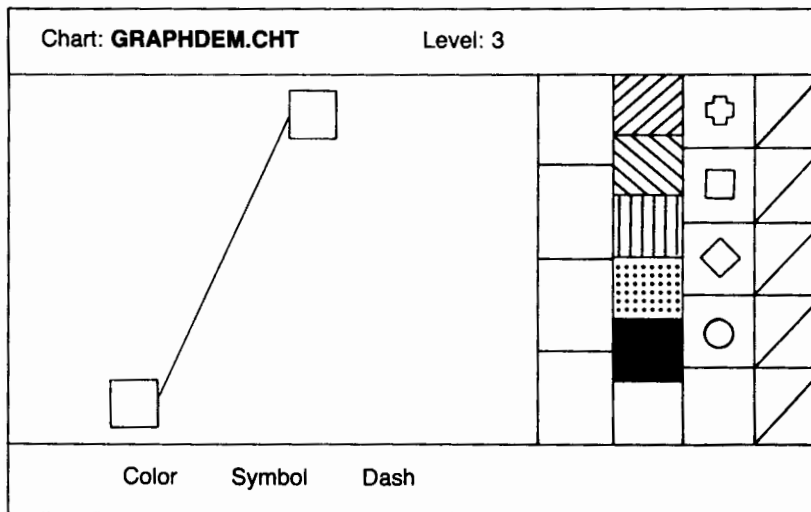
USER: press <do> to select "Color". With the <up/down arrows> select various colors. With <right arrow> select "Symbol". There are five different "Symbols" to select from. Repeat the previous process of selecting the various options on the right hand side of the display. Now with <right arrow> select "Dash" to give you five different textures, then press <do>.

Press <undo> to return to the chart Description window.

Changing to Three-D Graphs

EXAMPLE SITUATION — We are now ready to View the Three-D Graph Type which enables you to highlight prominent points by the use of the third dimension.

We will continue our tour on the premise that you already know how to go from "Simple" to "Bar". Please note that when using the Three-D Graph Type in the View command, ONLY the "Bar" Level Type can be accessed. To begin, follow the steps outlined below.

GR: the main Chart Description window is represented on your screen.

USER: with the <up arrow> make sure that Graph Type is set at "Three-D" and Level Type is set at "Bar". Press <menu> and then enter <V> to View the Three-D Bar graph.

GR: the Data/Grid window is now on your screen it will resemble the figure below.

Chart: **GRAPHDEM.CHT**   Level: 1

Data	Grid
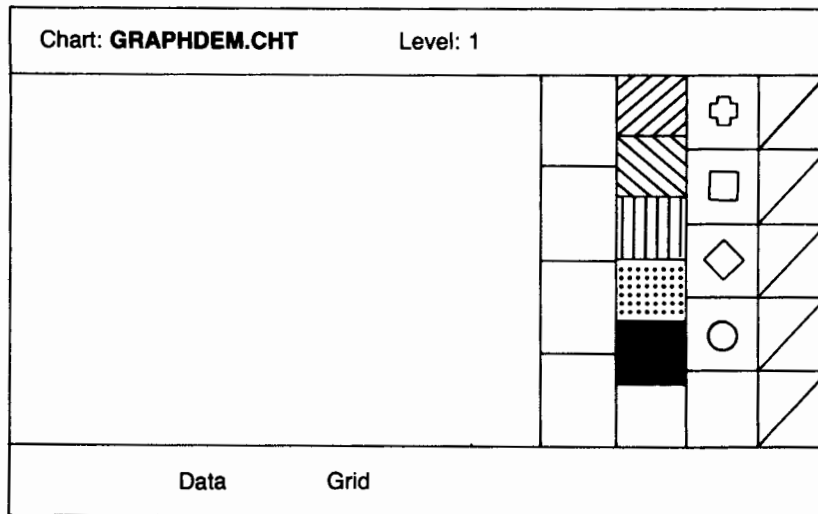
USER: press <do> to select "Data". This option allows you to change the shape and colors of the bars.

GR: The "Outline", "Color", "Texture" and "View" options are displayed.

USER: position the cursor at the "Outline" option, then press <do>.

GR: The "Outline" option defines the border color of the bars.

USER: press <up arrow> four times, then press <do>.

GR: Notice that the "Outline" color of the bar is changed.

USER: Next, move the cursor to "Color", then press <do>.

GR.II.31

GR: "Left", "Right", and "Top", options are now displayed. This feature defines the color of the Left, Right and Top panel.

USER: position the cursor at the "Left" option, then press <do>. Next, press the <down arrow> four times followed by <do>.

GR: Notice the change in the color of the left panel. You can repeat the same process to alter the color of the right and top panel by using the "Right" and "Top" options.

USER: press <undo> to return to the "Outline", "Color", "Texture" and "View" option line. Position the prompt at the "Texture" option, then press <do>.

GR: This option defines the "Texture" of the Left, Right, and Top panels. Be certain that the Outline and panel Color is set to something other than no color, because "Texture" is only effective when color is used.

USER: position the arrow at the "Right" option followed by <do>. Press <up arrow> three times, then press <do>.

GR: Notice the change in the texture of the Right panel. If you wish to change the texture of the Left and Top panel, follow the same series of instructions as was described for the right panel.

USER: press <undo> to escape this option. Position the prompt at the "View" option, then press <do>.

GR: the Left/Right window is now displayed on your screen. This feature allows you to modify the size of the bar.

USER: place prompt at "Left" option and press <do>.

GR: a directional arrow is superimposed in the window. This is used to modify the size of the left/right panels. The farther to the right the arrow is positioned, the larger the panel becomes. Conversely, panel reduction occurs when moving the arrow in the left direction.

USER: press <right arrow> three times followed by <do>.

GR: the size of the left panel has increased.

USER: press <undo> twice to access the "Data Grid" option.

GR: your screen represents the Data/Grid option line.

USER: move the cursor to "Grid" and press <do>. This option allows you to change the Grid appearance.

GR.II.32

GR: The option line is displayed. The "Outline", "Color" and "Texture" selections of the "Grid" are similar to those available to "Data". To use these selections for "Grid", follow the same series of instructions provided for "Data".

USER: move the cursor to "View" and press <do>. This will display the "Title/Rotate" option.

GR: the "Tilt" option, allows you to move the intersection corner of the grid to where the arrow is positioned. "Rotate" allows the lower left corner of the grid to be moved vertically. Use the right/left <arrows> to move the location of the display. By pressing the <NumLock> key you can move the cursor at a slower rate. It will move one pixel at a time rather than fifteen at a time.

USER: After altering the view angle of the Grid, press <undo> three times to return to the Chart Description window.

Viewing Three-D in this window is an excellent opportunity for the user to understand "Total Positions" and "Total Levels" via the Chart Description window. This will help you to understand these two entries more completely because each Level is specified in the View window.

Changing to Windowed Graphs

EXAMPLE SITUATION — Now we will introduce you to a very practical option in the Graphics package. In this part of the lesson we show a useful application of the Windowed Graph Type in the View command. This procedure has many applications because it allows you to represent multiple graphs on the screen. For example, a Line graph, Bar graph and a Pie graph in separate frames, all displayed on one screen. Although up to "30" different windows are allowed, a dozen or less should only be displayed because of space limitations.

GR: the main Chart Description window is displayed on your screen. Windowed Graph Type should be selected along with "Bar" highlighted, make sure **GRAPHDEM.CHT** is loaded.

USER: press <menu> and enter <V>.

GR: A Windows/Graphs display resembling the figure below should be on your screen. The "Windows" option allows you to select the location and size of the display. The "Graphs" option allows you to alter the window of the graph to be displayed. Both options effect only ONE level at a time.

Chart: **GRAPHDEM. CHT**   Level: 1

Windows   Graphs
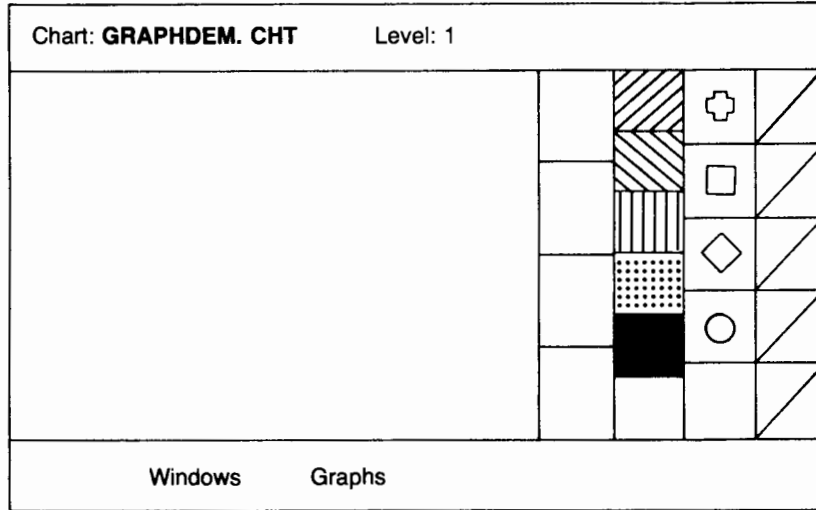
USER: the cursor should be placed under the "Windows" position which allows you to tailor each window. Press <do> to receive the display of Size/Positions options. Using the <right arrow> select "Size" by pressing <do>.

GR: the "Size" option, allows you to change the window dimensions of each Level within the window. The pointer will move to the upper right hand corner. Now you can begin to alter the "Size" of the Graph according to your specifications. Then go to "Positions".

USER: Use the <arrow> keys to scale the lower left side of the window. Then repeat the process for the "Positions" option (altering the upper right side of window) until you're satisfied with the location of your window setup, and press <undo>. You have returned to the Windows/Graphs display. Use <Pg Up> and <Pg Dn> to jump between graph windows.

The purpose of altering the individual windows is to scale the graph to fit the window size required for graphing.

USER: move cursor under "Graphs" which allows you to alter the appearance of Bars or Lines and press <do> to receive the Outline, Color, and Texture options. Specify selection through <arrow> keys, <do> and finally <undo> after experimenting with each option.

We will continue with the following example under the assumption that you know how to enter the "Levels" window. Please make sure that all levels are either Bar or Line Type because Pie Level Type CANNOT be displayed in the following Graph Type.

GR: the main Chart Description window is on your screen.

GR.II.34

USER: press <menu> and enter [LE]. Now press <ret>, <left arrow>, <right arrow> to set each Level Type so they are all in Bar.

Changing to Overlay

EXAMPLE SITUATION — You are ready to complete the final lesson in this chapter. This Graph Type while in the View command allows you to do a composite of many graphs displayed on one screen to create an overlapping dimension. The most effective appearance would involve combining a Bar with a Line graph. The Pie Level Type is not designed to be used in Overlay. This option is excellent for comparison analysis.

GR: the Graphics main Chart Description Window is displayed on your screen. Through the use of the <up arrow> make sure that "Overlay" has been selected with "Bar" highlighted.

USER: press the <menu> key and enter <V> to access the View window.

GR: the Overlay Graph is displayed on your screen resembling the figure below. By using the <PgDn> key you can see that each Level is identical to the "Windowed" Graph Type. The functions of each option are also identical.

Chart: **GRAPHDEM.CHT**   Level: 1

Outline   Color   Texture
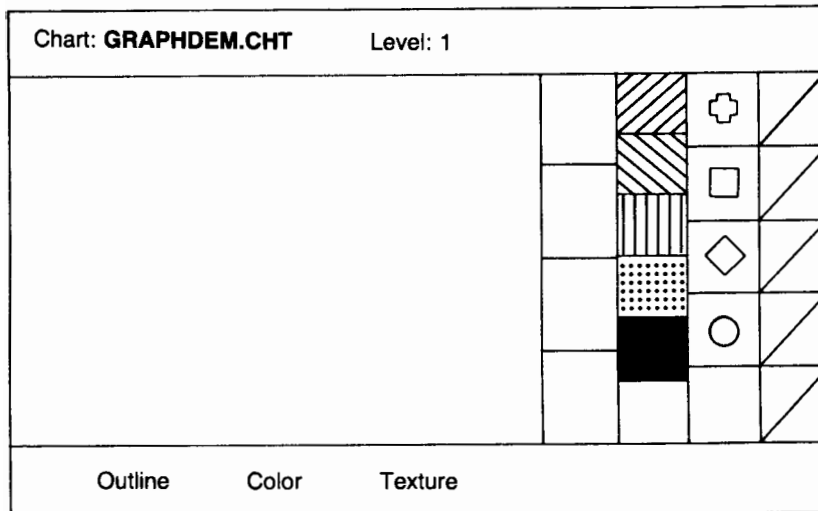
USER: you can now alter Outline, Color, and Texture options using the directional <right arrow> key in the same way as did with the "Windowed" Graph Type. When the chart is altered according to your specifications, press <undo> twice to return to the main Chart Description window.

GR.II.35

You have just completed an indepth tour of the View command. you should now feel comfortable with this command. It is a important dimension in the Graphics module. Before moving on to the last chapter in the tutorial manual, we would like to encourage you to take time, to review the areas already covered. Once you feel comfortable with the material, continue to the final chapter of this tutorial.

You should now be able to:

* Access the View command in the main menu window
* Use the View command for Graph Alteration
* Go from one Graph Type to another using the View command
* Understand When and Why this command should be used

If at this point you would like to Exit from the module, press the <menu> key and enter <O> for Options.

CHAPTER 4

THE IMPORT/DATA COMMAND

GOAL: You have now become familiar with many aspects of the Graphics module. Now it is time to learn about creating your own chart. This chapter revolves around the <Import/Data> command. You will learn how to: 1) create your own personalized chart by manually entering data into the work area; 2) load pre-recorded data into your new chart from a Standard Interface File (SIF).

EXAMPLE SITUATION — Mr. Wilson has gone through every exercise and now is ready to create his very own chart. He will use the fourth command in the menu for this exercise. The Import/Data command in business enables you to put together presentations by gathering data from resources such as writing reports, or importing data from another source file.

GR: the main Chart Description window should be on your screen with the **GRAPHDEM.CHT** loaded.

We are now ready to begin with the final chapter. Please turn your attention to the chart on the following page. It is the Data Setup window and is used when data needs to be refreshed. It will serve as a model throughout this exercise and should be displayed on your screen once you press <menu> and enter <I>. Note **GRAPHDEM.CHT** is loaded into the Chart Description window.

Data Source	
Options	
Refresh_Data	Refresh_Context
Position	Data
1. Jan	125
2. Feb	175
3. Mar	150
4. Apr	145
5. May	195
6. Jun	165
7. Jul	200
8. Aug	100
Data Setup	
<arrows> <move keys> <do> <undo> <search>	

GR.II.37

Although there are only "8" Positions in the above Figure, there are up to "30" Positions allowed. You can use the <Pg> keys to quickly move the cursor through the maximum/minimum number in each entry to save time.

Loading Data from Keyboard

EXAMPLE SITUATION — Mr. Wilson, manager of "Good Earth Health Products", wants to change the data of the **GRAPHDEM.CHT** within the Level "1" of his data set.

GR: the Chart Description window should be displayed. Placement of the cursor in this window is not important. Make sure the Current Level Number is "1"

USER: press the <menu> key and enter <I> the Import/Data command.

GR: you are now going to change "Data Source" in the Data Setup window.

USER: press <ret> three times. Insert the data by entering [10], pressing <down arrow>, [20], <down arrow> . . . [80]. Now press <menu> and <G> for graph.

GR: the graph should resemble Figure 7, in the Sample Graph chapter with the larger data in the background creating a good pictorial presentation.

USER: press <undo> after comparing both graphs.

When altering data via the keyboard the user must often jump from window to window. This method should be used when small changes in updating are necessary. The following method is much more efficient when Loading large amounts of data.

Loading Data via a SIF File

EXAMPLE SITUATION — Data is loaded through the SIF file in the Import/Data window by pressing the <search> key to scan a list of existing SIF files. In this case, Mr. Wilson wants to save time by importing his data through an existing SIF file rather than typing it in. The figure below is your sample SIF file called YOUR.SIF, with "8" Positions and "4" Levels.

	JAN,	FEB,	MAR,	APR,	MAY,	JUN,	JUL,	AUG;
"CA",	125,	175,	150,	145,	195,	165,	200,	100;
"NY",	225,	250,	200,	275,	245,	285,	295,	234;
"TX",	300,	325,	345,	385,	350,	375,	365,	300;
"MN",	410,	450,	435,	470,	455,	500,	485,	420;

figure: YOUR.SIF

In the figure above the vertical axis representing the four "States" are Levels and the horizontal axis representing the eight "Months" are Positions.

GR.II.38

GR: in this exercise, we will use a "Three-D" Graph Type with "Bar" Level Type highlighted. Note the data is automatically loaded. Total Levels is "4" and Total Positions is "8" of **GRAPHDEM.CHT** (see Chapter 1 for a detailed explanation) in the Chart Description window.

USER: Press <menu> and enter [LO], then<search> to load **GRAPHDEM. CHT**, then press <do> twice. In the Chart Description window, change Total Levels to "8" and Total Positions to "4". Press <do> twice.

For the Load feature to work, the file name entered must exist. In this case, the Graphics module will search for the YOUR.SIF file in all on-line volumes. If you are using diskettes, be sure to have YOUR.SIF on one of the diskettes being used.

USER: in this case, press the <menu> key and enter <I> for Import/Data. Now press the <search> key at the "Data Source" row to select (or type in) YOUR.SIF, followed by pressing <do>.

GR: your screen should now display the Data Setup window.

Data Source	YOUR.SIF
Options	
Refresh Data	Refresh Context
Position	Data
1. Jan	10
2. Feb	20
3. Mar	30
4. Apr	40
Data Setup	
<arrows> <move keys> <do> <undo> <search>	

USER: in this case, press the <ret> key and <do> to select "Refresh Data". This file is the data for **GRAPHDEM.CHT**.

GR: the window below will appear on your screen.

Refresh by:
Levels Positions
STATUS
waiting   working   finished
Position Level
Import Setup
\<do\> confirms \<undo\> quits

USER: press \<right Arrow\> and \<do\> to Refresh Data by "Positions".

GR: your screen will display the new Data Setup window. Note the difference in the "Position" names, and "Data" numbers. This figure below should resemble your screen.

YOUR.SIF	
Options	
Refresh Data	Refresh Context
Position	Data
1. CA 2. NY 3. TX 4. MN	125 225 300 410
Data Setup	
\<arrows\> \<move keys\> \<do\> \<undo\> \<search\>	

NOTE: If a non-numeric warning message appears while using the Refresh options (Data or Context) then entries are converted to zero while graphing.

In this case, a "Positions" selection will alter the data pictorially. That is, the data itself remains unchanged, but the Levels and Positions are interchanged. Refer to Chapter 1 for a more detailed explanation of this subject.

USER: press the \<undo\> key twice to return to the main command window, then press the \<menu\> key and enter \<G\> for Graph. Be sure that Three-D is highlighted.

GR: a Three-D graph is displayed on your screen. Notice that the larger data (Positions in this case) is placed in the foreground, creating a poor pictorial display. Please see Figure 8, in the Sample Graphs chapter.

The other option is to "Refresh Context" (Integration Package ONLY). This option is exercised when the user enters the Graphics module from another integrated module.

GR: the "Refresh Context" option allows you to update your current file and is exercised in the same fashion as the "Refresh Data" option.

Use your knowledge of previous chapters and try to graph this data in Three-D, Overlay Windowed, or Simple Graph Types.

This ends the guided tour. It is now time to apply the knowledge you have obtained up to this point, by creating your very own chart. You may clear your screen of the GRAPHDEM.CHT in order to construct your own chart.

USER: press <menu><O> followed by <do> to access the Options window, then press <G> to return to Graphics.

GR: **GRAPHDEM.CHT** is replaced by a default chart in the Chart Description window.

REVIEW — Creating Your Own Chart

EXAMPLE SITUATION — In designing your own chart, we will invent a business situation to make it more realistic. Let's suppose you are Mr. Wilson, manager of "Good Earth Health Products" and you want to make a graph of the profits, expenses, and the advertisement budget for the last four years. Thus, you want to create a chart of "3" Levels and "4" Positions. The table that you want to graph resembles the following.

POSITIONS	1979	1980	1981	1982
LEVELS				
Profits	1,000	200	1,000	2,500
Advertisement	1,000	300	2,000	3,500
Expenses	10,000	11,200	12,500	15,000

GR: Reload the Graphics module so the Graphics Chart Description window will be represented on your screen in the Default State.

USER: change the Total Levels to "3" and Total Positions to "4". Refer to Chapter 1 for further details if necessary. Now press <menu> and enter [LE] for Levels.

GR: the Levels Window is opened.

USER: enter a name for each Level (Profits, Expenses, Advertisements) and set Level 1 Type to "Bar", Level 2 to "Line", and Level 3 to "Bar". Press <undo> to exit the Levels Window.

GR: the Chart Description window is now displayed.

USER: make sure that Current Level number is "1" in the Chart Description window, then press <menu> and enter <I> for the Import/Data command.

GR: the Data Setup window is displayed.

USER: press <ret> twice to move cursor to desired location. Since the first Level is "Profits", enter the first row of data of the table into level 1 (i.e., 1,000; 200; 1,000; 2,500), and enter Position names as 79, 80, 81, 82 for: first position, second position, third position, and fourth position respectively. Repeat the process for the next two Levels.

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You can now start Graphing this information in Overlay, Windowed, Three-D, and Simple Graph Types in either Bar, Line or Pie Level Types. See the two Explanation chapters in the Reference Manual if you have any problems. Practice taking slides or making hard copies of the graph while changing the look of the graph using the View command. Finally try to change the Bar "Shape" of the Three-D graph as well as the "Texture" of the Bar for each level.

GR: In the Pie Level Type, through the use of the "explode" <!> key, you can distinguish a section(s) of the Pie by pressing <!> after the "Data" which you want to explode in the "Data Setup" window. Note, that there should not be any space between the last digit of data and the "!" point.

Finally, although you can use up to "30" different Pie sections, this Level Type is best presented when using less than twelve different sections. See figure 5, in the Sample Graph chapter.

Returning to the Save Command

EXAMPLE SITUATION — The Save command is the second option in the main Graphics menu. Its purpose is to retain information entered into a chart for future use. You can either Save information under an already exiting Chart Name or a new one. When Saving information under an existing Chart name, the "old" information will automatically be overwritten. A window will appear prompting you with a warning and gives you the option to overwrite or cancel the action Should you chose to overwrite, the window shall appear as follows:

The chart that you specified already exists on the disk. If it is OK to overwrite it press <do>. Press <undo> to cancel this action.

CONFIRM: <do> confirms <undo> cancels <up> <down>

You may enter any information, except the Chart Name onto the screen, without Saving the workfile first. The Chart Name is not entered until you select the Save command. This is the only place where a chart is named, deleted or overwritten. We may begin entering information at this point. To show you how this command operates, we will return to the Chart Description Window to save a default chart for personal use. This is a "time saving" suggestion for the user who requires a certain size of data for frequent use. For example, perhaps you are taking an inventory of three districts every six months. Rather than manually altering parameters such as Level Types, Titles, or Level and Positions in the Chart Description Window, save a chart for your individual use to be recalled at a later time.

USER: press <do>.

GR: the Graphics main Chart Description window is displayed on your screen.

USER: In this case, change "Total Levels" to number "3" and "Total Positions" to number "6". Press <menu> and enter <S>. Now enter [DEFAULT1] and <ret>. You.can now enter <menu> followed by [LO] and <do> twice.

GR: The "DEFAULT1.CHT" is now loaded for you to use whenever you desire.

CONGRATULATIONS! You have now finished the exercises in this tutorial. It is our hope that you now possess a comprehensive understanding of not only the Import/Data window, but the other selections appearing in the main Graphics menu. You should now recognize that Graphics provides a way to overlap large amounts of information on the screen or hardcopy, so that you can distill raw data quickly and easily.

We recommend that you continue to experiment with the main menu commands to develope a sound understanding of all of the commands and options. If you have any further questions on any of the commands discussed in the tutorial, please refer to the alphabetically arranged Reference section.

Included, you will find a Sample Graph chapter containing a sampling of eight different graphs.

We hope that GRAPHICS is useful in all your applications.

You should now be able to:

* Enter the Import/Data command
* Load data manually from the keyboard
* Load data via a SIF File
* Understand Level and Position adjustment
* Create your own personalized chart
* Save your own personalized chart

If you would like to Exit from the module, press the <menu> key at enter <O> for Options.

SAMPLE GRAPHS

Full color graphics can be assembled using raw data retrieved from Graphic interface modules, or you can simply insert the information from the keyboard. Graphs are an indispensible aid in making presentations because they enhance professional reports, papers, and demonstrations efficiently.

With Graphics you can display the results of your work not only in graphic form but also numerically, and you can save everything for later use. Sample graphs, that show Graphic's versatility appear at the end of this chapter. Graphs can be applied in areas such as:

* Comparison Analysis
* Business Trends
* Variation Graph
* Color Contrast
* Forecast or Estimations

Trend analysis can be projected by fitting the areas to a simple regression or parabolic curve, thus indicating how closely the data matches an ideal curve. Other possibilities include using data points to calculate business trends, and averages. The following page demonstrates a few of the graphs produced by the Graphics module. Notice that all the graphs are easy to interpret, with both the graph and axes clearly labeled.

EXAMPLES: below is a group of eight different sample graphs illustrating Graphics versatility of the Graphics module. Figure 1, an example of a Simple Line graph is illustrated below.

Figure 1. Simple Line Graph
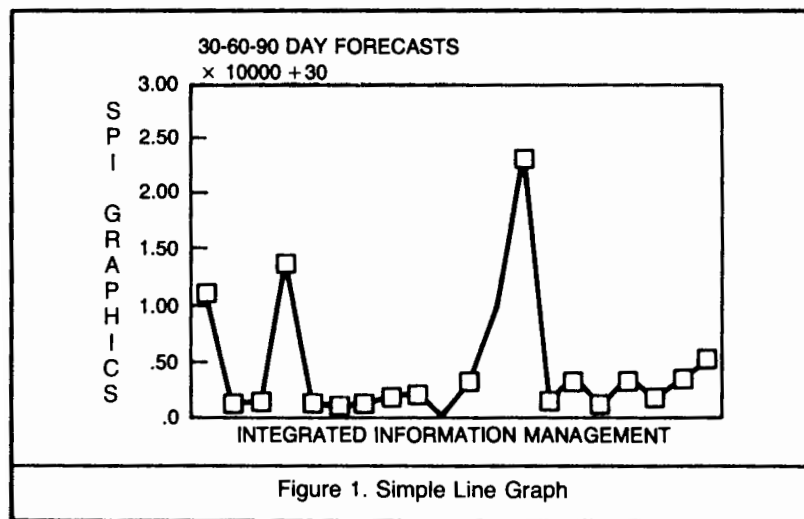
For the graph in Figure 1, data was entered directly from the keyboard and important events were highlighted. The data for this graph is used to estimate sales over a period of time.

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For example Figure 2, takes the former graph one step further by combining it with a different Level Type.
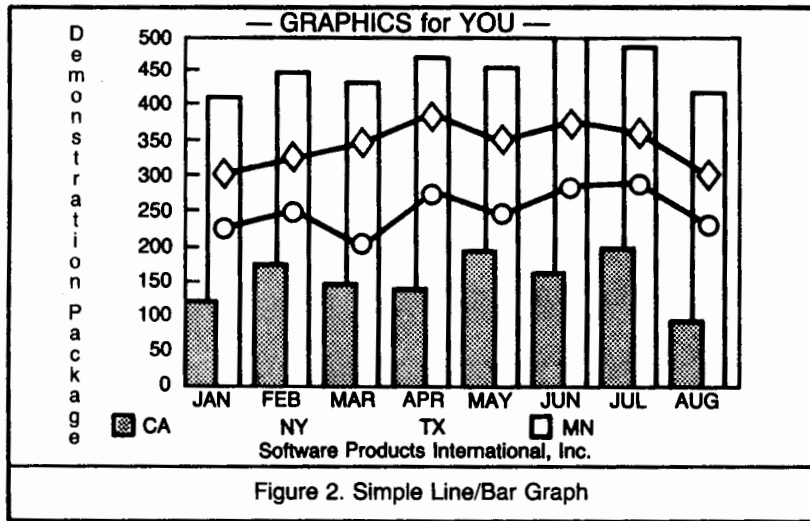
Figure 2. Simple Line/Bar Graph

In Figure 2, the values that are plotted were inserted into Graphics using a combination of two different Level Types: Line and Bar.

Figure 3, is an example of Graphics ability to superimpose the Bar Level Type in a Overlay Graph Type.
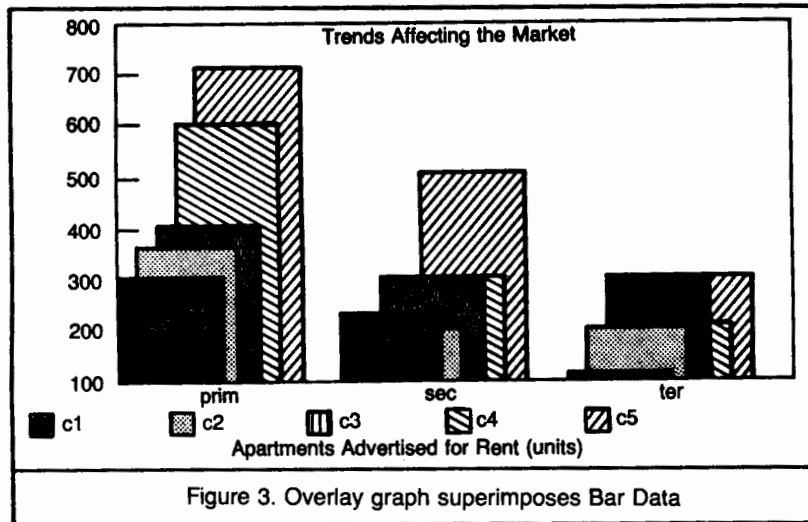
Figure 3. Overlay graph superimposes Bar Data

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In Figure 3, the data was superimposed, allowing a graph emphasizing trend variation. Up to "30" different levels could be superimposed, but less than 10, generally works best.

Figure 4, demonstrates the ability of Graphics to combine two different Level Types in Windowed form.

Trends Affecting the Market

Apartments Advertised for Rent (units)
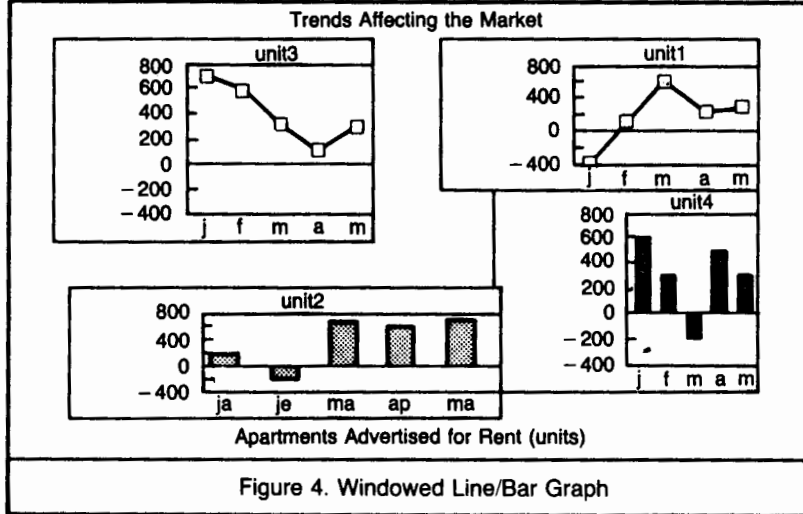
Figure 4. Windowed Line/Bar Graph

In Figure 4, the values are plotted in both Line and Bar form. Different Graph Type styles enhance the graph. For example, inventory levels of different products.

Figure 5, an exploded Pie chart, displays the data from a single level or position as wedges in a circle.

— GRAPHICS for YOU —

Demonstration Package

CA

JUL – 200
MAY – 195!
FEB – 175
JUN – 165!
MAR – 150
APR – 145
JAN – 125
AUG – 100

Software Products International, Inc.
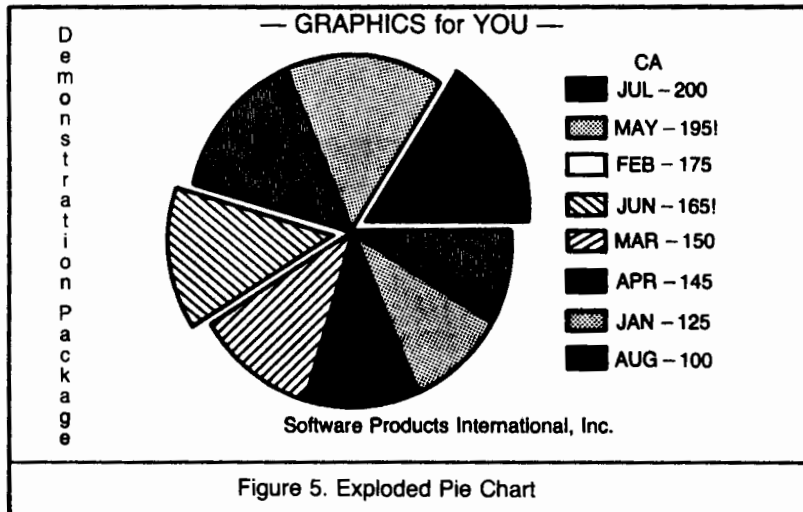
Figure 5. Exploded Pie Chart

Figure 5 demonstrates the Pie chart when comparing the components of the whole. In this example, we can see the contribution each month made to the whole year by dividing each segment. Here, we go one step further by segregating two sections to illustrate how to highlight the data relationships via the "explode" capability. This segregating was accomplished in the Data Setup window.

Figure 6 shows a combination of all three types in Overlay. This Graph Type provides a way to overlap different information on the screen of hardcopy, so that you can refer to large amounts of unique data quickly and easily.

Figure 6. Combination of Bar, Pie and Line types.
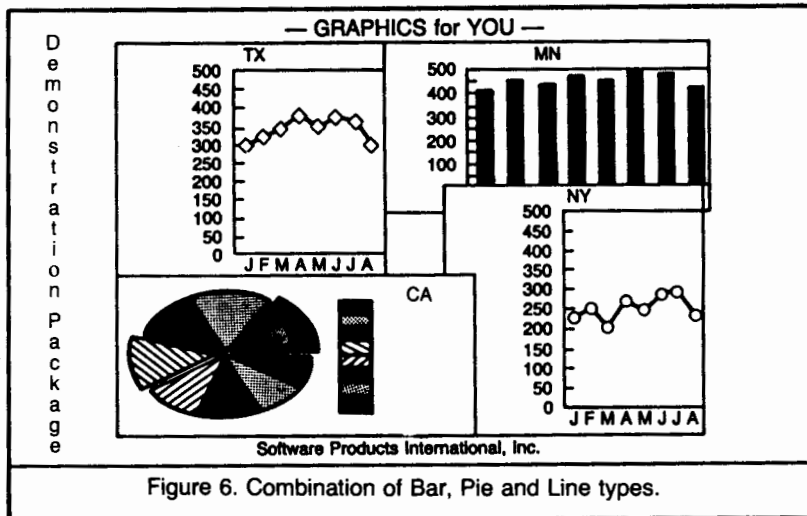
In Figure 6, all three Level Types are displayed on one graph through the use of the Overlay technique. This option is valuable when giving presentations because of its ability to present a wide range of information.

In Figure 7, your **GRAPHDEM.CHT** is displayed with 4 Levels and 8 Positions as a Three-D Bar Graph.

Figure 7. **GRAPHDEM.CHT** in Three-D
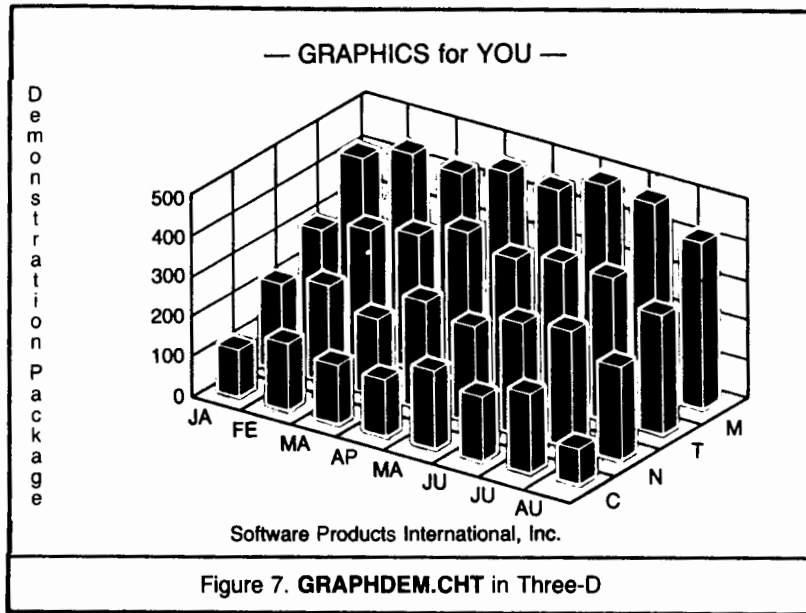
In Figure 7, a Three-D bar graph is displayed demonstrating the effects of the "Level" and "Position" field in the main window. Note the positive effects of having the large data in the rear. This type of graph could be used to denote profits of four business districts, over a eight month period.

In Figure 8, **GRAPHDEM.CHT** a Three-D bar graph, is displayed with 8 Levels and 4 Positions.

Figure 8. **GRAPHDEM.CHT** in Three-D
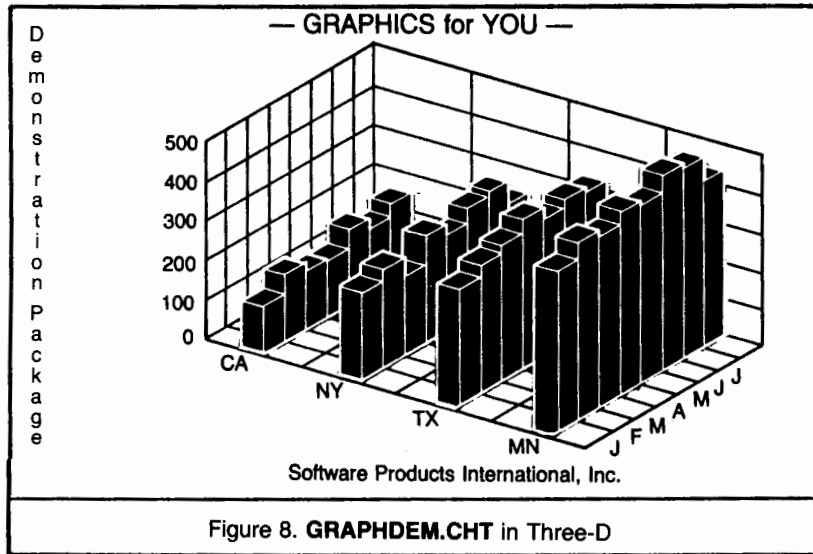
In Figure 8, "Levels" and "Positions" are reversed clearly depicting the effects after changing these two dimensions. Notice the negative effects of having the larger data in the foreground.

We hope you enjoy using this versatile tool. You should be aware though, that there is no module that does not require an investment of many hours of study and practice to master thoroughly, and Graphics is no exception. This sophisticated tool, like many things that are worthwhile, can only be used most effectively with extra time spent learning how to use it.

O·P·E·N
ACCESS

SOFTWARE PRODUCTS INTERNATIONAL, INC.

WORD PROCESSOR

VOLUME II — USER'S MANUAL

O·P·E·N
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VOLUME II

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Chapter 1.
INTRODUCTION TO OPEN ACCESS WORD PROCESSING

1. Introduction to Word Processing

Welcome to the OPEN ACCESS Word Processing module. In general, almost everyone who has used a computer has been able to experience the benefits of using a word processing program. Word processing programs have saved secretaries, editors, managers, and many others countless thousands of hours of typing.

Just in case you are not familiar with the concept of a word processing program, we will give a very brief description. A word processing program is a software package which allows you to create a file of textual information and then edit and print the contents of that text as necessary. Thus, a word processing program can be very useful for typing (and editing) letters, memos, reports, manuals, contracts, books, and many other word oriented documents.

There are four main areas in which the benefits of a word processor are evident. First of all, the document you type may be stored on a floppy diskette or hard disk so that at any time in the future, you may create another original of that document. With a typewriter, you must either settle for a photocopy or a carbon copy or you are forced to re-type the document.

Secondly, once you type a document, you may make major alterations without being forced to re-type the document. For instance, if you need to move a paragraph from the end of the document to the beginning, it's a simple task with a word processor. Not so with a typewriter. With a word processor, you are free to insert and delete entire words, sentences, and paragraphs without any problem. Not so with a typewriter. If you have multiple occurrences of a misspelled word, you can correct all occurrences with one action using a word processor. Not so with a typewriter. The list goes on.

Thirdly, a word processor can help to easily make your document more attractive. For example, you can have the word processor automatically right justify your document for a nice block appearance. Also, you can specify for sections of the document to be printed with a bold type, or underlined, or italicized. These important features are much more difficult without a word processor.

Lastly, with some word processors, you may easily integrate information from different applications, such as an electronic spreadsheet. For instance, if you were generating a quarterly sales report that was to include projection figures for the upcoming quarter, you could, with a word processor like the OPEN ACCESS Word Processor, easily incorporate the sales projection from the spreadsheet into a document file. This, of course saves you from re-typing the data by hand or, at best, working through a file conversion to get the spreadsheet information into an acceptable format.

With the increasing demands for office productivity and efficiency, a word processing module is becoming a necessity rather than a luxury. With this being the situation, it only makes sense to select a word processing system which will tie in closely with the rest of your office needs.

What are your other information management needs? Most likely, you need a database module to handle your filing needs, a spreadsheet module to handle your projection needs, a graphics module to make numeric data trends and comparisons clearer, a time management module to help manage your appointments more efficiently, and a communications module to be able to talk to other data processing environments.

It's no accident that these are the six modules found in OPEN ACCESS. Thus, the OPEN ACCESS Word Processing module seems to be a natural selection for an efficient word processing system. It does NOT try to force word processing into a spreadsheet environment. Instead, it provides you with all of the advanced features and full screen oriented editing that you would expect to find in a stand-alone word processing system. Yet, OPEN ACCESS Word Processing is intimately tied into the other data processing modules enabling you to enjoy the benefits of an integrated package.

So, this manual will seek to guide you and teach you, chapter by chapter, through the features of the OPEN ACCESS Word Processing module. The first few Chapters will cover text editing commands, the next few chapters will describe the text formatting options, then the printing features will be demonstrated, and, lastly, the file handling commands will be discussed.

2. Typical Word Processing Features

Now that we have discussed the major benefits of a word processing system, let's take a minute to list the major commands which you should expect to find in a word processing package.

CREATE   permits you to make a new document.

READ   create a copy of an existing document in the computer's memory. You may then edit this copy. If you wish to keep the changes you may update the permanent copy on disk, otherwise you may abandon the changes.

INSERT   is used for entering characters into your document.

DELETE   is used to remove characters from your document.

EXCHANGE   is used to replace, or "write over," characters in your document.

COPY   is used to duplicate a portion of text and to move the duplicate to another position in the same file or a different file.

MOVETEXT	is used to remove a portion of text and place it in a new position within the same document.
FIND	locate a specific pattern of text.
REPLACE	locate a specific pattern of text and replace it with another pattern of text.
FORMAT	format a paragraph according to the current margins and paragraph indentation. This would include block right margins and proportional spacing.
PRINT ATTRIBUTES	specify printing attributes such as bold type, underline, italics, line spacing, header lines, footer lines, etc.
PRINT	is used to produce a printed copy of your document for you to read, file, send, etc.
FILE	stores a permanent copy of your document on a floppy or hard disk.

In the OPEN ACCESS Word Processor, you have all of the options listed above and many more. For instance, a pocket calculator window is available at the touch of a key. A search window is also available to see what files are available to you.

Now, we will spend a minute to outline the goal of this manual and then we will begin our tutorial example so that you may see the usefulness and ease of use of the OPEN ACCESS Word Processor.

3. Goal of the User Manual

In this manual, we have one primary purpose. That goal is to give you enough description and practice with each of the features of the Word Processor so that you will be ready to effectively use it for your own applications.

To meet this goal, we will enter a sample letter and then manipulate that letter in a variety of ways which will point out how to use the Word Processor features to their best advantage. This sample letter is from a hypothetical microcomputer manufacturer to a hypothetical venture capital company thanking them for their financial assistance and advice. It appears to be a very typical application, yet, as you will see, many of the Word Processing features we have been discussing will be used to make the task much easier.

We have tried to minimize the amount of extraneous work which must be done to demonstrate these features. Because of this, the sample letter is not long enough to show some of the printing features which do not become apparent until several pages have been generated. Also, some features, such as header and footer lines are not applicable to a letter. So, we will also make use of a pre-existing document in the chapters on printer attributes and printing.

Each of the Chapters will serve as a lesson. In almost all cases, you may leave the program after completing the examples in that lesson. This way, you may adjust learning the Word Processing module to your own schedule.

Chapter 2.
Creating A File and Inserting Text

GOAL: In this chapter, you learn how to create a new file and how to select between Document and Text files. Once you have created a file, you will learn how to use the Insert command to enter text into a file. In addition, you will learn how to specify that some text should be printed in bold type, underlined, or italicized.

Once you have accessed the Word Processor from the Options window, the initial display appears on your computer screen as illustrated below:

```
                    Open Access - Word Processor
              (C) 1983 Software Products International Inc.




                  Word Processor - File Selection Menu
                   FILE: Read_Old       Create_New


             <chars> <Arrows> <Help> <Do> <UnDo>
```
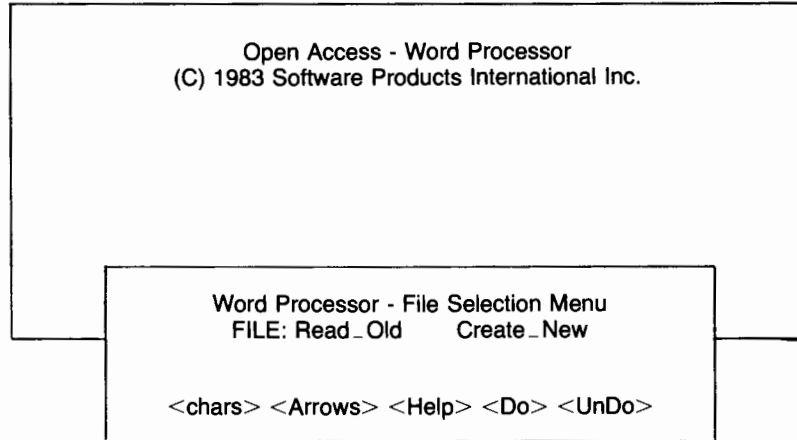
1. Creating a File

The first Word Processor screen displays the copyright message and a prompt giving you the alternative of creating a new file or reading an existing file.

USER: Select "Create New" by pressing <C>.

WP: The second FILE command line appears:

```
FILE: Create New File:
                     Document Text
```
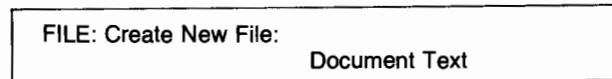
Document Files and Text Files

You have the choice of creating either a "Document" or a "Text" file. The difference between these two types of files is the features which each offers.

Document is the most versatile of the two choices. When writing a Document file, you have available all the special Word Processor features, such as: Wordwrap and right justification; special typesets like Bold, Italic, and Underline; and the ability to set individual formats for each paragraph. You will learn more about these features in later chapters.

The other type of file is the Text file. This file is a standard DOS text file. As such, it does not contain the special codes required by the Word Processor to produce the special features included in the Document file. Text mode is used primarily to allow the Word Processor to communicate with other programs which can read and write standard DOS text files. As we will see in a later Chapter, we may convert a text file into a document file and vice versa to fit the needs of our specific application.

Refer to the FILE section of Volume III for detailed information on further differences between Document and Text. For this tutorial simply remember that Document is for writing fancy "papers" and Text is for communicating with other modules.

For our sample letter, we would like to select the Document file in order to use some of the nicer features of our Word Processor.

USER: Selection "Document" by pressing <D> or highlighting the word Document and pressing the <do> key.

WP: The following prompt is displayed:

```
FILE: Create New file:
        Document
  Name of new file:
```

If you are creating a Document file, the Word Processor suffixes your file name with ".DOC"; if you are creating a Text file, the name is suffixed with ".TXT". These suffixes are automatically added—you simply need to enter your file name.

PLEASE NOTE: a file name may be no longer than eight characters. Numbers can be used as a part of a file name.

USER: Enter the name [INVEST] and press <Do>

WP: The INSERT command line appears as follows:
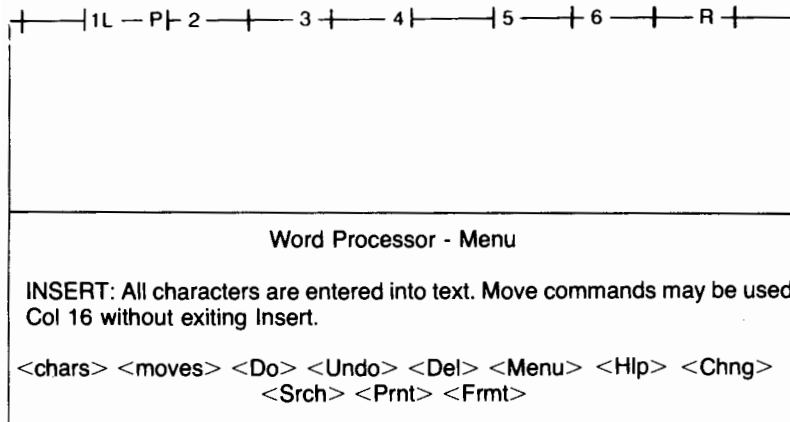
```
+----+1L — P+ 2 ——+—— 3 +—— 4+———+5 ——+ 6 ——+—— R +----+
|                                                          |
|                                                          |
|                                                          |
|                                                          |
|                                                          |
+----------------------------------------------------------+
|                   Word Processor - Menu                  |
|                                                          |
| INSERT: All characters are entered into text. Move commands may be used |
| Col 16 without exiting Insert.                           |
|                                                          |
| <chars> <moves> <Do> <Undo> <Del> <Menu> <Hlp> <Chng>   |
|                  <Srch> <Prnt> <Frmt>                    |
+----------------------------------------------------------+
```

Before we begin typing text, we will take a minute to demonstrate one of the features which is available at any time you are using the Word Processing module. This is the Help window. The Help window provides a quick summary of the command(s) which are currently available to you or the information that is being asked of you in a specific prompt. This quick reminder may be enough to save you from having to hunt up your answer in the manual.

The Help window is opened with the <Help> function key.

WP: The Insert command line is still on your screen.

USER: Press <Help>

WP: The Help window opens at the bottom of the Text window and presents a summary of information about the Insert command.

There is one further point about the Help window worth noting. At any time you have pressed the <help> key, you may press it a second time to display a window which will list all of the function keys for the program. This way, if you do not have your function key template and you are not sure about which key on the keyboard matches a function, you can use the double Help window to save you some guesswork.

USER: press <undo> once to put away the Help window. (If you have pressed <help> a second time to see the function key window, then press <undo> a second time.)

2. Inserting Text

EXAMPLE SITUATION: We must write a letter to Mr. Hal Stevenson of Fortune Financial Co. to thank him for his financial assistance and advice in getting a sluggish sales campaign off the ground. In this part, we will create the file which will hold the letter and we will type in most of the text to be included in the letter.

The Insert "mode" is used for entering text into the Text window. The Insert command line has many features which enable you to edit your file quickly and conveniently. Each of these features will be discussed in detail in later chapters.

You can think of the Text window as a piece of paper in your typewriter. Whenever the Insert command line is displayed, any letters or numbers that you press on the keyboard are entered into the Text window.

There is an important difference between a typewriter and your Word Processor: It is not necessary to carriage return after every line.

As you approach the right margin, the "carriage" will automatically return. The word you are typing is written on the new line if it can not fit on the previous line. This feature is called "Wordwrap." Wordwrap is always "on" unless you specifically turn it off.

You should only use a carriage return when you wish to begin a new paragraph. Press <Ret> once to begin a new paragraph; press <Ret> twice if you want a blank line between paragraphs. When you press <Ret>, a paragraph symbol (a backward capital "p") appears to indicate the end of a paragraph.

If you look at the very top of the screen you will notice the Ruler. The numbers across the top denote the column numbers 10, 20, 30, etc. The Ruler displays the current left and right margins, the paragraph indent, and the tab stops. The left margin is denoted by the letter "L", the right margin by the letter "R", the paragraph indent by the letter "P", and tab stops by vertical bars. Later, you will notice that the settings on this ruler change as the paragraph style defaults change.

You should also take a quick look at the line on the very bottom of the screen. This is a list of available keys and function keys that are allowable at this point in the program. This line will change at various points to reflect the allowable keys.

This lesson is intended to give you an opportunity to practice entering text. So, you may now type in the following few paragraphs. This will give us the body of our letter. From that point on, we will be able to manipulate the letter to demonstrate other commands. You will notice that there are some mistakes in the following paragraphs. Please type in these mistakes as you see them because we must have some common mistakes to demonstrate the editing features described in later chapters.

USER: type in the following using the <back space> to backup over and correct
mistakes. (Do not press <ret> when you are within a paragraph.):

January 6, 1984

Mr. Hal Stevenson, President
Fortune Financial
500 W. Bay St.
San Francisco, CA 90736

Dear Mr. Stevenson,

It is a great pleasure for me to inform you that the fruits of our last few meetings are beginning to appear. We recieved the final 1983 sales figures for our new 64 bit micro and it appears that your advice has steAred us in the right direction. Sales for the fourth quarter were up 27% for an overall year's increase of 22%.

Summarized below are the sales figureS by region and quarter.

Our spreadsheet analysis tells us that if we increase our advertising to $350,000 per month and reach our sales quantity of 15,000 units per month, we will reach our goals of 35 million revenues per month and four million profits per month. Second quarter of 1984 seems to be a realistic estimate, just in time for our planned public stock offering.

In a few days, you'll recie an updated business plan with all the accOunting details.

Sincerely,

Jim Fox, President

The Cursor

Your "location" in the Word Processor is indicated by the cursor. The cursor is very important since any features that you use will take effect at the position of the cursor.

Consequently, the position of the cursor is always important. The more quickly you can position the cursor, the more efficiently you can use your Word Processor. The following table describes the various methods for moving the cursor. The keys which position the cursor are called "<move>" keys.

In order to see which keys on the keyboard match which movement key, please refer to your function key template or press the <help> key twice.

<move> key	Function
<left arrow>	Moves the cursor from its present position one space to the left
<right arrow>	Moves the cursor from its present position one space to the right
<up arrow>	Moves the cursor up to the preceeding line
<down arrow>	Moves the cursor down to the following line
<word forward>	Moves the cursor from its present position to the beginning of the next word
<word back>	Moves the cursor from its present position to the beginning of the preceeding word
<sentence forward>	Moves the cursor from its present position to the beginning of the next sentence to the right
<sentence back>	Moves the cursor from its present position to the beginning of the preceeding sentence
<paragraph forward>	Moves the cursor from its present position to the beginning of the next paragraph
<paragraph back>	Moves the cursor from its present position to the beginning of the preceeding paragraph
<page up>	Moves the cursor down from its present position by one "screen"
<page down>	Moves the cursor up from its present position by one "screen"

<jump><right>	Moves the cursor right from its present position to the end of the line
<jump><left>	Moves the cursor left from its present position to the beginning of the line
<jump><down>	Pressing this combination once moves the cursor from its present position to the bottom of the window. Pressing this combination twice moves the cursor to the end of the file
<jump><up>	Pressing this combination once moves the cursor from its present position to the top of the window. Pressing this combination twice moves the cursor to the beginning of the file

We may now practice a few of these movements by following the actions listed below.

USER: press <jump> <up> twice to get to the beginning of the file. Press the <down arrow> twelve times to move the cursor inside a paragraph. Now press <right arrow> six times, <word forward> twice, <sentence forward> twice, <paragraph forward> once, <paragraph back> once, <sentence back> twice, <word back> twice, and then <up arrow> twelve times. We should now be at the top of the screen. Press <page down> and then <page up>. Press <jump> <down> to return to the bottom of the screen.

Special Print Types

As you practiced typing in the Text window, you entered your text sequentially, i.e., one character after another. However, you may easily "go back" and insert a word or sentence in the middle of a paragraph.

The Word Processor enables you to insert new text at any point in your file without damaging your existing text. When you make an insertion, each character you enter "pushes" the existing text over one space. Simply position the cursor at the place where you want to make your insertion and enter the new text.

At this point, we would like to demonstrate two things. First of all, we will move to specified locations within our letter and insert text in front of other existing text. Secondly, we would like to show you how you can insert text in a way that will designate that this text should later be printed with a special print type, such as bold type, underlined, or italicized.

The reason that we will demonstrate how to specify a special print type at this point is that the text designated to be printed with the special type will show up on your screen with a specific video attribute. If you have a color monitor, text to be underlined will be displayed in one color while text to be bold face will be displayed in another color. On a monochrome monitor, underline may show up as underline and bold type as inverse video. Anyway, because the special video is used to highlight the text with the special print type, it is only possible to designate this text while you are in Insert mode.

Follow the dialogue below to demonstrate these points.

USER: Move the cursor until it follows the word "micro" in the first paragraph. Enter [, ,] after the word micro to open up a space. Now press <change>.

WP: The Print Types prompt line is displayed as shown below.

Toggle print type	Bold Off	Underline Off	Italic Off
	<B> <U> <I> <Do> <Undo> <Change>		
	<Help>		

USER: Press <B> to toggle Bold style on. Press <U> to toggle Underline style on. Press <menu>.

WP: The Bold and Underline switches are set to "on" and we are back in Insert mode.

USER: Press <left arrow> until you are at the second comma, then enter [SUPER 64].

WP: Notice the special video state that the inserted text shows up in. This will notify you that this text will be printed in bold type and will be underlined.

USER: Move the cursor so that it is on the period at the end of the only sentence in the second paragraph. Press <space> and enter [SUPER 64]. This text is also displayed in the same video state reminding you that it also will be bold and underlined. Press <change> to access the print type options.

WP: The Print Types prompt line is displayed.

USER: Press <B> and <U> to switch the bold face and underline attributes off. Press <menu>. Now move the cursor so that it is on the letter "S" of the word "SUPER" which you just typed. Enter [for] and press <space>.

WP: The word "for" is displayed in a normal video state designating that it will have no special print type.

USER: Move the cursor so that it is immediately following the words "stock offering." at the end of the third paragraph. Press <Ret> twice to begin a new paragraph, and then enter [As you have said,"]. Press <change>.

WP: The Print Types prompt line is displayed.

USER: Press <I> to set Italic mode. Press <menu> to return to Insert mode. Enter [When the fruit is ripe, you'd better pick it or settle for the spoils].

WP: The text we have just typed is displayed in a different video mode than the other special print types we specified. This is because we just selected the italic print type for this quote.

USER: Press <change> to display the Print Types prompt line. Press <I> to switch italics off. Press <menu> to return to Insert mode. Enter [. "] to finish the quote in normal print type. Press <jump> <up> twice.

PLEASE NOTE: These type styles can be used in any combination.

It is important to remember that the type styles you select only affect the text which you enter AFTER selecting them. In other words, to change the type style of a word that is already entered into the Text window, you must delete the word and re-enter it after selecting the type style.

When you are inserting text, the line at which you are inserting will either be pushed out of the window, or will be dropped down to the next line.

Lastly, follow the steps below to save the file we have entered so far onto the disk in case you would like to continue on with the next chapter at a later time.

USER: Press <menu>. Now press <F> to select the File command. Press <do> to save the file.

A full discussion of the File command will occur in the chapter on the File command. For now understand that until the file that you are currently working with is saved, it only exists in memory. The Word Processor will prompt at several points in the program so that you do not accidentally lose your entered text. It should be noted, however, that it is always safer to save the file out on to disk even before you are through working with the file. This prevents loss of entered text in case of power failure or other hardware problems.

WP: When the file is saved on disk, the prompt to Create a New File or Read an Existing File will be displayed.

You may now either continue with the next chapter or refer to Chapter 12 for instructions on how to exit the Word Processor module.

Review

Before proceeding to the next chapter, please take a moment to review the basic concepts and procedures that have been presented in this chapter. If you have mastered these lessons, you can:

— create a new Document file

— understand the difference between a Document and a Text file

— insert text into the Text window

— position the cursor within the Text window using a variety of <move> keys

— make insertions into the middle of your text

— insert text which will be printed with a special Print Type, such as bold face, underline, or italics.

Chapter 3
DELETING AND EXCHANGING TEXT

GOAL: This chapter will allow you to become proficient in the use of the Delete and Exchange commands used to edit files. The Delete command allows you to remove sections of text while the Exchange command enables you to type over existing text and so replacing it. We will also instruct you in the use of abbreviations which will automatically be expanded to a longer sequence of characters.

Every method for editing text involves two steps;

    1.) positioning the cursor
    2.) making the desired changes in your text

The key to successful and efficient use of the Word Processor is knowing which combination of cursor moves and editing commands is best suited for the task you need to complete.

1. Editing with Delete

EXAMPLE SITUATION: After typing in our sample letter, we read through the letter and discover there are some unnecessary letters and words. In this part, we will use the <delete> key and Delete command to erase these.

As you have probably noticed, there is an extra "s" in the word "figures" in the second paragraph. We may easily remove this unnecessary character by following the steps below.

    WP: The File Selection Menu is on the bottom of the screen.

    USER: Press <R> to select the "Read_Old" option.

    WP: You are prompted for the name of the file.

    USER: Enter [INVEST] <ret> in order to read in the INVEST document file.

    WP: The Text window opens onto the screen with the text of IN-VEST displayed.

    USER: Move the cursor so that it is at the capitalized "S" in the word "figuresS" in the second paragraph. Press <delete>.

WP: The letter "s" is removed.

The <delete> key may be used to remove one character at a time from text. Simply position the cursor over the character you want to delete and press <delete>. That character is removed.

USER: In the first paragraph, we find that we have accidentally entered the word "the" twice in one place. Move the cursor so that it is on top of the "t" of either occurrence of the word "the" located just before the words "fourth quarter" in the last sentence of paragraph one. Press <menu> and <D> to access the Delete command, then press <word forward>. Press <insert> to return to the Insert command.

WP: The entire word "the" plus the following space(s) are deleted by the one keystroke. When you press <insert> from the Delete command you access the Insert prompt line.

USER: In order to prove to you that you may undo a deletion, press <menu> then <D>. Then press the <ret> key three times.

WP: Three lines of text are removed.

USER: Press the <undo> key.

WP: The three lines of text are restored.

As you can see, there is a variety of <move> keys which can be used to remove text within Delete. These keys can be described as "destructive." At this time, please open the Delete Help window (press <help>) to see a list of the keys which are destructive in Delete. When you have finished viewing the list, close the Help window (press <undo>).

There are also several keys which will accept your deletion. The <do> or <menu> will accept the deletion and then display the main command line while pressing <insert>, as we have seen, will accept the deletion and display the Insert prompt line. Again, because the majority of movement keys are destructive in Delete, it is necessary to return to Insert for repositioning the cursor.

USER: Press <menu> then <I> to access insert.

2. Editing with Exchange

EXAMPLE SITUATION: In this part, we realize there are some letters and words which need exchanging, including a typo and a poor choice of wording. This will be done with the Exchange command.

The Exchange command allows you to overwrite text that already has been entered into the Text window with new text. Thus, Exchange is handy for transposed letters and other one-for-one character exchanges.

Exchange can be accessed from the main command line or directly from Insert. You can use <line insert> to toggle between Insert and Exchange.

WP: The Insert command line is displayed.

USER: Select Exchange from Insert by pressing <line insert>.

WP: The screen displays the Exchange command line.

```
─|──1L──P──|─2──|──3─|──4|──|5──|─6──|──R─|─
        January 6, 1984

        Mr. Hal Stevenson, President
        Fortune Financial
        500 W. Bay St.
        San Francisco, Ca. 90736


        Dear Mr. Stevenson,

    It is a great pleasure for me to inform you that the fruits of our last
  few meetings are beginning to appear. We recieved the final 1983 sales
  figures for our new 64 bit micro, SUPER 64, and it appears that your
  advice has steared us in the right direction. Sales for the fourth quarter
  were up 27% for an overall year's increase of 22%.

    Summarized below are the sales figures by region and quarter for
  SUPER 64.
```

EXCHANGE: Characters entered are exchanged.
<Ins> inserts space at cursor, <Del> deletes char under cursor.
<chars> <moves> <Ins> <Del> <Do> <Undo> <Menu> <Help>
<line_ins> <line_del>

You position the cursor over the character(s) you wish to replace and simply enter the new characters over the old characters.. The <do> and <menu> keys accept the exchange and return you to the main command line. Note that, in Exchange, the <insert> key does NOT access the Insert command. Instead, it allows you to insert a single space. You don't have to leave Exchange and access Insert when there isn't enough room for an extra character or two.

USER: Move the cursor so that it is on top of the "O" in the word "accOunting" in the only sentence of the last paragraph. Press <o>.

WP: The "O" is exchanged for the character "o" and the word "accounting" is spelled properly.

USER: After reading through our letter, we feel it would sound a little better if in the first paragraph we said "for an overall annual increase" rather than "for an overall year's increase". So, move the cursor until it is on top of the letter "y" in the word "year's". Now enter [annual].

WP: The letters of the word "year's" are exchanged one by one with the letters of the word "annual".

USER: Press <menu> to display the main command line.

3. Text Abbreviations

EXAMPLE SITUATION: In this part, we realize that we should put the company name after the salutation at the end of the letter. We will enter and then use an abbreviation for our company name. We can use that abbreviation whenever we need to enter the company name.

The Word Processing module allows you to specify an abbreviation for a longer sequence of characters. The abbreviation must stand alone, with a space or period on each end. Then, at any time you type the abbreviation, the abbreviation will be exchanged automatically with the extended text.

Using this feature, you can avoid typing and retyping commonly used product names, company names, or anything else you can abbreviate. You may store up to ten such abbreviations with each Word Processing file.

In this example, we will enter and store an abbreviation for the name of a company in the Background window, then use the abbreviation in the Text window.

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USER: Select the Background command by highlighting "Background" and pressing <do> or by pressing <B>.

WP: The Background window is displayed. This window is also used for storing the paragraph styles, as we shall see in a later chapter. However, it is also used to store the text abbreviations.

USER: Use the <down arrow> to move the cursor until it is under the words "Short text". Enter [SS] and then press <ret>. Press the <right arrow> so that the cursor is under the words "Full text". Enter [Systems Seven, Inc.]. Press <ret>.

WP: The abbreviation and the long text that the abbreviation stands for have now been stored in our file.

USER: Press <menu> to display the main command line. Press <insert> to access the Insert command. Move the cursor so that it is after "Jim Fox, President" at the very end of the letter. Press <ret> to insert a new line into the letter and then position the cursor so that it is underneath the "J" in the name "Jim Fox". Enter [SS] <space>.

WP: The abbreviation "SS" is exchanged by the full text of the company name.

USER: Press <menu> to return to the main command line.

In our example abbreviation, we used it only once in this letter. But, imagine how handy these abbreviations would be if you were to use the abbreviation twenty or thirty times in a document!

To make sure the most current version of your sample letter is saved on disk, follow these instructions.

USER: Press <SA> to access the Save command, press <do> to save the current version of your sample letter.

WP: The Word Process main command line is displayed.

If you do not wish to continue the tutorial at this time, refer to the instructions below.

USER: Press <O> to access the Options command and then press <O> to exit to the Operating System.

Review

Before proceeding to the next chapter, please take a moment to review the material presented here. If you have mastered the procedures demonstrated in this chapter, you can:

— delete characters, words, etc. which are not necessary in your text

— use Exchange to enter new characters over existing characters

— enter an abbreviation and then use that abbreviation in your document to be replaced by a longer sequence of text.

Chapter 4.
Finding and Replacing Text

GOAL: This section discusses the procedures for setting and finding markers. A marker is an invisible "placeholder" to which the cursor may be sent quickly and directly. In addition, you will learn how to search for a particular text pattern and, if you wish, to replace that pattern with another.

1. Setting and Finding Markers

Setting markers and finding markers are two separate procedures. To set a marker, use the Setmarker command from the Main command line; to send the cursor to a marker, use the Marker option of the Search function.

EXAMPLE SITUATION: At a later point you will want to copy in some text from a different document file and you want to remind yourself of that location. This can be done with the Setmarker command.

WP: The main command line is displayed.

USER: Press <F> to select the Filer command.

WP: The File Selection Menu is on the bottom of the screen.

USER: Press <R> to select the Read _ Old option.

WP: You are prompted for the name of the file.

USER: Enter [INVEST] <ret> in order to read in the INVEST document file.

WP: The text window opens onto the screen with the text of INVEST displayed.

USER: Press <paragraph forward> until you are positioned between the second and third paragraphs of the letter's main body.

WP: The cursor is between the second and third paragraphs

Before accessing Setmarker, the cursor must be positioned at the point in your text where you want to set a marker. In this case the cursor needs to be positioned at the blank line after the paragraph (at the end of ". . . SUPER 64"):

USER: Press <Menu>

WP: The Main command line appears

USER: Select Setmarker by highlighting it and pressing <do>, or entering <S>.

WP: The Setmarker command line is displayed as follows:

```
+-----|1L — P|- 2 ——+—— 3 +—— 4 |——|5 ——+ 6 —+— R +—-
       January 6, 1984

       Mr. Hal Stevenson, President
       Fortune Financial
       500 W. Bay St.
       San Francisco, Ca. 90736

       Dear Mr. Stevenson,

       It is a great pleasure for me to inform you that the fruits of our
       last few meetings are beginning to appear. We reclEved the final
       1983 sales figures for our new 64 bit micro, SUPER 64, and it
       appears that your advice has steAred us in the right direction. Sales
       for the fourth quarter were up 27% for an overall year's increase of
       22%.

       Summarized below are the sales figures by region and quarter
       for SUPER 64.
_____
 SET MARKER:  Enter Marker:
              <chars> <Do> <Undo> <Help> <Ret>
```

USER: Enter [ADD] and press <Do> to mark the place where you will later copy in the sales figures.

WP: The marker is set and the Main command line is displayed.

Markers are not visible within files. However, the markers that have been set are listed with the Setmarker command line. Now that you have set a marker, when you access Setmarker again you will see "add" listed.

There are three things you should remember about Setmarker:

1) A marker can be any combination of letters but may only be three letters long.

2) You are allowed to set up to eight markers in each file.

3) When the marker limit of your file is full, you may change a marker:

After you enter the ninth marker and press <Do>, you will see something similar to the following display:

```
SET MARKER:   Replace which (enter 0 to exit):
    1:ADD  2:BEG  3:END  4:CHT  5:TAB  6:HER  7:THR  8:HOB
              <char> <Do> <Undo> <Help> <Ret>
```

(The markers which you have set will of course be listed across the bottom, rather than the markers shown here.)

You may select the old marker which you want to replace with your new marker by entering its corresponding number and pressing <Do>.

To send the cursor to a marker, use the Marker option of the Search function.

WP: The Main command line is displayed.

USER: Press <page down> twice so you are at a different location in the document file.

USER: Press <Search>.

WP: The Search command line is displayed.

USER: Select Marker by highlighting it and pressing <Do>, or pressing <M>.

WP: The Marker prompt appears as shown below:

```
SEARCH:  Which marker:
Markers used:  ADD
```

Please note that the Marker command line also lists all the markers which you have set.

USER: Enter [ADD] and press <Do>.

WP: The cursor immediately jumps to the marked location.

When you are ready to insert the sales table, you will be able to find the correct place quickly and easily by using Marker to send the cursor to "ADD".

2. Finding Text Patterns.

The Find option of the Search function allows you to locate text patterns in your file. This is extremely useful in that you can quickly locate a word or a phrase without paging through the entire text to find it. Find is accessed by pressing the <Search> key from the following command lines: Insert, Delete, Copy, and the Main command line.

EXAMPLE SITUATION: Your secretary has informed you that you have inverted the letters "ie" in the word "received". We now need to find that occurrence to correct the error.

WP: The Word Processor's Main command line is on the screen.

USER: Press <jump up> twice to position the cursor at the top of the text file. It is important to always have the cursor at the beginning of the file when using the Search function as it will only search downward through the text from the cursor's current position.

WP: The cursor is at the beginning of your file.

USER: Press <Search>.

WP: The <Search> command line appears as shown below:

```
┌────┤1L ─ P├ 2 ──┼── 3 ┼── 4├───┤5 ──┤ 6 ──┼── R ┤──────┐
        January 6, 1984

        Mr. Hal Stevenson, President
        Fortune Financial
        500 W. Bay St.
        San Francisco, Ca. 90736

        Dear Mr. Stevenson,

        It is a great pleasure for me to inform you that the fruits of our
        last few meetings are beginning to appear. We reclEved the final
        1983 sales figures for our new 64 bit micro, SUPER 64, and it
        appears that your advice has steAred us in the right direction. Sales
        for the fourth quarter were up 27% for an overall year's increase of
        22%.

        Summarized below are the sales figures by region and quarter
        for SUPER 64.
├──────────────────────────────────────────────────────────┤
 Search:   Find Marker Replace
 Press <Undo> to exit, <Search> to find again
              <arrows><Do><Undo><Help><Search>
└──────────────────────────────────────────────────────────┘
```

USER: Select Find by highlighting and pressing <Do>, or pressing <F>

WP: The first Find prompt appears as shown below:

FIND: How many times (<Search> for last occurrence): 1

It is important to understand that Find is used to locate a specific occurrence of the word you choose; if you enter "3", it will NOT find three places where your chosen word appears but will find where it appears for the third time.

USER: Press <Do> to accept the default of one so that we can find the first occurrence of our mispelled word.

WP: The second Find prompt is displayed as shown below:

FIND: (Token) Enter pattern:

                <chars><Do><Undo><Change><Help><Ret>

In the prompt, you see the word "Token" within parentheses.

USER: Press the <Change> function key.

WP: The prompt now displays the word "Literal" within parentheses.

When using Find, you may choose either a Token find or a Literal find. Use <Change> to toggle back and forth between the two choices. A Token find searches for a "whole" word, i.e. a group of characters with a space on each side. Most of your finds will probably be Token.

A Literal find searches for parts of words. A Literal find is useful, for example, if you need to find the third place where you used the verb "ask" in any tense. A Literal find for "ask" will also find "asks", "asked", and "asking".

USER: Enter [IE] and press <Do>

WP: The Word Processor searches for the pattern and places the cursor on the "IE".

USER: You can now go into Exchange mode and overwrite the two transposed letters with the correct letters. Press <menu> to display main command line. Press <E> to enter Exchange mode. Enter [ei] to overwrite the incorrect "ie". Then press <menu> to return to the Main Menu.

WP: The correction is made and the Word Processor's Main Menu is on the screen.

Suppose you still suspect there are more occurrences of the misspelled word. You may quickly repeat a find by returning to the <Search> command line and pressing <Search>:

USER: Press <Search>.

WP: The <Search> command line appears.

USER: Press <Search> again.

WP: The Word Processing searches for the same patterna and places the cursor on the next occurrence of "ie".

USER: You can now go into Exchange mode and correct the second misspelling. Press <menu> to display main command line. Press <E> to enter Exchange mode. Enter [ei] <insert> twice to make room for the rest of the word. Now enter <ve> to complete the word. Press <menu> to return to the Main Menu.

Now you want to try the search one more time to see if there is any additional occurrences of the misspelling, so you repeat the search.

USER: Press <Search> to access the Search function.

WP: The Search command line appears.

USER: Press <Search> to find the next occurrence of the same pattern.

WP: The following message is displayed:

```
                    *** PROBLEM ***
                    Pattern not found
                         <Do>
```

This message is displayed because the Word Processor could not find any more occurrences of your target word. The Word Processor can only find target words when they occur AFTER the cursor position. In this case, when you started your find, the cursor was positioned at the beginning of the file, so there must not be anymore occurrences of the pattern we were trying to find.

USER: Press <Do> to return to the Main Menu.

WP: You are returned to the Main Menu.

3. Replacing Text Patterns.

In the previous example, you searched for a misspelled word and, upon finding it, used Exchange to correct the error. The Search function provides a easier solution to this situation — the Replace option. The Replace option allows you to specify a pattern to find, token or literal, and a replacement pattern to replace any occurrences of the found pattern. Replacements can be done automatically or by user verification.

EXAMPLE SITUATION: You have reviewed your document one more time and have noticed that "steared" is not the correct spelling for "steer". In this example you will "search and replace" the incorrect spelling with a different word "guided". In addition, you will do it with the user verification enabled.

Replace is accessed by pressing (Search) from the Insert command line. As with Find and Marker, the cursor should be positioned at the beginning of your file.

USER: Press <Insert> to access the Insert command line.

WP: The insert command line is displayed.

USER: Press <jump up> twice.

UP: The cursor is positioned at the beginning of the file.

USER: Press <Search>.

WP: The <Search> command line is displayed.

USER: Select Replace by highlighting or entering <R>

WP: The first Replace prompt appears as shown below:

```
+----+1L — P+ 2 ——+—— 3 +—— 4+———+5 ——+ 6 ——+— R +———
```

January 6, 1984

Mr. Hal Stevenson, President
Fortune Financial
500 W. Bay St.
San Francisco, Ca. 90736

Dear Mr. Stevenson,

It is a great pleasure for me to inform you that the fruits of our
last few meetings are beginning to appear. We received the final
1983 sales figures for our new 64 bit micro, SUPER 64, and it
appears that your advice has steAred us in the right direction. Sales
for the fourth quarter were up 27% for an overall annual increase of
22%.

Summarized below are the sales figures by region and quarter
for SUPER 64.

REPLACE: How many times (<Search> for every occurrence): 1

USER: Enter [12] and press <Do>. In this case you want to enter a number that is
        high enough that all occurrences will be found.

WP: The second Replace prompt appears as follows:

REPLACE: (Literal) Enter Pattern:
IE_____
          <chars> <Do> <Undo> <Change> <Help> <Ret>

USER: Press <Change>, if necessary, to select Token. Now enter the word that
        you wish to have replaced:

USER: Enter [steared] and press <Do>.

WP: The third Replace prompt is displayed as shown below:

REPLACE: (Verify Off) Replace "steared" with what:

<chars> <Do> <Undo> <Change> <Ret>

USER: Press <Change>, if necessary, to show "Verify On" in the parentheses on the prompt line.

WP: The Word Processor is now set to automatically complete the replaces with verification.

USER: Enter [guided] and press <Do>.

WP: The cursor jumps to the first occurrence of "steared" and ask you if it should be replaced.

Press <Do> to replace, <Search> to skip, <Undo> to exit Replace
<Do> <Undo> <Search> <Help>

USER: Press <Do> to indicate an affirmative answer.

WP: The word is replaced with "guided" and then main command window is redisplayed.

To make sure the most current version of your sample letter is saved on disk, follow these instructions.

USER: Press <Menu> to access the Main Menu. Press <F> to access the Filer command, press <do> to save the current version of your sample letter and then press <undo> and <Menu> to return to the Word Processor main command window.

If you do not wish to continue the tutorial at this time, refer to the instructions below.

USER: Press <O> to access the Options command and then press <O> to exit to the Operating System.

Review

As a result of the lessons in this Chapter, you will now be able to perform the following actions.

— set markers in a file

— search for set markers in a file

— find a word or partial word in a file

— exchange a text pattern with another text pattern

Chapter 5
COPYING AND MOVING TEXT

GOAL: This chapter explores the Copy and Move commands. Copy is used to duplicate text within the current file or copy text from a separate file into the current file. Move is used to reposition a section of text from one location to another within the current file.

---

1. Copying Text Within the Same File

EXAMPLE SITUATION: After reviewing our sample letter, we would like to re-emphasize how Mr. Stevenson's advice has helped the sales campaign. We want to reiterate one sentence in the letter.

Use this procedure to copy one sentence from the beginning of the sample letter into a paragraph near the end.

WP: The main command line is displayed.

USER: Press <F> to select the Filer command.

WP: The File selection window is on the screen.

USER: Press <R> to select the "Read Old" option. Enter [INVEST] <ret> to retrieve the previously created letter.

WP: The letter is loaded into the Text window and you are in Insert mode.

USER: Press <menu> to access the main command line.

WP: The main command line appears

USER: Select Copy by highlighting the word "Copy" and pressing <do>, or pressing <C>.

WP: You are prompted to "Press <change> for file copy or move to start of block to copy."

USER: Move the cursor up so that it is on top of the "y" in the word "your" located in the phrase "your advice has guided us in the right direction" located in the first paragraph. Press <do>. Use the <word forward> and <right> keys to position the cursor on the space after the word "direction" at the end of the phrase mentioned above.

WP: As you move the cursor to the end of the phrase, you will see the characters of the phrase highlighted. The highlighting indicates which text will be copied.

USER: Press <do>.

WP: The text window splits. The prompt, "Select destination of text. <Do> moves text." appears

Your screen display may be slightly different from the following.

```
|---1L---P---|-2----|---3-|---4|---|5---|--6---|---R-|-
```

It is a great pleasure for me to inform you that the fruits of our last few meetings are begining to appear. We received the finial 1983 sales figures for our new 64 bit micro and it appears that **your advice has steered us in the right direction**. Sales for the fourth quarter were up 27% for an overall year's increase of 22%.

Summarized below are the sales figures by region and

```
+---|1L - P|-2 ---+--- 3 +--- 4|---|5---+ 6 ---+-- R-+
```

January 6, 1984
Mr. Hal Stevenson, President
Fortune Financial
500 W. Bay St.

Dear Mr. Stevenson,

It is a great pleasure for me to inform you that the fruits of our last new meetings are begining to appear. We

---

COPY:
    Select destination of text. <Do> moves text.

    <Do> <Undo> <Moves> <Help>

In the top half of the split window you see the (highlighted) text that you are copying. In the bottom half you can move the cursor through the entire current file. You must position the cursor in the bottom window to indicate where the copied text should be placed in the current file.

USER: Move the cursor so that it is positioned on the paragraph symbol after the first and only sentence in the fourth (next to last) paragraph. This means the cursor is right after the quote about picking fruit when ripe. Press <do>.

WP.II.32

WP: The text window unsplits. The highlighted text has been copied into the current file.

USER: Press <insert>. The cursor is positioned on top of the "y" in "your" in the newly copied sentence. Now enter [As I said,] so the new sentence has a proper beginning. Move the cursor so that it is positioned on the paragraph symbol at the end of this sentence and enter [We thank you for your assistance and will try to continue picking the fruit while it's in season.]. Press <menu> to redisplay the main command line.

2. Copying Text From a Separate File

EXAMPLE SITUATION: A set of Sales figures are in a separate Document file because they originated in the Spreadsheet module. We would like to copy the sales figures into our letter.

You can pre-position your cursor before accessing the Copy command. Find the marker you entered in the previous chapter to indicate where the Sales figures should be added.

USER: Press <search> and then press [M] and then enter [ADD] and press <ret>.

WP: The cursor jumps to the marker.

USER: Press <menu> then highlight Copy and press <do>, or press <C>.

WP: You are prompted to "Press <change> for File Copy or move to start of block to copy."

USER: This time, since we want to copy text from a separate file, press <change>.

WP: The prompt: "Copy from which file?" appears.

If you know the name of the file from which you want to copy, you can simply enter the file name. If you are unsure of the file name, you may use <search>. Pressing <search> at this point opens the same Search Window that you use with File when you do not know the name of the file which you want to read into the Text window:

USER: Press <search>.

WP: The <search> window opens.

WP.II.33

USER: Highlight "SALES" and press <do>.

WP: The file name "SALES" appears after the "Copy from which file" prompt.

USER: Press <do>.

WP: The "SALES" file is displayed on your screen. You are prompted to "Move to start of block to copy and press <do>."

USER: The cursor is at the begining of the file so just press <do>.

WP: You are prompted to "Move to end of block to copy and press <do> again.

USER: Move the cursor to the end of the file. Notice that all of the text is highlighted. Press <do>.

WP: The text window splits. The prompt, "Select destination of text. <Do> moves text." appears at the bottom of your screen.

Your screen display may be slightly different from the following.

```
┌─┤──1L──P──┤─2──┤──3─┤──4┤──┤5──┤─6──┤──R─┤─┐

  Southwest      12,500    14,000    15,000    19,000    60,500

  Total          55,000    57,500    58,000    73,000   242,000



├─L────1───── 2──── 3──── 4──── 5──── 6──── 7──────
```

right direction. Sales for the fourth quarter were up 27% for an overall year's increase of 22%.

Summarized below are the sales figures by region and quarter for SUPER 64.

Our spreadsheet analysis tells us that is we increase our advertising to $350,000 per month and reach our sales quantity 15,000 units per month and four million profits per month. Second quarter of 1984 seems to be a realistic

```
─────────────────────────────────────────────────
                Word Processor - Menu
 COPY: Select destination of text. <Do> moves text.

        <moves> <Do> <Undo> <Help> <Search>
─────────────────────────────────────────────────
```

In the top half of the split text window displays the highlighted text from the SALES file that is being copied. The lower half displays the current file INVEST. In the lower window, the cursor is pre-positioned on the ADD marker, indicating where the copied SALES text should be placed in INVEST.

> USER: Since the cursor already shows the destination of the copied text, just press <do>.

> WP: The window unsplits. The text is copied into the current file.

Please note that this ability to view both the file you are copying into and the file you are copying from at the same time is very rare in word processing systems even though it is so convenient. Traditionally, you would have to save your original file to disk, open the copy from file, mark the section to copy, save that file, re-open your original file and then copy the text. And, if the text you copied wasn't really the text you wanted, you repeat the same procedure all over again. By allowing you to view both files at once and by allowing you access to both files without having to explicitly save our original file, this Word Processor has proven itself to be a helpful tool.

3. Moving Text Within a File

EXAMPLE SITUATION: We would like to move a paragraph from one location to another to end the letter on a slightly different note.

Using the Move command you can take a portion of text from one place in your file and move it to another location. The Move command relocates the text while the Copy command duplicates text. You may move text only within the file that is in the Text window. Move may not be used from one file to another.

In our example, we would like to move the last paragraph so that it is the second to last paragraph. This will leave us closing the letter on a note of thanks and on our promise for continued effort in the future.

> WP: The main command line is displayed

> USER: Select Move by either highlighting the word "Move" and pressing <do>, or pressing <M>.

> WP: You are prompted to "Move to start of block and press <Do>."

> USER: Move the cursor so that it is on the first character of the last paragraph. Press <do>.

> WP: You are prompted to "Move to end of block and press <Do>."

WP.II.35

USER: Press <ret> three times.

WP: The next three lines are highlighted meaning that they will be moved. Note that this includes a blank line which will be used to separate the two paragraphs.

USER: Press <do>.

WP: The Text window splits. You are prompted to "Select destination of text. <Do> moves text."

The example screen may not match your screen exactly.

```
|——1L——P——|—2——|——3—|——4|——|5——|—6——|——R—|
  In a few days, you'll receive an updated business plan with all the
  accounting details.

                      Sincerely,

                      Jim Fox, President


L ——— 2 ——— 3 ——— 4 ——— 5 ——— 6 ——— 7 ———
  right direction. Sales for the fourth quarter were up 27% for and overall
  years's increase of 22%.

  Summarized below are the Sales figures by region and quarter for
  SUPER 64.

                 Dollar Amounts in Thousands

     Northeast      10,500   11,500   12,500   16,000   50,500
```
```
                    Word Processor - Menu
MOVE:
      Select destination of text. <Do> moves text.

              <Do> <Undo> Moves> <Help>
```

USER: Move the cursor so that it is on the first letter of the second to last paragraph. This is the destination to which we want to move our text. Press <do>.

WP: The last paragraph is moved so that it is now the next to last paragraph. Note that the original last paragraph was not copied, only moved.

To make sure the most current version of your sample letter is saved on disk, follow these instructions.

USER: Press <F> to access the Filer command, press <do> to save the current version of your sample letter and then press <undo> to return to the Word Processor main command line.

If you do not wish to continue the tutorial at this time, refer to the instructions below.

USER: Press <O> to access the Options command and then press <O> to exit to the Operating System.

Review

Please take a moment to review the lessons of this chapter. If you have mastered the Copy and Move procedures, you can:

— copy text within the same file

— copy text from one file to another file

— move text from its original location to a new position within the same file

Chapter 6.
Justification and Margining

GOAL: With the Word Processor you specify the justification and margining of several paragraph styles. You can then quickly select one of these paragraph styles to reformat paragraphs.

The Word Processor uses a simple scheme to associate any one of eight user defined paragraph styles to a paragraph. These paragraph styles may be set up using the Background command or dynamically using the Format function. In addition, you can easily set up global tab and decimal tab stops in order to facilitate text entry.

Until you begin creating different paragraph types, all the paragraphs you enter will be formatted according to the Word Processor "default" paragraph type. The settings of this default paragraph type are: left margin, 11; paragraph indent, 16; right margin, 70; Wordwrap, on; Autoindent, on; and Justify, left. Up to now, the paragraphs you have entered have been of this default paragraph type. Tabstops are globally set at every 8th column. (Each space across the Text window is called a "column.")

EXAMPLE SITUATION: Now you want to create a professional looking document suitable to send to your investor.

1. Setting Paragraph Styles

WP: The main command line is displayed.

USER: Press <F> to select the Filer command.

WP: The File Selection Menu is on the bottom of the screen.

USER: Press <R> to select the Read—Old option.

W P: You are prompted for the name of the file.

USER: Enter [INVEST] <ret> in order to read in the INVEST document file.

Background is accessed from the Main command line:

WP: The Insert command line is displayed.

USER: Press <menu>.

WP: The Main command line appears.

USER: Select Background by highlighting it and pressing <Do>, or entering
        <B>

WP: The Background window comes up on your screen as follows:

```
+------|1L — P|- 2 ——+—— 3 +——— 4 |———| 5 ——+ 6 ——+—— R +
|       Left_      Par_      Right_    Word-     Auto-
|       Margin    Indent     Margin    wrap      Indent      Justify
|   A    11        16         70       On        Off         Left
|   B    11        16         70       On        Off         Left
|   C    11        16         70       On        Off         Left
|   D    11        16         70       On        Off         Left
|   E    11        16         70       On        Off         Left
|   F    11        16         70       On        Off         Left
|   G    11        16         70       On        Off         Left
|   H    11        16         70       On        Off         Left
|
|       Abbreviations:      Short text       Full Text
|
|               1           SS               Systems Seven, Inc.
|               2
|
+----------------------------------------------------------------
|                        Word Processor - Menu
|
|       Background:
|                   Paragraph types
|                   <arrows> <chars> <change> <help> <menu>
+----------------------------------------------------------------
```

As you can see in the above screen, the various paragraph types, lettered A through H,
are listed vertically. Their associated default settings are listed in columns across from
them. On the very top of the screen you see the Ruler which indicates the settings for the
paragraph type currently highlighted.

The following is a brief explanation of the paragraph style options:

Option	Explanation
Left_Margin	sets the left most margin of a paragraph.
Par_Indent	sets the indentation of the first line in a paragraph.
Right_Margin	sets the right most margin of a paragraph.
Word-wrap	when set to "On", text will automatically wrap around to the next line when the right margin is reached. When set to "Off", text can be entered beyond the right margin.
Auto-Indent	when set to "On", and Word-wrap is set to "On", will cause the cursor to pick up the paragraph indentation from the previous paragraph. Can be adjusted from insert mode on the first line of a paragraph using <space> and <backspace>.
Justify	will right, left, and right and left justify margins. Will also center justify paragraphs.

Before actually changing a paragraph type, practice moving the cursor around the Background table.

USER: Press <right> five times, press <down> five times, press <left> five times, and press <up> five times.

Now, suppose you would like to change the letter paragraph type ("A") to have Justify set to "Both" for both right and left justification.

USER: Press <right> five times.

WP: The cursor is at Justify Left.

USER: Press <Change> twice until Justify is set to "Both".

WP: Justify is set to "Both".

To practice changing paragraph types in Background, change one of the default paragraph types into the following paragraph type:

USER: Press <Ret>.

WP: The cursor is at paragraph type "B".

USER: Enter [6] and press <Do>.

WP: The left margin is set at 6.

USER: Press<right> five times, press <Change> once to enable the right justification.

WP: Right justification is enabled.

USER: Press <Menu> to return to the main Word Processor menu.

2. Reformatting Paragraphs

EXAMPLE SITUATION: Now that some paragraph styles have been set up, you want to turn your work into a professional looking letter. This can be done easily with the Format function.

WP: The Main command line is displayed

USER: Press <Insert>

WP: The Insert command line is displayed

USER: Position the cursor somewhere in the first paragraph and press <Format>

WP: The Format command menu appears at the bottom of the screen as shown below:

```
+------1L — P|- 2 ----+--- 3 +---- 4 |------| 5 --- + 6 --+-- R +------
      January 6, 1984

      Mr. Hal Stevenson, President
      Fortune Financial
      500 W. Bay St.
      San Francisco, Ca. 90736

      Dear Mr. Stevenson,

      It is a great pleasure for me to inform you that the fruits of our
last few meetings are beginning to appear. We received the final
1983 sales figures for our new 64 bit micro, SUPER 64, and it
appears that your advice has guided us in the right direction. Sales
for the fourth quarter were up 27% for an overall annual increase of
22%.

      Summarized below are the sales figures by region and quarter
for SUPER 64.
```

```
                    Word Processor - Menu
FORMAT: Background Margins_and_Tabstops Wordwrap Autoindent justify Save
                                        On      Off     Left


<Left arrow> <Right arrow> <Do> <Menu> <Format> <Help>
```

The Format menu lets you quickly reformat a paragraph with a previously defined set-
ting, to set up a default paragraphing style for current usage, or to redefine a paragraph
type's settings, or to reset the global tab stops. Before describing each of these
capabilities in detail, let's first reformat the current paragraph to see the results of the
newly defined paragraph style "A".

USER: Press <B> to select the Background option.

WP: You are prompted for the letter of the paragraph type to be applied to the
        current paragraph as follows.

```
BACKGROUND SELECT:
Enter paragraph type:

                    <A>..<H> <UnDo>
```

USER: Press <A> to select the paragraph type "A" which we previously
        defined.

WP: The current paragraph is remargined with the settings defined in paragraph
        type "A" as follows:

```
+     |1L — P|- 2 ——+— 3 +—— 4 |———| 5 —— + 6 ——+— R +
       Mr. Hal Stevenson, President
       Fortune Financial
       500 W. Bay St.
       San Francisco, Ca. 90736

       Dear Mr. Stevenson,

           It is a great pleasure for me to inform you that the fruits of our
       last few meetings are beginning to appear. We received the final
       1983 sales figures for our new 64 bit micro, SUPER 64, and it
       appears that your advice has guided us in the right direction. Sales
       for the fourth quarter were up 27% for an overall year's increase of
       22%.

           Summarized below are the sales figures by region and quarter
       for SUPER 64.

                    Dollar Amounts in Thousands
————————————————————————————————————————————————————————————
                    Word Processor - Menu
INSERT: All characters are entered into text. Movement commands may be used
Col 16      without exiting Insert.

   <chars> <moves> <Do> <Undo> <Del> <Menu> <Hlp> <Chng>
                    <Srch> <Prnt> <Frmt>
```

As you can see the paragraph is both right and left justified with proportional spacing. You will also notice that the Ruler at the top of the screen has changed to reflect the new right, left and paragraph indentations.

USER: Continue to format the remaining paragraphs in your letter by positioning the cursor in the paragraph, pressing <Format> to select the Format function, pressing <B> to select the Background option, and pressing <A> to select the paragraphing style "A". Reformat all the paragraphs except the SALES.DOC section that you copied.

WP: All of the paragraphs are formatted according to paragraph style "A".

USER: Position the cursor on the date at the top of the letter. Press <Format> to access the Format options.

WP: The Format options menu appears.

USER: Press <B> to select Background. Then press <B> to select paragraphing style "B".

WP: The date paragraph jumps to the right of the screen according to the Right justify attribute set in paragraph style "B".

3. Changing the Current Format Style

EXAMPLE SITUATION: Suppose you have a situation where you need to enter a paragraph in a style that is not already designed and you don't want to waste any of your previously defined styles. The Format function allows you to temporarily change the paragraphing style while you are entering your text — you do not have to select one of the predefined styles.

USER: Position the cursor on the "Mr. Hal Stevenson, President" paragraph. Press <Format> to reaccess the Format option.

WP: The Format menu reappears at the bottom of the screen.

From the main Format menu, you can use the <arrow> keys to select and change the Wordwrap, Autoindent and Justify attributes. In addition you can select the Margins_and_Tabstops to alter the Left_Margin, Right_Margin, and Para_Indent settings. Each of these attributes correspond to the settings found in the Background command of the Word Processor Main Menu.

USER: Select Margins_and_Tabstops by highlighting and pressing <Do>, or pressing <M>.

WP: The Margins _ and _ Tapstops command line appears at the bottom of the text window as shown below:

```
┌──L──┼──────P──┼──────────┼──────┼────┼──R────┐
│                                               │
│                                               │
│                                               │
```

RULER: <L>, <R>, <P>	Set Left, Right and Paragraph margins
Col 1 <->, <+>, <.>, <:>	Clr Tab, Set Tab, Set Decimal Tab, Set SIF Tab

<L> <R> <P> <-> <+>	<arrows> <Tab> <BckTab> <Help>
<.> <:>	<Menu> <LineDel>

Please notice the top line of the Text window. The Ruler line, as described earlier, displays the default settings for the left margin, paragraph indent, and right margin. The vertical lines represent tabstops which will be described later.

The Margins and Tabstops option allows you to reposition any of the margin settings by using the <arrows> and <tab> to position the cursor and then the letters "L", "R", and "P" which correspond to Left, Right, and Paragraph respectively to set the margins.

USER: Press <Tab> eight times and <left> two times to position the cursor on column 63

WP: The cursor is on column number 63.

USER: Enter <R>.

WP: The right margin R is moved from its old position on the Ruler line to the new setting.

As you move the cursor along the Ruler line, there is a counter which records the column number (each space across the text window is called a "column") on which the cursor is positioned. This counter is located in the command line. Watch the counter change as you move the cursor along the Ruler line in the next exercise.

You have now reset the right margin. Continue to create a new paragraph type by resetting paragraph indent.

USER: Move the cursor to column 11 then press <P> to set the paragraph indentation.

WP: The paragraph indent is reset at 11.

USER: Press <Menu> to return to the main Format command line and then press <menu> again to return to the Insert command prompt line.

4. Saving a Paragraph Style

After you have created a new paragraph type, you must use the Save option to save the reset margins, tabstops, and options as a paragraph type.

Save your paragraph type as "C" because paragraph types "A" and "B" are already being used.

WP: You are in Insert mode.

USER: Press <Format> to access the Format function.

WP: The Format command line is on the screen.

USER: Press <S> to select the Save option

WP: The following prompt appears:

```
BACKGROUND SAVE:
Save as paragraph type:
                        <A>..<H> <UnDo>
```

USER: Press <C>.

WP: The paragraph type is saved and the <Format> command line is displayed.

USER: Press <Menu>.

WP: You are in Insert mode.

USER: Position the cursor on each of the letter title lines from beginning until "Dear Mr. Stevenson" and press <Format> to access the Format function. Then press <B> to select the Background option. Finally, press <C> to select the paragraphing style "C" which is Left justified.

WP: Your letter should finally appear as follows:

```
+------|1L----+2----+---3-+---4+-------|5----+6—R+----7-+------
                                              January 6, 1984

     Mr. Hal Stevenson, President
     Fortune Financial
     500 W. Bay St.
     San Francisco, Ca. 90736

     Dear Mr. Stevenson,

          It is a great pleasure for me to inform you that the fruits of our
     last few meetings are beginning to appear. We received the final
     1983 sales figures for our new 64 bit micro, SUPER 64, and it
     appears that your advice has guided us in the right direction. Sales
     for the fourth quarter were up 27% for an overall year's increase of
     22%.

          Summarized below are the sales figures by region and quarter
     for SUPER 64.
```

```
                      Word Processor - Menu
INSERT: All characters are entered into text. Movement commands may be used
Col 11      without exiting Insert.

   <chars> <moves> <Do> <Undo> <Del> <Menu> <Hlp> <Chng>
                      <Srch> <Prnt> <Frmt>
```

5. Changing the Global Tab Stops

To set a tabstop, access the Ruler line by pressing <format> from the Insert command
and then selecting the Margins and Tabstops option. Now, position the cursor on the
Ruler line at the place where you want a tabstop and enter a plus sign "+". A pair of
double vertical lines will appear to indicate that a tabstop is set. To remove a tabstop,
position the cursor on the tabstop you want to remove and enter a minus sign "-". The
double vertical lines will be cleared from the Ruler line. You can also press <Line
Del> to remove all of the tab stops.

You may also set decimal tabstops along the Ruler line. Decimal tabstops help you,
when entering table of numbers, by aligning the decimal points. To set a decimal
tabstop, position the cursor at the point where you want a decimal tabstop and enter a
period ".". To remove a decimal tabstop, position the cursor on the decimal tabstop
and enter a minus sign "-". Pressing <Tab> from the Insert command line sends the
cursor to both normal and decimal tabstops.

Margins _ and _ Tabstops is also used to set SIF tabstops. SIF tabstops are used to read SIF files into the Word Processor. SIF files are text files with a specific format used for integrating information from one application to another application. Thus, SIF stands for Standard Interface Format. SIF files have a tabular, or table-like, format. If you have not set SIF tabstops when a SIF file is read into the Word Processor, the columns of the tables will be compacted. Set SIF tabstops at the places where you want table columns positioned. To set a SIF tabstop, position the cursor along the Ruler line to where you want a SIF tabstop and enter a colon ":". To remove a SIF tabstop, position the cursor on the SIF tabstop you want to remove and enter a minus sign "-".

For more information on SIF files and the SIF tabstops, please refer to the Chapter on Importing Information.

To make sure the most current version of your sample letter is saved on disk, follow these instructions.

USER: Press <menu>. Press <F> to access the Filer command, press <do> to save the current version of your sample letter and then press <undo> to return to the Word Processor main command window.

If you do not wish to continue the tutorial at this time, refer to the instructions below.

USER: Press <O> to access the Options command and then press <O> to exit to the Operating System.

Review

Please review what you have learned in this chapter. You will now be able to successfully perform the following tasks.

— set up a table of paragraphing styles

— use the various paragraphing styles to format your document

— create a temporary paragraphing style

— set the global tab stops

Chapter 7.
PRINT CHARACTERISTICS

GOAL: This chapter will demonstrate the use of printing commands which allow you to change the print type, set printing parameters within the text file, link several files together and include graphs in your printout.

1. Type Styles

The Word Processor module enables you to enhance your documents by Underlining and printing in Bold and Italic type styles. The text to be printed in Bold, Italic, and Underline must be entered into the file using the Insert Command. This is accomplished by using the <Change> function of the Insert command. Any text entered using the Bold or Italic option will appear highlighted. The text entered using the Underline option will appear underlined on monochrome monitors; on color monitors the under-lined text will appear highlighted. For more explanation refer to the Chapter on Inserting Text.

2. In-Text Formatting Commands

In-Text Formatting Commands are printing commands that are inserted into your docu-ment or text file. These commands are read by the printer unit and allow you to set print-ing parameters, override the settings in the PRINT menu, and change previously entered In-Text Commands. Examples of In-Text commands include setting the page number, causing a form feed, setting the line spacing, and several more options.

All In-Text Formatting Commands are preceded by a caret symbol (^) and are placed at the point you want the command to take effect. The Command is then typed out and a space is entered after the command. Next, depending on the command, you will enter a sequence of characters, a number, or on/off. The following is the format to use when entering the In-Text commands:

Enter [^] and then the command name, press <Space>, and enter a sequence of characters, a number, or on/off.

A sequence of characters are any keyboard letters, numbers, or symbols with the excep-tion of the double quotes ('') and the vertical bar (|). The sequence is printed within the text as the command instructs the printer.

The double quotes ('') and the vertical bar (|), like the carat (^) are part of the command instructions and will not be printed in the character sequence following the command. To enter a sequence of characters, you must open and close the sequence with double quotes ('').

The following examples illustrate how to enter In-Text Formatting Commands:

^header "Getting Started"

^Page 5

^alternate on

In the following pages each of the available commands will be explained and you will have a chance to enter the commands into an example file, INTRO.DOC, which you will print in Chapter 8. You will notice that most of these commands are also available as options in the PRINT Window.

HEADER, SUBHEADER, FOOTER TEXT

Command Format: [^header "your text"] [^subheader "your text"]
                [^footer "your text"]

These three commands are used to set the header, subheader and footer texts in the file. These settings are also available in the PRINT Window. However, setting the header, subheader and footer in the file allow them to contain print attributes such as boldface, underline, or italics. The header, subheader and footer set in the document or text file will also override the setting in the PRINT Window. This latter feature is especially useful when you are producing multi-sectioned documents and you want to change the header, subheader, or the footer in the middle of the document.

Unless otherwise specified, in the header, subheader, and footer will be centered when the document is printed. To alter the default, use the vertical bar (|) to determine where the header, subheader, and footer will be placed; left, center, or right. Follow the examples below as a guide:

Left	— ^header "Open Access|"
Center	— ^header "Getting Started"
	OR
	— ^header "|Getting Started|"
Right	— ^header "|SPI"

You can also, set up the header, subheader, and footer to split into three columns; left, center, and right. Use the following header as an example format when entering all three options.

^header "Open Access|Getting Started|SPI"

This same format applies to other combinations, just make sure that you use all the vertical bars necessary to instruct the system as to the placement of headers, subheaders, and footers.

Note that you should always turn off the boldface, underline, or italics print attributes before entering the vertical bar (|) or double quote ('') characters in a header, subheader, or footer line.

Now we are ready to insert the header. Load an example file, INTRO.DOC.

WP: The main command line is displayed.

USER: Press <F> to select the Filer command.

WP: FILE: Read _ Old Create _ New.

USER: Highlight Read _ Old and press <do> or press <R>.

WP: Name of old file:

USER: Enter [INTRO] and press <Do>.

WP: INTRO.DOC is on the screen and you are in the INSERT mode.

USER: Press <jump><up arrow> twice.

WP: Cursor is at the top of the file.

USER: Enter [^ header ''] then press <Change>. Select Bold by pressing <B>. Press <Menu> to return to INSERT. Enter [Open Access]. Press <Change> and turn Bold OFF. Press <Menu> to return to INSERT. Enter [|]. Press <Change> and turn Bold ON. Press <Menu>. Enter [SPI]. Press <Change> and turn Bold OFF. Press <Menu>. Enter [''] and press <Ret>.

A subheader and a footer can be entered into your text file using the same procedure. In this exercise, we will set the subheader and the footer in the PRINT Window in Chapter 8.

HEADER LINE POSITION

Command Format: [^header line #]

This command instructs the system where to print the header within the Top Margin. We want the header to appear on the second line.

WP: Cursor is on a blank line below the ^header command.

USER: Enter [^header line 2] and press <Ret>.

SUBHEADER LINE POSITION

Command Format: [^subheader line #]

This will instruct the system where to print the subheader within the Top Margin. The subheader line will be set in the PRINT Window in this exercise in Chapter 8.

FOOTER LINE POSITION

Command Format: [^footer line #]

This will instruct the system where to print the footer within the Bottom Margin. The footer line will be set in the PRINT Window in this exercise in Chapter 8.

LINE START

Command Format: [^line #]

This command tells the system to skip down to that line number. We will set the line start to 10 so that the first line of INTRO.DOC will begin printing 10 lines from the top.

WP: Cursor is on the line below ^header line 2.

USER: Enter [^line 10] and press <Ret>.

TOP MARGIN

Command Format: [^top margin #]

The number entered here tells the Word Processor to leave that many blank lines at the top of the page with the exception of the header and subheader lines.

WP: Cursor is on the line below ^line 10.

USER: Enter [^top margin 4] and press <Ret>.

BOTTOM MARGIN

Command Format: [^bottom margin #]

The number entered here tells the system to leave that many blank lines at the bottom of the page with the exception of the footer line.

PAGE NUMBER

Command Format: [^page #]

The number entered here is the page number of the next page. INTRO.DOC is a section of the Getting Started Manual. Start numbering the pages from 6.

WP: Cursor is on the line below ^top margin 4.

USER: Enter [^page 6] and press <Ret>.

START A NEW PAGE

Command Format: [^page]

Wherever you enter this command, the Word Processor will start printing on a new page. We will insert a ^page command at the end of the file so that our include file will begin on a new page.

WP: Cursor is on the line below ^page 6.

USER: Press <jump><down> twice to move to the end of file.

WP: Cursor is at the end of file.

USER: Enter [^page] and press <Ret>.

ALTERNATE HEADINGS

Command Format: [^alternate on]

This command if entered as "on", will switch the left and right portion of the header on even-numbered pages. It is used when printing double sided pages. We will turn ON the alternate command for the header. This will cause the headers Open Access and SPI to switch corners in which they appear on alternating pages.

WP: Cursor is at the end of file.

USER: Press <jump> <up> twice and <down arrow> once.

WP: Cursor is on the ^ of the command ^header line 2.

USER: Enter [^alternate on] and press <Ret>.

INCLUDE FILES

Command Format: [^include volume: file name]

This command allows you to print any number of files without restarting the printing procedure for each individual file. Includes can all be placed at the end of the first file or can each be individually placed at the end of the preceding file. The printing commands will carry over from the last entered command until changed in any new file. In other words, new printing commands entered will override previously entered commands. We will include the letter that you edited in previous chapters.

WP: Cursor is on the ^ of the command ^header line 2.

USER: Press <jump> <down> twice to move to the end of file.

WP: Cursor is at the end of file.

USER: Enter [^include B:INVEST.DOC] and press <Ret>.

PARAGRAPH BLOCK

Command Format: [^block #]

This command determines where to split the last paragraph on a page. The number entered here tells the system to automatically advance to the next page if the last paragraph starts within this designated number of lines from the bottom margin. This feature allows you to keep tables, charts, lists and short paragraphs to be kept together on one page. All you have to do is to count the number of lines of the chart, table, etc. and enter [^block number of lines] before the particular block of text or data begins. For example, let's assume that you don't want the short paragraph on TIME MANAGER to be split.

WP: Cursor at the end of file.

USER: Press <page up> twice and <jump> <up> once.

UP: Cursor is on the line above TIME MANAGER.

USER: Enter [^block 10].

LINE SPACING

Command Format: [^spacing #]

Use this command to set the line spacing, 1 for single space or 2 for double space. We will double space the text on Open Access Integration.

WP: Cursor is at the end of the line of ^block 10.

USER: Press <down arrow> 12 times.

WP: Cursor is on the line above the heading OPEN ACCESS INTEGRATION.

USER: Enter [^spacing 2] and press <Ret>.

Now that you have entered all the In-Text Commands, you are ready to go to the PRINT Window and set other printing parameters. Before you go to PRINT, save this updated file to a different name. Saving to a different file name will allow you to use the original file INTRO.DOC again for practice or review. The newly saved file will save you from re-entering all the IN-Text Commands if you do not wish to continue on to the next chapter at this time.

WP: Cursor is on the line below ^spacing 2.

USER: Press <Menu> and select<F> for file.

WP: Same changed current file "INTRO.DOC"?

USER: Press <Change>.

WP: The prompt "Write to which file:" is displayed.

USER: Enter a new name e.g., [INTRO2] and press <Do>.

WP: INTRO.DOC is still on screen and you are prompted, FILE: Read_Old Create_New.

If you do not wish to continue the tutorial at this time, refer to the instructions below.

USER: Press <O> to access the Options command and then press <O> to exit to the Operating System.

3. Including Graph Files

You may include a graphics print image file created in the Graphics module in your document or text file and print it out using your Word Processor Printer unit. This feature allows you to demonstrate your findings in a report by including a graph in the appropriate place. The procedure for including a graphics file is the same as including a text file. You simply enter [include XXXX.IMA]. All graphics print image files created for exportation into the Word Processor have the IMA suffix. Refer to the Graphics manual for more information on creating a print image file.

One important point to note is that at the time you print your graph out to an ASCII file (a graph file with an "IMA" suffix) so that it may be included in your Word Processing printout, the Print Device prompt must be set to the same printer device which you will use to print your word processing document. In other words, determine which printer you would like to print your document with your graph in it, set the Print Device prompt to that printer when you send your graph to an ASCII file, then set the Print Device to that printer when you print your document. This is necessary so that all of the appropriate printer codes are set in the ASCII graph file.

REVIEW

In this Chapter, we have covered many of the printing attributes you may specify in order to generate a printed copy of your file in the format you wish to see. You now know how to specify the following options.

— Include commands within the text of your file to specify print characteristics such as header, subheader, and footer contents and position; line spacing; top and bottom margins; page numbering; and more. You also know how to chain files together in order to print a longer document.

— Specify that a graph file which has been converted to an ASCII file may be included in the middle of your printout.

Chapter 8.
PRINTING

GOAL: This chapter will discuss the various printing options available in the Print Window. A good understanding of these options will enable you to have more control over the final appearance of your printed letters, reports and other documents.

If you are continuing from the preceding chapter, you should have INTRO.DOC on the screen. If you are starting with this chapter, load the saved file, possibly named INTRO2.DOC.

WP: INTRO.DOC or INTRO2.DOC is on the screen. You are now in Insert mode.

USER: Press <Print>.

WP: The PRINT Window appears on the screen with the default printing parameters and the print device set to your default printer or "CONSOLE."

1. PRINT Window

The PRINT Window allows you to set printing parameters by utilizing the various options available in the Word Processor. Use the PRINT Window to select your first set of printing instructions and all common parameters. The PRINT Window appears on the screen with the default printing parameters set as shown below:

```
Header:              Line number:  1      Special:  None

Subheader:           Line number:  2      Special:  None

   Footer:           Line number:  2      Special:  None
|-#-|

      Paper width:  80       Top margin:  3        First page:  1
     Paper length:  66    Bottom margin:  4        Start page:  1
Alternate headings:  off  Paragraph block:  4      Stop page:  32767
          Spacing:  1       Left offset:  0

Print Device:   Your Printer
```

Each of the printing parameters that appear inside the Print Window will be discussed and you will learn to enter the individual parameters.

One important note before we describe these features is to note that if you want to save all of the alterations you make in the Print Window, press <menu> to return to the Insert command. If you would like to cancel all of the changes you have made in the Print Window, press <undo> to return to the Insert command.

HEADER, SUBHEADER, AND FOOTER

Header, subheader and footer are a sequence of characters entered on the line below each option. The print unit will automatically insert the header, subheader, and footer on all pages as specified by the SPECIAL option. Header, subheader and footer entries set with the In-Text Command inside your Document or Text file as demonstrated in the preceding chapter will override those set in the Print Window from the point in the file where the In-Text Commands appear.

Unless otherwise specified the header, subheader, and footer entries will be centered when the document is printed. To alter the default you can use the vertical bar (|) to determine where the header, subheader, and footer entries will be placed; left, center, or right. Follow the examples below as a guide:

Left   — Open Access|

Center   — Getting Started
                    OR
              |Getting Started|

Right   — |SPI

You can also, set up the header, subheader, and footer to split into 3 columns; left, center, and right. Use the following header as an example format when entering all three options.

Open Access|Getting Started|SPI

This same format applies to other combinations, just make sure that you use the necessary vertical bars to instruct the system as to the placement of headers, subheaders, and footers.

WP: The PRINT Window is on the screen and the cursor is located next to Print Device.

USER: Press <ret> four times or use the arrow keys to position the cursor under the Subheader option.

WP: Subheader.

_____

USER: Enter [Getting Started] and press <ret>.

Pressing <ret> always accepts your insertion. If you wish to change the text for header, subheader or footer, position the cursor under the appropriate heading and press <Change>. At this point, you can type over the existing text to change it, or press <Space> to delete the existing text.

LINE NUMBER

The Line Number will instruct the print unit on which line, within the Top or Bottom Margin settings, to place the header, subheader, and footer.

WP: Line Number: 2.

USER: Enter [3] and press <ret>.

SPECIAL

Special allows you to choose one of four settings that tells the print unit on which pages to print the header, subheader, and footer. The choices are:

None   — The header, subheader, and footer always appear.

Skip First   — The header, subheader, and footer appear on all pages after the first page.

Skip Odd   — The header, subheader, and footer appear on all even-numbered pages.

Skip Even   — The header, subheader, and footer appear on all odd-numbered pages.

To select the desired option toggle by pressing <Change> Press <ret> to accept the desired choice.

WP: Special: None.

USER: Press <Down Arrow> once to position the cursor on the third Special: None that is associated with the footer.

WP: Cursor is on the third Special: None.

USER: Press <Change> once to toggle Skip First.

WP: Third Special: Skip First.

USER: Press <ret> once.

WP: The cursor is next to the Paper Width option.

CONSECUTIVE PAGE NUMBERS

Consecutive Page Numbers will be printed automatically by using this command, |#|, : 1, 2, 3, etc (do not enter the commas as they will be printed). The command, |-#-|, which appears directly beneath the Footer option is the default and will print page numbers like so: -1-, -2-, -3-, etc. You can accept the default by moving the cursor to the next option, or you can alter the Footer by entering over the page numbering command. However, if you want consecutive page numbers printed, you must use this set of symbols, |#|, in that order.

To alter the page number command, enter a sequence of characters or numbers before or after the number symbol (#). One way to alter page numbers would be to add a section number, letter, or symbol. For example, |I.#| will print all page numbers in the following consecutive order: I.1, I.2, I.3, etc. Another example would be to add the word, |page #|, which would print the following: page 1, page 2, page 3, etc.

The placement of page numbers is not limited to the Footer. You can delete the page numbering command as it appears and place it in the Header, or the Subheader. To start consecutive page numbering see the First Page option.

PAPER WIDTH

Paper Width is used to set the column width of the paper. Column width is measured in characters per line; 80 for 8 ½ inches wide and 132 for 14 inches wide if you have a ten pitch print size.

    WP: Paper Width: 80.

    USER: If you are using paper that is 80 columns, move the cursor to the next option; if not enter the column width and then Press <ret>.

PAPER LENGTH

Paper Length is used to set the line length of a full sheet of paper. There are 66 lines on paper that is 11 inches long if you have a ten pitch print size.

    WP: Paper Length: 66 (If your print device is set to Console, your paper length will be set to 24.)

    USER: If you are using paper that is 66 lines long, press <ret> to move the next option; if not enter the line length and Press <ret> once to accept, and <ret> again to move to the next option.

ALTERNATE HEADINGS

Alternate Headings is an on/off option that is toggled by pressing <Change>. This option is handy when you are compiling documents using double sided pages, because the "on" position tells the system to switch the left and right portion of the headers on even-numbered pages. The off position prints the headers the same on each page. Use the <Change> function to toggle on or off, and accept the change by pressing <ret>.

WP: Alternate headings: off.

USER: We will leave the Alternate headings turned off in the PRINT Window since we turned it on in the file with the In-Text Command. Press <ret>.

SPACING

Spacing sets the line spacing. Use 1 for single spacing or 2 for double spacing.

WP: Spacing: 1.

USER: Press <ret> to move the cursor to Top Margin option.

TOP MARGIN

Top Margin is the number of blank lines appearing at the top of each page. The text will be printed on the line below the top margin setting. However, the header and subheader will be printed within the top margin as designated by the Line Number entry. The Line Number entry actually prints the header and subheader on the actual page line, ignoring the top Margin setting.

WP: Top Margin: 3.

USER: Press <ret>.

BOTTOM MARGIN

Bottom Margin is the number of blank lines appearing at the bottom of each page. To assign a bottom margin count up from the bottom of the page, starting with one. Like the header and subheader, the footer is printed within the Bottom Margin.

WP: Bottom Margin: 4.

USER: Press <ret> to move the cursor down to the next option.

PARAGRAPH BLOCK

Paragraph Block determines where the bottom paragraph will be split. The number entered here tells the system to automatically advance to the next page if a new paragraph starts within this designated number of lines from the bottom margin.

    WP: Paragraph Block: 4.

    USER: Paragraph block of 4 will prevent your underlined headings from splitting over two pages and prevent your section heading appearing at the bottom of one page and the text for that section appearing on the next page. Press <ret> to move the cursor down to the next option.

LEFT OFFSET

Left Offset instructs the printer to offset your text to the left by the number of columns entered here. The Left Offset adds X blank columns to the Left Margin of your text file before printing.

    WP: Left offset:

    USER: Enter [4] and Press <ret> once.

FIRST PAGE

First Page is the number of the first text page. In other words this will print title pages, preface pages, contents pages, etc. without numbering them. The number entered here will be the first page numbered.

    WP: First page: 1.

    USER: To number the first page leave the setting at 1 and press <ret> to move the cursor down to the next option.

START PAGE

Start Page is the number of the page at which the system will start printing

    WP: Start page: _____

    USER: Press <ret> to start printing page 1; return is the default and tells the system to start printing page 1.

STOP PAGE

Stop Page is the number of the page at which the system will stop printing.

WP: Stop Page: 32767.

USER: Press <ret> to stop printing after the last page; by pressing the <ret>, you are telling the system to print through the last page.

2. Printer Selection Window

PRINT DEVICE

Print Device indicates the printer that you have selected from the Printer Selection Window. To change the printer type, press <Change> and select the desired print device.

WP: Print Device: CONSOLE.

USER: Press <Change> and you will see the Printer Selection Window appear within the PRINT Window.

WP: Printer Selection Window appears as shown below.

```
┌─────────────────────────────────────────────────────────────┐
│                                                               │
│  Header:                  Line number:  1          Special:  None │
│                                                               │
│  Subheader:          ┌──────────────────────────┐ cial:  None │
│                      │                          │              │
│    Footer:           │ CONSOLE:                 │ cial:  None │
│  |-#-|               │ PRINTER                  │              │
│                      │ DEMOFILE                 │              │
│                      │ CONLABEL                 │              │
│    Paper width       │ PRTLABEL                 │ t page:  1  │
│    Paper length      │ EPSONMX80                │ t page:     │
│  Alternate headings  │ EPSONMX100               │ p page:     │
│    Spacing           │                          │              │
│                      └──────────────────────────┤              │
│                      │   Output Device Selection │              │
│  Print Device:       ├──────────────────────────┤              │
│                      │ <up> <down> <do> <undo> <pages> │        │
│                                                               │
└─────────────────────────────────────────────────────────────┘
```

At this point, select the appropriate output device by highlighting and pressing <Do>. For more information concerning the Print Unit, refer to the Utility Section in the Getting Started Manual.

USER: Select the output device that your computer is connected to by high-lighting and pressing <Do>.

If you do not have a printer, highlight CONSOLE and press <do>

If you own a printer that is not listed in the Menu refer to the Print Unit section in the Introduction

WP: Print Device: CONSOLE (or the printer you have selected will appear here).

3. Printing the Letter

Now that you have entered all the desired In-Text Commands and have set the printing parameters in the PRINT Window, you can print the example file, INTRO.DOC or INTRO2.DOC and the example letter which was included at the end of INTRO.DOC.

WP: The cursor is on the Print Device.

USER: If you want, double check your chosen settings and then press <Do> to print.

WP: The example file will scroll up the screen as it is being printed on your printer; or if you are printing to the console the file will appear on the console as it would on a printer.

Congratulations! you have successfully obtained an actual printed letter from your new Word Processor. Because of the detail involved in the PRINT Command, we recommend experimenting with this section. Use the file included with this program or create your own documents, and then experiment by setting different values to the options and by entering In-Text Formatting commands. By doing so, you will gain a greater understanding of the PRINT Menu and the In-Text commands, and how they interrelate.

WP: The PRINT Window is on the screen.

USER: Press <Menu> to exit the PRINT Window and return to the example file.

WP: The example file (INTRO.DOC or INTRO2.DOC) is in the text window and you are in INSERT mode.

If you wish to save this file, press <Menu> and <F> for file. When you are prompted to save the file, save to INTRO2.DOC.

REVIEW

In this Chapter we have covered the options relating to printing out your Document or Text file. You now know how to use these features.

— Select any of the features from the Print Window, such as specifying page length, page width, header line content and position, printer device, line spacing, and other options.

— Print the contents of your file to the specified Print Device.

Chapter 9.
Mass Mailings

GOAL: In this chapter, you learn how to create text files that can be used with the Information Manager to do mass mailings.

As noted earlier, the Word Processor supports two styles of text files — Document files with ".DOC" suffixes and Text files with ".TXT" suffixes. The Mailer command within the Information Manager expects the file to be printed to be of the Text type. So, in order to prepare a text file for the Mailer, you must be sure that the file is a Text file. This may be done by originally creating a file of the type Text or by copying a Document type file into a Text type file.

EXAMPLE SITUATION: Suppose, now that you have a nicely composed letter regarding your sales, that you want to send personalized copies to other investors. This can be done by copying the letter into a Text file, slightly altering it and then using it in conjunction with the Mailer option in Information Management.

WP: You are prompted with "Read _ Old Create _ New".

USER: Press <C> to select the Create _ New option.

WP: You are prompted with "Document Text".

USER: Press <T> to select the Text type file.

Remember that the Mailer command in the Information Manager will only accept Text type files.

WP: A file name prompt appears asking for the name of the file.

USER: Enter [SALESLET] <ret> to assign the file a name.

WP: The Text editing window opens on the screen with the cursor in the upper left hand corner. You are in insert mode.

Since the letter previously created is a Document file, you need to convert it into a Text type file. This is easily done using the Copy option from the Word Processor's Main menu.

USER: Press <menu> to access the Word Processor Main menu.

WP: The Main menu appears at the bottom of the screen.

USER: Press <C> to select the Copy option.

WP: The Copy prompt appears.

USER: Press <change> in order to copy from a different text file.

WP: You are prompted for the text file to be copied from.

USER: Enter [INVEST] <ret> to select the document previously created.

WP: The INVEST document is read into the lower window.

USER: Press <do> at the beginning of the document, <page> down to the end
        of the letter and press <do> again to copy the entire text into the Text file
        you are creating.

WP: The letter is copied into our current file and appears on your screen as fol-
        lows:

```
|------|1L------|2------|------3------|4|------|5------|6--R|----7-|------
```

                                                    January 6, 1984

    Mr. Hal Stevenson, President
    Fortune Financial
    500 W. Bay St.
    San Francisco, Ca 90736

    Dear Mr. Stevenson,

        It is a great pleasure for me to inform you that the profits of our
    last few meetings are beginning to appear. We received the final
    1983 sales figures for our new 64 bit micro, SUPER 64, and it
    appears that your advice has guided us in the right direction. Sales
    for the fourth quarter were up 27% for an overall annual increase of
    22%.

        Summarized below are the sales figures by region and quarter
    for SUPER 64.

Word Processor — Menu

INSERT: All characters are entered into text. Movement commands may
be used Col 11 without exiting Insert.

                <chars> <moves> <Do> <Undo> <Del>
                <Menu> <Hlp> <Chng> <Srch> <Frmt>

You will notice that the content of the letter is exactly the same as you saved it. What is
important to note here is that though the paragraphs are right justified, the Justify option
is no longer available to you because you are in a Text file. You have basically tricked
the Word Processor into saving the nicely formatted paragraphs for use with the Mailer
command in Information Management. You will also notice that none of the printer
attributes are copied into the Text file as these are not supported here.

Now that the basic letter is in the Text style, you can add the various substitution macros so that data base field information can be inserted at the appropriate points in the letter as follows.

```
+      +1L    + 2    +    3 +    4|      |5    + 6 — R +    7 +
                                                @:SYSDATE


    Mr. @:firstname @:lastname@',' @title
    @:company
    @:address
    @:city, @:state @:zip

    Dear Mr. @:lastname,

        It is a great pleasure for me to inform you that the profits of our
    last few meetings are beginning to appear. We received the final
    1983 sales figures for our new 64 bit micro, SUPER 64, and it
    appears that your advice has guided us in the right direction. Sales
    for the fourth quarter were up to 27% for an overall year's increase of
    22%.

        Summarized below are the sales figures by region and quarter
    for SUPER 64.
```

```
                     Word Processor — Menu
INSERT: All characters are entered into text. Movement commands may
be used Col 11 without exiting Insert.
            <chars> <moves> <Do> <Undo> <Del>
            <Menu> <Hlp> <Chng> <Srch> <Frmt>
```

For more information on Mailer substitution syntax, please consult the Information Management Manual.

USER: Press <menu> to display the main Command window.

To make sure the most current version of your sample letter is saved on disk, follow these instructions.

USER: Press <F> to access the Filer command, press <do> to save the current version of your sample letter and then press <undo> and <Menu> to return to the Word Processor main command window.

If you do not wish to continue the tutorial at this time, refer to the instructions below.

USER: Press <O> to access the Options command and then press <O> to exit to the Operating System.

REVIEW

After following the discussion in this chapter, you are now familiar with the following concepts.

— copy a file of type Document into a file of Type Text

— set up a Text file so it is able to be used with the Information Manager's Mailer option

Chapter 10
IMPORTING INFORMATION

GOAL: SIF files are used to transfer information from one module to another. For the Word Processor to use the information in a SIF file, you must copy the SIF into a Text or Document file. In this chapter you will see how to set SIF tabs and copy a SIF file into a Text or Document file.

EXAMPLE SITUATION: You must write a memo to Mr. Smith in the Marketing Department. He wants to know the number of Software products sold monthly in January through August, in California, New York, Texas, and Minnesota. That information is "exported" from Information Management in the file, "YOUR.SIF". You will Copy the information from the SIF file into your memo.

WP: The main command line appears.

USER: Press <F>, or highlight "FILE" and press <do> to access the File command.

WP: The File Selection menu appears with the options "Read__Old" and "Create__New" USER: Press <C>, or highlight "Create__New" and press <do>.

WP: The options "Document" and "Text" appear on the command line

USER: Press <D>, or highlight "Document" and press <do>.

WP: You are prompted for the "Name of new file:"

USER: Enter [MEMO] and press <do>.

WP: A blank Text window appears and you are placed in the Insert mode.

en

USER: Enter the first part of the memo as follows;

MEMO

January 20, 1984
To: Mr. Smith - Marketing
From: (your name) - Sales

The following is the information you requested on Software sales for
the first eight months of 1983;

Word Processor - Menu
INSERT All Characters are entered into text. Movement commands Col
1 may be used without Insert

<chars><moves><Do><Undo><Del><Menu><Hlp><Chng><Srch><Prnt><Frmt>

USER: Be sure to leave two blank lines after the first sentence and
        press <menu>.

WP: The main command line appears.

USER: Highlight Copy and press <do> or press <C>. The Copy com-
        mand line prompts "Press <change> for File copy or Move to
        start of block to copy".

WP: Press <change>.

USER: the prompt "Copy from which file?" appears at the Copy com-
        mand line

WP: Press <search> to find out what files are available.

USER: The Search window opens and displays the following;

```
B
A
CON
COM1
COM2
LPT1
LPT2
          → INVEST              TXT ←
            LABEL               TXT
            INVEST              DOC
            SALES               DOC
            INTRO               DOC
            INTRO2              DOC
            SALESLET            TXT
            YOUR                SIF

    <page> <jump> <up> <down> <undo>
      <change><line-ins><line-del><do>
```

USER: Make sure "YOUR.SIF" is highlighted and press <do>.

WP: "YOUR.SIF" is placed after the "Copy from which file?" prompt.

A SIF file has a tabular form. If you do not set SIF tabstops BEFORE entering the SIF file into the Text window the information will not fit in the Text window correctly. The SIF tabstops indicate where columns should begin.

USER: Press <format>.

WP: the ruler line at the top of the screen is ready to receive tabstop settings.

```
—|—1—|—2—|—3—|—4—|—5—6—|
   MEMO

   January 20, 1984
   To: Mr. Smith - Marketing
   From: (your name) - Sales

   The Following is the information you requested on Software sales for
   the first eight months of 1983;




              Word Processor - Menu
   Ruler:<L>,<R>,<P> Set left, Right and Paragraph margins
   Col1 <->,<+>,<.>,<:>Clr Tab, Set Tab, Set Decimal Tab, Set SIF Tab
```

Notice the column position indicator in the lower left corner of your screen. It indicates the cursor is currently at Column 1. As you move the cursor with left and right <arrow> keys, the indicator will report its position.

WP: The cursor rests on column 1 of the ruler line.

USER: Press <right> 13 times and press <:> (a colon).

WP: The colon marks a SIF tab on column 14.

USER: Press <right> 9 times and press <:>.

WP: A SIF tab indicated by a colon appears at column 23.

UER: Press <right> 6 times and press <:>.

WP: A SIF tab is indicated by the colon at column 29.

USER: Enter a <:> at columns 35, 41, 47, 53, 59 and 65.

WP: 9 SIF tabs are indicated by 9 colons on the Ruler line.

If you want to erase a SIF tab, position the cursor on it and press <->.
If you want to start over press <line del> to remove all existing tabstops.

WP.II.73

USER: Press <format> to leave the Format option.

WP: The Copy command line reappears with "Copy from which file?: B:YOUR.SIF".

USER: press <do> to enter "YOUR.SIF".

WP: The information from the SIF file appears in the lower screen. Notice that each column begins at the point indicated by a SIF tab. The Copy cammand line prompts "Move to start of block to copy and press <do>."

USER: Using the <arrow> keys position the cursor at the begining of the first line of the SIF information and press <do>.

WP: The Copy command line contains the prompt "Move to end of block to copy and press <do> again."

USER: Press <ret> 6 times to move the cursor to the end of the SIF information. As you move the cursor, the text you are selecting becomes highlighted. Press <do> when all of the SIF information is highlighted.

WP: The text window splits. The highlighted SIF file is in the top half, the currect file is in the bottom half. You are prompted to "Select destination of text. <do> moves text."

USER: Make sure that the cursor (in the bottom window half) is at the end of the Memo text and press <do>.

WP: The information from the SIF file is copied into your memo at the point marked by the cursor. The main command line appears.

```
MEMO

January 20, 1984
To: Mr. Smith - Marketing
From: (your name) - Sales

The following is the information you requested on Software sales for
the first eight months of 1983;

STATE:K      JAN   FEB   MAR   APR   MAY   JUN   JLY   AUG
CA           125   175   150   145   195   165   200   100
NY           225   250   200   275   245   285   295   235
TX           300   325   345   385   350   375   365   300
MN           410   450   435   470   455   500   485   420


                      Word Processor - Menu
Insert Delete Exchg Copy SetMark Movetext Bckgrnd File Options =Calc
Document:MEMO

    <moves> <Do> <Ins> <Del> <Help> <Search> <Print> <Format>
```

You could continue to use the editing capabilities of the Word Processor
to alter your memo. Some characters (:K) from the SIF file definition header
came in with the SIF information. You could use Exchange to blank them
out. You could use the Calculator to help you figure totals for the table.

Review

The ability to bring information from other modules into the Word Pro-
cessor makes it a very powerful tool. After reviewing this chapter, you
may now perform the following tasks.

— Integrate information from other applications which has been
  stored in a standard text file into a Word Processor Text or Docu-
  ment file

— Set SIF tabstops so that your information may be integrated in an
  acceptable format

Chapter 11.
File commands

GOAL: In this chapter, you learn how to save a file, read an existing file into the Text window, copy a file, change a file name, and remove a file. These tasks are achieved using File and the Search window from the File command line.

1. Saving a File

EXAMPLE SITUATION: You want to save your file on your floppy or hard disk. You access the Save command to save the file.

WP: The main command line appears.

USER: Highlight "Save" and press <do>.

WP: The prompt "Save changed current file "filename"?" appears.

USER: Press <do>.

WP: "SAVE: Writing" appears to indicate that your file is being sav-
        ed, then the main command line is displayed.

At this point you could press <I> to return to the Insert command and continue working on your file. Updating a file consists of saving the file then returning to Insert to continue writing or editing the file. You should update every two or three paragraphs until you are familiar with the Word Processor and the system in general.

Frequent updates can save you a great deal of work. For example, if your computer is accidentally unplugged, you would lose all entries made since your last save. If your last save was at the previous paragraph, then you would need to reenter only one paragraph rather than several pages.

2. Selecting a File Name from the Search Window

EXAMPLE SITUATION: You want to continue working on a File you entered previously but don't remember the name that it was saved under. You access the File command and enter the File name from the Search Window.

WP: The line "File: Read_Old Create_New" is displayed.

USER: Press <R>, or highlight "Read_Old" and press <do>.

WP: The following line appears:

```
Read Old File:
    Name of Old File:
        <chars><Search><Help><Menu><Do><Undo>
```

If you know the name of the File that you want to read, you may enter the name and press <Do>. When you are unsure of the name, use the <Search> function:

USER: Press <Search>.

WP: The Search Window opens:

```
B
A
CON
COM1
COM2
LPT1
LPT2
              >   INVEST      TXT        <
                  LABEL       TXT
                  INVEST      DOC
                  SALES       DOC
                  INTRO       DOC
                  INTRO2      DOC
                  SALESLET    TXT
                  YOUR        SIF

    <page><jump><up><down><undo>
    <change><line-ins><line-del><do>
```

You can access the Search Window by pressing <Search> from the File and the Copy command lines. The left side of the window lists the volumes on-line, the right side of the window lists the available files.

You can use movement keys; <up>, <down>, <page up>, and <page down>, to find the file you wish to enter. When you move the highlight on the right side through the first volume's files to the next volume's files, the highlight on the left side moves to the name of the appropriate volume.

USER: Press <page down>.

WP: On the right side the highlight jumps to the top of the next volume's files, and on the left side the highlight jumps to the next volume's name.

USER: Press <page up>.

WP: On the right side the highlight jumps back to the bottom of the first volume's files, and on the left side the highlight jumps back to the first volume's name.

USER: Use the arrow keys to highlight "INVEST" and press <Do>.

WP: The <Search> window closes and "INVEST. DOC" appears after "Name of old file".

USER: Press <Do>.

WP: The message "Reading . . ." is displayed briefly, then the "INVEST" file appears in the Text window, and you are placed in the Insert command.

USER: Press <menu>.

WP: The Main command line is displayed.

3. Copying a file

EXAMPLE SITUATION: You want to make a copy of the file that you created while practicing with the Word Processor. You Use the <Line-Insert> function key of the Search window to copy the file INVEST, then give the duplicate file the name, "CHART."

WP: The Main command line is displayed.

USER: Highlight File and press <do> or press <F>.

WP: The File prompt "Read_Old Create_New" appears.

USER: Press <R>, or highlight "Read_Old" and press <do>.

WP: The prompt "Name of old file" is displayed.

USER: Press <Search>.

WP: The Search Window opens.

USER: Highlight "INVEST" then press <Line-Insert>.

WP: The Search Window closes and the following prompt appears over the File prompt:

```
Copy "B:INVEST.DOC" to ?
```

USER: Enter [CHART] and press <Do>.

WP: The prompt disappears, and the <Search> window re-opens with the file "CHART" in the file list.

You now have the practice file named "INVEST" and a copy of it named "CHART".

4. Changing a file name

EXAMPLE SITUATION: You want to change the name of the file "CHART" to "CHART2". You use the <change> function of the Search Window to change the file name.

WP: The <Search> window is open.

USER: Highlight "CHART" and press <Change>.

WP: The <Search> window closes and the following prompt is displayed:

```
Change "B:CHART.DOC" to?
```

USER: Enter [CHART2] and press <Do>.

WP: The prompt disappears, and the Search Window re-opens with the name of the file changed to "CHART2".

5. Deleting a file

EXAMPLE SITUATION: You cannot think of any reason to keep both the original "INVEST" and the copied and renamed version of it called "CHART2". You use the <Line-Delete> function of the Search Window to remove "CHART2".

WP: The <Search> window is open.

USER: Highlight "CHART2" and press <Line-Delete>.

WP: The <Search> window closes and the following prompt appears:

```
Delete "B:CHART2. DOC"?
```

USER: Press <Do> to confirm the deletion.

WP: The prompt disappears, and the <Search> window re-opens with "CHART2" removed from the file list.

WP: The Search window is open.

USER: Remove the files "SALESLET", "INTRO2", "INVEST. DOC" and "INVEST. TXT" in the same manner.

WP: The Search window displays the text and document files.

USER: Press <Undo>.

WP: The Search window closes and the FILE prompt "Name of old file" is displayed.

USER: Press <Undo> then press <Menu>.

WP: The Word Processor main Command Window is displayed.

Review

After progressing through the material in this Chapter, you now know how to perform these operations.

— read an old file into the Text window

— open and use the Search window of File

— copy a file

— change a file name

— delete a file

Chapter 12.
OPTIONS

GOAL: This chapter explains how to save your file and exit the Word Processor using the OPTIONS command.

EXAMPLE SITUATION: You have almost completed the tutorial. You know how to save a file with the File option, but would like a quicker way. Selecting the Options command allows you a short cut to saving your file when you also want to exit the Word Processing module.

Saving a file with OPTIONS

Options is used to exit from the Word Processor. If you have not yet saved the file that is in the Text window, or if you have made recent changes to it, Options will prompt you to save the file before leaving the Word Processor. You will not be taken through this procedure at this time, since your letter is currently saved, however the correct steps are explained below:

Options is accessed from the Main command line. If you are in the Insert command line, press <Menu>. The Main command line appears. Select Options. If your file is not currently saved, the following prompt will be displayed:

```
OPTIONS (Quit Word Processor):
          Save changed current file "INVEST. DOC"?
          <Do> <Undo> <Change> <Help>
```

To save your file press <Do>. The file will be saved, and the Options window will open. With the Options Window on your screen, press "O" to exit the Word Processing module and then remove your diskettes and turn off your computer, or refer to the Getting Started manual for other options.

Using Options to exit the Word Processor

At this time, you will actually select OPTIONS and end the tutorial:

WP: The Insert command line is displayed.

USER: Press <Menu>.

WP: The Main command line appears.

USER: Select Options by highlighting it and pressing <Do>, or pressing <O>.

WP: The Options window opens.

For more information, please refer to your Getting Started manual.

Pressing <Undo> allows you to return to the Word Processor.

USER: Remove your diskette(s) from the disk drive(s), and turn off the computer
        or choose one of the other options.

O·P·E·N
ACCESS

SOFTWARE PRODUCTS INTERNATIONAL, INC.

COMMUNICATIONS

VOLUME II — USER'S MANUAL

VOLUME II

TABLE OF CONTENTS

CHAPTER 8 — CONFIGURATION

Introduction

This User's Manual is a self-contained tutorial to the Communications Module, introducing all the features necessary to use the module. The chapters are arranged in a logical sequence, enabling you to become familiar with one feature before proceeding to the next.

Each chapter uses an example dialogue between Communications (CM) and yourself (USER) to guide you step by step through the creation of various communication links and features.

Throughout this manual, whenever you are instructed to press a single key, the key name will be enclosed in angle brackets, such as <ret>, <search>, <do>, and <undo>. Entries requiring a series of keys are enclosed in square brackets, such as [filename]. Do not enter the brackets themselves. Finally, upper case commands are mandatory. For example, PRESS <ret>.

Chapter 1

Introduction

GOAL: This chapter explains installation requirements and procedures for most types of computer communication systems. After reading this chapter, you should be able to correctly install your own system.

SPI's Communications Module supports a variety of communication systems, ranging from direct cable links to high-speed intelligent modems.

The following sections describe each supported system. You should read the section(s) corresponding to the system(s) you will be using.

DIRECT CABLE INSTALLATION

Computer users located within the same building often need to share programs and transfer data. Rather than employing expensive, high-speed modems, the most cost-effective way to establish communications is a direct cable connection.

System Requirements

For your Communications Module to operate in this environment, you need the following:

1) Two computers each with a serial (RS-232C) port.
2) Sufficient cable, with the proper connectors, to link your computers. One connector may need to be "bit-flipped." For specifics, refer to Appendix B.

Installation

Simply connect your cable to the RS-232C port (serial port A) on each computer as illustrated below. If a connector does not fit; try inverting it. There is only one correct orientation.
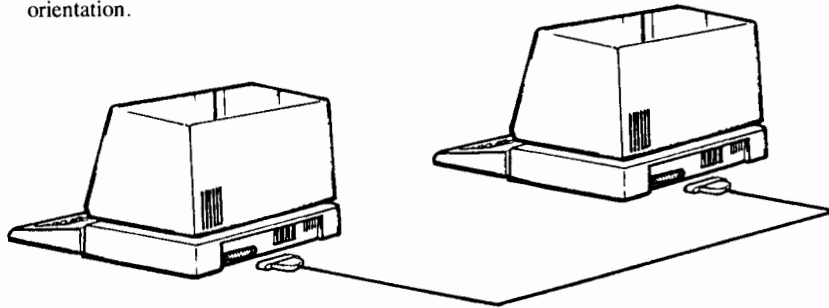
If you are planning only to use a direct cable link for your communications, skip to Chapter Two and begin the tutorial. Otherwise, continue reading.

CM.II.2

ACOUSTIC MODEM INSTALLATION

Acoustic modems provide an economical alternative to high-speed, direct connect modems. If you have an acoustic modem, follow the steps below to correctly install your system.

System Requirements

To use the Communications Module with an acoustic modem, you need the following:

1) One computer with a serial (RS-232C) port.
2) One acoustic modem.
3) One telephone with a standard handset.
4) One cable with the proper connectors at each end.

Installation

Connect the modem to the serial (RS-232) port (serial port A) of your computer using your cable as shown below. If the connectors do not fit; invert them. There is only one correct orientation.
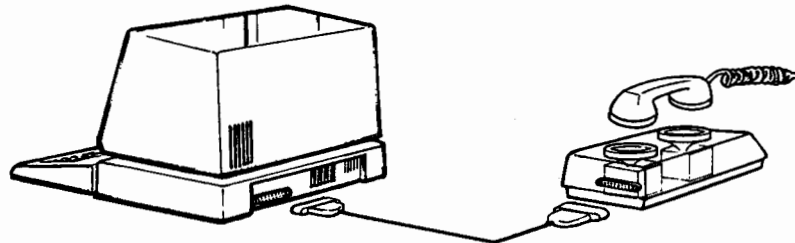
To check you installation, follow these steps:

1. Turn your computer on and access the Communications Module and the Terminal mode as explained in Chapters Two and Four.

2. Make sure the "answer/originate" switch on the modem is set to "originate."

3. Pick up the telephone handset and dial the phone number of the computer or service you wish to contact.

4. When the secondary computer answers, you should hear a high-pitched tone; this is the "carrier" signal of the modem.

5. When you hear this sound, insert the telephone handset into the cups of your modem. A "Connect" message should appear at the top of your screen. For future communications, you must create a new Configuration file as described in Chapters Eight and Nine.

If you are unable to establish communications, try the following:

1. Be sure your telephone handset is correctly placed in the modem cups.

2. Check your cable connections. Are they correctly wired?

DIRECT CONNECT MODEM INSTALLATION

Direct connect modems are similar to acoustic modems, except that an electronic rather than acoustic couple to the telephone is used, offering somewhat more reliability. (Intelligent, high-speed modems are almost always direct connect, but we'll discuss those later.)

System Requirements

To use Communications with a direct connect modem, you need the following:

1) One computer with a serial (RS-232C) port.
2) One direct connect modem.
3) One data telephone or one standard telephone and a duplex modular jack ("Y connector").
4) One serial cable with the proper connectors at each end.
5) One modular telephone cord.

If you do not have a modular telephone system, consult your telephone company.

Installation

Direct connect modems may be installed in either of two methods depicted below.

With a data telephone:

Connect a cable with the proper connectors from your computer (serial port A) to the modem. Using a modular telephone cable, connect your modem to the data telephone. Finally, connect the telephone to a telephone outlet.

CM.II.5

With a standard telephone:

Plug the "Y" connector into your telephone outlet. Using the proper cable, connect your standard telephone to the "Y" connector. Now, connect a cable from the serial port of your computer (serial port A) to the modem. Finally, attach a cable between your modem and the "Y" connector.
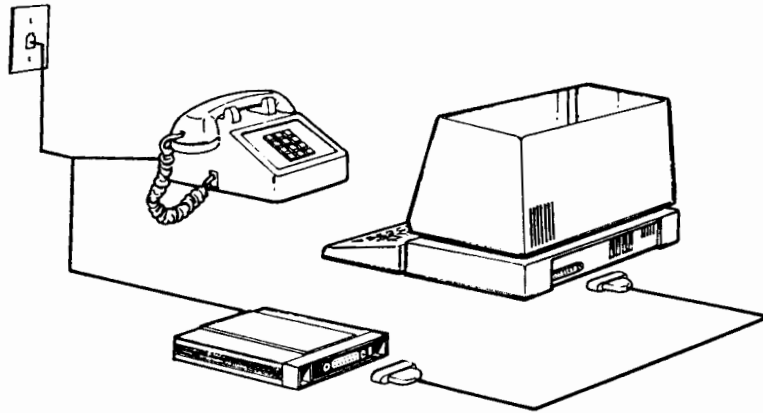
To check your installation, follow these steps:

1. Turn your computer on and access the Communications Module as explained in Chapters Two and Four.

2. Dial the phone number of the computer or service you wish to contact.

3. When the secondary computer answers, a "Connect" prompt should appear on your screen.

INTELLIGENT MODEM INSTALLATION

Using an intelligent modem and Communications Module, your computer is capable of automatically dialing and answering a telephone while communicating at speeds of, depending on the modem, up to 2400 baud, with 300 and 1200 baud being the usual speeds. The Communications Module is pre-programmed to work with a Hayes 1200 baud Smart modem. If you are using a different intelligent modem, refer to Chapter Eight to configure the Communications Module for your own particular modem.

System Requirements

The following is required to use Communications with an intelligent modem:

1) One computer with a serial (RS-232C) port.
2) One cable with the proper connectors at each end.
3) One telephone cable to connect the modem to the telephone outlet.

(No telephone is necessary because the intelligent modem is programmed to perform the dialing and answering functions).

Installation

Using the serial cable, connect the serial port of your computer (serial port A) to the modem. Plug the telephone cable into a phone outlet at one end, and into the modem at the other.
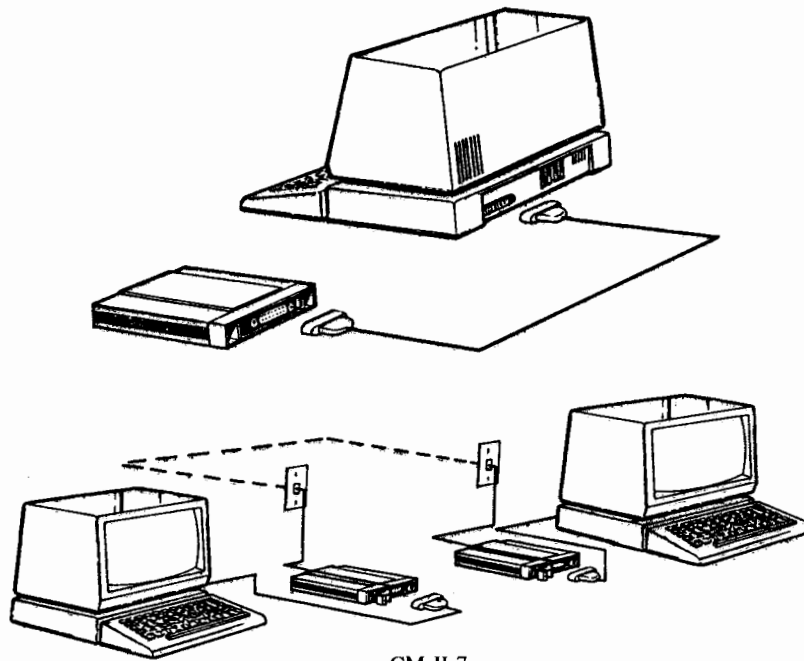
CM.II.7

Chapter 2

Accessing Communications

GOAL: This chapter steps through the procedures necessary to access Communications Main Menu. In addition, each of Communications options is summarized, providing an introduction to the module's capabilities.

Before beginning this tutorial, make sure you have completed the following:

1. Your computer communication system is installed as described in Chapter One.

2. The secondary computer is "up and waiting" for a call from the primary computer. (Remember, the secondary computer receives a call; the primary computer originates, or dials it).

   This secondary computer may be an information service (e.g. Dow Jones News Service), a time-sharing mainframe computer, or another microcomputer. "Up and waiting" simply means the modem of the secondary must be on and set to "answer" mode.

Once you have completed the preliminary installation, you can begin to setup a communications link. Access your Communications Module as specified in Volume I. Your computer briefly displays an initialization screen as shown below:

```
Open Access — Communication
(C) 1983 Software Products International Inc.
```
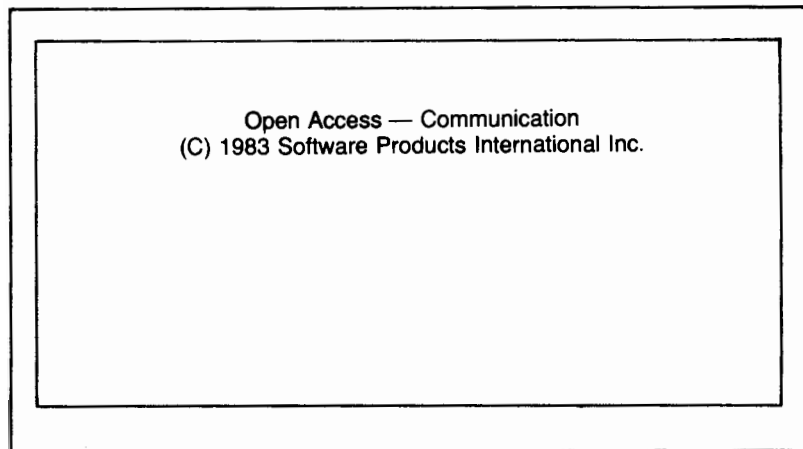
After a few seconds, the Communications Main Menu is displayed as shown below:

```
┌──────────────────────────────────────────────────────────────┐
│ ┌──────────────────────────────────────────────────────────┐ │
│ │                                                          │ │
│ │              Open Access — Communication                 │ │
│ │          (C) 1983 Software Products International Inc.    │ │
│ │                                                          │ │
│ │                                                          │ │
│ │                                                          │ │
│ │                                                          │ │
│ │                                                          │ │
│ │                                                          │ │
│ └──────────────────────────────────────────────────────────┘ │
│                                                                │
│        Communication — [Configuration file HAYES.LPR]          │
├──────────────────────────────────────────────────────────────┤
│     Options Configuration Phone_Options Terminal_Mode          │
│           Log_File Up_Load Master Slave                         │
├──────────────────────────────────────────────────────────────┤
│           <arrows> <do> <undo> <menu> <help>                   │
└──────────────────────────────────────────────────────────────┘
```

The four lines of text at the bottom of this screen provide the following information:

1. The top row lists the Configuration file currently being used by Communications. This file contains the data necessary for your computer to "talk" with a particular modem.

   When Communications is first selected, the Hayes Configuration file is automatically chosen. If you are not using a Hayes Smart modem, Chapter Eight explains how to create your own Configuration file.

2. The second two lines list the available Communication Module options. These options, or Communication functions, are selected much like an item from a restaurant menu.

3. The bottom row lists the keys used to select an option. For example, an option may be selected in one of two ways:

   (1) Press <arrows> (<left> or <right>) to highlight the option name, then press <do>.

   (2) Simply press the first letter of the option name. (e.g., Press <P> for Phones Options).

   Finally, notice the <help> and <menu> keys listed to the right of the <undo> key. By pressing <help>, a "window" appears on your screen containing explanatory information about a particular command line. Press <undo> to return to the previous screen.

Press <menu> to return to the Communications Main Menu. (If you are already at the Main Menu, pressing <menu> displays the Options menu.)

The following table summarizes the purpose for each of the Main Menu options.

Options	Name	Purpose
O	Options	Exits Communications and returns you to the Option Menu where you may select another module.
C	Configuration	Enables you to create a new Configuration or select an existing one. This file may also be displayed for examination or modification. Finally, Configuration allows you to initialize your modem and serial port to a selected Configuration file.
P	Phones_Options	Automatically dials phone number from a user-maintained list. This option can only be used with an intelligent modem.
T	Terminal_Mode	Enables your computer to become a "dumb" terminal.
L	Log_File	Creates a file to store information received while in Terminal Mode.
U	Up_Load	Sends unformatted ASCII text files from your computer to another.
M	Master	Accesses, maintains, sends and receives files from the Slave computer.
S	Slave	Enables files in your directory to be accessed and maintained by the Master computer. It is used in conjunction with the Master mode.

In the following sections, each of the above functions is explained in detail, starting with the simplest and progressing to the most complex.

Chapter 3

Phones Mode

GOAL: This chapter explains the Phones mode option. Phones enables your computer to automatically dial a telephone number from a list you maintain.

Accessing Phones

At the Communication Main Menu, PRESS <P>. This selects the Phone Options and displays the Phones Menu screen as shown below:

```
┌─────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────────────────┐  │
│  │                                               │  │
│  │                                               │  │
│  │                                               │  │
│  │                                               │  │
│  │                                               │  │
│  │                                               │  │
│  │                                               │  │
│  │                                               │  │
│  │                                               │  │
│  │                                               │  │
│  └───────────────────────────────────────────────┘  │
│              Communication - Phone Options            │
├─────────────────────────────────────────────────────┤
│            Quit Phone_List Dial Hang_Up               │
├─────────────────────────────────────────────────────┤
│     <arrows> <do> <undo> <menu> <help>                │
│  ├──────────────────────────────────────────────────┤│
│  │        Log_File Up_Load Master Slave              ││
│  ├──────────────────────────────────────────────────┤│
│  │     <arrows> <do> <undo> <menu> <help>           ││
│  └──────────────────────────────────────────────────┘│
└─────────────────────────────────────────────────────┘
```
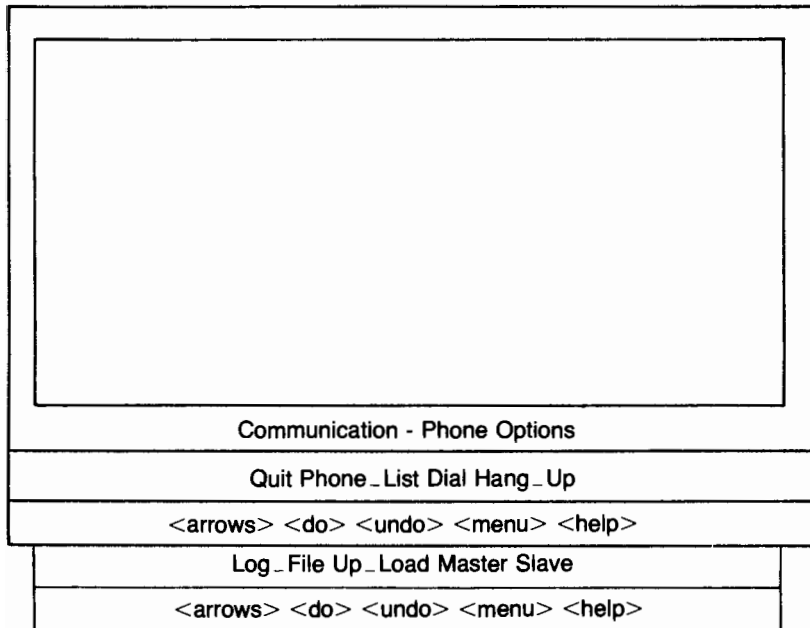
Building the phone number list

Your Communications Module must be given a list of phone numbers before a number can be dialed. To create this list, PRESS <P> at the Phone Menu. As you can see, your initial list is empty.

```
                        Phone List
   Number               Name




   <do> <undo> <up> <down> <search> <tab> <line-ins>
              <line-del> <back-tab>
```

Communication - Phone Options
Quit Phone_List Dial Hang_Up
<arrows> <do> <undo> <menu> <help>

Log_File Up_Load Master Slave
<arrows <do> <undo> <menu> <help>

Here's how to add a phone number to your list:

USER: Press <line-ins>.

CM: A new entry position is created.

USER: Enter the new telephone number. For our example, enter [(619) 555-1212]. Check to be sure the entry is correct. If you have made an entry mistake, press <left> to backspace and re-enter the information. At this time, go ahead and enter all the telephone numbers you will be using.

The "Number" field may contain a maximum of 15 characters consisting of numerals (0-9), and the following symbols: <#>, <->, <(>, <)>, <~>, and <*>. These symbols may represent long and short delays, useful when using telephone services such as MCI and Sprint (See Chapter Eight for a complete discussion of long and short delays).

"Name" may contain any combination of up to 39 characters.

USER: When the number is correctly entered, press <ret>.

CM: The cursor moves to the "Name" column and waits for an entry.

USER: Enter [TEST] and press <ret>.

CM: The cursor returns to the first telephone number in your list.

USER: If your telephone list is complete, press <do>.

CM.II.12

CM: The list is stored, the "window" disappears, and you are returned to the Phones Menu.

When adding more entries to your list, simply repeat the above steps. Note that a list may contain up to a total of ten telephone numbers. Also, a different phone list is associated with each Configuration File.

If you press <undo> before storing your telephone list, the following prompt appears within the Phone list window:

| Verify — exit without update? |

USER: Press <do> to update any changes to your list. Otherwise, press <undo> to cancel any changes.

CM: The Phone list window disappears, and you are returned to the Phones Menu.

Corrections to the Phone List

If, after storing your list, you notice an incorrect entry, the mistake can be corrected as follows:

USER: Press <P>.

CM: The Phone List option is selected.

USER: Select the incorrect entry using either of the following methods:

Press <up> and/or <down> to align the cursor at the incorrect entry line.

or

Press <search>. The following prompt appears:

| Letter of phone number (A - _) |

Press the letter corresponding to the incorrect entry.

CM: The cursor moves to the "Number" field of the selected entry.

USER: If the phone number is incorrect, enter the correction. To correct the "Name" field, press <tab>.

CM: The cursor moves to the "Name" field.

CM.II.13

USER: Enter the correct name and press <ret>.

If you need to make additional corrections, repeat the above steps. Otherwise, if you have no further corrections, press <do>.

CM: The system updates the phone-list and returns you to the Phones Menu.

Here's how to delete an entry:

USER: Enter the Phone_List mode and select an entry to be deleted as described above. Press <line-del>.

CM: The program then asks:

```
Verify Delete
```

USER: Verify the deletion by pressing <do>. (If you decide not to delete, press <undo>.)

USER: Repeat the above steps to delete another entry or press <do> to update the list and return to the Phones Menu.

Dialing

Now that you have created a phone list (and, of course, connected your smart modem between your computer and telephone jack), you are ready to have your modem dial a number. Follow the steps outlined below: (Remember, you must be using an intelligent modem with its own Configuration File (Chapter Eight) or a Hayes Smart modem.)

USER: Make sure the Phones Menu is displayed on your screen. (If it is not, press <P> at the Main Menu). Press <D> for Dial.

CM: The following window appears on your screen:

```
Phone #
                 <do> <undo> <search> <menu>
```

USER: Enter a telephone number or press <search> to select a number from your list. (You must have added a valid phone number for a secondary computer).

Using \<search\>

> USER: Press \<search\> to display your phone list. Select the number to be dialed by using either \<search\> or \<up\> and \<down\>.
>
> If you press \<search\>, enter the letter corresponding to the number to be dialed. Otherwise, press \<up\> and/or \<down\> to highlight the correct telephone number.
>
> Press \<do\>.

> CM: The telephone number is displayed in the above window.

Note that a second telephone number may be appended to the number displayed in the above window. For example, you can store telephone numbers for services such as MCI and Sprint. Then, a service may be selected and combined with the number you wish to dial.

> USER: Press \<search\>, select a second number, then press \<do\>.

> CM: The combined number is displayed in the "phone #" window.

Direct Entry

> USER: Simply enter the telephone number. Remember, the number may be a maximum of 15 characters including the \< x \>, \<*\>, \<-\>, \<(\>, \<~\>, and \<)\> characters. Press \<do\>.

> CM: The telephone number is displayed in the above window.

Now that you have selected a telephone number, we may proceed to establish the communications link.

> USER: Press \<do\>.

> CM: The following window appears on your screen:

```
┌─────────────────────────────┐
│     Modem Initialization     │
│   Verify Modem is Attached   │
│   <do>  <undo>  <help>       │
└─────────────────────────────┘
```

If an intelligent modem is properly connected to your computer, press \<do\>. (Otherwise, press \<undo\> to return to the Phones Menu). If you press \<do\> without an attached modem, the Communications Module will wait indefinitely, requiring you to restart the program.

CM.II.15

CM: The telephone number is dialed, the "Modem Initialization" window dis-
       appears, and your computer is automatically switched to Terminal Mode
       (Chapter Four).

       If your screen displays "connect," the secondary system has answered
       the phone and communications may begin. If, on the other hand, you see a
       "no carrier" message, the secondary did not answer.

Hang-up

When communication has ended, you can "hang-up" by first PRESSING <undo> at
the Terminal Mode screen.

CM: The Main Menu is displayed.

USER: Press <P> for Phones Mode.

CM: The Phone Menu is displayed.

USER: Press <H> to hang up.

CM: The modem "hangs up."

USER: You may now press <Q> to return to the Main Menu.

Chapter 4

Terminal Mode

GOAL: This chapter introduces the Terminal_Mode, a Communications option that converts your computer into a terminal, enabling communication with a variety of computers.

Introduction

In the Terminal mode, your computer is converted into a terminal, enabling full or half-duplex communication with various information services or other computers. This mode can be used with every communication installation from direct cable to intelligent modem. Furthermore, in Terminal mode, Log Files (Chapter 5) may be created to receive and store information for future examination.

Accessing Terminal Mode

Before accessing the Terminal mode, communication must be established with another computer. How this is done depends on your particular installation. For example, with an intelligent modem, Phone_Option both dials a number and switches to the Terminal mode once the connection is made.

After establishing communication, if you are not already in the Terminal mode, PRESS <T> at the Main Menu. If you have not already initialized your modem, the Modem Initialization window is displayed inside the Terminal Mode screen as shown below:

```
┌──────────────────────────────────────────────────────────────┐
│  ┌────────────────────────────────────────────────────────┐  │
│  │                                                          │  │
│  │              ┌──────────────────────────────┐           │  │
│  │              │     Modem Initialization       │          │  │
│  │              │  Verify Modem is Attached_     │          │  │
│  │              │   <do>  <undo>  <help>         │          │  │
│  │              └──────────────────────────────┘           │  │
│  │                                                          │  │
│  │                                                          │  │
│  └────────────────────────────────────────────────────────┘  │
│        Communication - [Configuration File HAYES.LPR]          │
├──────────────────────────────────────────────────────────────┤
│     Options Configuration Phone_Options Terminal_Mode          │
│              Log_File Up_Load Master Slave                      │
├──────────────────────────────────────────────────────────────┤
│        <arrows> <do> <undo> <menu> <help>                      │
└──────────────────────────────────────────────────────────────┘
```

CM.II.17
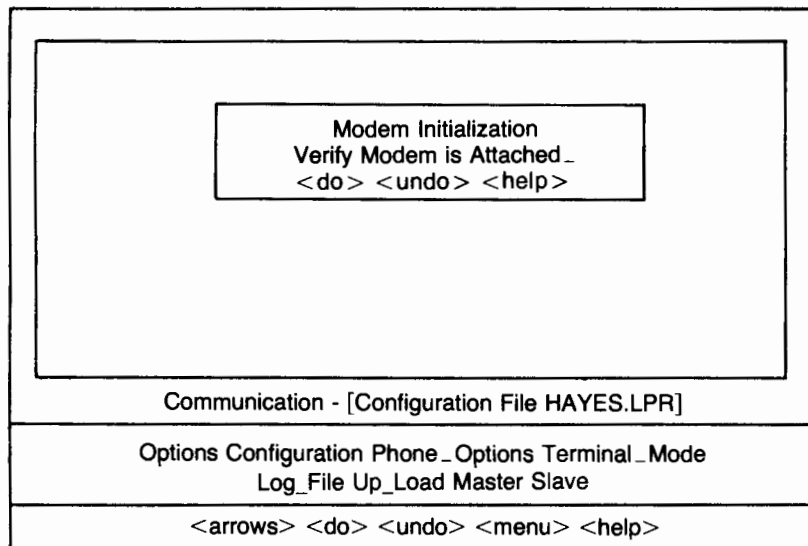
USER: If you see the above window, press <do> to initialize your modem or direct cable link. (Your modem or cable must, or course, be connected. If not, press <undo> and connect a modem or serial cable to your computer as described in Chapter Two.)

CM: The "Modem Initialization" window disappears, and the Terminal Mode screen is displayed as shown below:

```
┌─────────────────────────────────────────────────┐
│ ┌───────────────────────────────────────────┐   │
│ │                                           │   │
│ │                                           │   │
│ │                                           │   │
│ │                                           │   │
│ │                                           │   │
│ │                                           │   │
│ │                                           │   │
│ │                                           │   │
│ └───────────────────────────────────────────┘   │
│                                                 │
│      Communication - Terminal Mode [Log File not open] │
├─────────────────────────────────────────────────┤
│                                                 │
├─────────────────────────────────────────────────┤
│       <stop>  <start>  <break>  <menu>          │
└─────────────────────────────────────────────────┘
```
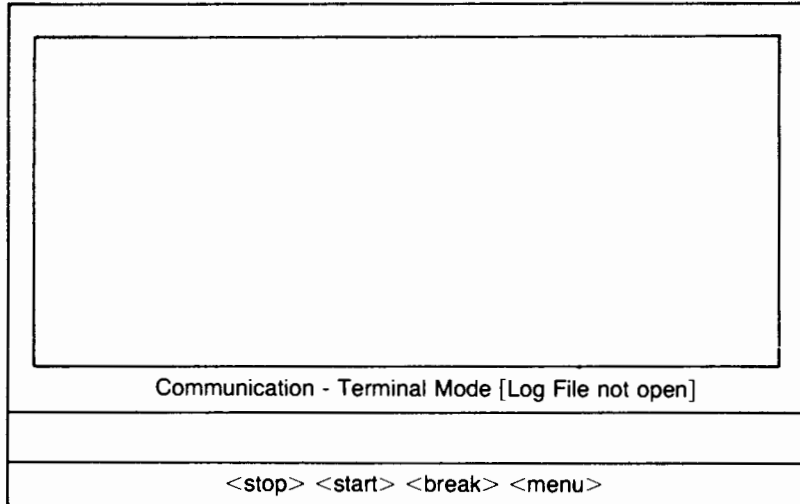
Notice that a Log File is not open; indicating any information received in Terminal mode will not be stored in a disk file. (Log Files are explained in Chapter Five.) The <stop>, <start> and <break> keys are generally unused. However, these keys may be configured (Chapter Eight) to send stop, start, and break messages to another computer.

Now that you are in Terminal mode, you may access computer information services, or time sharing computers or simply another computer that is also in Terminal mode.

Try these examples.

EXAMPLE SITUATION: It is 10:00 am PST. Using your new computer information service, Communications Module and an intelligent modem, you decide to check the current trading activity on Wall Street.

USER: Access Communications main menu as described in Chapter Two.

CM: The main menu is displayed.

USER: Press <P>.

CM: The Phones Menu displayed.

USER: Press <D>.

CM: The Dial command is selected. (This assumes the computer network tele-phone number is already entered in your list).

USER: Select a telephone number as described in Chapter Three. Press <do>.

CM: If you see a "connect" message on your screen, communications is estab-lished. (If you see a "no carrier" message, the secondary computer did not answer.)

USER: "Log in" to your information service. (That is, enter information such as code number and password as required by the particular dial-up service. Refer to your dial-up service reference guide for further details.)

To hang up, do the following:

USER: Press <menu> at the Terminal mode screen.

CM: The program leaves the Terminal Mode and returns to the Main menu.

USER: Press <P>.

CM: The Phones Menu appears on your screen.

USER: Press <H>.

CM: The modem hangs up and you are returned to the Main Menu.

The above example can be used to access any communications service. The next exam-ple shows you how to communicate with another microcomputer.

EXAMPLE SITUATION: You have arranged to contact a friend this evening using your Communications Module and an acoustic modem. Your friend has the same con-figuration. (Notice you may use other modems as well. However, the Baudrate, Databits, and Duplex fields of the Configuration file must be set to be the same. See Chapter Eight for further information).

(Remember, you are USER1 and your friend is USER2).

USER1: Access Communications Module as described in Chapter Two.

USER2: Access Communications Module as well.

CM: Both of you should see the Communications Main Menu displayed on your screen.

USER1: Dial USER2's telephone number. (If you are using an intelligent modem, dial the number as explained in Chapter Three). When USER2 answers, you must each do the following:
1. Press <T> to access the Terminal mode.
2. Place the telephone handset in the cups of your modem.

CM: The communications link is now established. To hang up, simply replace the telephone handset on the telephone.

CM.II.19

Chapter 5

Log Files

GOAL: This chapter explains the use of Log Files. Log Files enable you to store data from an information service or other computers for future use.

Introduction

Log Files store information as it is received in Terminal mode from another system. This other system can be another personal computer or an information service.

Accessing Log Files

At the Communication's Main Menu, PRESS <L>. This selects the Log File option and displays the Log File Menu as shown below:

Communication - Log File Options

Quit Open_Logfile Close_Logfile Print_Logfile

<arrows> <do> <undo> <menu> <help>

Log_File Up_Load Master Slave

<arrows> <do> <undo> <menu> <help>

The following table summarizes the purpose of the Log File Menu commands:

Selection	Name	Purpose
O	Open_Logfile	Creates a disk file to store information.
C	Close_Logfile	Stops the Logfile operation.
P	Print_Logfile	Prints Log files.
Q	Quit	Returns you to the Communications Main Menu.

Now, follow the example to open your own Log file.

EXAMPLE SITUATION: The Chief Financial Officer of your company needs to see a printout of today's Wall Street trading activity. You will use the Phones mode, a Log File, an intelligent modem, and an information service to get that report.

USER: If the Log File menu is not displayed on your screen, press <L> at the Communications Main Menu.

CM: The Log File Menu appears as shown above.

USER: Press <O>.

CM: The Open_Logfile command is selected and the File Selection window appears on your screen as shown below:

```
┌─────────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────────────────────┐  │
│  │                                                   │  │
│  │                                                   │  │
│  │                                                   │  │
│  │                                                   │  │
│  │                                                   │  │
│  │                                                   │  │
│  │                                                   │  │
│  │                                                   │  │
│  │                                                   │  │
│  ├───────────────────────────────────────────────────┤  │
│  │        Communication - Log File Options           │  │
│  └───────────────────────────────────────────────────┘  │
│        ┌───────────────────────────────────────┐        │
│        │  Enter log file name or press <search>:│        │
│        │        <do> <undo> <search>            │        │
│        ├───────────────────────────────────────┤        │
│        │ <arrows> <do> <undo> <menu> <help>     │        │
│        └───────────────────────────────────────┘        │
└─────────────────────────────────────────────────────────┘
```
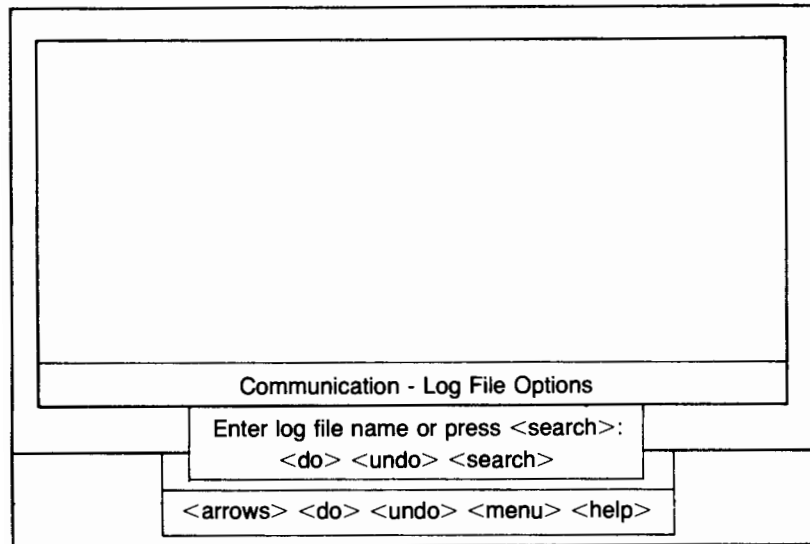
You now need to enter the name of a log file, or press <search> to select a predefined log file. If you press <search> the program displays the File Manager window as shown below:

CM.II.21

```
B
A
CON
LPT1
COMI
                => TEST              TXT <=
                   LOG               TXT


Enter log
        <page> <jump> <up> <down> <undo>

        <change><line-ine><line-del><do>
```
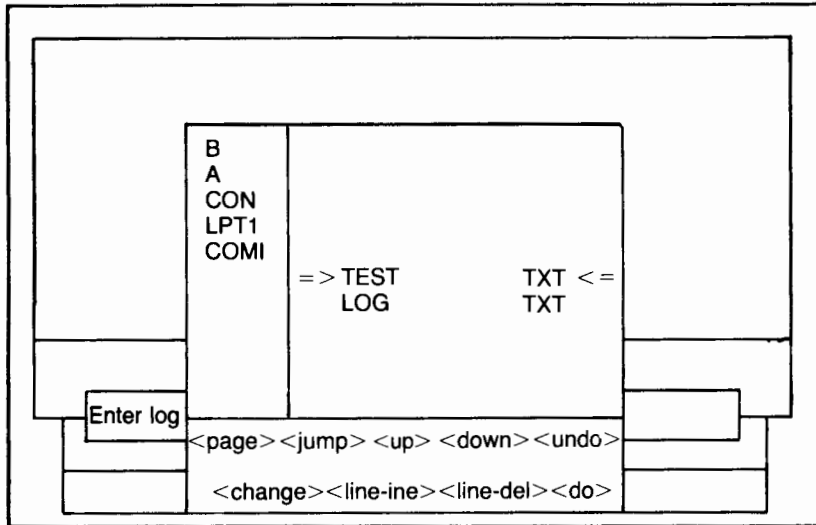
USER: Select a previously set up log file by pressing <up> and/or <down> to
         align the file name between the pointers. Press <do>.

CM: The File Manager window disappears, and the selected file appears in the
         file selection window.

USER: Press <do>.

CM: A new window appears at the bottom of your screen as shown below:

```
                  Communication - Log File Options

         Enter Log File name or press <search>: File name

              Remove Old "Volume: File name"?
```

CM.II.22
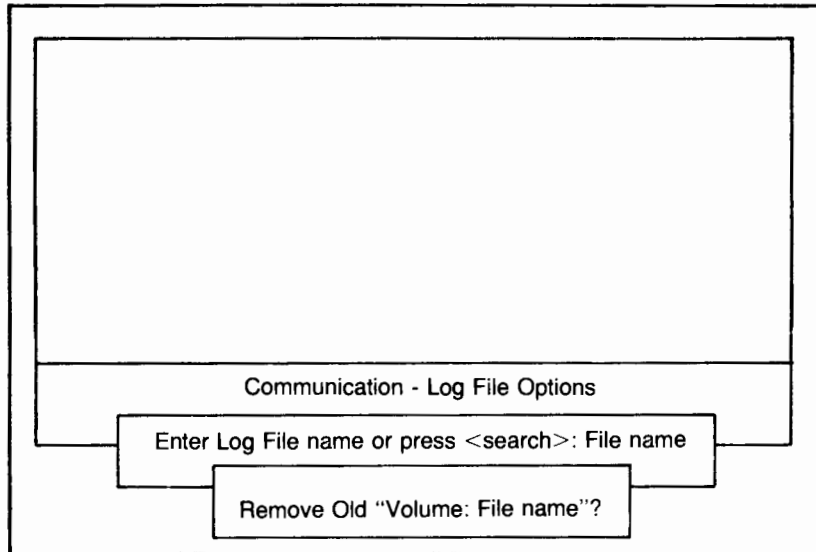
USER: Press <do> to remove the old file. (Press <undo> to select another file).

CM: If you pressed <do>, the new log file is opened and you are returned to the Log File Menu. Your log file is now ready to receive information.

USER: Press <Q>.

CM: The Main Menu is displayed on your screen.

Now that the log file is open, you can establish a communications link with Dow Jones News Service described as follows:

USER: Press <P>.

CM: The Phones Menu is displayed.

USER: Press <D>.

CM: The Dial mode is selected.

USER: Choose the correct telephone number as described in Chapter Three.

CM: Upon a successful connection, the program automatically enters the Terminal mode. Your screen should appear as shown: (If you see the Modem Initialization screen, be sure your modem is connected, then press <do>. Your screen will display the following:)

```
+-----------------------------------------------+
|  +-----------------------------------------+  |
|  |                                         |  |
|  |                                         |  |
|  |                                         |  |
|  |                                         |  |
|  |                                         |  |
|  |                                         |  |
|  +-----------------------------------------+  |
|   Communication - Terminal Mode [Log File Volume: File] |
+-----------------------------------------------+
| Log Size =                  Freebytes =       |
+-----------------------------------------------+
|       <stop> <start> <break> <menu>           |
+-----------------------------------------------+
```

Any information received is now stored directly in your open Log file. The amount of information is indicated by "Log Size" and the amount of free space remaining on your disk is indicated by "Freebytes."

To hang up when communications has ended, do the following:

USER: Press <menu> at the Terminal Mode Menu.

CM: The Communications Main Menu is displayed.

USER: Press <L>.

CM: The Log file command is selected.

USER: Press <C>.

CM: The Log File is closed.

USER: You may now continue communications, or hang up. To hang up, press
        <H> at the Phones Menu.

To view and printout your Log file:

USER: At the Communications Main Menu, press <L>.

CM: The Log File option is selected.

USER: If your Log file is not already closed, press <C>.

CM: The logfile is closed and the Log File Menu remains on your screen.

USER: Press <P>.

CM: The Print_Logfile option is selected and the file selection window is dis-
        played as shown below:

```
+------------------------------------------------------------------+
| +--------------------------------------------------------------+ |
| |                                                              | |
| |                                                              | |
| |                                                              | |
| |                                                              | |
| |                                                              | |
| |                                                              | |
| |                                                              | |
| |                                                              | |
| +--------------------------------------------------------------+ |
| |            Communication - Log File Options                  | |
| +--------------------------------------------------------------+ |
|     | Enter log file name to print or press <search>    |        |
|     |        <do> <undo> <search>                       |        |
|     +----------------------------------------------------+       |
|       | <arrows> <do> <undo> <menu> <help>   |                   |
|       +--------------------------------------+                   |
+------------------------------------------------------------------+
```
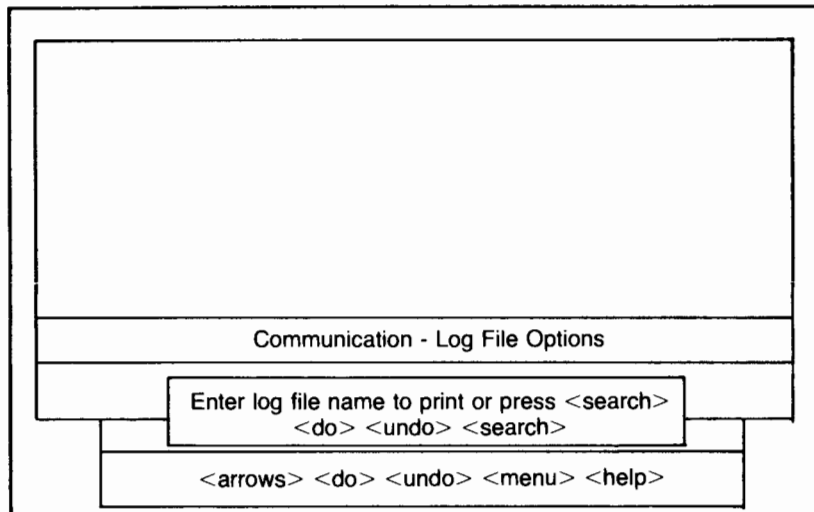
USER: Enter the name of your Log File or press <search> to select the file.

CM: After the file is selected, press <do>.

USER: The Output Device Selection Window appears on your screen:

```
CONSOLE
PRINTER
FILE
CONLABEL
PRTLABEL
EPSONFX80
EPSONMX100

           Output Device Selection
     <up> <down><do><undo> <pages>

      Communication - Log File Options

   Enter log file name to print or press <search>
            <do> <undo> <search>

      <arrows> <do> <undo> <menu> <help>
```

USER: Press <up> or <down> to highlight the appropriate output device name. Press <do>.

CM: The first page of your log file is displayed or printed depending upon your output device.

USER: Press <do> to view or print the next page. (This applies only for certain output devices such as Console and single page printers). Notice that the date, Log File name and Page number are listed at the top of each page.

CM: When all the pages have been output, Communications returns to the Log File Menu.

Chapter 6

Up _ Load

GOAL: This chapter explains an easy method of sending text files to another computer such as a mini or mainframe.

Introduction

The Communications Module can send files to another computer even if that computer does not use the Communications Module. Therefore, you can use Up _ Load to send letters to a friend and source programs to a mainframe computer.

Accessing Up_Load

To begin, you need to save a text file on any volume. Then, after accessing the Communications Main Menu as described in Chapter Three, Press <U>. Your screen appears as follows:

```
┌─────────────────────────────────────────────────────┐
│ ┌───────────────────────────────────────────────┐    │
│ │                                               │    │
│ │                                               │    │
│ │                                               │    │
│ │                                               │    │
│ │                                               │    │
│ │                                               │    │
│ │                                               │    │
│ │              ┌──────────────────────────────┐ │    │
│ │              │ Enter file to send or press <search>: │
│ └──────────────│  <do> <undo> <search> <menu> │─┘    │
│                └──────────────────────────────┘      │
│                │ <arrows> <do> <undo> <menu> <help> │ │
│                └──────────────────────────────────┘  │
└─────────────────────────────────────────────────────┘
```
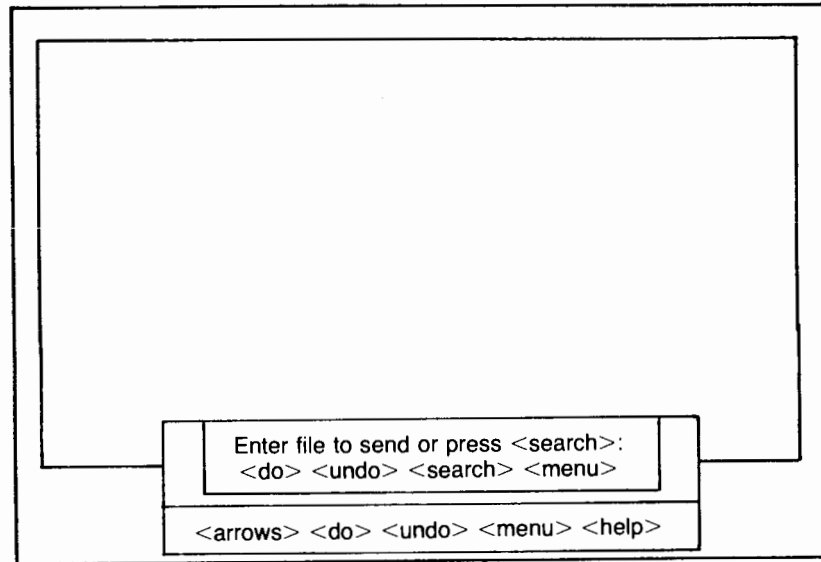
If you press <search> a list of test files appears on your screen.

  USER: Press <up> and/or down to position a file name between the pointers. Press <do>.

  CM: The selected file appears in the ''Enter File'' window.

  USER: Press <do>.

  CM: Your screen appears as follows:

CM.II.26

```
┌──────────────────────────────────────────────────────┐
│  ┌────────────────────────────────────────────────┐  │
│  │                                                │  │
│  │                                                │  │
│  │                                                │  │
│  │                                                │  │
│  │                                                │  │
│  │                                                │  │
│  │                                                │  │
│  │                                                │  │
│  ├────────────────────────────────────────────────┤  │
│  │        Communication - Sending File to host    │  │
│  ├────────────────────────────────────────────────┤  │
│  │              <any key to quit>                  │  │
│  └────────────────────────────────────────────────┘  │
│        ┌────────────────────────────────────────┐     │
│        │   Log_File Up_Load Master Slave         │     │
│        ├────────────────────────────────────────┤     │
│        │ <arrows> <do> <undo> <menu> <help>      │     │
│        └────────────────────────────────────────┘     │
└──────────────────────────────────────────────────────┘
```
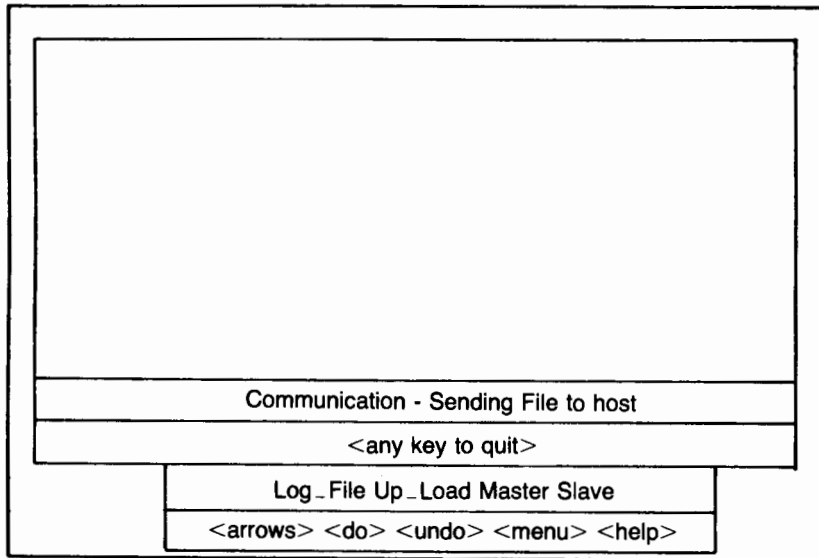
Notice that "dots" appear across the top of your screen. These indicate the file is being sent. After the file is sent, the "Enter file to send" window reappears. You may now select another file as described above, or press <undo> to return to the Main Menu.

CM.II.27

Chapter 7

Master/Slave Operations

GOAL: This chapter explains how to establish a Master/Slave link between two computers. In this relationship, the Master computer is given complete control over the Slave; enabling the Master to access, maintain, and receive the Slave's files. The Master may also send files to the Slave.

Introduction

After a communications link has been established, the Master computer can remotely access and manipulate the Slave's files. These file operations may be classified into two types: Single File operations and Batch (multiple) transfers. Within Single_File operations, the Master may rename, delete, or copy any file to or from any volume. In Batch_Transfers, however, files may not be deleted or renamed.

Accessing Master/Slave

Before entering the Master mode, you must establish a communications link with another computer as described in Chapter One.

Next, both you and the secondary user must access the Communications Module as described in Chapter Two. When the Main Menu is displayed on each screen, you may proceed.

To begin, the secondary user must PRESS <S> at the Main Menu. This selects the Slave option and displays the Slave screen. If the Modem Initialization window appears, press <do>.

If the following Problem window appears, the Slave must PRESS <do>, then PRESS <C> to enter the Configuration mode.

```
Master/Slave mode requires 8 data bits
PROBLEM        Press <do> to Continue
```

In the Configuration file, the "Databits" field must be set to 8. Refer to Chapter eight for more information. After setting the "Databits" field, the secondeary user must start again.

The Slave Screen appears as follows:

CM.II.28

```
┌─────────────────────────────────────────────┐
│  ┌───────────────────────────────────────┐  │
│  │                                       │  │
│  │                                       │  │
│  │                                       │  │
│  │                                       │  │
│  │                                       │  │
│  │                                       │  │
│  └───────────────────────────────────────┘  │
│            Communication Slave Mode          │
├─────────────────────────────────────────────┤
│                                              │
├─────────────────────────────────────────────┤
│               <any key to quit>              │
└─────────────────────────────────────────────┘
```

The secondary user is now the Slave. (To exit the Slave mode, the secondary user (User2) may press any key).

After the secondary user has entered the Slave mode, you may enter the Master mode. To do so, PRESS <M> at the Main Menu. IF the Modem Initialization window appears, press <do>. If you see the "data bits" problem window, you must follow the same correction steps required by the Slave.

Otherwise, if your communications links is operational, and if the secondary computer is in the Slave Mode, the Master screen is displayed as shown below:

```
┌───────────────────────────────────────────┬──────────┐
│ ┌─────────────────────────────────────────┐│          │
│ │                                         ││          │
│ │                                         ││          │
│ │                                         ││          │
│ ├─────────────────────────────────────────┤│          │
│ │         Master Mode Options             ││          │
│ │ Command        : Single_File Batch_Transfer│       │
│ │ From  Machine  : Local    Remote        ││          │
│ │       Volume   : Name                   │├──────────┤
│ │ To    Machine  : Local    Remote        ││          │
│ │       Volume   : Name                   ││          │
│ │                                         ││          │
│ │ <do> <undo> <up> <down> <left> <right>  ││          │
│ └─────────────────────────────────────────┘│          │
└───────────────────────────────────────────┴──────────┘
```

CM.II.29

The following explains the Master Mode Options screen:

Option	Purpose
Command	Selects either Single File or Batch (multiple) file operations.
From Machine	Selects either the local (Master) or remote (Slave) computer for file access.
Volume	Selects the source volume.
To Machine	Selects either the local or remote computer for file reception.
Volume	Selects the destination volume.

By selecting various options, you can use the Master/Slave mode to list, copy and maintain files.

The tutorial begins with Single File operations.

File Listings

The main purpose of Single File operations is to maintain files. However, before maintenance, it is essential to have a list of the files on each disk (volume). To get these lists, you must make selections in the Master Mode Options window as explained below.

    USER: At the "Command" line, make sure "Single_File" is highlighted. (If it is not, press <left>. Then, press <down>).

    CM: "From Machine" is highlighted.

We now have two options, Local or Remote. If you would like a list of your own files, highlight "Local." If you would like a list of Slave's files, press <right> to highlight "Remote."

    USER: Press <down>.

    CM: "Volume" is highlighted and a volume name appears.

If you have chosen Local as your source, then a local volume name will appear. If you have chose Remote as your source, then a remote volume name. Other volumes within the source computer may be selected simply by pressing <left> or <right>.

    USER: Press <down>.

    CM: "To Machine" is highlighted.

"To Machine" represents the destination computer for transferring files. This selection has no effect on file listings, deletions, or changes. Therefore, either "Local," or "Remote" may be selected.

USER: Press <down>.

CM: "Volume" is highlighted and a volume name appears.

USER: Press <do> to accept these settings and display a listing of the selected volume directory as shown below:

```
                    ┌──────────────────────────────────────────────┐
                    │ Name                                         │
                    │                                              │
                    │                                              │
                    │                => NAME4      TYPE1 <=        │
                    │                   NAME2      TYPE2           │
                    │                   NAME1      TYPE2           │
              Mast  │                   NAME3      TYPE1           │
  Command        :  │                                              │
  From  Machine  :  │                                              │
        Volume   :  │                                              │
  To    Machine  :  │ <page><jump> <up> <down> <undo>             │
        Volume   :  │                                              │
        <do> <undo>│ <change><line-ins> <line-del><do>            │
                    └──────────────────────────────────────────────┘
```

The above window lists the files from the selected volume. Press <up> or <down> to display portions of the list outside the window frame.

Notice that the file names are listed randomly. To alphabetize the files grouped by Type, press <search>. To group the files in complete alphabetic order, press <search> again.

From this window, using the commands at the bottom of the screen, you can also delete files and change file names. In addition, with a few adjustments to the Master Mode Option Window, you can copy files to and from the Master and Slave. To begin, let's change a file name.

Note that when displaying, renaming, or deleting file directory entries, you are always looking at a "From Machine" volume which can either be local or remote.

Changing File Names

To rename a file, first access a volume listing as described above. Then follow these steps:

USER: Press <up> and/or <down> to align the file name between the opposing pointers. Press <change>.

CM: The listing disappears, and a new window is displayed at the bottom of your screen as shown below:

```
Change "Volume:Filename" To
Volume:Filename
```

USER: Enter the [new Filename] and press <do>.

CM: The window disappears, the change is briefly displayed, and the file list window reappears, waiting patiently for another command.

Deleting Files

To delete a file:

USER: Access a file listing as described above. Then, press <up> and/or <down> to position the file name between the pointers. Press <line-del>.

CM: A verification prompt appears at the bottom of your screen as shown below:

```
Delete "Volume:Filename"?
```

USER: If you are sure you want to delete this file, press <do>. Otherwise, press <undo>.

CM: The deletion is verified and the file listing window reappears.

Copying Files

Finally, in Single_File mode, files can be copied or transferred. For these operations you must re-adjust the Master Mode Options screen to select one of the following copy combinations:

From Local	To Local
From Local	To Remote
From Remote	To Remote
From Remote	To Local

To begin, access the master Mode Options window. Then, set the options according to the chart below:

— Settings —		
"From Machine"	"To Machine"	Effect
Local	Local	Files are copied with the same volume or files are transferred from one local volume to another.
Local	Remote	Files are transferred from a local volume to a remote volume.
Remote	Remote	Files are copied within the same volume or files are transferred from one remote volume to another.
Remote	Local	Files are transferred from a remote volume to a local volume.

As an example, transfer a file from the local to the remote computer.

USER: Access the Master Mode Options window and make sure the "Command" line is set to "Single File." Press <down>.

CM: "From Machine" is highlighted.

USER: Make sure "Local" is highlighted. If not, press <left>. Press <down>.

CM: A local volume is selected.

USER: Press <down>.

CM: "To Machine" is highlighted.

USER: Press <right>.

CM: "Remote" is highlighted.

USER: Press <down>.

CM: A remote volume is selected.

USER: If the options are correctly set, press <do>.

CM: A window listing the contents of the local volume is displayed.

USER: Press <up> and/or <down> to position a file name between the pointers. Press <line-ins>.

CM: A window appears at the bottom of your screen as shown below:

CM.II.33

```
┌─────────────────────────────┐
│  Copy "Volume:Filename" To  │
└─────────────────────────────┘
```

USER: Press <do> to keep the same file name, or enter a new file name then press <do>.

CM: "Dots" appear across the upper right corner of your screen, and a transfer verification message appears in the upper left. The file listing window then reappears.

Batch Transfer

Batch (multiple file) transfers are similar to Single_File transfers, except files are transferred or copied all at once. Accessing Batch_Transfer is also simple. In fact, only one option in the Master Mode Options window need be changed.

Here's an example.

USER: Press <M> at the Main Menu.

CM: The Master Mode Options window is displayed.

USER: Press <right>.

CM: "Batch_Transfer" is highlighted.

Refer to the following chart to select and setup the additional Master mode options.

——— Settings ———		
"From Machine"	"To Machine"	Effect
Local	Local	Files are copied within the same volume or files are transferred from one local volume to another.
Local	Remote	Files are transferred from a local volume to a remote volume.
Remote	Remote	Files are copied within the same volume or files are transferred from one remote volume to another.
Remote	Local	Files are transferred from a remote volume to a local volume.

After the Master Mode Options Window is set, PRESS <do>. The selected volume files are displayed as shown below:

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```
                        ┌─────────────────────────────┐
                        │ Name │                       │
                        │      │                       │
                        │      │                       │
                        │      │                       │
                        │      │  => NAME4    TYPE1 <=  │
                        │      │     NAME2    TYPE2     │
                        │      │     NAME1    TYPE2     │
                 Mast   │      │     NAME3    TYPE1     │
  Command     :         │      │                       │
  From  Machine  :      │      └───────────────────────┘
        Volume   :      │
  To    Machine  :      │  <page><jump> <up> <down> <undo>
        Volume   :      │         <change><do>
        <do> <undo>     │
└───────────────────────┘
```
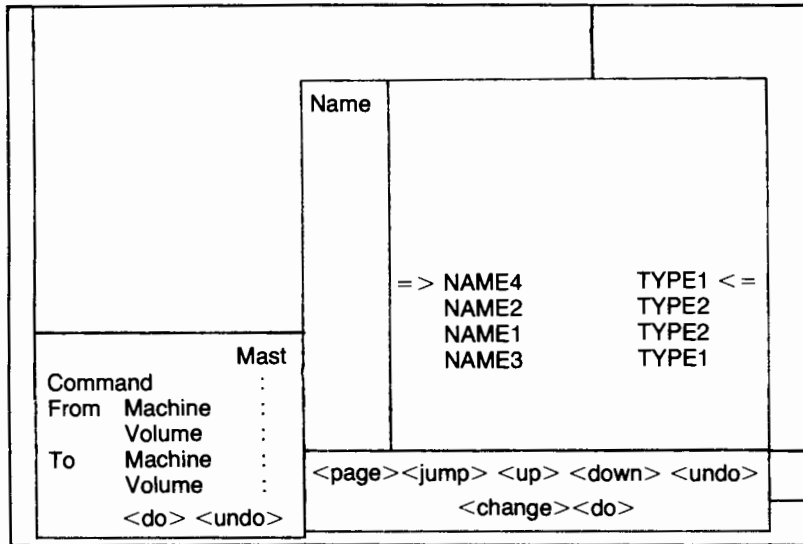
To transfer one or more files, do the following:

USER: Press <up> or <down> to position a file between the pointers. Then press <change>.

CM: The file name is highlighted.

USER: Repeat the above step until every file to be transferred is highlighted. If any files are mistakenly highlighted, reposition the file name between the pointers, then press <change>. When your list is complete, press <do>.

CM: The files are transferred, and the Master Mode Options Screen reappears.

Existing Master/Slave mode

USER1: Press <undo> at the Master Mode Options Window.

CM: The following prompt appears:

```
┌─────────────────────────────┐
│  Unlock the Remote Machine?  │
└─────────────────────────────┘
```

USER1: Press <do> to release the Slave. (If you press <undo> the Slave can still be released by pressing any key at the Slave machine.)

CM: Both the Master and Slave computers return to the Communications Main Menu.

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Chapter 8

Configuration

GOAL: The Configuration mode is used to select and modify new or existing Configuration files. These files store the control signals and user-defined strings required for a particular modem. In this chapter, you'll learn how to create a new Configuration file, select an existing file, and initialize both your serial port and modem.

Introduction

This chapter explains how to configure your system for modems other than the Hayes Smart modem. (If you are using a Hayes Smart modem (1200 baud), you may not need to create another Configuration file).

Accessing Configuration

To begin, PRESS <C> at the Communications Main Menu. The Configuration Menu is displayed as shown below:

```
Communication — Configuration Options

Quit Current_Entries New_Configuration Init_Modem

<arrows> <do> <undo> <menu> <help>

Log_File Up_Load Master Slave

<arrows> <do> <undo> <menu> <help>
```

The following table summarizes the purpose of each of the Configuration Menu selections.

Option	Name	Purpose
C	Current_Entries	Displays the current Configuration file for examination or modification.
N	New_Configuration	Allows you to select and initialize any new or existing modem configuration file.
I	Init_Modem	Initializes both the serial input/output port and the modem with the current Configuration file.
Q	Quit	Returns you to the Communications Main Menu.

If you do not have a Hayes Smart Modem, you will need to create a new configuration file or modify an existing one to "match" your particular modem. Let's create a new Configuration file using the New_Configuration command. To begin, PRESS <N> at the Configuration Menu. Your screen appears as follows:

```
┌──────────────────────────────────────────────────────────┐
│ ┌──────────────────────────────────────────────────────┐ │
│ │                                                      │ │
│ │                                                      │ │
│ │                                                      │ │
│ │                                                      │ │
│ │                                                      │ │
│ │                                                      │ │
│ │                                                      │ │
│ │                                                      │ │
│ ├──────────────────────────────────────────────────────┤ │
│ │        Communication — Configuration Options         │ │
│ ├──────────────────────────────────────────────────────┤ │
│ │  ┌──────────────────────────────────────────────┐    │ │
│ │  │ Enter Configuration file name or < search >  │    │ │
│ │  │       < do >  < undo >  < search >           │    │ │
│ │  └──────────────────────────────────────────────┘    │ │
│ │  ┌──────────────────────────────────────────────────┐ │
│ │  │ <arrows> <do> <undo> <menu> <help>               │ │
│ │  └──────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────────┘
```
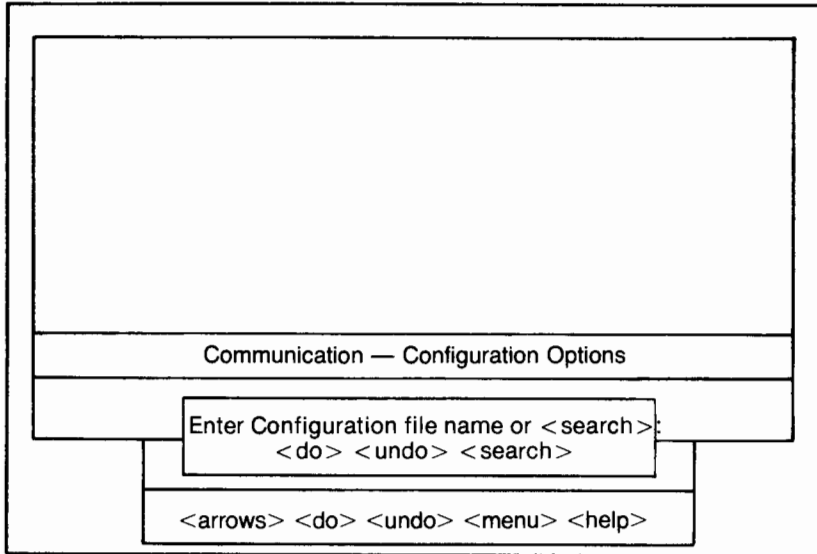
Now, enter a name for your new Configuration file, or select an existing file by pressing <search>. (If you press <search>, press <up> and/or <down> to position a file name between the pointers. Then press <do>.) Press <do> to confirm your selection. After a few moments, the above screen disappears and the Communications Module is initialized to the new file (even if the Configuration file is empty).

If you have created a new file, that file will be blank. You must now use the Current_Entries command to access and update your new file. Press <C> at the Configuration Menu. Your screen displays the first "page" of the Configuration file as shown below:

```
┌─────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────────────────────────────────┐    │
│  │    Communication — Configuration file Maintenance [Filename]│  │
│  │                                                           │    │
│  │  Name of Modem                                            │    │
│  │  Default Logfile Name                                     │    │
│  │  Master/Slave Password                                    │    │
│  │                                                           │    │
│  │                                                           │    │
│  │                                                           │    │
│  │                                                           │    │
│  │   <up> <down> <page> <do> <undo> <menu> <help>            │    │
│  ├──────────────────────────────────────────────────────────┤    │
│  │          Communication — Configuration Options            │    │
│  ├──────────────────────────────────────────────────────────┤    │
│  │    Quit    Current_Entries   New_Configuration   Init_Modem│   │
│  ├──────────────────────────────────────────────────────────┤    │
│  │      <arrows>    <do>    <undo>    <menu>    <help>        │    │
│  │     ┌────────────────────────────────────────────────┐    │    │
│  │     │     Log_File    Up_Load    Master Slave         │    │    │
│  │     ├────────────────────────────────────────────────┤    │    │
│  │     │   <arrows>   <do>    <undo>    <menu>    <help>  │    │    │
└─────────────────────────────────────────────────────────────────┘
```

The following explains the function of the configuration file fields. Remember that every modem does not require every field.

Name of Modem: A user-defined string of up to 39 characters used only for identification. To change this field, simply press <up> or <down> to highlight the field, then enter your modem's name (or any other name).

To change an entry, press <up> and <down> to position the highlight, then enter the change; press <undo> to cancel a change in process.

All other fields, unless otherwise specified, are entered using the same method.

Default Logfile Name: This name of at most 8 characters is used by the program as a default Logfile. You'll see this name appear in the "Enter Log File" window.

Master/Slave Password: Reserved for future Communication Module versions, the password entered in this field will be necessary for communications in the Master/Slave mode.

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After you have entered these first fields, press <down>. The next Configuration file page is displayed as shown below:

```
┌─────────────────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────────────────────────────┐  │
│  │   Communication — Configuration File Maintenance [Filename] │  │
│  │                                                             │  │
│  │  Up_Load Option Configuration                               │  │
│  │                                                             │  │
│  │  Send File Name?        No     Yes                          │  │
│  │  Seq Before File Name                                       │  │
│  │                                                             │  │
│  │  Seq After File Name                                        │  │
│  │                                                             │  │
│  │  User Definable Keys                                        │  │
│  │                                                             │  │
│  │  Break Sequence                                             │  │
│  │  Stop Key Sequence (XOFF)                                   │  │
│  │  Start Key Sequence (XON)                                   │  │
│  │      <up> <down> <page> <do> <undo> <menu> <help>           │  │
│  └───────────────────────────────────────────────────────────┘  │
│           Communication — Configuration Options                  │
├─────────────────────────────────────────────────────────────────┤
│      Quit Current_Entries New_Configuration Init_Modem           │
├─────────────────────────────────────────────────────────────────┤
│             <arrows> <do> <undo> <menu> <help>                   │
│         ┌─────────────────────────────────────────┐             │
│         │      Log_File Up_Load Master Slave        │             │
│         ├─────────────────────────────────────────┤             │
│         │   <arrows> <do> <undo> <menu> <help>      │             │
│         └─────────────────────────────────────────┘             │
└─────────────────────────────────────────────────────────────────┘
```

Up_Load Option Configuration

Send File Name?:   If you choose "Yes," the file name is sent as a text "header" when you use the Up_Load option to send a file to another computer.

Sequence Before File Name: Enter the sequence that will be sent to inform the other computer that you are about to send a file to it. Check your dial-up service guide for the necessary sequence.

Sequence After File Name: If you wish to send the file name as a text header when using the Up_Load option, enter the sequence that will be sent to inform the other computer that the text header is complete, and that file transmission is about to begin. Again, check your dial-up service guide for the necessary sequence.

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User Definable Keys

Break Key Sequence: Enter a sequence to be sent whenever <break> is pressed in Terminal mode. You may wish to enter the command to return your modem to local mode, or you may wish to set this entry to the sequence recognized by the other computer. Check your modem owner's guide and your dial-up service reference for the necessary sequence.

The next two sequences are used with logfile operations to tell a primary computer when to start and stop sending data.

Stop Key Sequence: This sequence tells the primary computer to stop sending data when <stop> is pressed in Terminal mode. This should correspond to XOFF sequence recognized by the other computer.

Start Key Sequence: This sequence tells the primary computer to start sending data when <start> is pressed in Terminal mode. This should correspond to XON sequence recognized by the other computer.

Notice that you have additional Configuration fields stored on a third screen. To access these fields, PRESS <page> or <down> at the end of the second screen. The new screen should appear as follows:

```
┌──────────────────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────────────────────────────┐    │
│  │     Communication — Configuration File Maintenance [Filename] │   │
│  │                                                            │    │
│  │  Data Transmission Configuration                           │    │
│  │  Baudrate:            110  150  300  600  1200  2400  4800  9600 │
│  │  Stopbits:            1    2                                │    │
│  │  Databits:            7    8                                │    │
│  │  Parity:              None  Odd   Even                      │    │
│  │  Duplex:              Half  Full                            │    │
│  │  Delay After Char                                          │    │
│  │  Delay After CR                                            │    │
│  │                                                            │    │
│  │    <up> <down> <page> <do> <undo> <menu> <help>            │    │
│  └───────────────────────────────────────────────────────────┘    │
│          Communication — Configuration Options                     │
├──────────────────────────────────────────────────────────────────┤
│     Quit Current_ Entries New_ Configuration Init_ Modem           │
├──────────────────────────────────────────────────────────────────┤
│         <arrows> <do> <undo> <menu> <help>                         │
│     ┌────────────────────────────────────────────┐                 │
│     │     Log_ File Up_ Load Master Slave        │                 │
│     ├────────────────────────────────────────────┤                 │
│     │     <arrows> <do> <undo> <menu> <help>     │                 │
│     └────────────────────────────────────────────┘                 │
└──────────────────────────────────────────────────────────────────┘
```

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Data Transmission Configuration

Baudrate:

Baudrate is the serial transmission speed of your modem measured in changes per second. (Because your modem has only two possible changes (1 and 0) the baud rate is equal to the bit rate).

Typically, acoustic modems operate at 300 baud, intelligent modems operate at 300 or 1200 baud, and greater speeds are generally restricted to special computer networks. If you are using a 300 baud modem, press <left arrow> until "300" is highlighted, then press <ret>.

The information recorded in these next fields is dependant upon your particular modem. Therefore, you must refer to your modem owner's manual for specific information.

Stopbits:

When data is sent by your Communications Module, a certain amount of information must specify the end of a charcter. Otherwise, your computer would never be able to separate one letter or number from the next. The stopbit(s), therefore, supply this information.

Databits:

This is the number of bits used to represent a character.

Parity:

Parity is an error-detecting code used by your computer to check for transmission errors. A parity bit, appended to the data, counts the number of ones (odd or even) in the data word.

Duplex:

These are the basic rules for data transfer. In half-duplex communications, data can travel in two directions (sending and receiving), but not simultaneously. In full duplex communications, data may travel in both directions at once (e.g. your telephone is full duplex).

Delay After Char:

This is a short delay for inter-character separation. This is, the delay between each character as it is sent to the modem. See your modem owner's manual for details.

Delay After CR:

Whenever a carriage return is received, this delay is produced.

Press <page> or <down> to view the remaining Configuration fields.

```
┌─────────────────────────────────────────────────────────┐
│  ┌────────────────────────────────────────────────────┐ │
│  │  Communication — Configuration File Maintenance [Filename] │
│  │                                                    │ │
│  │ Modem Configuration                                │ │
│  │ Long Delay Char          .                         │ │
│  │ Long Delay                                         │ │
│  │ Short Delay Char                                   │ │
│  │ Short Delay                                        │ │
│  │ Init Sequence                                      │ │
│  │ Answer Sequence                                    │ │
│  │ Dial Sequence                                      │ │
│  │ Sequence After Ph                                  │ │
│  │ Hang up Sequence                                   │ │
│  │ Quit Sequence                                      │ │
│  │                                                    │ │
│  │                                                    │ │
│  │    <up> <down> <page> <do> <undo. <menu> <help>    │ │
│  └────────────────────────────────────────────────────┘ │
│         Communication — Configuration Options            │
├─────────────────────────────────────────────────────────┤
│   Quit Current_Entries New Configuration Init_Modem      │
├─────────────────────────────────────────────────────────┤
│        <arrows> <do> <undo> <menu> <help>                │
├─────────────────────────────────────────────────────────┤
│         │  Log_File Up_Load Master Slave       │         │
│         ├──────────────────────────────────────┤         │
│         │  <arrows> <do> <undo> <menu> <help>  │         │
└─────────────────────────────────────────────────────────┘
```

Modem Configuration

Long delay Char: A character entered here is used in various modem control sequences to produce a long delay (approx. one-tenth of a second or 0.1 second). A good character to use is <~>.

Long delay: An integer entered here tells Communications just how long a long delay should be. For example, if you enter 15, a long delay will approximately 1.5 seconds. (15 x .1) seconds. Delays are often required by intelligent modems for internal processing. Consult your modem owner's manual for specifics.

Short Delay Char: Whenever this character is read by your system, it produces a short delay (about .001 second). This character must be different from the Long Delay Char. A good character to enter here is <->.

Short delay: Similar to the Long delay, this integer tells the program how long a short delay should be. If you were to enter 10, a total short delay would be approximately 0.1 (10 x .001) seconds. Again, refer to your modem owner's manual for specifics.

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This next group of sequences uses the above delay characters along with a few others to send specific messages to your intelligent modem. Consult your modem owner's manual for the specific sequence requirements.

Init Sequence: This sequence of characters is sent out after Communications is started.

Answer sequence: This sequence is sent out by the secondary just before entering the slave mode. This tells its modem to switch from originate to auto-answer mode. Refer to your intelligent modem owner's manual for specific information.

Dial Sequence: This sequence, which includes the dial command, tells your modem a phone number is about to be sent. As usual, this sequnce depends upon your particular intelligent modem.

Sequence After Ph #:   This sequence, concatenated with the Dial Sequence and telephone number, is sent after the phone number. If the Dial Sequence and Sequence After Ph # are left blank, they may be manually entered when dialing a telephone number. Refer to your modem owner's manual for details.

Hang up Sequence: This sequence, as you may suspect, is sent out when Phones Hang-up mode is invoked. This sequence is generally the same as the "Quit" sequence.

Quit Sequence: This sequence is sent out whenever you exit Communications.

Now that you have correctly set the required fields for your particular modem, PRESS <do> to update your Configuration file and return to the Configuration Menu.

You can now initialize your serial input/output port and modem by PRESSING <I> at the Configuration Menu. Your screen appears as shown below:

```
┌─────────────────────────────────────────────────────────────┐
│  ┌────────────────────────────────────────────────────────┐  │
│  │                                                        │  │
│  │                                                        │  │
│  │          ┌──────────────────────────────┐              │  │
│  │          │      Modem Initialization     │              │  │
│  │          │   Verify Modem is Attached     │              │  │
│  │          │   <do>  <undo>  <help>         │              │  │
│  │          └──────────────────────────────┘              │  │
│  │                                                        │  │
│  │                                                        │  │
│  └────────────────────────────────────────────────────────┘  │
│         Communication — Configuration Options                │
├─────────────────────────────────────────────────────────────┤
│      Quit Current_ Entries New Configuration Init_ Modem     │
├─────────────────────────────────────────────────────────────┤
│          <arrows> <do> <undo> <menu> <help>                 │
├──────────┬──────────────────────────────────────┬───────────┤
│          │    Log_ File Up_ Load Master Slave     │           │
│          ├──────────────────────────────────────┤           │
│          │  <arrows> <do> <undo> <menu> <help>   │           │
└──────────┴──────────────────────────────────────┴───────────┘
```

If your modem is connected and ready, press <do>. (If your modem is not connected, press <undo>). The menu disappears and you are returned to the Initialization Menu.

If you were to press <do> without connecting a modem, the Communications Module will wait indefinitely. It is then necessary for you to reinitialize your program.

Press <undo> to return to the Communications Main Menu.

Now that you have completed the Communications User Manual you should be able to efficiently use your communication system to send, receive and modify information. If you have further questions, you can refer to the Reference Manual and Pocket Reference.

O·P·E·N
ACCESS

SOFTWARE PRODUCTS INTERNATIONAL, INC.

TIME MANAGER

VOLUME II — USER'S MANUAL

VOLUME II

TABLE OF CONTENTS

PART TWO: THE OPTIONS

Introduction

This section of the User's Manual introduces you to the Time Manager — an electronic calendar, appointment diary and address book that helps you manage your time easily and efficiently. By following the step-by-step tutorial in the following chapters, you will learn how each of the Time Manager's windows functions to accomplish a variety of appointment-scheduling tasks. By the end of the final lesson, you will have practiced using each Time Management function enough to be able to construct and operate a time management system tailored to your own needs.

The Time Manager User's Manual is divided into two parts. Whether you are a novice or experienced software user, you will find the chapters in Part One informative. Each chapter has been designed as a unit of instruction about one of the basic components of the Time Manager program. The first chapters attempt to reach the most inexperienced software user, but progressively build expertise in using the main concepts and procedures necessary to operate the program.

Chapter One shows you how to access the Time Command window, from which you can access all other commands and functions. In this chapter, you learn the basic procedures for selecting commands, opening and closing windows, and operating function keys.

Chapter Two introduces you to the Calendar and demonstrates some basic procedures for entering and saving data records. The Calendar looks like an ordinary monthly calendar but lasts until the year 1999. You can write notes on it and use its Scratch Pad to organize reminders and messages.

Chapter Three introduces the Daily Appointment Schedule, the 24-hour day-at-a-glance appointment diary, and shows you how to use it to schedule, display and cancel appointments.

Chapter Four demonstrates the Address Card window, where you can record the names, addresses and telephone numbers of your colleagues and associates. The Time Manager keeps them alphabetized automatically.

Once you have mastered using the basic Time Manager components, you are ready for Part Two. These lessons introduce you to some optional features of the Time Manager which help you to use the basic components more efficiently and to tailor its operations to suit your own needs. These chapters presume that you have already gained some expertise in using the basic procedures presented in Part One, but refer you back to specific introductory lessons if necessary.

Chapter Five demonstrates some alternative methods for accessing the Calendar, the Daily Appointment Schedule or the Appointment window quickly, so you can save time when you have a particular scheduling task to accomplish.

Chapter Six shows how to use the Auto-Appointment feature to schedule appointments that occur regularly on a daily, weekly or monthly basis. You enter the details once and let the Time Manager find the exact dates.

Chapter Seven demonstrates how to use the Search option to find appointment information when you have forgotten the date and the time of a meeting.

Chapter Eight shows how to print paper copies of your Appointments, Daily Appointment Schedule and Address Cards.

Chapter Nine illustrates the Hours Mask option. You can customize your Daily Appointment Schedule to warn you whenever you try to schedule an appointment during lunch, or during the time you want to reserve for a special project, or outside your normal working hours.

Chapter Ten demonstrates how to use the Cancel window to cancel a single appointment when you know the date and time, or all your appointments within a given time frame.

Chapter Eleven is for users with more than one person's time to manage. It shows you how to constuct two or more Daily Appointment Schedules that function concurrently to keep track of scheduled appointments and messages.

How to Use this Manual

The User's Manual provides step-by-step instructions for operating the Time Manager. BEFORE using it, please read Volume I: Getting Started, for a general introduction to operating the program on your computer. AFTER you have completed the tutorial and have become familiar with the Time Manager's functions, please refer to the Reference Guide whenever you need to review how a particular window or function operates.

To provide a framework for organizing the material, the Time Manager User's Manual is structured around a fictional office setting   the corporate headquarters of the Stewing Oil Company in Callus, Texas. For the tutorial you become the personal secretary of the president of Stewing Oil, K.R. Stewing. The tutorial follows the course of an average business day, during which you are presented with a number of time management tasks that can be implemented using the Time Manager's functions.

Each chapter is made up of a series of lessons, each of which introduces a new concept or function and demonstrates its use in the context of a particular appointment-scheduling task. The task itself is presented in an hypothetical "Example Situation" that helps you understand the purpose of the procedures that are demonstrated in the lesson or lessons that follow it.

The lessons combine explanatory material and step-by-step instructions presented in the form of a dialogue between you and your computer.

TM: Brief descriptions of relevant aspects of the display on your screen before, during and after a procedure are presented as the Time Manager's (TM) role in the dialogue.

USER: The exact keyboard entries that produce the described results are presented as USER's role in the dialogue.

To complete a lesson, simply duplicate the USER's entries from your keyboard, checking your screen as you go to see that the display on your screen matches the description. While following the dialogues, keep in mind that:

[square brackets] enclose a string of characters that may be entered from your keyboard, for example: [First Lastname], [LA], [101283]. Enter ONLY those characters enclosed in brackets, NOT the brackets themselves.

<angle-brackets> enclose function key entries such as <return>, <do> or <insert>. Press ONLY the single key, NOT the brackets themselves.

DO NOT ENTER the instructions "enter," "press," "move," etc., NOR extraneous punctuation marks.

ENTER ONLY <the key> or [character string] WITHIN the brackets themselves.

The dialogues are constructed so that each one begins from the point at which the last one ended. For this reason, it is important to follow the sequence of lessons as presented. As you become more familiar with the program, however, you will learn that the practical sequencing of procedures is quite flexible.

Each chapter is designed to be learned in one session, ending at a convenient point in terms of the procedures being presented. Each user can proceed at his/her own pace. If you are an experienced software user, you may progress quickly enough to work through more than one chapter in a session. Less experienced users, on the other hand, may prefer to repeat some chapters before going on to the next one. Each chapter accommodates both approaches by offering alternative instructions at the end. You can use the review lesson at the end of each chapter as a guide for practice and testing your own progress.

We hope you enjoy learning how to use the Time Manager.

Chapter 1. The Time Command Window.

GOAL: This chapter introduces the Time Command window. While showing a calendar for the current month, this window functions as a central point from which other Time Manager windows can be displayed. In this chapter, you learn to display the Time Command window, to open and close other windows, and to operate the functions <do>, <undo>, <help> and <calc>.

EXAMPLE SITUATION: K.R. Stewing's efficient private secretary is ready to begin learning how to use the Time Manager. You have already read "Getting Started" and have made back-up copies of your diskettes. The appropriate diskettes are in the disk drives and you have already booted-up. Now you are ready to meet the Time Manager.

```
| WARNING   WARNING   WARNING   WARNING   WARNING |
|                                                  |
| BEFORE PROCEEDING FURTHER, PLEASE MAKE SURE      |
| THAT YOU HAVE MADE A BACK-UP COPY OF YOUR TIME   |
| MANAGER DISKETTE AND HAVE STORED THE ORIGINAL    |
| IN A SAFE PLACE. WORK ONLY WITH A COPY OF THE TIME|
| MANAGER, NOT THE ORIGINAL.                       |
```

1.1. Displaying the Time Command window.

This lesson demonstrates how to display the Time Command window on your screen, and introduces some of its features.

First, access the Time Manager as described in Volume I: Getting Started. When the program has been successfully initialized, your screen looks like this:

```
Open Access — Time Management
(c) 1983 Software Products International Inc.

    Please enter name of owner: _____
```

Notice that the cursor is positioned at the end of the prompt line. A "prompt" is a request for more information, in this case for a name that can be used as an index for

filing and retrieving Time Management data. The first time you enter a particular name, the Time Manager creates a set of data files for storing this individual's appointment schedule. Then, whatever appointment data you enter or change "belong" to this owner." Subsequently, Time Manager uses this name to retrieve existing data files.

Respond to the prompt by entering a name from your keyboard into the "field" (highlighted area) next to the prompt line, as shown in the dialogue below. Notice that the cursor is pointing at the first (left-most) position in the field. Whatever you type in from your keyboard will appear at the cursor position. Don't worry about whether your entries are upper-or lower-case characters; when it matters, the Time Manager converts lower-case entries to uppercase as you type.

TM: The cursor points to the prompt field.

USER: Enter the name of our fictional executive. [K.R. Stewing].

Before proceeding, check to make sure your entry is spelled correctly, so that your computer can retrieve K.R.'s data file again later. Your computer reads different spellings, punctuations and spacings as different names. If you make a mistake in entering the name, press <left> or <right> arrows to space over your entry; then type over the mistakes.

If your entry is not exactly like the one in the dialogue, make a note of it in the margin for your own information. As you become more experienced with using the Time Manager, you might find it useful to keep a log of owner's names for your own reference.

USER: When the entry is correct, press <do>.

TM: The Time Command window is drawn on your screen.

January						1984
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Time-Manager   (c) 1984 Software Products International, Inc.
    Calendar   List   Make   Address   Search   Auto   Cancel
                 Hours   Print   New   Owner   Options

TM.II.2

A "window" consists of a particular screen display and a set of commands or functions that can be operated while that display is on your screen. The Time Command window is unique in that it functions as a central point from which the other Time Manager windows can be accessed, although, as you will see later, some windows can be accessed through other windows as well. Throughout using the Time Manager, the Time Command window provides a point from which you can choose a set of functions to accomplish particular appointment scheduling tasks and to which you can return when a task has been completed.

At the top of your screen is a heading that presents the current month and year, as registered by your computer's dating function. (See "Open Access Shell" for more information).

The middle part of the display resembles an ordinary calendar for the current month. As we proceed, you will see that this part of the screen serves as a frame within which other windows can be displayed.

At the bottom of the screen is the "Time Command Menu," essentially a list of the Time Manager's commands that are available while this window is on your screen. Each command points to a window and each window in turn "looks into" one of Time Manager's data files. When you select a command from the menu, the Time Manager opens the appropriate window on your screen. While that window is open, you can use its function keys to display or modify the data.

1.2. Selecting a Command.

There are two methods of selecting commands from the Time Command window. This lesson demonstrates one of them.

    TM: "Calendar," the first command on the menu, is highlighted.

    USER: Press the <right> and <left> arrows a few times in succession.

    TM: The highlighting moves forward or backward to the next command on the list.

Take a moment to practice moving the highlighting. Notice that the sequencing circles around so that pressing <left> while the first command, "Calendar," is highlighted moves the highlighting to the last item on the menu, "Options, " and that pressing <right> from "Options" moves it back to "Calendar."

In the next dialogue, you select the "Make" command to open the Make-Appointment window.

    USER: Press <left> or <right> until "Make" is highlighted; then press <do>.

TM: The Make-Appointment window opens on your screen inside the
Time Command window.

1.3. Opening a Window

To "open" a window means to display it on your screen so that its unique functions
can be operated. In this lesson, the Appointment window is used as an example to
point out some of the general features of windows. The functioning of the window
will be discussed in another chapter. In the present chapter, we are concerned only
with the mechanics of selecting commands and displaying windows on your screen.

```
January                                                          1984
       Sunday    Monday   Tuesday  Wednesday Thursday   Friday    Saturday

         1         2         3         4        5         6         7

    Date: 1-1-84                              Time: 0:00 -23:55
 8
       With

       Subject
15
       Notes

22
                        Make Appointment
          <arrows>   <edit keys>   <ret>   <do>   <undo>
29

    Time-Manager   (c) 1983 Software Products International, Inc.
       Calendar  List  Make  Address  Search  Auto  Cancel
              Hours  Print  New  Owner  Options
```

First, notice the formatted area within the window "frame." This is the functional
display area of the window, where you enter or display data that are or can be
stored in one of the data files, in this case, the Appointment data file.

You can think of a data file as being similar to an ordinary manila file folder, like
the ones you may have in a desk drawer or file cabinet. Each data file contains a set
of "records" or formatted data configurations like the one displayed on your
screen. Certain fields within the display area are reserved for particular kinds of
information. While a record is displayed in the window, you can use the window's
functions to record, change, store or remove data as described in later lessons.

Second, note the list of <functions> arranged on the "sill" of the window. These are the operations that your computer can perform while this window is open on your screen. The list serves as a builtin reference guide of available options while the window is open.

Each item refers to a particular key on your keyboard. By pressing one of the function keys, you tell the Time Manager which procedure you want performed. Since keyboards vary, a generic term for the function key appears in the list. Please refer to the template in Volume I to find out which key on your keyboard matches the generic term. For the moment, DO NOT attempt to operate any of the function keys.

Finally, note that you can see part of the Time Command window behind the Appointment window. One nice feature of windows is that they can be overlaid, as a frame-within-a-frame as you see here, or in layers, one on top of the other. Here there are only two layers, but in following lessons you will see that even more layers are possible.

The main advantage of being able to overlay windows is that you don't have to remember how the windows are sequenced on your screen to be able to access one of the bottom-layer windows. All you have to do is "close" the top window (or the inside window) to restore the one below it (or behind it) to your screen with all its functions operating again.

1.4. Getting <help>.

Each of Time Manager's windows has a <help> function that displays a brief description of the window's function. You can use <help> whenever you need a reminder of how to proceed. The following dialogue demonstrates how to use <help>.

    TM: The Appointment window is on your screen.

    USER: Press <help>.

    TM: A Help window opens up inside the Appointment window.

January Sunday	Monday	Tuesday	Wednesday	Thrusday	Friday	1984 Saturday
1	2	3	4	5	6	7

Date 1-1-84   Time 0:00 -23:55

With

8   Subject

15   Notes

<div align="center">Make Appointment</div>

22

General Descirption

29   <move keys>: <up> <down> left> <right> <jump up> <jump down>
                <jump right> <jump left> <tab> <back tab>

<edit keys>: <left> <right> <up> <down> <insert> <delete> <return>

<div align="center"><up> <down> <help> <undo></div>

The Help window lists each available function key and briefly describes what it does.

USER: Press <up> or <down> a few times in succession.

TM: The text within the window scrolls up or down, circling around at the top or bottom.

While a Help window is open, you can open a second Help window for a list of the function keys that matches their generic names with particular keys on your keyboard.

USER: Press <help> while the Help window is open.

TM: The function key list opens on top of the Help window. (The representation you see below may not be the same as the one on your screen.)

```
┌─────────────────────────────────────┬──────────────────────────────┐
│ January                             │  — IBMpc Key Setup —         │
│ Sunday    Monday  Tuesday Wednesday Thursday                        │
├───┬─────────┬─────┬─────────┬───────┼──────────────────────────────┤
│ 1 │   2     │  3  │   4     │   5   │ <do>      =   F10            │
│   │ Date  1- 1-84         Time 0:00 -23:53 <undo>   =   <Esc>       │
│   │ With                           │ <help>    =   F1             │
│   │                                │ <menu>    =   F2             │
│ 8 │ Subject                        │ <print>   =   F3             │
│   │                                │ <search>  =   F4             │
│   │ Notes        Computer          │ <change>  =   F6             │
│15 │              Museum            │ <calc>    =   F8             │
│   │                                │ <macro>   =   <Home>         │
├───┤                                ├──────────────────────────────┤
│22 │         MAKE APPOINTMENT       │      Arrow Movement          │
│   │                                │   <arrows>   <undo>          │
├───┤ General Description            └──────────────────────────────┘
│29 │
│   │ <move keys>: <up> <down> <left> <right> <jump up> <jump down>
│   │              <jump right> <jump left> <tab> <back tab>
│   │ <edit keys>: <left> <right> <up> <down> <insert> <delete> <return>
├───┤
│   │        <up>   <down>   <help>   <undo>
└───┴──────────────────────────────────────────────────────────────┘
```

Again, you can use <up> and <down> arrows to scroll the text within the window.

1.5. Using the Calculator.

Suppose, while using Time Manager, you remember that you have to balance your checkbook. Instead of taking out your pocket calculator, you can use the Time Manager's calculator from any open window.

TM: The Appointment window and Help windows are open.

USER: Press <calc>.

TM: The Calculator window opens on the screen on top of the other window(s).

TM.II.7

```
=:                          0.00  |                        |  — IBMpc Key Setup —
   (7)  (8)  (9)  (+)  (C)         | Wednesday   Thursday   |
   (4)  (5)  (6)  (-)  (<)         |                        |  <do>      =   F10
   (1)  (2)  (3)  (*)  (>)         |              5         |  <undo>    =   <Esc>
   (,)  (0)  (.)  (/)  (=)         |                        |  <help>    =   F1
  <change> <back space> <do> <undo>| Time   0:00 -23:53     |  <menu>    =   F2
                                                               <print>   =   F3
                                                               <search>  =   F4
   8    Subject                                                <change> =   F6
        Notes                                                  <calc>    =   F8
  15                                                           <macro>   =   <Home>

                                                              Arrow Movement
  22                     MAKE APPOINTMENT
                                                              <arrows>   <undo>
        General Description
  29
        <move keys>: <up> <down> <left> <right> <jump up> <jump down<
                     <jump right> <jump left> <tab> <back tab>

        <edit keys>: <left> <right> <up> <down> <insert> <delete> <return>

                    <up>  <down>  <help>  <undo>
```

The Calculator works much like a pocket calculator, to perform simple addition, subtraction, multiplication and division. See the "Open Access Shell" in this volume to find out how to use it.

1.6. Closing a window.

When a window is "closed," its display is removed from your screen and its functions are no longer operative. Meanwhile, behind the scenes, certain automatic functions may be carried out depending on the particular window you are using. For example, a record may be saved in a data file or a data file may be updated to reflect changes you have made in the data. The procedure for closing a window WITHOUT affecting a data file is as follows:

TM: The Calculator window is displayed on the screen.

USER: Press <undo> to close the Calculator.

TM: The Calculator disappears from the screen, leaving the help windows intact.

USER: Press <undo> <undo> to close both Help windows.

TM: The Help windows close, restoring the Appointment window.

USER: Press <undo> to close the Appointment window.

TM: The Time Command window is restored to your screen.

Please note that the windows close in reverse order from which they were opened — the last one opened is the first one closed.

Please remember that, in most instances, you can use <undo> either to disengage a function or to close a window without affecting a data file. If, for example, in the course of any of the lessons to follow, you inadvertently press the wrong function key, you can press <undo> to negate it. If you lose your place in the sequence of lessons, or if you decide to start over, you can usually press <undo> to restore the Time Command window to your screen.

1.7. Selecting commands (II)

While the Time Command window is on your screen, you can select a command and open a window by entering the first few characters in the command word — you need to enter just enough characters to distinguish your choice from any other item on the menu. In the following dialogue, you practice using this method to select a few commands.

TM: The Time Command window is on your screen.

USER: Enter [M] to select the "Make" command.

TM: The Make-Appointment window opens on your screen.

USER: Press <undo> to close the window. Then enter [OP] to select "Options."

TM: The Options menu opens on your screen, from which you can select another program.

USER: Press <undo> to close the Options window. Then enter [CAL] to select "Calendar."

TM: The Calendar window opens on your screen.

USER: If you intend to proceed immediately to the next chapter, you can leave the Calendar open. Otherwise, press <undo> to close it.

You can use either this method or the one you learned in Lesson 1.2 to select commands from the Time Command menu. All of the dialogues in this tutorial select commands by highlighting the command word and pressing <do>. Feel free to substitute the character entry method if you prefer.

1.8. Review.

Before proceeding to the next chapter, take a moment to review the main concepts presented so far. If you have mastered the material, you can:

— display the Time Command window.
— define the following terms: prompt, window, command, menu, data file, record.
— select commands from the Time Command Menu.
— open and close a window.
— identify the function keys on your keyboard by their generic names.
— understand what it means to "overlay" windows.
— open and close the Help windows.
— open and close the Calculator.

Once you feel familiar with these concepts, you are ready to proceed to the next chapter.

Chapter 2. The Calendar

GOAL: This chapter introduces the Calendar window and demonstrates some of its special features. At the same time, you are introduced to some procedures for operating function keys and for entering data.

EXAMPLE SITUATION: K.R. likes his secretary to remind him of almost everything he needs to do—from reviewing salaries to calling his mother when he's going to be late for dinner. The lessons in this chapter show you how to use the Calender to keep K.R.'s notes and messages organized.

BEFORE PROCEEDING, follow the steps outlined in the previous chapter, if you have not already done so, to initialize the program and display the Time Command window on your screen.

2.1. Opening the Calendar window.

At the end of the last chapter, you learned how to open the Calendar from the Time Command window. If the Calendar is still open on your screen, you can skip the following dialogue.

TM: The Time Command window is displayed on the screen.

USER: Select "Calendar" from the Time Command Menu; press <do>.

TM: The Calendar window opens on top of the Time Command window.

January						1984
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

< move keys > < page keys > < date > < del > < scratch > < function keys > < do > < undo >

The display on your screen resembles the Time Command window in most respects except that along the "sill" of the window the menu has been replaced by a list of the

Calendar's function keys. The functional display area is now "active" to perform a number of different functions.

The functional display area resembles a conventional calendar. It is divided into a grid of seven daily cells across the screen and six weekly cells down, providing a total of 42 daily cells in which you can write memos and notes. Each of the dated cells is linked to a Scratch Pad, where you can organize notes and messages, and to a Daily Appointment Schedule.

2.2. Displaying past and future calendars.

You can think of each monthly calendar display as a page on an ordinary calendar. When you initialize the program, the Time Manager displays the calendar for the current month. You can use the <page> keys to change the display on your screen from the current month to a past or future one.

> <page down>   displays a future month.
> <page up>   displays a past month.

The lessons in this User's Manual are set in the month of October, 1983. In the following dialogue, you change the calendar display from the current month to October, 1983.

> TM: The calendar for the current month is displayed.
>
> USER: Press <page up> as many times as necessary until the calendar for October, 1983, is displayed.
>
> TM: The Calendar window is ready to be used.

2.3. Using the <move keys>.

The <move keys> are a set of function keys that move the cursor from one point on the Calendar to another, so that you can write memos or select a day for one of the dated calendar functions. This lesson shows you how to use them.

The <move keys> are listed in the table below. Practice using each one a few times until you know what each one does. Refer to your template to identify the appropriate keys on your keyboard.

As you read through the table, press the key shown in angle brackets to move the cursor from its present position to the point described. In practice, <move keys> can be operated in any sequence you wish. There is no danger of moving the cursor outside the calendar display, because an instruction to do so will be ignored.

Key	Movement
<tab>	Forward to the next day's cell. (Press this key several times in succession to move quickly through the calendar.)
<backtab>	Backward to the previous day's cell.
<jump down>	To the bottom row of cells.
<jump up>	To the top row of cells.
<jump right>	To the "Saturday" column.
<jump left>	To the "Sunday" column.
<right>	One space to the right, non-destructively.
<left>	One space to the left, non-destructively.
<up>	One row up.
<down>	One row down.

After you have practiced moving the cursor enough to be able to find your way easily within the calendar, please locate the cursor within the "October 31" cell.

2.4. Writing memos.

You can write memos or notes on the Calendar, just as you would on a conventional calendar. The horizontal lines, the date numerals, and the corners of undated cells are protected, but otherwise you can write wherever and whatever you want.

In the following dialogue, you remind K.R. that his office staff should have their salaries reviewed at the end of this month.

TM: Cursor is located in Oct. 31.

USER: Use <arrows> to position the cursor below the date numeral. Enter [Salary review for office staff].

TM: Memo appears at cursor location.

To make corrections in the text, use <left> and <right> arrows to space non-destructively to the mistake, then type over the error. Use <space> to insert blanks or to delete characters.

TM.II.13

If you are a novice software user, this is an opportunity for you to practice entering text data. Please experiment as much as you wish by moving the cursor to the point on the Calendar display where you want to write a memo, and then typing the text from your keyboard.

After you have written as much as you want on the calendar, proceed to the next lesson.

2.5. Deleting a calendar.

Assuming that you experimented liberally during the preceding lesson, your October Calendar display is almost unrecognizable. You can refresh the display and erase all of your text entries as the following dialogue demonstrates. (Note: you can erase individual text entries by <space>ing over them.)

TM: October calendar display.

USER: Press <delete>.

TM: On your screen, the old calendar dissolves and a new one is drawn for the same month.

Take a moment to re-write some memos on the new calendar. When the display is acceptable, proceed to the next lesson.

2.6. Saving a Calendar.

When a Calendar display has something written on it, the Time Manager automatically saves that display when you press <page up> or <page down>.

TM: The October Calendar, on which a memo has been written, is displayed.

USER: Press <page down>.

TM: The November calendar is displayed.

USER: Press <page up>.

TM: The October Calendar is displayed, still containing the written memo.

When a Calendar is saved, it is stored permanently in the Calendar data file, a file reserved specifically for Calendars on which memos have been written. When you display a saved Calendar, it is presented screen intact and cannot be deleted using the <delete> function. However, you can write more memos, if you wish, and then use the <delete> function to restore the original "saved" version of the Calendar (this principle is demonstrated in a later lesson).

2.7. Using the Scratch Pad.

You have a list of things that K.R. needs to be reminded to do. The list is too long to fit in a cell on the calendar, but does not contain the kinds of things for which he would make an appointment. For each dated cell on a Calendar, there is a Scratch Pad for organizing miscellaneous notes, lists and messages.

TM: The October calendar is displayed on the screen.

USER: Use the <move keys> to move the cursor within the cell for Wednesday, October 12. Press <scratch>.

TM: The Scratch Pad window opens up in the Calendar display area.

```
__October _____ 1983__
|   _____   |
|  |                                                    |  |
|  |  10-12-83                                          |  |
|  |  _____  |  |
|  |  _____  |  |
|  |  _____  |  |
|  |  _____  |  |
|  |  _____  |  |
|  |_____ Scratch Pad _____|  |
|  |____ <arrows>  <edit keys>  <do>  <undo> ____|        |
|                                                          |
|<movekeys><pagekeys><change><date><delete><scratch>|
|_____ <search>  <print>  <do>  <undo> ____|
```
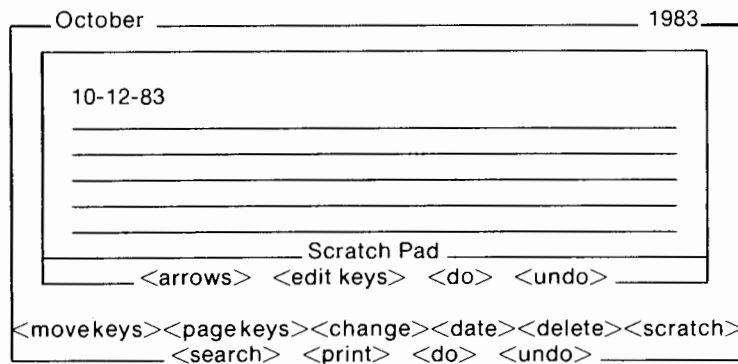
The Scratch Pad provides five data fields into which you can enter any text you wish. In the next lessons, the Scratch Pad window will be used to demonstrate basic text data entry procedures.

2.8. Entering text data into data fields.

A data field is an area within a window that has been reserved for a certain kind of data entry; in the present case for strings of alphanumeric characters. A field is indicated by a highlighted area on your screen.

To enter text into a field, use <up> or <down> arrows to move the cursor to the left-most position in the field; then enter the characters from your keyboard. Press <return> to accept the text and move the cursor to the next data field. This basic data entry procedure is demonstrated in the following dialogue.

TM: The cursor is positioned at the first field.

USER: Enter [Review the new contracts]; press <return>.

TM: The highlighting turns off and the cursor points to the second field.

USER: Enter [Call Mom.]; press <return>.

TM: The highlighting turns off and the cursor moves to the third data field.

2.9. Using the <arrows> and <edit keys>.

The <arrows> and <edit keys> operate during data entry to move the cursor from one field to another or to correct mistakes in existing text. The table below describes how each of these keys functions while the cursor is located WITHIN a data field. Please review the table before attempting the practice dialogue.

<arrows>

<left>   moves the cursor non-destructively one space to the left of its current position.

<right>   moves the cursor non-destructively one space to the right of its current position.

<up>   accepts an entry and moves the cursor up to the next data field.

<down>   accepts an entry and moves the cursor down to the next data field.

<edit keys>

<insert>   within a data field, inserts a space at the cursor's location, moving the remainder of the text one space right.

<delete>   deletes a space or character at the cursor's location, moving the remainder of the text one space left.

<return>   accepts (saves) an entry and moves the cursor forward (right or down) to the next data field.

Note that the function keys defined here as <edit keys> can function differently in other contexts. For example, you have already seen <delete> used to delete a calendar. Nevertheless, the function of a key is never ambiguous. When <edit keys> are included on the function list of a window, the keys listed above function in the "edit mode" described here. When the individual generic term (for example, <insert>) appears on a function list, the key functions in some other way (for example, to insert a record in a data file).

The following demonstrates how to correct a misspelling using the <arrows> and <edit keys>.

TM: The cursor points to the third Scratch Pad field.

USER: Enter a misspelled word [MMISPELLED WARD]. Press <left> until the cursor points to "M". Press <delete>.

TM: "MISPELLED WARD".

USER: Press <right> until cursor points at "P". Press <insert>.

TM: "MIS PELLED WARD".

USER: Enter [S].

TM: "MISSPELLED WARD".

USER: Press <right> until cursor points to "A". Enter [O].

TM: "MISSPELLED WORD".

USER: Press <return>.

TM: The field highlighting turns off and the cursor moves to the fourth data field.

2.10. Overwriting data fields.

If you want to change a data entry after it has been accepted, you can use <arrows> to position the cursor, and then type over the existing entry. In the following dialogue, you replace your "misspelled word" with another note for K.R.

TM: Cursor points to fourth data field.

USER: Press <up>.

TM: Cursor points to third data field.

USER: Enter [Prepare for meeting with Robby].

TM: The first character entry (P) in the field erases the existing entry, leaving a blank field for new text.

USER: Press <up>to accept the entry.

TM: The cursor moves up to the second data field, "call Mom."

Before an entry is accepted (before you press <return>, <up> or <down>), you can use <undo> to repair an original entry after overwriting it, as demonstrated.

USER: Enter [XXXXX] over "call Mom;" then press <undo>.

TM: "call Mom" is repaired.

You can use <return>, <up> or <down> to move the cursor from one field to another without making any changes in your entries. In the following dialogue, you practice using these keys to move the cursor between data fields.

USER: Press either <return> or <down> to move the cursor to the next field. Press <return> or <down> again to leave that field without changing it.

TM: The cursor points to the fourth field.

USER: Press <return> or <down> to leave the field blank.

TM: The cursor points to the fifth field.

At the last data field in a window, you can use <return> or <down> to move the cursor back to the first field. At the first field, you can use <up> to move the cursor to the last field. This is shown in the following dialogue.

TM: The cursor points to the fifth field.

USER: Press <return> or <down>.

TM: The cursor points to the first field.

USER: Press <up>.

TM: The cursor points to the last field.

Before proceeding to the next lesson, take a moment to review the data entry procedures presented in Lessons 2.8, 2.9 and 2.10. Use the Scratch Pad to practice entering data. What you enter on the Scratch Pad is not critical to Time Manager's functioning, but these procedures are used later, while entering more important data. Taking the time to become familiar with these keys will save effort later on.

2.11. Saving a Scratch Pad.

This lesson uses the Scratch Pad to demonstrate how to close a window in which you have entered data. The procedure to use depends on whether or not you want to save the data you have entered. When a Scratch Pad (or other data entry window) is "saved," it is permanently stored in a data file reserved specifically for that purpose. Once a record is saved, you can retrieve it when you need to see or change the data.

In the following dialogue, you save the Scratch Pad on which you have been practicing data entry procedures.

TM: The cursor points to any data field, highlighting on or off.

USER: Press <do>.

TM: The Scratch Pad window closes and the Calendar window is restored. Behind the scenes, the Time Manager has filed this Scatch Pad in a data file, so that it can be retrieved at a later time.

USER: While the cursor is still in the same cell of the Calendar, press <scratch>.

TM: The Scratch Pad opens, displaying the saved entry.

In the next dialogue, you overwrite one of the Scratch Pad fields and then choose not to save the changed version.

TM: The cursor points to the first field.

USER: Enter [XXXXXX]; press <return>.

TM: The change is accepted and the cursor moves to the next field.

USER: Press <undo>.

TM: The Scratch Pad closes, and the Calendar window is restored to the screen.

USER: While the cursor is in the same cell, press <scratch>.

TM: The Scratch Pad opens, displaying the original record.

As you see, the original "saved" version of this Scratch Pad is intact, while the "unsaved" version no longer exists. When you save a record, Time Manager keeps that version of the record until you save another version of the same record. This is demonstrated in the next dialogue.

TM: The cursor points to the first field.

USER: Enter [XXXXX]; press <do>.

TM: The Scratch Pad closes, restoring the Calendar.

USER: While the cursor is in the same cell, press <scratch>.

TM: The Scratch Pad opens, displaying the last saved version.

Time Manager has kept the last "saved" version of the record instead of the original one.

When you are ready to proceed to the next lesson, close the Scratch Pad by pressing either <do> or <undo>.

2.12. Closing the Calendar window.

If you intend to proceed immediately with the next lesson, leave the Calendar window open. However, if you end this session now, close the Calendar window before leaving Time Manager.

While closing the window, you can decide whether or not you want to save the display on your screen: if you have written notes on the display and haven't yet saved it (see Lesson 2.6), you can do so as shown in the next dialogue.

TM: The Calendar window is displayed on your screen.

USER: Press <do>.

TM: The Time Command window is restored to the screen. Behind the scenes, the Calendar that was on the screen has been saved.

Note that whether you use <do> or <undo> to close the Calendar, the Scratch Pads and other Calendars you have already saved are unaffected. That is, even if you use <undo> to close the window, your saved records remain saved.

As the Time Command window returns to your screen, you can see that the Calendar that was displayed when you closed the window remains on the screen, providing you with continuous access to your written messages.

2.13. Review

Before proceeding to the next chapter, take a moment to review the basic concepts and procedures presented in this chapter. If you have mastered these lessons, you can:

- open the Calendar window;
- use the <move keys> to locate the cursor anywhere on the calendar display;
- use the <page keys> to display past and future calendars on your screen and to save written-on displays;
- <delete> a messed-up Calendar;
- use <scratch> to open a Scratch Pad;
- use the <edit keys> to enter data into a text data field;
- use <do> to save a Scratch Pad or a Calendar;
- use <undo> to repair a data field or a record.

Chapter 3. The Daily Appointment Schedule

GOAL: This chapter introduces two of the major features of the Time Manager program: the Daily Appointment Schedule and the Appointment window. The Daily Appointment Schedule is a listing of your scheduled appointments for one day. The Appointment window is formatted for entering or displaying appointment information. In this chapter, the use of these two windows to create, display and delete appointment entries is shown.

EXAMPLE SITUATION: The date is October 12, 1983. The place is the executive suite of the Stewing Oil Company's corporate headquarters. K.R.'s busy secretary wants to use the Time Manager to schedule K.R.'s appointments for the busy day ahead of him. In the following lessons, you build on what you have already learned to schedule appointments and operate the Daily Appointment Schedule.

3.1 Opening the Daily Appointment Schedule window.

This lesson shows you how to open the Daily Appointment Schedule window and then introduces you to some of its features.

BEFORE PROCEEDING, if you haven't already done so, please follow the steps outlined in the preceding chapters to display the October, 1983, Calendar window on your screen, that is:

1. Initialize the program.
2. Display the Time Command window.
3. Open the Calendar window.
4. Page the display to October, 1983.

Now, you can open the Daily Appointment Schedule for Wednesday, October 12, by following this dialogue.

TM: The October Calendar window is open.

USER: Use the <move keys> to locate the cursor in the October 12 cell. Press <search>.

TM: The Daily Appointment Schedule opens up on top of the Calendar window.

```
┌─────────────────────────────────────────────────────────────┐
│                                                             │
│  October 12              K. R. Stewing              1983    │
│                                                             │
│     6:00 _____        9:00 _____            │
│     6:30 _____        9:30 _____            │
│     7:00 _____       10:00 _____            │
│     7:30 _____       10:30 _____            │
│     8:00 _____       11:00 _____            │
│     8:30 _____       11:30 _____            │
│                                                             │
│ ─────────────── Daily Appointment Schedule ────────────     │
│ ──<page><arrows><next><insert><delete><search><print><undo>──│
└─────────────────────────────────────────────────────────────┘
```

The Daily Appointment Schedule shows you when and with whom you have
scheduled appointments for a day. At the top of your screen is a heading which
presents the date of this schedule and its owner's name. The functional display area
of this window presents two columns of "time slots". (This representation of your
screen display has been shortened for demonstration purposes. The display on your
screen has time slots for every ten minutes: 6:00, 6:10, 6:20, 6:30, etc., up until
11:50.) When an appointment has been scheduled in a time slot, the name of the
person with whom you will meet is displayed where you now see blank lines.

Along the "sill" of the window is a list of function keys you can operate while this
display is on your screen. These are demonstrated in the following lessons.

3.2. Selecting a time slot.

Before you can create, display or delete entries to the Daily Appointment Schedule,
you must position the cursor in the appropriate time slot. The <page keys> and
<arrows> operate the screen display and cursor movements, as follows.

The <page keys> change the screen display so that earlier or later time slots are
displayed. Looking at your screen, you see that the Daily Appointment Schedule
now lists time slots for times between 6:00 and 11:50. There are four pages, similar
to the one on your screen, that can be displayed.

    <page up>   displays time slots earlier than those on your screen.

    <page down>   displays time slots later than those on your screen.

Take a moment to display all four pages of the Daily Appointment Schedule by
pressing <page up> and <page down>. Notice that, at the first and last pages of
time slots, the display sequence circles around so that the first page follows the last
one (and vice versa). Finally, return the display to the page containing the time slots
between 6:00 and 11:50.

Once you have displayed the appropriate page of time slots, you can use the <arrows> to move the cursor up, down, left or right to the time slot you want to select. Please take a moment to practice moving the cursor. Then, to prepare for the next lesson, select the 10:00 time slot as shown in the following dialogue.

TM: The screen displays time slots between 6:00 and 11:50, and the cursor points at 6:00.

USER: Press <right> to move the cursor to the right-hand column, then press <down> until the cursor points to 10:00.

TM: The 10:00 time slot is selected.

3.3. Scheduling new appointments.

EXAMPLE SITUATION: K.R.'s first appointment for today is with his brother Robby Stewing, the vice-president of Stewing Oil, at 10:00 this morning. The next three lessons demonstrate how to schedule this appointment.

TM: The cursor is positioned in the 10:00 time slot.

USER: Press <insert>.

TM: A display like the following opens up inside the Daily Appointment Schedule:

```
┌─────────────────────────────────────────────────────────────┐
│  October 12              K.R. Stewing              1983       │
│  ┌─────────────────────────────────────────────────────────┐ │
│  │  Date: 10-12-83                     Time: 10:00 - 23:55  │ │
│  │                                                         │ │
│  │  WITH:        _____  │ │
│  │                                                         │ │
│  │  SUBJECT:     _____  │ │
│  │                                                         │ │
│  │  NOTES:       _____  │ │
│  │               _____  │ │
│  │  _____ Make Appointment _____ │ │
│  │   ──── <arrows>  <edit keys>  <ret>  <do>  <undo> ────   │ │
│  │_____ Daily Appointment Schedule _____│ │
│  ── < page keys > < arrows > < next > < insert > < search > < print > < delete > < undo > ── │
└─────────────────────────────────────────────────────────────┘
```

TM.11.23

This is the Appointment window. As you recall from Chapter 1, it is formatted so you can enter appointment data from your keyboard using the function keys listed along the "sill" of the window. Data entry procedures are demonstrated in the next lesson.

3.4. Entering Appointment Data.

This lesson takes each of the Appointment data fields in turn, discussing the kinds of data that can be entered in each field and then demonstrating how to enter data.

You have already learned how to enter text data in Chapter 2 (see Lessons 2.8, 2.9, 2.10, and 2.11). The same procedures can be used to enter data into the text fields of this window.

Please note that procedures for entering numeric data are slightly different from those with which you are familiar. Special procedures for entering time data are outlined below.

```
┌──────────────────────────────────────────────────┐
│                                                    │
│                   Date: 10-12-83                   │
│                                                    │
│                                                    │
└──────────────────────────────────────────────────┘
```

The Date field records the date in mm-dd-yy format (where mm=month, dd=day, and yy=year). Here it already contains a date coinciding with the date of the Daily Appointment Schedule, and is blocked against further data entries.

```
┌──────────────────────────────────────────────────┐
│                                                    │
│                 Time: 10:00 - 23:55                │
│                                                    │
│                                                    │
└──────────────────────────────────────────────────┘
```

The Time fields record the Start-time and End-time of this appointment. The Start-time coincides with the time slot you chose on the Daily Appointment Schedule, and is blocked against further data entries. Both Time fields represent the time in hh:mm format, where hh = hour, based on a 24-hour clock, and where mm = minutes after the hour.

You can see that the End-time field already records a default value, 23:55. In the following, you replace the default value with a new value, 10:45. First, to demonstrate the error-protection features that apply to this field, you attempt to enter some unacceptable times. Error-protection features prevent acceptance of Time entries that do not meet certain criteria.

    TM: The cursor points to the End-time field.

USER: Enter [1005]; press <return>.

TM: The cursor moves back to the End-time hours position (the End-time value must be at least ten minutes later than the Start-time value).

USER: Enter [2400]; press <return>.

TM: The cursor moves back to the End-time hours position (a Time value must be less than or equal to 23:55).

USER: Enter [1033]; press <return>.

TM: The Time entry is changed to read 10:30; the cursor moves to the With field (minutes field entries are rounded down to the nearest five-minute interval).

USER: Press <up> to move the cursor to the End-time field. Press <tab> to move the cursor to the minutes field. Enter [60], press <return>.

TM: The cursor moves back to the End-time hours position (the minutes value must be no larger than 55).

USER: Press <tab> to move the cursor to the minutes field. Enter [45]; then press <return>.

TM: The field highlighting turns off and the cursor moves to the With field (the time 10:45 meets all error-protection criteria).

Note that you can use <tab>, <backtab>, <left> and <right> to space nondestructively over existing Time Entries.

```
With: _____
```

The WITH field is a text field (alphabetic characters are acceptable) for recording the name of the person or group with whom the appointment is scheduled. As you will see, whatever you enter in this field will be entered in the time slot on the Daily Appointment Schedule.

Error-protection in this field is minimal. Your entry is blocked only if you attempt to type in too many characters. Remember that you can use <edit keys> within text fields to make corrections.

TM: Cursor is positioned at the start of the With field.

USER: Enter [Robby Stewing]; press <return>.

TM: The field highlighting turns off and the cursor moves to the next data field, Subject.

```
┌─────────────────────────────────────────────────────┐
│                                                     │
│   Subject: _____    │
│                                                     │
└─────────────────────────────────────────────────────┘
```

The SUBJECT field is a text field for recording the topic of this appointment. Later, this field may be used to retrieve this appointment for display.

TM: Cursor points to Subject field.

USER: Enter [contracts]; press <return>.

TM: The field highlighting is turned off and the cursor moves to the next field.

```
┌─────────────────────────────────────────────────────┐
│                                                     │
│   Notes: _____    │
│          _____    │
│                                                     │
└─────────────────────────────────────────────────────┘
```

The NOTES field is a text field that is intended for short notes about this appointment entry. You can use it, for example, to note the address of a rendez-vous or to remind yourself to bring special documents or equipment.

In this case, you need to remind K.R. that the contracts he needs for this meeting are still being prepared by the typist.

TM: Cursor points at Notes field.

USER: Enter [get file from typist]; press <return>.

TM: Cursor moves to the second line of the field.

At this point, you can make changes in any of the data fields: use <up> or <down> to move the cursor to the appropriate field; use <edit keys> within text data fields to help make corrections.

3.5. Saving an Appointment.

Having completed entering data into the Appointment window, you can save this Appointment in a permanent data file and schedule it in the Daily Appointment Schedule.

TM: The cursor points to any accepted data field.

USER: Press <do> to save the Appointment. (Or, in cases of irreparable
        errors, for example, if you have suddenly realized that this appoint-
        ment should be scheduled at another date or time, press <undo> to
        revoke scheduling.)

TM: On the screen, the Appointment window closes and the Daily
        Appointment Schedule is redrawn to include the new entry.

Behind the scenes, the Appointment record that was displayed in the window has
been inserted into the Appointment data file. In addition, the Daily Appointment
Schedule is updated automatically to include the new appointment.

```
┌─────────────────────────────────────────────────────────────────┐
│  October 12              K.R. Stewing              1983           │
│                                                                   │
│  6:00 _____       9:00 _____                │
│  6:30 _____       9:30 _____                │
│  7:00 _____      10:00 Robby Stewing                   │
│  7:30 _____      10:30 _____                │
│  8:00 _____      11:00 _____                │
│  8:30 _____      11:30 _____                │
│                                                                   │
│  _____ Daily Appointment Schedule _____       │
│  ___<page> <arrows> <next> <insert> <delete> <search> <undo>___   │
└─────────────────────────────────────────────────────────────────┘
```

On your screen, as the Daily Appointment Schedule is reconstructed, you can see
that the appointment you just entered is listed in the 10:00 time slot. The name you
entered in the With field, "Robby Stewing," has been inserted at 10:00.

3.6. Rescheduling appointments.

EXAMPLE SITUATION: While reviewing the new contracts that he planned to
discuss with his brother Robby, K.R. has found a number of problems that he
prefers to discuss with his lawyer, Calvin Calhoun, before he talks to Robby. He
has asked you to move his appointment with Robby to 14:00 (2:00 pm) and to
schedule Calvin at 10:00.

TM: The Daily Appointment Schedule is displayed.

USER: Select the 10:00 time slot, press <search>.

TM: The Appointment window opens, displaying the 10:00 appointment
        with Robby Stewing.

Now you can proceed to overwrite any of the TEXT data fields. Remember that the <edit keys> can be used to make corrections within a data field.

TM: Cursor points to "Robby Stewing."

USER: Enter [Cal Calhoun]. Press <return> or <down> until the cursor points to the Notes field. Enter [private meeting, don't tell Robby]. Press <do> to save the changed entry.

TM: The Appointment window closes. The Daily Appointment Schedule now displays "Cal Calhoun" in the 10:00 time slot.

Next, re-enter the appointment with Robby Stewing at the 14:00 time slot, using the same procedures you have already learned.

3.7. Scheduling Overlapping Appointments.

EXAMPLE SITUATION: Senator Rex Texan has just telephoned from Washington. He is flying to Texas today and wants to meet K.R. this afternoon at 14:00 regarding an important investigation into K.R.'s business activities. There is already an appointment scheduled at that time with Robby Stewing, but you feel almost certain you can change it again.

USER: Select the 14:00 time slot (where "Robby Stewing" has been entered), press <insert>.

TM: The Appointment window opens, displaying a blank Appointment form.

USER: Enter the End-time, With, Subject and Notes data as usual. Press <do> to save the appointment.

TM: A prompt appears in the Appointment window.

```
There is already an appointment in this time slot. Continue?
```

This prompt appears whenever you attempt to schedule an appointment whose time entries overlap with those of a previously scheduled one. If the latter appointment is tentative or unconfirmed, you can choose to schedule one or more appointments simultaneously.

USER: Press <do> to schedule an overlapping appointment.

TM: The Appointment window closes. The Daily Appointment Schedule is
        updated to include the new appointment.

```
┌─────────────────────────────────────────────────────────────────────┐
│  October 12              K.R. Stewing              1983              │
│                                                                     │
│  12:00 _____            15:00 _____               │
│  12:30 _____            15:30 _____               │
│  13:00 _____            16:00 _____               │
│  13:30 _____            16:30 _____               │
│  14:00 Robby Stewing      +      17:00 _____               │
│  14:30 _____            17:30 _____               │
│                                                                     │
│  _____ Daily Appointment Schedule _____       │
│ ─ <page> <arrows> <next> <insert> <delete> <search> <print> <undo> ─│
└─────────────────────────────────────────────────────────────────────┘
```

On your screen, a plus (+) has been placed next to the 14:00 entry to indicate that
there is more than one appointment scheduled in that time slot. Please note that the
plus appears only when the Start-times of overlapping appointments are identical.

3.8. Displaying Overlapping Appointments

In this lesson, selection and display of overlapping appointments is shown.

USER: Locate the cursor in the 14:00 time slot.

TM: Time slot entry is "Robby Stewing."

USER: Press <next>.

TM: The time slot entry is "Rex Texan."

As you can see, <next> displays the next name in the time slot when there is a plus
(+) next to the time slot.

USER: While "Rex Texan" is displayed, press <search>.

TM: The Appointment window opens, displaying the appointment with
        Rex Texan.

USER: Press <undo> to close the Appointment window.

TM: The Daily Appointment Schedule is restored.

Here, use <undo> to close the window because you have not changed any of the
Appointment data. While the window is open, you can change any of the text data
fields (as demonstrated in Lesson 3.6) and use <do> to save the changed
Appointment.

TM.11.29

3.9. Cancelling appointments.

EXAMPLE SITUATION: Because of the arrival of Senator Texan, K.R. wants to postpone indefinitely his meeting with his brother Robby. In the following dialogue, you cancel his 14:00 appointment.

TM: The Daily Appointment Schedule is displayed.

USER: Select the 14:00 time slot, press <next> to display "Robby Stewing," then press <delete>.

TM: The Appointment window opens, displaying the selected Appointment. At the bottom of the display area of the window is a prompt:

```
┌──────────────────────────────────────────────┐
│                                              │
│           Confirm Appointment Deletion       │
│                                              │
│                                              │
└──────────────────────────────────────────────┘
```

USER: Press <do> to continue the cancellation.

TM: The Appointment window closes. The appointment is deleted from the Appointment file and the name "Robby Stewing" is removed from the time slot on the Daily Appointment Schedule.

```
┌──────────────────────────────────────────────────────────────┐
│  October 12              K.R. Stewing              1983       │
│                                                               │
│    12:00_____      15:00_____           │
│    12:30_____      15:30_____           │
│    13:00_____      16:00_____           │
│    13:30_____      16:30_____           │
│    14:00 Rex Texan            17:00_____           │
│    14:30_____      17:30_____           │
│                                                               │
│  ──────────────── Daily Appointment Schedule ─────────────    │
│  <page> <arrows> <next> <insert> <delete> <search> <print> <undo> │
└──────────────────────────────────────────────────────────────┘
```

As you can see, the marker (+) has been removed from the 14:00 time slot. If you press <next>, you find that "Robby Stewing" is no longer in the slot.

3.10. Closing the Daily Appointment Schedule.

Before proceeding, you can take some time to review the lessons in this chapter and to practice scheduling, changing and cancelling appointments. When you are ready, close the Daily Appointment Schedule as demonstrated in the following dialogue.

TM: The Daily Appointment Schedule window is displayed on your screen.

USER: Press <undo>.

TM: The Daily Appointment Schedule dissolves, leaving the Calendar window on your screen.

While the window is closing, Time Management saves the Daily Appointment Schedule and your appointment entries so that they can be displayed at a later time.

USER: Press <undo> to close the Calendar window.

TM: The Time Command window is restored to your screen.

3.11. Review.

Before proceeding to the next chapter, please take a moment to review the procedures and concepts presented in this chapter. The preceding dialogues have demonstrated the basic procedures for operating the Daily Appointment Schedule. The following chapters will elaborate on these procedures and will often refer back to them.

If you have mastered the material presented here, you can:

— use <page keys> to advance the Daily Appointment Schedule display;
— use <arrows> to select a time slot;
— use <insert> to schedule new appointments;
— use <search> to display or change appointments;
— use <next> to show overlapping appointments;
— use <delete> to cancel appointments;
— use <do> to save an appointment;
— use <undo> to close the Appointment window or the Daily Appointment Schedule.

Chapter 4. The Address Cards

GOAL: This chapter introduces the Address window, the component of the Time Manager that resembles a conventional address card file. The following lessons demonstrate how to create new Address Cards and how to find, display, change or delete existing ones.

EXAMPLE SITUATION: K.R. Stewing hates to dial his own telephone, so he relies on his reliable secretary to make his calls for him. The lessons in this chapter show you how to use the Address window to organize the addresses and phone numbers of K.R.'s business associates. As you will see, the Time Manager does the searching and alphabetizing for you.

BEFORE PROCEEDING, if you have not already done so, display the Time Command window on your screen by following the steps presented in Chapter One.

4.1. Opening the Address window

This lesson demonstrates how to open the address window and then introduces some of its features.

TM: The Time command window is on your screen.

USER: Select "Address" from the Time Command list, press < do > .

TM: A display like the one below opens up inside the Time Command window.

```
┌─October ──────────────────────────────── 1983─┐
│  ┌──────────────────────────────────────────┐ │
│  │                                          │ │
│  │   Get which name?_____    │ │
│  ├──────────────────────────────────────────┤ │
│  │                                          │ │
│  │                                          │ │
│  │ ──────────────── Address Card ────────── │ │
│  │ ──────────── <do> <undo> ─────────────── │ │
│  └──────────────────────────────────────────┘ │
│  ──────────────── Time Command Menu ────────── │
└────────────────────────────────────────────────┘
```
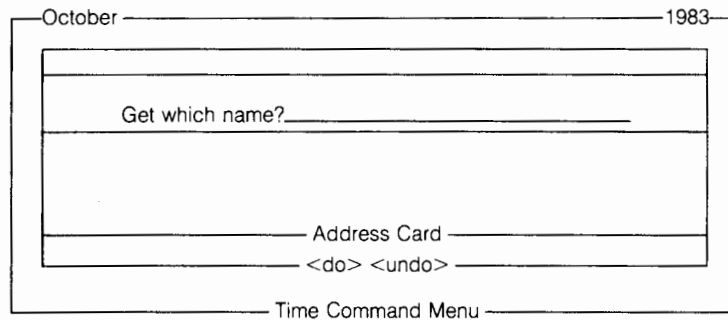
This is the Address window. Inside its frame there are two distinct "panes." One is the display pane, the empty area delimited by a frame on your screen. As we proceed, you will see that this pane functions to display a formatted Address Card within which you can enter, display, change or delete address data.

The second pane, located above the display pane on your screen is the directory pane where the prompt, "Get which name?," appears at the moment. As you proceed you will see that an alphabetical index of the names in the Address Card file will be displayed in this space.

As usual, along the "sill" of the window is a list of function keys that can be operated while this window is displayed.

4.2. Creating the First Address Card

When the Address Card file is empty, as it is now, the procedure for accessing the appropriate display is slightly different from the one that would be followed under "normal" circumstances. The following dialogue demonstrates how to create the first Address Card entry.

TM: "Get which name?"

USER: Press <do>.

TM: A prompt appears in the directory pane

No records in data file. Press <do> to insert new card or <undo> to exit.

This prompt appears whenever you attempt to access or close the Address window while the Address Card data file is empty. If by chance your data file is not empty, please see Lesson 4.8 before continuing.

USER: Press <do>.

TM: An Address Card formatted for data entry opens inside the display pane.

```
┌─October──────────────────────────────────1983─┐
│                                                │
│   ┌────────────────────────────────────────┐  │
│   │ Name: _____ │  │
│   │ Address: _____ │  │
│   │ _____  │  │
│   │ _____  │  │
│   │ _____  │  │
│   │ Phone: Home:_____ Business:_____ │  │
│   └──────────── Insert Address Card ───────┘  │
│          <arrows> <edit keys> <do> <undo>      │
│                                                │
└─────────────── Time command Menu ─────────────┘
```

TM.II.33

As you can see, there are five data fields for recording the name and address of a business associate and two fields for recording home and business telephone numbers. The next lesson revues data entry procedures.

4.3. Entering Address Data

EXAMPLE SITUATION: You want your first Address Card to record the home address and telephone number of your boss, K.R. Stewing.

This lesson review the procedures for entering address information. All of the Address Card data fields are text fields, so you can use the standard data entry procedures that you learned in Chapter Two.

Name: _____

The Name field records a person's name or any other text you want to appear in the Address Card directory. The entry will be sorted alphabetically on the first, secondly, third, etc. characters in the field. Please remember that your computer will read different spellings and punctuations as different names and sort them accordingly.

If this field is left blank, it can appear as a blank (or not appear) in the directory. To avoid problems, DO NOT LEAVE THIS FIELD BLANK.

TM: "Address:"

USER: Enter [Stewing, K.R.], press <return>.

The next four lines of the Address box can be used for whatever address information you wish. In the following dialogue, you enter K.R.'s business reference and home address.

TM: Cursor point to second Address line.

USER: Enter [Stewing Oil Company]; press <return>.
         Enter [Southspoon Ranch. RFD 2]; press <return>.
         Enter [Callus, Texas 89898]; press <return>, <return>.

TM: The cursor points to the Phone line.

Phone: Home _____ Business: _____

TM.II.34

These two fields record home and business telephone numbers. In the following dialogue, you enter K.R.'s home phone number and leave the "business" field blank.

TM: "Phone: Home:"

USER: Enter [999/555-1212]; press <return>.

Please review your data entries for mistakes. If necessary, you can use the <edit keys> and <arrows> while making revisions.

4.4. Saving an Address Card.

This lesson demonstrates how to save a new address Card. When an Address Card is "saved," it is permanently stored in the Address Card data file and its NAME field is inserted in the directory in alphabetic order.

TM: The cursor points to the phone field or any other data field.

USER: Press <do>.

TM: This Address card is saved, and a new blank card appears in the display pane of the window.

Before proceeding, please create Address Cards for the names listed below. Use the data entry procedures outlined in Lesson 4.3, inventing an address and telephone number for each one, and then save each new entry. After each save, a new blank Address Card appears in the Window.

TEXAN SENATOR REX
CHEZ JACQUES RESTAURANT
DAREWELL, DANNY

After saving the final entry, you can display the directory by following this dialogue.

TM: A blank Address Card is in the display pane.

USER: Press <undo>.

TM: The directory is displayed. The cursor is in the directory next to the last Address Card you entered.

```
┌─October ──────────────────────────── 1983─┐
│         ──→ CHEZ JACQUES RESTAURANT        │
│         ──→ DAREWELL, DANNY                │
│       ──→ STEWING, K.R.                    │
│     ──→ TEXAN, SENATOR REX                 │
│   ──→                                      │
│  ┌───────────────────────────────────────┐│
│  │ Name:    DAREWELL, DANNY              ││
│  │ Address: Rough Riders Inc.           ││
│  │          6 Down Home Lane            ││
│  │          Dallas, TX 89714            ││
│  ├───────────────────────────────────────┤│
│  │ Phone: Home: 999/222-3322    Business: 222-4499 x 312 ││
│  ├───────────────────────────────────────┤│
│  │            Address Card              ││
│  └── <up><down><insert><delete><search><print><do><undo> ──┘│
│  ──────────────── Time Command Menu ──────│
└───────────────────────────────────────────┘
```

As you can see, the directory lists in alphabetyic order the NAME fields of each of the Address Cards you entered. The cursor is located next to a name in the directory, and the corresponding Address Card is displayed in the display pane.

4.5. Displaying Address Cards.

EXAMPLE SITUATION: K.R. wants you to telephone Senator Rex Texan's office to confirm the meeting you arranged for this afternoon, You have already entered an address card for the senator. Now you want to look up his telephone number. In the following dialogue, you learn how to locate and display Address Cards.

While the cursor is in the directory pane of the address window, you can use <up> and <down> arrows to move the cursor next to a name in the directory. As the cursor is positioned next to a name, the corresponding Address Card appears in the display pane.

TM:	The cursor points to DAREWELL. The Address Card for Danny Darewell is displayed.
TM:	The Address Card for Chez Jacques Restaurant is displayed.
User:	Press <down> <down> <down> rapidly in succession.
TM:	The cursor moves to TEXAN. The display sequence skips ahead to display the Address Card for Rex Texan.

Please notice that the display sequence is controlled by the speed at which you press <up> or <down>. You can display each of a series of Address Cards by pressing <up> or <down> slowly in succession, or display only the last Address Card in a series by pressing the arrows rapidly.

Before going on to the next lesson, take a moment or two to practice finding and displaying Address Cards.

4.6. <Search>ing for a name in the directory.

EXAMPLE SITUATION: Suppose for a moment that your directory is very long, so long that using the arrows to find a name would be very slow and tedious. The <search> function provides a way to locate a name or a section of the directory quickly. In the following dialogue, you locate the name of the restaurant, "Chez Jacques," where K.R. wants reservations for this evening.

TM: Cursor is in directory pane of the Address window.

USER: Press <search>.

TM: The following prompt appears in the directory pane of the window.

> Get which name? _____

You may recall that this prompt appeared on your screen when you first opened the Address window (see Lesson 4.1). In the earlier lesson, the Address Card file was empty, so this prompt might have seemed superfluous. Now that there are entries in the directory, this feature can be demonstrated more meaningfully. The description of the way this prompt functions in the context of the <search> function applies as well in the context of opening the Address window.

Your response to the prompt initiates a search of the directory for a name or character. The number of characters you enter depends on the number of names in the directory and the degree of specificity you want in locating an entry. If your directory is very long, you may want to enter an entire name. If the directory is short or you are unsure of a spelling, you can enter just one or two characters. In either case, the Time Manager attempts to find the name in the directory that is closest to your response to the prompt.

In the following dialogue, you enter an abbreviated response to the prompt because you don't remember whether you previously entered "Chez Jacques Restaurant" or "Restaurant Chez Jacques." For demonstration purposes, pretend that the directory is much longer than it really is at the moment.

TM: "Get which name?"

USER: Enter [R], press <do>.

TM: The directory is displayed on your screen with the cursor pointing to "STEWING, K.R."

There are no entries in the directory with the initial "R," so the "found" name is the next entry closest to your response to the prompt. In the next dialogue, you try another search strategy.

TM: The cursor points to "STEWING, K.R.'

USER: Press <search>.

TM: "Get which name?"

USER: Enter [CH], press <do>.

TM: The directory is displayed, with the cursor pointing at the first "CH" entry, "Chez Jacques Restaurant." The corresponding Address Card appears in the display pane.

If it happened to be the case that there were several "CH" entries in the directory, and "Chez Jacques" were not the first one, you could use <up> or <down> to move the cursor until you located the name you wanted.

4.7. Changing Address Cards.

EXAMPLE SITUATION: You decide that it would be more efficient to keep all "restaurant" entries in one section of the directory. You want to change the "Chez Jacques Restaurant" entry so that it reads "Restaurant Chez Jacques."

TM: The cursor is in the directory. The Address Card to be changed appears in the display pane.

USER: Press <do>.

TM: The cursor moves to the display pane and points to the first Address field. A new function list is provided.

┌─October ─────────────────────────────────── 1983─┐

     ──➤ CHEZ JACQUES RESTAURANT
    ──➤ DAREWELL, DANNY
   ──➤ STEWING, K.R.
  ──➤ TEXAN, SENATOR REX
 ──➤

┌───┐
│ Name: CHEZ JACQUES RESTAURANT   │
│ Address: Henri, Maitre d'   │
│   24 Stewing Plaza   │
│   Callus, TX 98726   │
│   │
│ Phone: Home: Business: 328-9355 │
├───┤
│   Change Address Card   │
└──────────── <arrows> <edit keys> <do> <undo> ──────────┘

└──────────────── Time Command List ────────────────┘

Now you can simply write over the previous entry to change any of the data fields.

TM: The cursor points to the first Address field.

USER: Enter [Restaurant, Chez Jacques]. Press <do> to save the changed entry.

TM: The new entry is saved, and the directory is updated to reflect the change.

┌─October ─────────────────────────────────── 1983─┐

     ──➤ DAREWELL, DANNY
    ──➤ RESTAURANT, CHEZ JACQUES
   ──➤ STEWING, K.R.
  ──➤ TEXAN, SENATOR REX
 ──➤

┌───┐
│ Name: RESTAURANT, CHEZ JACQUES   │
│ Address: Henri, Maitre d'   │
│   24 Stewing Plaza   │
│   Callus, TX 98726   │
│   │
│ Phone: Home: Business: 328-9355 │
├───┤
│   Address Card   │
└─<up> <down> <insert> <delete> <search> <print> <do> <undo>─┘

└──────────────── Time Command Menu ────────────────┘

TM.II.39

Please notice that the directory has been re-alphabetized so that the new (changed) name appears in the appropriate order.

4.8. <Insert>ing new Address Cards.

EXAMPLE SITUATION: K.R.'s lawyer, Calvin Calhoun, has left the country for an extended vacation. In the following dialogue, you record his new Alcapulco address.

In Lesson 4.1 you learned how to add new Address Cards when the data file was empty. This lesson demonstrates the procedure for creating new additions to the Address Card file under normal circumstances.

TM: The cursor is in the directory pane, pointing at any name.

USER: Press <insert>.

TM: The display pane presents a blank Address Card, ready for data entry.

USER: Enter Mr. Calhoun's name, address and telephone number, pressing <return> to accept each field. Use the <edit keys> to correct mistakes. Press <do> to save the record.

TM: The entry is saved, and a new blank Address Card appears in the display pane.

USER: Press <undo> to display the directory.

TM: The first line of the Address field is duplicated and alphabetized in the directory.

```
┌─October ───────────────────────────── 1983 ─┐
│                                              │
│        ──→ CALHOUN, CALVIN                   │
│        ──→ DAREWELL, DANNY                   │
│      ──→ RESTAURANT, CHEZ JACQUES            │
│    ──→ STEWING, K.R.                         │
│  ──→ TEXAN, SENATOR REX                      │
│                                              │
│  ┌────────────────────────────────────────┐ │
│  │ Name:    CALHOUN, CALVIN               │ │
│  │ Address: % Hide-Away Hotel             │ │
│  │                                        │ │
│  │                                        │ │
│  │ Phone: Home: 919/869.21.12  Business:  │ │
│  ├────────────────────────────────────────┤ │
│  │             Address Card               │ │
│  <up><down><insert><delete><search><print><do><undo>│
│                                              │
└──────────── Time Command List ──────────────┘
```

I.M.II.40

4.9. <Delete>ing Address Cards.

EXAMPLE SITUATION: While exploring for oil in the jungles of South America, Danny Darewell has mysteriously disappeared. In the following dialogue, you remove his Address Card from your file.

TM: The cursor is in the directory.

USER: Use <search> and/or <up> and <down> to find DAREWELL in the directory.

TM: Danny Darewell's Address Card appears in the display pane.

USER: Press <delete>.

TM: On the sill of the display pane, the following prompt appears.

```
Confirm Address Deletion
```
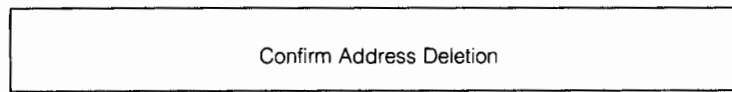
The prompt is there to prevent, as much as possible, inadvertent deletions from the Address Card file. If you want to keep the Address Card that is now displayed, you can press <undo> in response to the prompt.

TM: "Confirm Deletion."

USER: Press <do>.

TM: The Address Card is removed from the file. The directory is updated to reflect the change. The cursor points to the next name on the list.

4.10. Closing the Address window.

You may want to take the opportunity to review some of the procedures you have just learned and to practice inserting, displaying and deleting Address Cards. When you are ready to close the Address window, be sure the cursor is in the Directory pane of the window, then press <undo>.

While the window is closing, Time Management saves the Address Card file and the directory in permanent storage so that you can access the information later.

4.11. Review

Before going on to the next chapter, take a few moments to review the main concepts and procedures that have been presented in this chapter. If you have mastered these lessons, you can:

— open and close the Address window;
— use the <search> function to locate a name in the directory;
— use <arrows> to select a name from the directory;
— use <do> to change or save Address Cards;
— use <insert> to create new Address Cards;
— use <delete> to remove Address Cards;
— use <undo> to negate another function and to close the Address window.

Chapter 5. The Fast Access Options

GOAL: This chapter introduces you to some alternative ways to access the components of the appointment scheduling system: the Calendar, the Daily Appointment Schedule, and the Appointment windows.

EXAMPLE SITUATION: You have learned the basic procedures for scheduling appointments. In this chapter, you learn some optional procedures that help you use the Time Manager more efficiently. Each of the options demonstrated in the following lessons provides a means of accessing a Calendar, a Daily Appointment Schedule or an Appointment form quickly by bypassing one or more of the basic procedures you have already learned.

BEFORE PROCEEDING, if you have not already done so, follow the procedures outlined in Chapter One to display the Time Command Window on your screen.

5.1. Dating a Calendar.

EXAMPLE SITUATION: You want to display the Calendar for March, 1984, so that you can enter a reminder to K.R. about his wife's next birthday. Instead of using <page keys> to locate a Calendar that is several months in the future, you use the Calendar's <date> function.

    TM: The Time Command window is on the screen.

    USER: Select "Calendar," press <do>.

    TM: The Calendar window is open, the cursor can be anywhere in the Calendar display.

    USER: Press <date>.

    TM: The Change Date window opens inside the Calendar display.

```
┌─ October ──────────────────────────────── 1983 ─┐
│  ┌──────────────────────────────────────────┐   │
│  │                                          │   │
│  │     Enter month you want to view: October 83   │
│  │                                          │   │
│  ├────────────────── Change Date ───────────┤   │
│  └────────── <arrows> <return> <do> <undo> ──┘   │
│                                                  │
└──────────────── Calendar Window ─────────────────┘
```
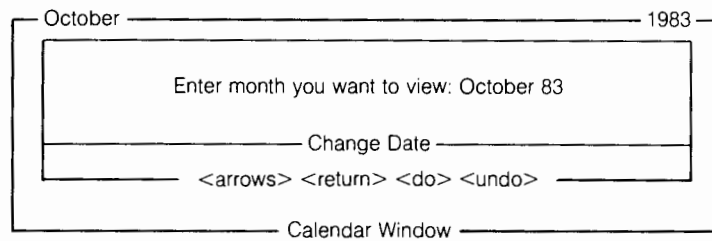
As you can see, this window displays the date of the current Calendar. In the following dialogue, you change the month and year to access another Calendar.

TM: The month field is highlighted.

USER: Use <up> or <down> to change the month to March. Press <return> to move the cursor to the Year, enter [84]. Press <do>.

TM: The Calendar for March, 1984, is displayed.

Any Calendar display between the dates January, 1970, and December, 1999, can be accessed with this option, simply by entering the date as described above. To access more distant calendars, you can <page up> or <page down> from the upper and lower limits.

To prepare for the next lesson, display the Calendar for October, 1983, using the <date> function from the 1984 Calendar. Repeat the procedure described, entering "October 83."

5.2. Resetting the default date.

When you initialize the Time Management program, the Date fields in various windows are automatically set to record "today's date" as it is registered by your computer's dating function. This feature ensures that an appropriate date has been entered wherever necessary for data processing purposes. As you will see in the next lesson, you can use this feature to your own advantage whenever you want to enter "today's date" quickly.

You can deliberately or inadvertently reset the default Date field value when you close the Calendar window, since, in any case, the default date is automatically set

to the date indicated by the cursor's location in the Calendar at the moment the window is closed. If the cursor is not located within one of the dated cells, the default date is set to the first day of the month displayed.

EXAMPLE SITUATION: For demonstration purposes, most of the lessons in this volume assume that "today's date" is October 12, 1983. In the following dialogue, you prepare for the next lesson by ensuring that the default date is set to 10-12-83.

   TM: The October, 1983, Calendar is displayed.

   USER: Locate the cursor in the cell dated 12, press <undo>.

   TM: The Calendar window closes, and the default date values are reset. The Time Command window is restored to the screen.

5.3. "List"ing "today's" Daily Appointment Schedule.

EXAMPLE SITUATION: You need to see K.R.'s Daily Appointment Schedule for today, October 12, 1983, quickly. Instead of opening the Calendar window, selecting a date and using the <search> function to open the Daily Appointment Schedule, you use the "List" command.

   TM: The Time Command window is on the screen.

   USER: Select "List" from the Time Command Menu, press <do>.

   TM: The following prompt appears on the screen.

```
Enter date of schedule:   10-12-83
```

   USER: Since the default value in the Date field is "today's date," there is no need to enter a new date. Press <do>.

   TM: The Daily Appointment Schedule for October 12, 1983, opens on the screen.

Now you can proceed to schedule, display or cancel any appointments for "today," using the procedures demonstrated in Chapter Three.

Before proceeding to the next lesson, close the Daily Appointment Schedule by pressing <undo>.

5.4. "List"ing any Daily Appointment Schedule.

EXAMPLE SITUATION: You have several appointments to schedule for the date October 24, 1983. In the following dialogues, you use the fast-access method to display that Daily Appointment Schedule and then see how to enter Date field data.

TM: The Time Command window is on the screen.

USER: Select "List" from the Time Command Menu, press <do>.

TM: The prompt appears again. The cursor points to the Date field.

```
Enter date of schedule:   10-12-83
```

You may recall that the Date field records the date in mm-dd-yy format (where mm=month, dd=day and yy=year). As usual, the current default date already appears in the field. In this case, you want to overwrite the default date with a new date.

The next dialogue demonstrates the procedures to follow when entering data into a Date field. Before entering the appropriate date, however, experiment with the error-protection features that apply to this field. Error-protection features prevent acceptance of date entries that do not meet certain criteria.

While entering dates, please keep in mind that you can use <left>, <right> and <tab> to space non-destructively over existing entries.

TM: The cursor points to mm.

USER: Enter [140183], press <do>.

TM: The cursor returns to the mm position (the mm value must be within the range 01 . . . 12).

USER: Enter [103383], press <do>.

TM: The cursor returns to the mm position (the dd value must be within the range 01 . . . 31).

USER: Press <tab> or <right> to move the cursor non-destructively to the dd position, enter [24], press <do>.

TM: The Daily Appointment Schedule fo October 24, 1983, opens on your screen (the date entry 10-24-83 satisfies error-protection criteria).

. Now you can proceed to schedule appointments or use any of the Daily Appointment Schedule functions as demonstrated in Chapter Three.

To prepare for the next lesson, close the Daily Appointment Schedule by pressing <undo>.

5.5. "Make"ing Appointments.

EXAMPLE SITUATION: K.R. has a number of appointments arranged for various dates and times during the next few weeks. You need to enter them in the Daily Appointment Schedule quickly, without bothering to open each of the different Daily Appointment Schedule windows. In the following dialogues, you use the "Make" command to schedule an appointment: with J.B. Baxter, on 10-24-83 at 10:00. In addition, you see how to enter Time when both Start-time and End-time can be modified.

TM: The Time Command window is on the screen.

USER: Select the "Make" command, press <do>.

TM: The Appointment window opens inside the Time Command window.

```
 ___ October 12 _____ 1983 ___
|   ┌────────────────────────────────────────────────────┐   |
|   │  DATE:   10-12-83                TIME:   00:00 - 23:55 │   |
|   │                                                       │   |
|   │  WITH: _____    │   |
|   │                                                       │   |
|   │  SUBJECT: _____    │   |
|   │                                                       │   |
|   │  NOTES: _____    │   |
|   │         _____    │   |
|   ├────────────────────────────────────────────────────┤   |
|   │                   Make Appointment                    │   |
|   └__ <arrows>  <edit keys>  <return>  <do>  <undo>__|   |
|   ┌──────────────────── Time Command Menu ──────────────┐   |
 ‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
```

This Appointment window looks just like the one you have already encountered in Chapter Three and functions like the Daily Appointment Schedule's <insert> function to add new Appointments to the Appointment file and to update the Daily Appointment Schedule. The main difference is that here the Date and Time fields are not blocked against data entries.

In the following dialogues, you review the procedures for entering data into Date and Time fields. Please keep in mind that <tab>, <left> and <right> can be used while entering Dates and Times to space non-destructively over existing entries.

```
                       Date:   10-12-83
```

The Date field already records "today's date" or the default date (see Lesson 5.2: Resetting the Default Date). If you have several appointments to schedule on the same date, you can use the default date setting to speed up the data entry process. If you have several appointments to schedule on different dates, you can overwrite the default date with another date (as first demonstrated in Lesson 5.4: Listing a Daily Appointment Schedule).

    TM: The cursor points to the Date field.

    USER: Press <tab> to move the cursor to the dd position, enter [24], press <return>.

    TM: The field highlighting turns off and the cursor moves to the next data field, Time.

```
                     Time:   0:00 - 23:55
```

As you may recall, the Time field records the Start-time and End-time of an appointment in hh:mm - hh:mm format (where hh=the hour in 24-hour notation, and where mm=minutes after the hour). Now the Time field records the default Time values. In the following dialogue, you replace the default times with new values: 10:00 - 10:55. (Please see Lesson 3.4: Entering Appointment Data, for a review of the error-protection features on the Time field.)

    TM: The cursor points to the Start-time hh position.

    USER: Enter [1000][1055]; press <return>.

    TM: The Time is 10:00 -10:55. The cursor moves to the With field.

The With, Subject and Notes fields are like those described in Lesson 3.4: Entering Appointment Data. Use the text data entry procedures you have already learned to fill in these fields. You can use the <edit keys> to correct any mistakes before saving the new entry.

    USER: Enter With [J.B. BAXTER], press <return>. Enter Subject [OIL], press <do> to save the Appointment.

    TM: If the Date and Time of this appointment overlap with one that has already been scheduled, the following prompt tells you so: "There is already an appointment in this time slot. Continue?"

USER: If the prompt appears, press <do> to schedule an overlapping appointment (see Lesson 3.7: Scheduling Overlapping Appointments).

TM: The Appointment window is cleared and ready to accept another appointment entry. Behind the scenes, the Daily Appointment Schedule is updated with the new entry.

You can repeat this procedure to practice scheduling more appointments. When you are ready to proceed to the next chapter, close the Appointment window as demonstrated in the next dialogue.

TM: A blank Appointment window is displayed, the cursor points at any field.

USER: Press <undo> to close the Appointment window.

TM: The Time Command window is restored to the screen.

5.6. Review

This chapter has presented some alternative ways to access the basic components of the Time Manager. It is up to you to decide which alternatives are most useful to you.

While using the Calendar, you may prefer to use <page keys> to display past or future Calendars for a few months ahead or back. When you want to display a Calendar that is far in the future, however, you can save time by using the <date> function to do the paging for you.

The Calendar's default date setting option can be used to save time entering Date values, especially when you intend to use the "List" or "Make" command for appointment scheduling. You can set the default date to your current most-frequently-used date and then overwrite the default date whenever you need to do so.

The "List" and "Make" commands provide quick access to the basic appointment-scheduling functions. You may prefer to use "List" most of the time to access the Daily Appointment Schedule when you know the date of the schedule you want to use. The Calendar's <search> function is more useful when you want to see your schedule for "next Tuesday" but don't know the exact date.

The "Make" command can be used instead of the Daily Appointment Schedule's <insert> function to schedule new appointments when you don't need to look at your current appointment listings. The Time Manager warns you whenever you schedule an appointment that overlaps with a previously-scheduled one. The "Make" command is especially useful when you have a number of appointments to schedule on several different dates.

This chapter has also introduced you to the data entry procedures and error-protection features that apply to the Date field and has demonstrated how to enter Time data when both Start-time and End-time fields can be modified.

Chapter 6. The Automatic Appointment Scheduling Option

GOAL: This chapter introduces you to the Auto Appointment window. By setting up a pattern definition in this window, you can automatically schedule appointments that recur regularly on a daily, weekly or monthly basis. The Time Manager automatically updates the Daily Appointment Schedule to include the new appointments, and warns you of potential scheduling conflicts.

EXAMPLE SITUATION: The date is October 12, 1983. You have some appointments to enter in K.R.'s Daily Appointment Schedule. Each appointment is one that will occur on a regular basis over the course of the next few weeks or months. To avoid having to schedule each one individually, you use the AutoAppointment window to automatically schedule these appointments.

BEFORE PROCEEDING, if you have not already done so, follow the procedure described in Chapter 1 to display the Time Command window on your screen.

6.1. Opening the AutoAppointment Window.

This lesson demonstrates how to open the AutoAppointment window and then introduces you to some of its features.

TM: The Time Command window is displayed on your screen.

USER: Select "Auto" from the Time Command menu, press <do>.

TM: The AutoAppointment window opens up inside the Time Command window.

```
 ─ October ─────────────────────────────── 1983 ─
 ┌────────────────────────────────────────────────┐
 │ ┌────────────────────────────────────────────┐ │
 │ │ Start Date: 10-12-83         Hours: 0:00 - 23:55 │
 │ │ With: _____       │ │
 │ │ Subject: _____       │ │
 │ │ Notes: _____       │ │
 │ │        _____       │ │
 │ ├────────────────────────────────────────────┤ │
 │ │ Day   Week   Month                         │ │
 │ │ Repeat 1              Separation 1         │ │
 │ ├────────────────────────────────────────────┤ │
 │ │           Auto Appointment                 │ │
 │ └ <arrows>  <edit keys>  <change>  <do>  <undo> ┘
 └──────────── Time Command Menu ─────────────────┘
```

TM.II.51

The AutoAppointment window resembles the diagram above. The functional pane of the window is shown divided into two parts for tutorial purposes, although on your screen it appears as one pane. The first part resembles the Appointment window that you have encountered in previous chapters and functions in a similar way, to record the details of the appointments to be scheduled.

The second part of the window functions differently, to define a daily, weekly or monthly pattern for scheduling the appointment described.

As usual, along the "sill" of the window is a list of the function keys that can be operated while the window is open. Each of these is demonstrated in the lessons that follow.

6.2. Scheduling Daily Appointments.

This lesson demonstrates how to schedule appointments that occur regularly on a daily basis, for example, those that occur "every day," "every other day," "every third day," "once every ten days," etc.

EXAMPLE SITUATION: K.R.'s doctor has advised him to exercise regularly to keep physically fit and healthy. Consequently, K.R. plays tennis every other day with his tennis teacher, Max Brown, at 17:00 (5 pm). In the following dialogues, you enter K.R.'s regular tennis schedule for the next ten days starting on October 21.

You can use the data entry procedures you have already learned to fill in the Appointment data fields. Please refer to Lesson 5.5 if you need to review entering Date and Time data.

```
Start Date:   10-12-83
```

For daily appointments, the Start Date field records the date of the first appointment to be scheduled. The Time Manager computes the dates of the remaining appointments from this date.

TM: The cursor points to the Start Date field.

USER: Enter [102183], press <return>.

TM: The cursor points to the Hours field.

```
Hours:   0:00 - 23:55
```

The Hours field records the Start-time and End-time of the appointments, in the same format as the Time field with which you are already familiar. The same error-protection features apply here.

TM: The cursor points to Hours.

USER: Enter [1700][1830], press <return>.
Enter [Max Brown] in the With field, press <return>.
Enter [tennis] in the subject field, press <return>.
Press <return><return> to leave the Notes fields blank.

TM: The cursor points to the Pattern Options list.

```
DAY   WEEK   MONTH
```

The Pattern Options determine whether a daily, weekly or monthly pattern is used to generate appointments. A pattern is indicated by highlighting the appropriate selection.

TM: "DAY" is already highlighted.

USER: Press <return> to define a daily pattern.

TM: The cursor moves to the Repeat field.

```
REPEAT   1
```

For daily patterns, the Repeat field indicates the number of appointments to be automatically scheduled. In this case, five new appointments are to be generated.

TM: The cursor points to the Repeat field.

USER: Enter [5], press <return>.

TM: The entry is accepted and the cursor moves to the Separation field.

```
SEPARATION 1
```

The Separation (S) field indicates how the dates of the automatic appointments are to be computed. If S=1, appointments are scheduled every day, beginning on the Start Date and continuing for as many days as indicated by the Repeat value. If S=2, appointments are dated every second day, beginning on the Start Date; if S=10, the appointments are dated every tenth day; and so forth.

USER: Enter [2] to indicate alternate daily spacing, press <return>.

TM: The entry is accepted and the cursor moves up to the Start Date field.

You can use the <edit keys> to correct any mistakes you might have made in any of the text data fields. When the appointment data are correctly entered and accepted, and the pattern option defined, you can proceed to intitiate automatic scheduling.

TM: The cursor points to the Date field (or any "accepted" data field).

USER: Press <do>.

TM: The following prompt appears in the window.

```
┌──────────────────────────────────────────────────────────┐
│     Confirm Auto-Appointment Execution                   │
└──────────────────────────────────────────────────────────┘
```

This prompt is to prevent inadvertent execution of the scheduling function. If there will be many appointments generated from this window, it may take some time schedule all of them.

TM: "Confirm Auto Appointment Execution."

USER: Press <do>.

TM: The Auto Appointment window is cleared, while the new appoint-
        ments are generated and entered into the Daily Appointment
        Schedule. After each entry, a dot appears in the upper-left corner of
        the window. After each pattern repeat cycle, a counter in the lower left
        corner is updated. After all entries are completed, the window closes
        and the Time Command window is restored to the screen.

Behind the scenes, the Daily Appointment Schedules for October 21, 23, 25, 27 and 29 are updated to show "Max Brown" in the 17:00 time slot.

To prepare for the next lesson, please re-open the Auto Appointment window by following the procedures described at the beginning of this chapter.

6.3. Scheduling Weekly Appointments.

This lesson demonstrates how to generate appointments that occur regularly on a weekly basis, for example, those that occur "every other Monday at 12:00," "every Monday and Wednesday at 14:00," "every third Tuesday," and so forth.

EXAMPLE SITUATION: Every Tuesday and Thursday afternoon, between 13:00 and 14:00, K.R. meets with his top management staff so that he can keep track of the major problems and events affecting the Stewing Oil Company. In the following dialogue, you enter this meeting schedule beginning Tuesday, November 1 and continuing for the next four weeks.

TM: The Auto Appointment window is open, the cursor points to the Start-Date field.

USER: Enter [110183]; press <return>.

For weekly patterns, the Start Date is the first day of the first week in which appointments will be generated. If your weekly pattern starts on Wednesday and the Start Date you enter falls on Thursday, for example, the first appointment is scheduled on the first Wednesday following the Start-Date.

TM: The cursor points to the Hours field.

USER: Enter [1300][1400]; press <return>.
Enter With [STAFF]; press <return>.
Enter Subject [problems]; press <return>.
Press <return><return> to leave Notes blank.

TM: The cursor is in the Pattern field; DAY is highlighted.

USER: Press <right> until WEEK is highlighted; press <return>.

TM: The Weekly Pattern field opens to the right of the list.

```
DAY   WEEK   MONTH   Sun Mon Tue Wed Thu Fri Sat
```

The Weekly Pattern field consists of a list of the days of the week. To define a weekly pattern, highlight each of the days you want to be included in the pattern, in this case, "Tue" and "Thu."

To highlight a day on the list, use <right> to move the cursor to the day; then press <change>. The <change> key has the effect of reversing the current status of the highlighting, that is, it changes the highlighting from "off" to "on" or from "on" to "off."

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TM: ◀ The cursor is in the Weekly Pattern field, pointing to the first day on the list, "Sun."

USER: Press <right> until the cursor points to "Tue;" press <change> to highlight it.

TM: "Tue" is highlighted and the cursor points to "Wed."

USER: Press <right> until "Thu" is highlighted; press <change>.

TM: "Thu" is highlighted, and the cursor points to "Fri."

USER: Press <right> until the cursor points to "Sat"; then press <right> once more.

TM: The weekly pattern is accepted; the cursor points to the Repeat field.

For weekly patterns, the Repeat field indicates the number of times (or weeks) the pattern is to be repeated. In this case, there are two appointments per week, to be repeated for four weeks.

USER: Enter [4]; press <return>.

TM: The entry is accepted and the cursor moves to the Separation field.

For weekly patterns, the Separation field indicates the weekly spacing of automatically scheduled appointments. If S=1, the pattern is repeated every week; if S=2, on alternate weeks; if S=3, every third week.

USER: Enter [1] to indicate that the pattern is to be repeated for each of the four weeks. Press <return>.

TM: The entry is accepted, and the cursor moves to the Date field.

At this point, you can make any changes or corrections in your entries that you wish. When the appointment data and the pattern definition is correct, you can proceed to schedule these appointments.

TM: The cursor points to the Date or any accepted data field.

USER: Press <do>.

TM: "Confirm Auto Appointment Execution."

USER: Press <do>.

TM: The Date of each appointment is computed and the appropriate Daily Appointment Schedule is updated with the new entry. After all appointments have been scheduled, the Auto Appointment window closes and the Time Command window is restored.

TM.11.56

The pattern defined in this lesson produces eight appointments (two days X four weeks): November 1, 3, 8, 10, 15, 17, 22, and 24.

Before proceeding to the next lesson, re-open the Auto Appointment window by following the procedure described in the first lesson of this chapter.

6.4. Scheduling Monthly Appointments.

EXAMPLE SITUATION: On the third Friday of every month, K. R. meets with the chief financial officers of Stewing Oil. The meeting usually begins with lunch at 12:00 and usually ends at about 4:00. In the following dialogue, you enter this meeting schedule for the next four months, beginning in November.

TM: The Auto Appointment window is open. The cursor points to Start-Date.

USER: Enter the appointment data, following the usual procedures.

For monthly patterns, the Start Date must be set on the first day of the month in which an appointment is to be scheduled, not necessarily the day of the month on which the appointment is to be scheduled. AFTER the Monthly Pattern field is chosen, error protection features will automatically reset the Start Date to dd=01. When entering the Starting Date, be sure to enter the appropriate mm value, in this case, mm=11.

TM: The appointment data is entered and accepted; the cursor points to the pattern field where "Day" is highlighted.

USER: Press <right> until "MONTH" is highlighted; press <return>.

TM: The Monthly Pattern field opens on your screen.

```
|     DAY   WEEK   MONTH          Week Into 1              |
```

The Monthly Pattern indicates which week of the month and which day of the week the appointments are to be scheduled.

TM: Cursor points at "Week Into."

USER: Enter [3] to indicate the third week into the month, press <return>.

TM: The entry is accepted, and "Sunday" appears to the right of the field.

```
┌─────────────────────────────────────────────────┐
│                                                 │
│    DAY   WEEK   MONTH    Week Into 3    Sunday   │
│                                                 │
└─────────────────────────────────────────────────┘
```

You can use <up> or <down> to change the day of the week on which to schedule the monthly appointments; then press <return> to accept it, as demonstrated in the following dialogue.

USER: Press <up> or <down> until "Friday" appears; then press <return>.

TM: The Monthly Pattern is accepted and the cursor moves to the Repeat field.

For monthly patterns, the Repeat field indicates the number of times a monthly appointment is to be scheduled. Please notice that the Separation field has disappeared. Monthly appointments are always scheduled for every month (S=1).

TM: The cursor points at the Repeat field.

USER: Enter [4]; press <return>.

TM: The entry is accepted and the cursor moves to the Date field.

Please notice that the date you entered previously has been changed to read "11-01-83." This is the result of an error-protection feature that disallows monthly pattern scheduling to begin later than the first day of a month, so that dates can be computed accurately.

USER: Press <do> to initiate automatic scheduling.

TM: "Confirm Auto-Appointment Execution."

USER: Press <do> to continue.

TM: Four appointments are generated and entered into the Daily Appointment Schedule: November 18, December 16, January 20 and February 17.

TM.II.58

Chapter 7. The Search Option

GOAL: This chapter introduces the Search option, a way of retrieving and displaying Appointments based on entries in the With field and/or the Subject field. This option is useful when you need to display or change an appointment whose date and time you have forgotten.

EXAMPLE SITUTATION: You have already entered a number of appointments in K.R.'s Daily Appointment Schedule. Now K.R. needs to be reminded of the dates, times and other details of the appointments. The lessons in this chapter demonstrate how to use the Search option to find and display appointments when either the With or Subject field is known.

BEFORE PROCEEDING, if you have not already done so, follow the steps presented in Chapter One to initialize the program and to display the Time Command window.

TO PREPARE FOR THIS LESSON, be sure to schedule the automatic appointments that were demonstrated in Chapter 6. The following lessons use those appointments as examples to demonstrate the Search options.
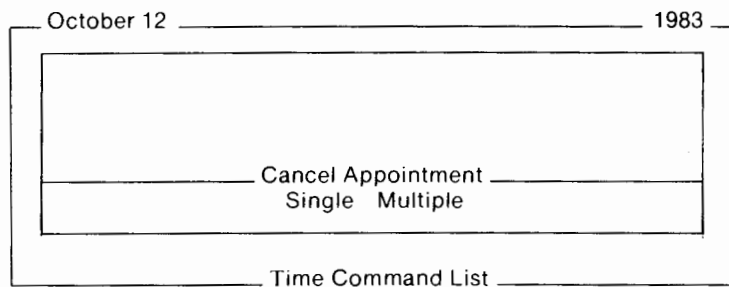
7.1. Opening the Search window.

This lesson demonstrates how to access the Search options from the Time Command window.

TM: The Time Command window is on your screen.

USER: Select "Search" from the Time Command list, press <do>.

TM: The Search window opens up inside the Time Command window.

```
_ October 12 _____ 1983 _
|  _____        |
| |                                             |     |
| | With: _____        |     |
| |                                             |     |
| | Subject: _____        |     |
| |_____|     |
| |         Appointment Search                  |     |
| |__ <arrows> <edit keys> <do> <undo>__|             |
|_____ Time Command List _____|
```

7.2. Searching for Appointments on the With Field.

EXAMPLE SITUTATION: You have already entered K.R's schedule for his weekly meeting with his staff. Now you need to enter the agendas for the various meetings. In the following dialogue, you find the scheduled appointments by searching on the With field.

TM: The cursor points to the With field.

USER: Enter [STAFF] exactly as the With entry on the Appointments. The <edit keys> may be used to correct any mistakes. When the entry is correct, press <do>.

TM: The With fields of K.R.'s appointment schedule are searched for any that match your entry. When the search is completed, the Appointment window opens on top of the Search window.

```
 ___ October 12 _____ 1983 ___
|                                                          |
|   _____   |
|  |  Date: 11-01-83              Time:  13:00 -14:00   |  |
|  |                                                    |  |
|  |  With:  STAFF                                      |  |
|  |  Subject:  problems                                |  |
|  |  Notes: _____          |  |
|  |         _____          |  |
|  |_____|  |
|  |             Appointment Search                     |  |
|  |__<page>  <arrows> <edit keys> <do> <undo>__|         |
|                                                          |
|_____ Time Command List _____|
```

As you see, the first appointment with "staff" has been displayed in the Search window. Now use the <page keys> to see the other appointments.

TM: The 11-01 appointment is displayed.

USER: Press <page down>.

TM: The 11-03 appointment is displayed.

USER: Press <page down>.

TM: The 11-08 appointment is displayed.

USER: Press <page up>.

TM: The 11-03 appointment is displayed again.

USER: Press <page up><page up>.

TM: The last appointment, dated 11-24 is displayed.

USER: Press <page down>.

TM: The 11-01 appointment is displayed.

The sequencing of the displays is circular, so that pressing <page down> while the last appointment is displayed presents the first appointment, and vice versa.

7.3. Changing Appointment entries.

Having found the series of appointments you were looking for, you can enter the agenda for the first few meetings, as the following dialogue demonstrates.

TM: The 11-01 appointment is displayed.

USER: Use <up> or <down> to locate the cursor in the Subject field; enter [new oil contracts]; press <return>.

TM: The entry is accepted; the cursor moves to the next Notes field.

USER: Enter [presentation by Cal Calhoun]; press <page down>.

TM: The changed appointment is permanently saved, and the next appointment is displayed.

USER: Move the cursor to the Notes field; enter [new marketing campaign]; press <do>.

TM: The changed appointment is saved.

Please note that the Date and Time fields in the Appointment window are blocked against data entry, but that the With, Subject and Notes fields can be overwritten using <edit keys>, <arrows> and <return> as usual. You can use either <page keys> or <do> to save the changed appointments.

When you have finished displaying and/or changing entries, close the Search window by pressing <undo>.

To prepare for the next lesson, open the Search window using the procedure demonstrated in Lesson 7.1.

7.4. Searching for appointments on the Subject field.

EXAMPLE SITUATION: K.R. can't remember when his first tennis lesson is, or the name of his new tennis coach. You remember that the subject entry is TENNIS. In the next dialogue, you locate the first lesson by searching on Subject.

TM: The Search window is open, the cursor points to the With field.

USER: Press <down> to move the cursor to the Subject field, enter [TENNIS]; press <do>.

TM: The appointment schedule is searched for all entries whose Subject field matches TENNIS. When the search is complete, the Appointment Search window opens on top of the Search window.

Looking at your screen, you see the October 21st appointment with MAX BROWN displayed inside the window. You can use <page down> or <page up> as before to display or change the remaining TENNIS appointments.

When you are ready, close the windows to clear the screen; then re-open the Search window for the next lesson.

7.5. Searching on both With and Subject fields.

EXAMPLE SITUATION: Cal Calhoun knows he has to give a presentation at one of the staff meetings, but he can't remember which one. Although you could find the appointment by searching on either name or subject, you want to narrow the search as much as possible to save time.

TM: The Search window is open; the cursor points to With.

USER: Enter [STAFF]; press <return>.
        Enter [NEW OIL CONTRACTS]; press <do>.

TM: The Appointment Search window opens, displaying the 11-01 appointment.

USER: Press <page down>.

TM: The 11-01 appointment is displayed again, since there are no other "found" appointments.

As usual, you can overwrite any of the text fields in the window, saving the changes by pressing <do>. When you are ready, close the Search window by pressing <undo>.

7.6. Review

This chapter has demonstrated how to use the "Search" command to find and display appointments.

If you know the date of an appointment, you can open the Daily Appointment Schedule to find the time in which it has been scheduled, and then use the <search> function to display the entry.

However, if you have forgotten the date, you can use "Search" to find the information you need as long as you remember the subject of the appointment or the name of the person with whom it is scheduled.

Chapter 8. The Print Options

GOAL: This chapter introduces you to the procedures for printing hard (paper) copies of Daily Appointment Schedules, Appointments and Address Cards.

EXAMPLE SITUATION: You want to give K.R. printed copies of his appointments and Address Cards so that he can refer to them while away from the office. The following lessons demonstrate the Time Manager's print options.

BEFORE PROCEEDING, please be sure that communication has been established between your computer and your printer and that your printer is appropriately set to print. (See Open Access Shell for more information about printing.)

IF YOU HAVE NOT ALREADY DONE SO, please follow the procedures demonstrated in Chapter 1 to initialize the program and to display the Time Command window on your screen.

The following lessons assume that the Appointments and Address Cards that are used as examples have already been entered. To prepare for this lesson, please make sure that the sample data from Chapters Three, Four and Five still exist.

8.1. "Print"ing a Daily Appointment Schedule.

In this lesson, you use the "Print" command to print a copy of K.R.'s Daily Appointment Schedule for October 12, 1983. You have already set the default date to "today's date."

TM: The Time Command window is on the screen.

USER: Select "Print"; press <do>.

TM: The Print window opens inside the Time Command window.

```
 __ October 12 _____ 1983 __
|                                                               |
|                                                               |
|          _____         |
|         |                                           |         |
|         |  Enter date of schedule to print:    10-12-83 |     |
|         |_____|         |
|                                                               |
|                                                               |
|_____Time Command List _____|
```
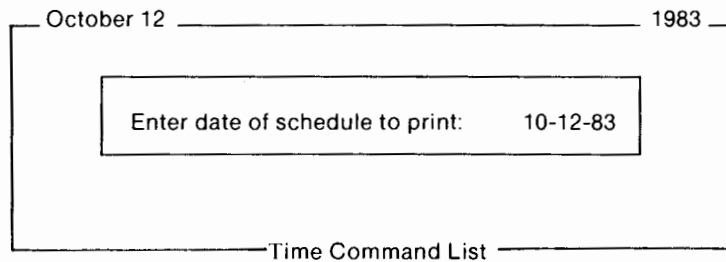
As you can see, the Print window prompts you to enter the date of the Daily Appointment Schedule to be printed. If you have not already reset the default date since initializing the program, the default date on your screen is the current date

registered by your computer's dating function. If that is the case, you can overwrite the default date with "10-12-83" using the procedure you learned in Lesson 5.4: "List"ing Appointments.

TM: The Date field reads "10-12-83."

USER: Press <do>.

TM: The Select Print Device window opens inside the Time Command window.

```
 ┌─ October ──────────────────────────────── 1983 ─┐
 │                                                  │
 │   ┌──────────────────────────────────┐          │
 │   │  CONSOLE                          │          │
 │   │  PRINTER                          │          │
 │   │  FILE                             │          │
 │   │  CONLABEL                         │          │
 │   │  PRTLABEL                         │          │
 │   │  EPSONFX80                        │          │
 │   │  PRISMBW                          │          │
 │   ├──────────────────────────────────┤          │
 │   │       Output Device Selection     │          │
 │   │<up><down><do><undo><pages>        │          │
 │   └──────────────────────────────────┘          │
 │              ─── Time Command Menu ───           │
 └──────────────────────────────────────────────────┘
```
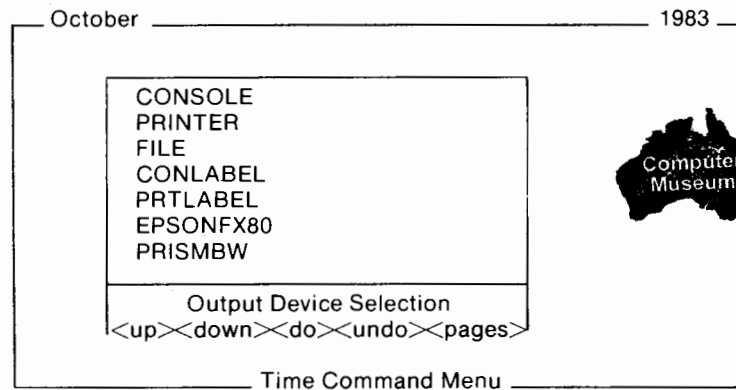
This window appears whenever you use the <print> function from one of the Time Manager's windows. Inside the window is a list of the possible output devices you can attach to your computer. (Please see Volume I: Open Access Shell for more information about these file names). Before the Time Manager can print, you have to select an output file.

USER: Press <page up> or <page down> until you see the file you want to
        select. Use <up> or <down> to highlight the file name, then press
        <do>.

TM: The appointment schedule for that date is sent to your printer.

On your printer, a printed version of all the Appointments scheduled for the day is generated.

Appointment List Report for K.R. STEWING
10-12-83

```
CAL CALHOUN        Subject:  contracts
10:00 to 10:45
            Notes:

REX TEXAN          Subject:  business investigation
14:00 to 14:45

            Notes:  Don't let Robby find out about this.
```

As you see, printed copies duplicate the Time, With, Subject and Notes fields that have been scheduled for the date you entered in the Print window.

On your screen, the Print window is still open. If you wish, you can proceed to enter another date and to print an appointment schedule for another day. When you have finished printing, close the Print window by pressing <undo> twice.

8.2. Printing from the Calendar window.

EXAMPLE SITUATION: Today is October 12, 1983. You want to print K.R.'s appointment schedule for "next Monday" but you don't remember the exact date. In this lesson, you learn another way to print all the appointments scheduled for a day.

TM: The Time Command window is on the screen.

USER: Select "Calendar"; press <do>.

TM: The Calendar window opens on the screen.

USER: Page the display (if necessary) to October, 1983. Locate the cursor in next Friday's cell, October 14. Press <print>.

TM: The Output Device Selection window appears. Your last selection is still highlighted. Press <do>. All the appointments for Monday, October 24 are sent to that device.

On your printer, the appointment with J.B. BAXTER at 10:00 is printed in the format shown in Lesson 8.1.

On your screen, the Calendar window is still open, with all other Calendar functions ready to be operated as you wish. Please leave the Calendar open for the next lesson.

8.3. Printing a single appointment.

EXAMPLE SITUATION: You want to print a copy of the appointment already scheduled for October 24 at 9:00 with Rex Texan. You don't want to bother to print the schedule for that day, just the one appointment.

TM: The October, 1983, Calendar window is on the screen.

USER: Locate the cursor in the October 24 cell; press <search>.

TM: The Daily Appointment Schedule opens on top of the Calendar.

USER: Select the 10:00 time slot; press <print>.

TM: The Output Device Selection window appears. Choose appropriately or keep your last selection (the default setting) and press <do>. The 10:00 appointment entry is sent to your printer.

On your printer, the single appointment entry is printed in the format shown in Lesson 8.1.

On your screen, the Daily Appointment Schedule is open, so that you can continue to operate the appointment scheduling functions as you wish. For example, you can schedule a new appointment, using the procedures demonstrated in Chapter 3, and, after saving the new entry, print a copy of it immediately.

When you are ready to end this lesson, close the Daily Appointment Schedule and the Calendar by pressing <undo> twice.

8.4. Printing Address Cards.

EXAMPLE SITUATION: This lesson demonstrates how to print copies of Address Cards, using the examples you have already entered in your Address Card file (see Chapter 4: The Address Card File). The first card you want to print is for TEXAN, REX.

TM: The Time Command window is on the screen.

USER: Select "Address"; press <do>.

TM: The Address window opens inside the Time Command window. The prompt, "Get which name?", appears in the directory pane.

USER: Enter [TE]; press <do>.

TM: The cursor points to TEXAN, REX in the directory, and the corresponding Address Card appears in the display pane.

USER: Press <print>.

TM: The Output Device Selection window appears. Press <do> to keep
        the default setting. The Address Card entry is sent to that device.

On your printer, the Address Card entry indicated by the cursor's location in the
directory is printed in the following form.

ADDRESS CARD

Name: TEXAN, SENATOR REX
Address: U.S. Senator
122 Stewing Pot Road
Callus, TX 90890

Phone: Home: 123/456-7890 Business:

On your screen, the Address window is still open. When printing is complete, you
can proceed to operate any of the Address window functions (see Chapter 4),
including printing more Address Cards by repeating the procedure demonstrated
in this lesson.

When you are ready to end this lesson, please close the Address window by pressing
<undo>.

8.5. Review.

In this chapter, you have seen four different Print options demonstrated: the
"Print" command, the Calendar <print> function, the Daily Appointment
Schedule <print> function, and the Address <print> function.

You can use either the "Print" command or the Calendar <print> function to print
copies of all the appointments scheduled for one day. Since the results of both
options are the same, your choice of options is largely a matter of your own
convenience.

Using the "Print" command offers the possibility of accessing the appointment
schedule for "today" or another date quickly, especially if the default date has been
properly pre-set (see Lesson 5.2: Resetting the Default Date). In addition, if you
want to print the schedules for a number of different dates at one time, the "Print"
command offers you the convenience of by-passing the Calendar date finding
procedures.

On the other hand, if you are unsure of an exact date or if you are in the midst of
using other Calendar functions, the Calendar <print> function offers the
convenience of printing an appointment schedule without much interruption to
your other tasks.

You can use the Daily Appointment Schedule <print> function to print a single appointment when that is all you need. In addition, this function offers the convenience of printing an appointment immediately after scheduling it, so that you can, if you wish, give a copy as a reminder to the person with whom it is scheduled.

You can use the Address <print> function whenever you want to print a copy of an Address Card. Since this function operates from the Address window, it offers the convenience of using the <search> function to locate the name you want as well as the possibility of printing in tandem with other Address functions.

Chapter 9. The Hours Mask Option

GOAL: This chapter introduces the Hours Mask option, by which you can reserve certain hours of the week for certain activities. Once the mask is defined, a warning message appears on your screen whenever you attempt to schedule an appointment during masked times (i.e. "outside normal working hours," "during lunch," or other times you are usually away from your office).

EXAMPLE SITUATION: There are times of the day when K.R. tends to be away from the office. For example, he usually arrives at his office at 8:00 and leaves at 19:00. Usually, he takes his lunch in a restaurant between 12:00 and 14:00, and has a drink in a cocktail lounge between 16:00 and 17:30. In the following lessons, you define an Hours Mask so that you are reminded whenever you try to schedule an appointment at one of these times.

BEFORE PROCEEDING, if you have not already done so, please follow the procedure demonstrated in Chapter 1 to initialize the program and to display the Time Command window on the screen.

9.1. Opening the Hours Mask Window.

This lesson shows you how to open the Hours Mask window and then discusses some of its features.

TM: The Time Command window is on the screen.

USER: Select "Hours" from the Time Command Menu; press <do>.

TM: The Hours Mask window opens inside the Time Command window.

```
 __ October 12 _____ 1983 __
|                                                         |
|    ┌─────────────────────────────────────────────┐     |
|    |                                              |     |
|    |          Hours     Break     Lunch    Break  |     |
|    |                                              |     |
|    | Sunday    0:00-23:55 0:00-23:55 0:00-23:55 0:00-23:55 |
|    | Monday    0:00-23:55 0:00-23:55 0:00-23:55 0:00-23:55 |
|    | Tuesday   0:00-23:55 0:00-23:55 0:00-23:55 0:00-23:55 |
|    | Wednesday 0:00-23:55 0:00-23:55 0:00-23:55 0:00-23:55 |
|    | Thursday  0:00-23:55 0:00-23:55 0:00-23:55 0:00-23:55 |
|    | Friday    0:00-23:55 0:00-23:55 0:00-23:55 0:00-23:55 |
|    | Saturday  0:00-23:55 0:00-23:55 0:00-23:55 0:00-23:55 |
|    |──────────────────────────────────────────────|     |
|    |                  Hours Mask                   |     |
|  __<tab>  <backtab>  <arrows>  <return>  <do>  <undo>__ |
|                                                         |
|_____ Time Command Menu _____|
```

TM.II.70

As you see, the Hours Mask window lists the days of the week along the left of the functional display area, and four categories of masks along the top, labelled "Hours," "Break," "Lunch" and "Break." Within this format, there are twenty-eight Time fields that define the Start-Time and End-Time values within each category. At the moment, each Time field is set to the usual default time, 0:00 - 23:55.

Along the window "sill" is a list of the function keys you can use to enter the Time field values.

9.2. Determining Hours Mask Settings.

This lesson explains how the Hours Mask functions so that you can understand how to determine which mask settings will produce the results you want.

There are four different mask categories, labelled "Hours," "Break," "Lunch" and "Break." The first category, "Hours," records the times during the week when appointments can usually be scheduled. Once the Time values have been recorded and the mask turned "on," your computer will check each new appointment entry against the mask.

If the Time field of an appointment falls outside the range of the mask setting in the first category, the following prompt line is generated when you attempt to save the appointment.

```
Outside normal working hours.   Continue?
```

You can proceed to save the appointment by pressing <do>, or, if you prefer, to interrupt appointment scheduling by pressing <undo>.

If, on the other hand, the Time field check reveals that the appointment falls within the time range defined in the first category, your computer then checks it against the second category, "Break." If the Time field of the appointment conflicts with the mask value, the following prompt line is generated during your attempt to save the appointment.

```
Overlaps with afternoon break.   Continue?
```

Again, you can proceed to save the appointment by pressing <do> or to interrupt saving by pressing <undo>.

If the Time field of the appointment falls within "normal working hours" and not during "first break," your computer proceeds to check the Time field against the third mask category, "Lunch." If a conflict is found, the following prompt appears during your attempt to save the appointment.

```
During normal lunch hours.   Continue?
```

Again, you can decide whether or not to proceed with scheduling the appointment.

Finally, if the Time field of the appointment is within "normal working hours" and does not conflict with either the "lunch" or first "break" category, your computer checks it against the mask for the fourth category, "Break." If a conflict is found, the following prompt line is generated during saving the appointment.

```
Overlaps with morning break.   Continue?
```

As usual, you can decide whether or not to proceed with saving the appointment.

When determing how to set the masking values, therefore, keep in mind that the first mask category defines INCLUSIVE times that permit appointment scheduling, while the second, third and fourth categories set EXCLUSIVE ranges within the first category. The Hours Mask function warns you of potential conflicts with your usual schedule but does not prevent you from scheduling appointments when you want.

Turning to our example, we can now determine the mask settings for K.R.'s normal daily routine.

For Monday through Friday, the first mask category can be set at "8:00 - 19:00" so as to generate a warning when an appointment is about to be scheduled outside this time range.

K.R. does not usually take a morning "break," but he does like to have an hour in the morning without interruptions so that he can plan his business strategies. You can set the first "break" to "9:00 - 9:55" to accommodate K.R.'s special needs.

Next, the "Lunch" mask can be set at "12:00 - 13:55," to generate a warning when an appointment may conflict with K.R.'s lunch hour.

K.R.'s afternoon break at "16:00 - 17:30" can be entered into the second "break" fields.

Weekend (Saturday and Sunday) masks may be set differently to reflect the fact that K.R. does not normally keep weekend office hours. To generate an appropriate warning for weekend appointments, the most efficient course is to set the first mask category so that most appointments would be determined outside that range. The setting that would be most efficient would be "0:00-0:05." The default values for the second, third and fourth mask categories can be retained without interfering with appointment scheduling, since a warning would, in most cases, be generated from the first Time field check against the mask.

9.3. Entering Hours Mask Data.

This lesson demonstrates how to enter the Time data into the Hours Mask window. The procedure is similar to the Time data entry procedures you have already learned. While entering the data, you can use the keys listed below to move the cursor to the data fields you want to change.

    <tab> . . . . moves the cursor forward (right or down) to the next Start-time position.

    <backtab> . . . . moves the cursor backward (left or up) to the next Start-time field.

    <right> . . . . moves the cursor non-destructively one space to the right within a data field.

    <left> . . . . moves the cursor non-destructively one space to the left within a data field.

    <return> . . . . accepts an entry and moves the cursor forward (right or down) to the next Start-time field.

    <up> . . . . accepts an entry and moves the cursor up one row to the next Start-time field.

    <down> . . . . accepts an entry and moves the cursor down one row to the next Start-time field.

In the following dialogue, you enter the mask values for Sunday (Hours = 0:00 -0:10; Lunch and Breaks = default setting).

    TM: The cursor points to the Sunday-Hours Start-time field.

    USER: Press <right> until the cursor points to the End-time field. Enter [010]; press <down>.

    TM: The entry is accepted and the cursor moves to Monday-Hours.

In the next dialogue, you enter K.R.'s Monday schedule (Hours=8:00-19:00; Break=9:00-9:55; Lunch=12:00-13:55; Break=16:0017:30).

TM: The cursor points to Monday-Hours.

USER: Enter [0800][1900]; press <return>.

TM: The cursor moves to Monday-Break.

USER: Press <right>; enter [9]; press <right> to keep default minutes. At the End-time position, enter [9], press <return> to keep default minutes.

TM: The cursor moves to Monday-Lunch.

USER: Enter [1200][1400]; press <return>.

TM: The cursor moves to Monday-Break.

USER: Enter [1600][1730]; press <return>.

TM: The cursor points to Tuesday-Hours.

Continue to enter the mask settings for K.R.'s schedule, repeating the procedure demonstrated above. Before proceeding to the next lesson, check to make sure that your entries are correct. You can use <tab>, <backtab>, <up> and <down> to move the cursor quickly to a field you have to correct.

9.5. Starting the Hours Mask Function.

Once all twenty-eight Hours fields have been appropriately set, the Hours Mask is ready to be turned "on." Once turned "on," the Hours Mask you have defined in the window is used by your computer to determine when to generate a message warning you of a potential problem.

PLEASE NOTE that there is no way to turn the masking function "off" once it has been turned "on." You can, whenever you wish, reopen the Hours Mask window to change the settings, but you cannot later change your mind about using the option unless and until you change the name of the "owner" of the Daily Appointment Schedule (see Chapter 11).

Before starting the mask, then, it is important to consider that the process of checking each appointment entry against the mask can add a certain amount of processing time to normal appointment scheduling procedures. It is up to you to decide whether it is more or less convenient to use the Hours Mask, based on your own individual needs.

To close the Hours Mask window WITHOUT turning "on" the Hours Mask function, press <undo>.

To turn "on" the Hours Mask so that future appointment scheduling can be checked against the mask, press <do>.

In either case, the Time Command window is restored to your screen. You can, if you wish, demonstrate the masking function (if you have turned it "on") by scheduling some appointments that will test the mask.

Chapter 10. The Cancel Options

GOAL: This chapter introduces some methods for cancelling appointments that supplement the one introduced in Chapter Three. This chapter shows you how to cancel one or more individual appointments from the Daily Appointment Schedules, how to cancel all appointments within a specific time frame, and how to delete the Scratch Pads.

EXAMPLE SITUATION: You have learned to cancel appointments by using the <delete> function in the Daily Appointment Schedule window. Now, to improve efficiency, you want to learn faster ways to cancel appointments. You have already entered three appointments (see Chapter 5) that can be used to demonstrate the optional cancellation procedures.

BEFORE PROCEEDING, please use the procedures demonstrated in Chapter One to initialize the program and to display the Time Command window on your screen, if you have not already done so.

TO PREPARE for the following lessons, use the procedures you have already learned to enter the sample appointment scheduled in Lesson 5.4: "Make"ing Appointments, if it no longer exists in the Daily Appointment Schedule.

10.1. Opening the Cancel Window

This lesson demonstrates how to access the Cancel options from the Time Command window.

TM: The Time Command window is on the screen.

USER: Select "Cancel" from the Time Command list; press <do>.

TM: The Cancel window opens inside the Time Command window.

```
 __ October 12 _____ 1983 __
|    _____     |
|   |                                              |     |
|   |                                              |     |
|   |                                              |     |
|   |_____ Cancel Appointment _____ |     |
|               Single   Multiple                        |
|    |_____|         |
|                                                        |
|_____ Time Command List _____|
```

As you can see, the functional display area of the window is now empty. You can choose either the "Single" or "Multiple" option by using <left> or <right> to highlight your choice.

10.2. Cancelling a single appointment.

EXAMPLE SITUATION: You want to cancel the appointment you scheduled earlier "on 10-24-83, at 10:00, with J.B. Baxter."

TM: The "Single" option is highlighted.

USER: Press <do>.

TM: The following prompt lines appear in the display window.

```
 _ October 12 _____ 1983 _
┌──┬──────────────────────────────────────────────┬──────┐
│  │                                                │      │
│  │   Date of the appointment to cancel:  10-12-83 │      │
│  │   Time of the appointment to cancel:  00:00 - 23:55   │
│  │                                                │      │
│  └─────────────── Cancel Appointment ─────────────┘      │
│   └──────── <arrows>  <tab keys>  <do>  <undo>──────┘     │
└──────────────────── Time Command Menu ──────────────────┘
```

The Date field is set to the "today's date" default value so that, if you had several appointments to cancel for today, you would not have to enter the date (see Lesson 5.2: Resetting the Default Date). The Time field is set to the usual default times.

TM: The cursor points to the Date field.

USER: Overwrite the default date with the appointment date, then press <return>.

TM: If the date entry is accepted, the cursor points to the Time field.

USER: Enter the Start-time and End-time of the appointment, then press <return>. Press <do> to start the cancellation.

TM: If the Date and Times entered match an existing appointment entry, the Appointment is displayed in the window, with the prompt: "Confirm Appointment Delete."

```
┌─ October 12 ──────────────────────────── 1983 ─┐
│  ┌──────────────────────────────────────────┐  │
│  │                                          │  │
│  │  Date: 10-14-83           Time: 10:00 - 10:55 │
│  │  With: J.B. BAXTER                       │  │
│  │  Subject: OIL                            │  │
│  │  Notes:                                  │  │
│  │                                          │  │
│  │              Confirm appointment delete. │  │
│  │                                          │  │
│  ├──────────────────────────────────────────┤  │
│  │                                          │  │
│  └──────────────────────────────────────────┘  │
└──────────────── Time Command Menu ──────────────┘
```

USER: Press <do> to cancel the displayed Appointment.

TM: The Appointment is removed from the Appointment file and the
        Daily Appointment Schedule is updated to reflect the change. On the
        screen, the Appointment window closes and the Cancel Single
        Appointment window is restored.

10.3. Cancelling overlapping appointments.

This lesson shows what happens when you attempt to cancel an appointment when
there are more than one appointment in that time slot.

TM: The Cancel Single Appointment window is displayed.

USER: Enter the Date and Time of an overlapping appointment. Press
        <do>.

TM: The first appointment is displayed in the window with the prompt:
        "Confirm Appointment Deletion."

USER: Press <do> to delete this appointment, or <undo> to keep it.

TM: The next appointment in that time slot is displayed.

USER: Press <do> to delete this appointment, or <undo> to keep it.

TM: The appointments are deleted from the Appointment file and the
        Daily Appointment Schedule is updated to reflect the change. When
        there are no other appointments in that time slot, the Appointment
        window closes and the Cancel Appointment window is restored to the
        screen.

10.4. Erroneous Cancellations.

This lesson shows you what happens if the time slot you describe in the Cancel window does not match exactly an existing appointment entry.

TM: The Cancel Single Appointment window is displayed.

USER: Enter the Date and Time of an Appointment that doesn't exist.

TM: The following prompt appears in the window.

```
No appointment in that time slot.   Press <do> to continue.
```

This prompt appears whenever Time Management fails to find an appointment whose Date, Start-time and End-time do not match exactly those entered in the Cancel window.

USER: Press <do>.

TM: The Single Cancel Appointment window is restored.

At this point, you can enter the date and time of another appointment. When you are ready to complete this lesson, close the Cancel window by pressing <undo>.

10.5. Cancelling Multiple Appointments and Scratch Pads.

EXAMPLE SITUATION: K.R. has decided to take two days off next week, so you use the Cancel option to cancel his appointments for October 23 and October 24.

TM: The Time Command window is on the screen.

USER: Select "Cancel;" then press <do>.

TM: The Cancel option window is displayed.

USER: Select the "Multiple" option; press <do>.

TM: The Multiple Cancellation Window opens.

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October 12 ——————————————— 1983

```
Cancel all appointments between: 0-0-0 and 12-31-99

——————Cancel Multiple Appointments——————
       <left> <right> <ret> <do> <undo>
————————— Time Command List —————————
```

In the following dialogue, you cancel appointments for the two days of K.R.'s vacation.

TM: The cursor points at the Start-date field.

USER: Enter the start-date [102383]; press <return>.
        Enter the end-date [102483]; press <do>.

TM: The prompt, "Delete Scratch Pads also?", appears.

The prompt refers to the Scratch Pads that are dated within the time frame described in the line above. You can choose to retain the Scratch Pads or to delete both Scratch Pads and Appointments.

TM: "Delete Scratch Pads also?"

USER: Press <undo> to keep the Scratch Pads, <do> to delete them.

TM: The prompt "CONFIRM MULTIPLE APPOINTMENT DELETION" appears in the window whether you save or delete the Scratch Pads.

The prompt is to ensure that appointments are not deleted accidentally. Please be sure that the dates you have entered are correct. Press <undo> to stop the cancellations from continuing.

TM: "Confirm multiple appointment deletion."

USER: Press <do>.

TM: The Time Command window is restored to your screen.

Behind the scenes, all appointments scheduled in the times slots 0:00 to 23:55 have been deleted for both days entered, and the Daily Appointment Schedules for those two days have been updated with free time slots.

TM.II.80

10.5. Review.

This chapter has introduced you to the Cancel option and has demonstrated some methods of cancelling appointments without using the Daily Appointment Schedule directly.

If you are unsure of the exact Start- and End-times of the appointments you want to cancel, you can use the <delete> function of the Daily Appointment Schedule to find, display and delete appointments one-at-a-time.

If you know the exact dates and times of appointments, you may prefer to use the Cancel-Single Appointment option. This option is especially useful when you want to cancel a number of appointments whose dates are different. You can enter a series of potential cancellations without having to display a number of different Daily Appointment Schedules.

The Cancel-Multiple Appointments option is a quick way to delete Appointments and Scratch Pads that are dated within a broad timeframe. You can cancel appointments for a two-day holiday or a two-week vacation in one simple procedure. In addition, you can use this option regularly to keep your Appointment file cleared of out-dated Appointments.

Chapter 11. The Multiple Ownership Option

GOAL: So far, this tutorial assumed that there is one Owner of the appointment scheduling system. In this chapter, you can learn how to use the Calendar, the Daily Appointment Schedule and the Address Card File when there are two or more Owners.

EXAMPLE SITUATION: In this chapter, we suppose that you are no longer K.R.'s private secretary. Instead, you are a secretary who keeps track of several executives, each of whom has his or her own appointment schedules.

BEFORE PROCEEDING, if you have not already done so, please follow the procedures presented in Chapter One to display the Time Command window on the screen.

11.1. Using the Owner Command.

This lesson demonstrates how to use the "Owner" command to change the Owner of a Daily Appointment Schedule. Up until now, the Owner of the Daily Appointment Schedule and its Appointment file has been K.R. Stewing, the name you entered while following the procedure to display the Time Command window on your screen. Consequently, all of the appointments that have been scheduled so far during these tutorial lessons have been stored in your computer indexed under the name "K.R. Stewing."

You can create a new Owner, and an additional set of Daily Appointment Schedules and Scratch Pads indexed under the new Owner's name, in either of two ways. First, you can enter the new Owner's name in response to the Owner's Name prompt while initializing the program (see Chapter One: Displaying the Time Command Window).

Second, you can change the Owner without re-initializing the program by using the "Owner" command as demonstrated in the following dialogue.

TM: The Time Command window is on the screen.

USER: Select "Owner;" press <do>.

TM: The following prompt line appears inside the Time Command window.

Please enter owner's name: K.R. STEWING

As you can see, the current owner's name appears as a default setting. Without making any changes in the field, you can press either <do> or <undo> to keep K.R.'s ownership current.

You can change the Owner's Name by over-writing the default name, using <edit keys> as usual to correct any mispellings, as demonstrated in the following dialogue.

    TM: The cursor points at the Name field.

    USER: Enter [Your Name]; press <do>.

    TM: The Time Command window is restored to your screen.

Behind the scenes, Time Management looks for an Appointment file belonging to "Your Name" and, since none already exists, creates a new one. From now until you change ownership again, all additions and changes to the Appointment file belong to the new owner.

Meanwhile, the Appointment file belonging to the previous owner, "K.R. Stewing," is stored by your computer. You can retrieve it whenever you want by using the Owner's option with K.R.'s name.

11.2. Owning the Daily Appointment Schedule.

To demonstrate the effect of changing the Owner's name, please open the new owner's Daily Appointment Schedule by following the procedures you have already learned in Chapter Three or Chapter Five.

```
+---------------------------------------------------------------+
|                                                               |
|  October 1                    Your Name                 1983  |
|                                                               |
|   6:00 _____      9:00 _____     |
|   6:30 _____      9:30 _____     |
|   7:00 _____     10:00 _____     |
|   7:30 _____     10:30 _____     |
|   8:00 _____     11:00 _____     |
|   8:30 _____     11:30 _____     |
|                                                               |
|              Daily Appointment Schedule                       |
|  <arrows><page><next><insert><search><delete><do><undo>       |
+---------------------------------------------------------------+
```

As you can see, the new owner's name appears in the heading of the Daily Appointment Schedule. You can schedule, change or cancel appointments as usual. Time Management creates a new Appointment file, Daily Appointment Schedule and Scratch Pad file for the new owner.

Before proceeding to the next lesson, close the Daily Appointment Schedule by pressing <undo>.

11.3. Owning the Hours Mask.

Each new Appointment file that is created by the Owner's option is given its own Hours Mask. To demonstrate, open the Hours Mask window as demonstrated in Chapter Nine.

You can see that the Hours fields have been set to their default values. You can individualize the mask settings for the new owner by entering and saving a new set of mask values. For the moment, however, please leave the masking function turned "off" by pressing <undo>.

11.3. Sharing the Calendars.

As you can see, the Calendar display of the Time Command window is the same as it was before you changed the owner's name. While the Daily Appointment Schedules are "private" in the sense that each one can belong to only one owner, the Calendars are shared by all owners. If your job is to coordinate the activities of several different people, you can use the Calendar displays to keep reminders of important deadlines, vacation schedules or other events—all in one place.

11.4. Sharing the Address Cards.

The Address Card File is not "owned" by individual owners. Instead, this file is openly shared and accessible to all owners of the appointment scheduling system. This means that new Address cards inserted under the "ownership" of a new owner, for example Robby Stewing, are merged with those inserted under prior "ownerships."

To demonstrate, please open the Address window and display the directory using the procedures you learned in Chapter Four.

As you can see, the Address directory contains the same list of names that you entered while K.R. was the "owner." Using the procedures you have already learned, you can insert or delete Address Cards and see that no distinction is made between Address Cards entered under either owner.

To complete this lesson, close the Address window by pressing <undo>.

11.5. Using Separate Data Disks.

Another way to use the Time Manager with multiple owners is to keep separate data diskettes for each individual owner. This way may be most convenient for you if the different owners want to keep private Address Card Files or if appointment scheduling is heavy enough in your office to use up available data storage space relatively quickly.

If you opt for this solution, simply make a separate back-up copy of the Time Manager's data files for each owner (see Volume I: Getting Started for information about which Time Manager files you need on a data disk). Then, while you are using the Time Manager, you can use the "New Data" command to change data disks whenever you want. The following dialogue demonstrates.

> TM: The Time Command window is on the screen. The old data diskette (the one you have been using) is still in the disk drive.

> USER: Select "New" from the Time Command menu; then press <do>.

> TM: The following prompt appears inside the Time Command window: "Replace data disk and press <do>."

> USER: Follow directions accordingly: take the first diskette out of the disk drive and replace it with another one. When the new disk is in place, press <do>.

> TM: The Time Command window is restored to your screen.

> USER: If the owner of the new disk is not the same as the old one, use the "Owner" command to change the current owner.

You can decide to continue with the same owner if you prefer. In this case, the Time Manager looks on the new disk for the current owner's existing data files. If none are found on the new disk, a new set of data files are created on the new disk for the current owner.

11.6 Review.

This chapter has demonstrated the Multiple Ownership option. If you have to manage the time for several different people, you can use this option to keep separate Daily Appointment Schedules for each one.

For each owner, Time Management keeps an individual Daily Appointment Schedule and Appointment file, a Scratch Pad file and an Hours mask   a complete appointment scheduling function. Each group of owners shares the Calendars and the Address Cards.

You can choose to keep separate data diskettes for individual owners or for separate data functions. For example, you can keep Address Cards on one disk and Appointments, Calendars and Scratch Pads on another. The New Data option lets you change data diskettes without rebooting.

O·P·E·N ACCESS

SOFTWARE PRODUCTS INTERNATIONAL, INC.

INTEGRATION GUIDE

VOLUME II — USER'S MANUAL

Computer Museum

OPEN ACCESS
INTEGRATION GUIDE

This section outlines the options you have for moving information from one module to another within the OPEN ACCESS program and between OPEN ACCESS and other software environments. OPEN ACCESS has been designed to take care of most, if not all, of your business application software needs. However, to make the program more useful to you, OPEN ACCESS can communicate with other microcomputer software packages and with other data processing environments. This allows you to establish OPEN ACCESS as the center of a complete integrated information management system.

The Integration Guide is divided into three parts. Part One discusses some of the concepts of integration in general and how OPEN ACCESS approaches these concepts. Part Two shows you all of the communication pathways available between the different modules of the OPEN ACCESS program. Part Three covers the communication pathways available between OPEN ACCESS and the outside data processing world.

The Integration Guide assumes that you are familiar with the OPEN ACCESS program. It is necessary to understand the features of the individual modules before you can effectively integrate the modules with each other. For more information on the individual OPEN ACCESS modules, please refer to the User's Manual.

PART I
Introduction to OPEN ACCESS Integration

After using a microcomputer for several different business applications, you quickly realize how useful it would be if, somehow, the information from one application could be used in another. While typing your sales report in a word processing program, do you have to re-type the sales history figures from your File Management System, then the sales projection figures from your Spreadsheet System ? Does generating graphs to accompany the report mean retyping the data into a graphics program and somehow fitting them into your report? With some systems, you can at least use file conversion techniques to move the information from one file format to another format, but often these techniques are difficult to learn and to use.

As the evolution of microcomputer software continues, it has finally become possible to move information automatically from one application to another. The concept of integration among business applications is now becoming a software industry standard. Incorporating the concepts of integration into software has helped to improve the efficiency of the microcomputer and thus increase productivity in the office environment. There are three major benefits which integration provides. Let's now spend a moment discussing each of those benefits.

Benefits of Integration

One of the benefits of being able to move information from one application to another is that you can be much more sure that you are using the most up-to-date information. Once you update new information in one application, a File Management module for example, you can easily move it to another application such as a Spreadsheet, thereby insuring that you have the most current data. If no integration is available, then it becomes a much more complicated task to ensure that the information has been updated in all the different applications. Did the Spreadsheet get updated first or the File Manager?

In other words, it's much easier to keep track of updating one application rather than keeping track of updating six applications. With integration, information can be updated just once, then moved to other applications.

A second major benefit of integration is that you can be more sure of having the correct information. If the same information must be entered for three or four applications, it is much more likely that errors will occur. With integration, all of the data transfer is done automatically. So, you can be sure that you are working with the same information in one application as in another application.

The third and probably the most obvious benefit of integration among applications is that you can save the time and energy required to re-type the same information over and over again. Instead of typing in sales figures four times so they can be used for File Management, Spreadsheet, Graphics, and Word Processing, you may type them in once and then move them automatically to the other three applications.

The bottom line is that integration among business applications improves the productivity of your micrcocomputer and your office environment. That is the goal of a data processing system.

OPEN ACCESS Integration

OPEN ACCESS approaches the concept of integration on two levels. One level is the integration of information within the OPEN ACCESS program. The second level is the integration of information between OPEN ACCESS and other microcomputer programs as well as other data processing environments.

Integration within OPEN ACCESS has been one of the founding principles of the package. You can move information from module to module in all of the logical combinations. For example, you can enter information in Information Management, then send it to the Spreadsheet for analysis, and then use Graphics to graph the results. Or, you can write a report in Word Processor that includes the graphs and Spreadsheet analysis. To keep the communication pathways as simple as possible, those combinations that do not have any practical application, such as moving the appointment calendar into the Spreadsheet, have not been structured.

OPEN ACCESS provides three different ways to move information from one module to another. You choose the communication medium which is most appropriate to your needs and circumstances. One method creates a temporary "virtual" file in memory to move information quickly from one module to another. The other two methods create permanent files on your data disk. SIF (Standard Interface Format) files provide a format that is readable by OPEN ACCESS modules. Standard DOS text files integrate OPEN ACCESS modules with each other as well as with a variety of other DOS-compatible programs.

OPEN ACCESS offers more than internal integration. It lets you move information from other software environments into OPEN ACCESS and from OPEN ACCESS into other software environments. OPEN ACCESS can exchange information with a variety of software packages such as Lotus 1-2-3*, VisiCalc*, dBase II*, and others. A special Utility program transfers information from DIF* files, dBase II* copy- delimited files, or DOS text files into SIF files. This means that the information you move from other software environments can be fully integrated with OPEN ACCESS applications.

OPEN ACCESS can also receive information from a subscription network or a mini or mainframe computer system and incorporate it into its own environment. This means that you can retrieve information from some of the largest and most up-to-date data bases in the world to use with OPEN ACCESS applications. Or, if your organization has a mini or mainframe computer system as the core of its data processing department, you can move ASCII files from that system into OPEN ACCESS.

As you can see, OPEN ACCESS provides you with tremendous potential to extend the areas in which your microcomputer can be used. With the advanced functionality that OPEN ACCESS offers, extremely sophisticated applications can be implemented. Yet, OPEN ACCESS is easy to learn and use, even for people with little or no previous computer experience. The powerful integration capabilities offered by OPEN ACCESS make it possible to automate all aspects of a business application - from storing and retrieving information, to making projections and analyses, to writing reports with graphs included, to mailing or sending the results.

* Lotus 1-2-3, VisiCalc, DIF and dBase II are trademarks of Lotus Development Corp., VisiCorp, Software Arts and Ashton-Tate respectively.

APPT. SCHEDULING

COMMUNICATIONS

INFO MGMT.

SPREADSHEET

GRAPHICS

WORD PROCESSING
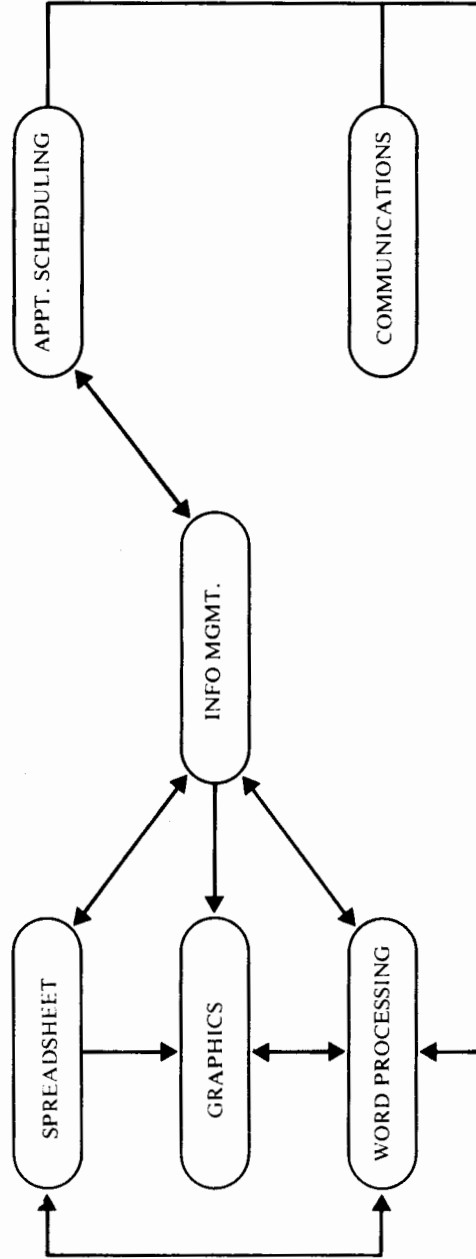
OPEN ACCESS INTERNAL INTEGRATION

IG.4

PART II
Integration Within OPEN ACCESS

In this part, we outline the communication paths through which one OPEN ACCESS module may communicate with other OPEN ACCESS modules. Then we describe the files used to "transport" the data from one module to another. Finally, we briefly describe the commands that transfer information and the steps necessary to implement them. For more detailed instructions about the commands, please refer to the User's Manual.

Overview

Each OPEN ACCESS module uses a specific type of file to process information internally. Each of these indigenous or "native" files is specially formatted to fit the module's specific applications in an efficient manner. However, not all of a module's "native" files can be understood by the other modules. Whenever you want to transport information from one module to another, you have to make sure that the "native" file is re-formatted (or "translated") into a file that can be understood by the receiving module.

OPEN ACCESS provides three types of files that are formatted so as to be understandable by different modules:

— Context files are temporary or "virtual" SIF files created only in memory by the CONTEXT command. You use these files when you want to transfer information directly from one module to another without saving the "translation" on your disk.

— SIF (Standard Interface Format) files are created by the EXPORT command and saved on your data disk. You use SIF files when you want to have the "translation" available for continued use. SIF files are identified by the file name suffix .SIF.

— Text files are created by the Word Processor and by the PRINT commands when you print to FILE from one of the modules. Text files are saved on your data disk and can be identified by the file name suffix .TXT.

Not all modules can create or understand all three types of files. Table 1 summarizes the possible options for "translating" files from one module to another. In Part Three, there are more detailed instructions for transferring information between modules.

Table 1: Intermodular File Communication

This table identifies the file types that can be understood by each OPEN ACCESS module. File types are identified by the file name suffix. Context files are represented in the table as CXT files. "Native" files are represented by their file name suffixes. Note that the Graphics module creates a special Image file that can be read by the Word Processor only. Communications module can send or recieve (s/r) compatible files.

From Module	To IM	SS	GR	WP	CM	TM	UT
IM	DB3	SIF CXT	SIF CXT	SIF TXT CXT	s/r	DB3	SIF
SS	SIF CXT	FMD	SIF CXT	SIF TXT	s/r	none	SIF
GR	none	none	CHT PHO	IMA	s/r	none	none
WP	TXT	none	none	TXT DOC	s/r	none	TXT
CM	s/r	s/r	s/r	TXT	LPR	s/r	TXT
TM	DB3	none	none	TXT	s/r	DB3	TXT
UT	SIF	SIF	SIF	SIF	SIF	none	SIF TXT

SIF Structure

The file format that can be understood by most OPEN ACCESS modules is the SIF (Standard Interface Format) file. This section outlines the structure of SIF files. Under most circumstances, you do not have to worry about the details of formatting a SIF file; for most applications, SIF files are constructed automatically by OPEN ACCESS. This review of SIF structure is here primarily to help you understand the procedures that convert other file formats to SIF files.

SIF Data Types There are five data types allowable in a SIF file:

— INTEGER, a whole number (with digits 0 through 9) without decimal or punctuation in the range -32,768 to +32,767;

— DECIMAL, a number with a decimal or exponental field (digits 0 through 9, minus (-) sign, decimal character, -e or -E scientific notation);

— BOOLEAN, a TRUE or FALSE data value (entered in upper-case);

— DATE, a valid date in MM-DD-YY format (or the current default date format);

— STRING, any printable characters.

SIF Format Information that is to be transferred to a SIF (or Context SIF) file must be organized in either "array" or "stream" format, or in "Dow Jones" format.

Array format is a rectangular arrangement of data into rows and columns, where all columns are the same width. A "cell" is an intersection of a row and a column. A typical array is like this one:

```
DOE        John    A.     12    675.89    TRUE
MICHAELS   Peter   M.   2341      8.99    FALSE
SMITH      Bill    L.     22     92.63    TRUE
```

A "row" in array format is equivalent to a "record" in an Information Management file, a "row" in a Spreadsheet file, or a "level" in a Graphics file.

A "column" in array format is equivalent to a "field" in an Information Management file, a "column" in a Spreadsheet model, or a "position" in a Graphics file.

Stream format is not organized into rows and columns. Fields, columns, or positions are separated (marked) by a space while records, rows or levels are delineated by a carriage return. A file in stream format looks like this:

```
DOE John A. 12 675.89 TRUE
MICHAELS Peter M. 2341 8.99 FALSE
SMITH Bill L. 22 92.63 TRUE
```

Usually, information received by the Communications module is in stream format.

Dow Jones format is the format of the Dow Jones network Historical Quote (HQ) or Current Quote (CQ). It is a text file that begins with a header record "Dow Jones Information Services"

Creating your own SIF file

SIF files contain two basic elements. The first element in any SIF file is the number of records in the file. The number of records is a single whole number on the first line.

The second element of a SIF file is its list of records. The fields in each record are separated by commas and optional carriage returns, as shown here.

> "Jim Smith",
> 25

Records are separated by semicolons and carriage returns, as follows.

> "Jim Smith",
> 25,
> "12-20-58";

A SIF may contain any number of lines. Remember to keep punctuation on the same line as the field or record to which it belongs. Start each new record on a different line. Fields may be on the same line.

> "Jim Smith", 25, "12-20-58";
> "Mary Jacobsson", 23, "12-20-60";

When you create your own SIF file, remember that your data must be entered in the correct data type format. BOOLEAN, DATE, and STRING data should be entered with string delimiters. String delimiters are single or double quotes which are inserted at the beginning and the end of each entry. You may use either type of quotes within the same SIF file but make sure that the beginning delimiter of an entry matches the ending one. If an apostrophe or single quote occurs within your string, use the double quotes as delimiters. INTEGER and DECIMAL data do not need delimiters.

The following is an example of a three record SIF file.

```
3                ← number of records
"U. S. Steel",   ← STRING
2000,            ← INTEGER
56.125,          ← DECIMAL
"11-11-72",      ← DATE in double quotes
'TRUE';          ← BOOLEAN in single quotes
"IBM",           ← second record
10000,
45.23
'1-28-80',
'FALSE';         ← last field in second record
"PEPSICO",       ← third record
150,
195.33
'12-3-82',
'TRUE';          ← end of the file
```

The following table summarizes the file types that can be used by each OPEN AC-CESS module and the commands used to export and import data to/from other modules.

Module	Native file type	Export command	via file type	Import command	via file type
IM	DB3	EXPORT	SIF	IMPORT	SIF
		CONTEXT	CXT		CXT
		PRINT	TXT	MAILER	TXT
SS	FMD	TRANSFER	SIF	TRANSFER	SIF
		CONTEXT	CXT		CXT
		PRINT	TXT		
WP	TXT	FILE	TXT	COPY	TXT
		PRINT	TXT		SIF
	DOC				
				INCLUDE	IMA
					TXT
					SIF
GR	CHT		IMA	IMPORT/DATA	SIF
	PHO				CXT
TM	DB3	PRINT	TXT		DB3
CM	LPR	SEND	SIF	RECEIVE	SIF
			CXT		CXT
			TXT		TXT
UT		SIF Inter change	SIF	SIF Inter change	TXT

Transferring Information between OPEN ACCESS Modules

The following outlines the basic procedures for importing (moving information TO) and exporting (moving information FROM) data files between modules. For each module there is a set of basic procedures to follow when you want to transfer information to another module. The basic procedural guidelines outlined in this section supplement the step-by-step instructions in the User's Manual. Please turn to the User's Manual for more complete details about using the commands and options mentioned in the guidelines.

The following guidelines assume that you are already familiar with the OPEN AC-CESS modules' functionality and operation. They focus on the steps you can take to move information FROM one module TO another module. For a complete set of guidelines for moving information FROM Module A TO Module B, read the section titled FROM Module A for "exporting" a file AND the section titled TO Module B for "importing" a file.

Data files can be transported between Open Access modules via Standard Interface Format files (SIFs), contexted virtual SIF files or standard DOS text (TXT) files. Each module uses a specific type of indigenous file, as indicated by the file name suffix. As a rule, a module's indigenous files must be converted to either a SIF or .TXT file before it can be exported to another module; similarly, an imported file must be converted to the module's indigenous type before module operations can begin.

Only the Word Processor and Information Management (Mailer option only) can read standard DOS text (TXT) files directly. Nevertheless, for some applications, using a text file to transfer information may offer the most efficient course of action. Each Open Access module (with the exception of Graphics) can output data to a text file through its PRINT command or <print> function. Once a text file is created, it can be copied (using the Copy command) or included (using the Include option) by the Word Processor into the body of another .TXT or .DOC file. Through such means, you can easily include the data produced from the various modules in the body of a report or letter developed through the Word Processor.

FROM INFORMATION MANAGEMENT

Information Management indigenous or "native" files are suffixed DB3. To export a DB3 file from Information Management to another module, use one of the following options:

1) EXPORT command, which converts a .DB3 file to a permanent SIF file that can be read from your disk by Spreadsheet, Graphics, and Word Processor.

   — Retrieve the DB3 file as an active file.

   — Select EXPORT, then enter the file name of the new SIF file.

   — When you are ready to use the SIF file in another module, follow the directions for importing SIF files under the module heading.

2) CONTEXT command, which constructs a temporary "virtual" SIF from a .DB3 file
for transport purposes only (the virtual SIF disappears after transport to another
module). This file can be "contexted" to the Spreadsheet, Graphics and the Word
Processor.

 — Retrieve the DB3 file as an active file.

 — Select the CONTEXT command, then the module to which you want the virtual
 SIF to be sent.

 — To Spreadsheet: enter the filename of the model to which the data base file
 is sent. This can be a new or existing model, or an unnamed model. When
 prompted, enter the cell coordinates where you want the DB3 information
 located.

To Spreadsheet: Data base "records" become rows and "fields" become columns.

To Graphics: As a rule, only numeric fields should be sent directly to Graphics. Field
names in DB3 files become labels for your graph. Each data base record becomes
a "level" and each field becomes a "position." The data base file must fit within
Graphics parameters (a maximum of 30 records/ levels and 30 fields/positions).

To Word Processing: The DB3 file is contexted so that each record becomes one line
of text. Each data base field is truncated (cut off) after 11 characters. To transfer longer
fields, use the EXPORT option instead of CONTEXT, or PRINT to a DOS text file (see
below for details).

To Time Manager: No transfer is necessary or available. Time Manager files are DB3
type, and can be read directly by Information Management.

To Communications: Master/Slave mode.

TO INFORMATION MANAGEMENT

To import an existing SIF file to Information Management, use the IMPORT com-
mand to transfer the SIF to a DB3 file:

 — From Information Management menu, select the IMPORT command.

 — Enter the name of the SIF file, then the name of the DB3 file to which you
 want the SIF file converted.

 — The new DB3 file is active.

Note: The Information Management module requires a File Definition Header, which
defines the key fields and field attributes, in each input file. If your SIF already has
this header, use the IMPORT command to convert the SIF to a file with a .DB3 suffix.

File Definition Header

```
3
'NAME:u"NUMBER:k"LASTDATE:n';
```

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The File Definition Header begins with the number of records in the file ("3" in the example) on the first line. The second line contains each field name followed by a colon and its key designation. The key name and its key designation are enclosed in single quotes:

'Fieldname:u'

The key designators are:

u = unique key field
k = key field
n = non-key field

If your SIF does not have a File Definition Header, Information Management creates a default header, which may or may not be adequate for your needs. If not, a File Definition Header, which identifies key fields and defines field attributes, can be created through the Spreadsheet module, as follows:

— Import the SIF to Spreadsheet.

— Spreadsheet column labels become field names in the header. Add [:k] to the first column label (and, optionally, any other column labels) to assign "key field" status; add [:u] to assign "unique key field" status. Use LOWER CASE status designators only.

— Export the file via SIF from Spreadsheet to Information Management.

— Use Information Management's Import command to convert the SIF to a .DB3 file.

Once the headered SIF has been converted to a .DB3 file, it can be modified using Information Management commands and options.

FROM SPREADSHEET

The Spreadsheet's indigenous or "native" files are suffixed FMD. To export a Spreadsheet FMD file to another module via SIF transport, there are two options available:

1) Transfer/Export option, which converts the .FMD file permanently to a SIF:

    — Select the TRANSFER command, EXPORT option.

    — Enter the name of the new SIF file.

    — Specify the top-left and bottom-right coordinates of the area to be transferred.   Remember to include the header record.

2) Context option, which constructs a temporary or "virtual" SIF from an .FMD file for transport purposes only (once transported, the virtual SIF disappears).

    — Select QUIT and specify whether to save your current model.

    — Select CONTEXT and the module to which you want the data to be sent.

    — Enter the top-left and bottom-right coordinates of the area to be sent.

    — To Information Management: specify the file name to which to send the contexted data.

    — To Graphics: specify the level/position parameters; then use the Refresh__Context option to prepare the data for graphing.

To Information Management: The first row transferred must be a header record with field names in each column. Add [:k] to the first column label (and any other column label) to assign "key field" status. Add [:u] to assign "unique key" status. Use lower-case designators only.

To Graphics: As a rule, only numeric data should be transferred to Graphics, but the first row or column may contain text labels. The Spreadsheet labels become labels on graphs. Columns become "levels" in Graphics, while rows become "positions." The area transferred must fit the Graphics parameters (maximum 30 rows/levels, 30 columns/positions).

To Word Processing: Contexting truncates cells to 11 characters. If this presents a difficulty with your data, you can use the TRANSFER command instead of CONTEXT, or PRINT to a DOS text file.

To Time Manager: No transfer is logical or available.

To Communications: Master/Slave mode.

TO SPREADSHEET

To import a SIF to the Spreadsheet, use the Transfer command's IMPORT option, which converts a .SIF to an .FMD suffixed file. Once the file has been converted, it can be modified using the Spreadsheet commands and options.

FROM GRAPHICS

To Word Processor: A Graphics file can be sent ONLY to the Word Processor, and ONLY by means of an ASCII file (suffixed .IMA) which has been specially formatted for Graphics applications. Most computer hardware can not support both text and graphics information on the screen at the same time. However, you can combine your graphs with text when you print them on a printer.

- In Graphics, access the graph file that contains the graph you want to insert into a text printout. Make sure it is set to look the way you want it to print.

- Select the PRINT/SLIDE command. Set the print device to the same one you will use when printing from Word Processor. Then enter the name of the ASCII file that stores the graph image.

- Select OPTIONS to access the Word Processor. Then access the Text or Document file with which you want to print the graph.

- At the location in the text where you want to insert a graph, insert an INCLUDE command that specifies the name of the ASCII file containing the graph image (remember to include the .IMA suffix). The format is: †include file.IMA.

- Select the Word Processor PRINT command; select the same Output Device you specified in Graphics. Your text and graph information is printed in one printout.

TO GRAPHICS

You can import information from the Information Manager or the Spreadsheet via the CONTEXT command or the EXPORT command. Please see the instructions under the "sending" module for creating SIF or Context files.

To import a SIF to Graphics,

- Select the IMPORT/DATA command; enter the file name of the SIF file you want to use.

- Select the Refresh Data option to get the SIF file information ready for graphing. Then proceed to use other Graphics commands and options.

To context a virtual SIF file to Graphics:

- Follow the instructions for contexting listed under the "sending" module heading, selecting Graphics as the "receiving" module. This accesses the Import/Data window.

- Enter the level/position parameters for the information in the contexted virtual file.

- Select the Refresh_Context option to prepare contexted data for graphing.

Note: As a rule, Graphics handles only numeric information arranged in array format. The information in the SIF file or contexted virtual file must fit within Graphics parameters (maximum 30 levels, maximum 30 positions). Field or column headings existing in transferred files become labels on your graphs.

IG.14

FROM WORD PROCESSOR

The Word Processor's indigenous or "native" files are suffixed TXT (standard DOS text file) or DOC (Document file). The standard DOS text file can be understood by Information Management only. However, the text file can be converted to a SIF file if necessary.

To Information Management: You can use the Information Management Mailer option to print form letters from Word Processor.

- In Word Processor, create a text (TXT) file that contains the form letter text and "Includes" specifications where data base information is to be inserted.

- In Information Management, use the MAILER command to retrieve the set of records that contains the information you want to insert in the letter. MAILER prints one copy of information where indicated by "Include."

To other modules: Ordinarily, it is not a common procedure to send information from the Word Processor to another module. However, if your application is such that you have information in a text (TXT) file that you want to use in Information Management, Spreadsheet or Graphics, you can use the SIF__Interchange Utility to convert your file from Text to SIF.

- In Word Processor, isolate the information you want to transfer in a separate text (TXT) file.

- Use the Word Processor options to arrange the information in an appropriate SIF format (see above, "SIF Structure"). In general, the information in the file must be arranged in either array or stream format, with appropriate string delimiters (single or double quotes) inserted; records must be separated by a semicolon and a carriage return.

- Select Utilities from the Options window; then select SIF Interchange from the Utilities menu. Finally, select the Text to SIF conversion option (see Getting Started/Installation Guide for details).

- Answer the prompts with information about your TXT file. You can specify that the conversion process "Skip lines," rows or records from the beginning of the file, or "Skip columns" from the left of a record.

- When conversion is complete, the SIF file on your disk can be imported as usual by one of the modules (see instructions listed under receiving module).

TO WORD PROCESSOR

You can send information to the Word Processor from another module via a SIF file, a contexted virtual file, or a standard DOS text file (suffixed TXT).

To import a SIF file to the Word Processor:

- Use the COPY command to copy the SIF into a .DOC or .TXT file.

— Use <format> to set SIF tabs before completing the copy procedure.

To context a virtual file to the Word Processor:

— Follow the instructions listed under the "sending" module heading to context a file to Word Processor. Contexting truncates (shortens) field or cell widths to 11 characters. If this creates a problem for your data, use a permanent SIF file or a standard DOS text file to transfer information.

To import a standard DOS text (TXT) file to the Word Processor:

— Produce a TXT file from one of the OPEN ACCESS modules by following the printing instructions presented in the module's documentation, selecting "FILE" from the Output Device Selection window. This creates a text file with the name you enter at the FILE prompt.

— In Word Processor, use the COPY command to copy the text file into a text (TXT) or document (DOC) file; or insert an INCLUDE command where you want the text file to be inserted while printing.

Note: All OPEN ACCESS modules, with the exception of Graphics, can print a text file in this way. See "From Graphics" for specific Graphics instructions.

FROM TIME MANAGER

Although most users would rarely find it necessary to export Time Manager files to other modules, it is possible to do so. The Time Manager data files APP.DB3 (Appointment file), CARDS.DB3 (Address file), REMDAY.DB3 (Scratch Pad file) and HOURS.DB3 (Hours Mask file) are fully compatible with Information Management .DB3 files, and can be converted to SIFs using Information Management's Export or Context commands. See "From Information Manager" for details.

TO TIME MANAGER

Ordinarily, you would not find it necessary to import information to the Time Manager from another module. However, you can use Information Management to append a DB3 file to one of the Time Manager's DB3 files.

— If transferring from another module, CONTEXT or EXPORT the file from the sending module to Information Management.

— In Information Management, assign a DB3 file name to the imported or contexted file. DO NOT assign one of the Time Manager file names.

— Use the APPEND command to attach the new DB3 file to the appropriate Time ˙ Manager file.

IG.17

FROM COMMUNICATIONS

Information may come through the Communications module in one of two ways.

1) The Master/Slave mode can transfer an OPEN ACCESS indigenous-type file from a remote location. In this case, the file can be used immediately by the module that understands that file type. For example, if the transferred file is a DB3 file, it can be used by Information Management; if it is suffixed FMD, it can be used by the Spreadsheet.

2) Information that is transferred from a large computer or from a network service through Communications now resides on a log file (suffixed LPR) that is equivalent to a standard DOS text file.

To Information Manager, Spreadsheet or Graphics: convert the text/log file to a SIF file by using the SIF Interchange Utility:

— Select Utilities from the Options window; then select SIF Interchange from the Utilities menu. Finally, select the Text to SIF conversion option (see Getting Started/Installation Guide for details).

— Answer the prompts with information about your log file. You can specify that the conversion process "Skip lines," rows or records from the beginning of the file, or "Skip columns" from the left of a record.

— When conversion is complete, the SIF file on your disk can be imported as usual by one of the modules (see instructions listed under receiving module).

To Word Processor: the text/log file can be accessed directly without conversion. If the log file is too long to fit in memory, you may not be able to edit the file. You can print the file in any case.

Part III
Integrating OPEN ACCESS with External Software Environments

In this part, we outline the communication paths through which OPEN ACCESS integrates information with other microcomputer programs, with mini and mainframe computers and with subscription network services. These capabilities tremendously extend the integration capacity of OPEN ACCESS.

For instance, what other software package allows you to access current Dow Jones stock quotes, then move the information into a history file in the Information Manager, perform interactive stock analyses with the Spreadsheet, graph the results, and include it all into a nicely formatted report typed with the Word Processor?

On the following page is an illustration the communication pathways between OPEN ACCESS and other software environments. This will help to clarify the following discussion.

DOW
JONES

1-2-3
VisiCalc

SUBSCRIPTION
NETWORK

DIF

OPEN ACCESS

MINI
OR
MAINFRAME
ASCII

dBASE II

OPEN ACCESS EXTERNAL INTEGRATION
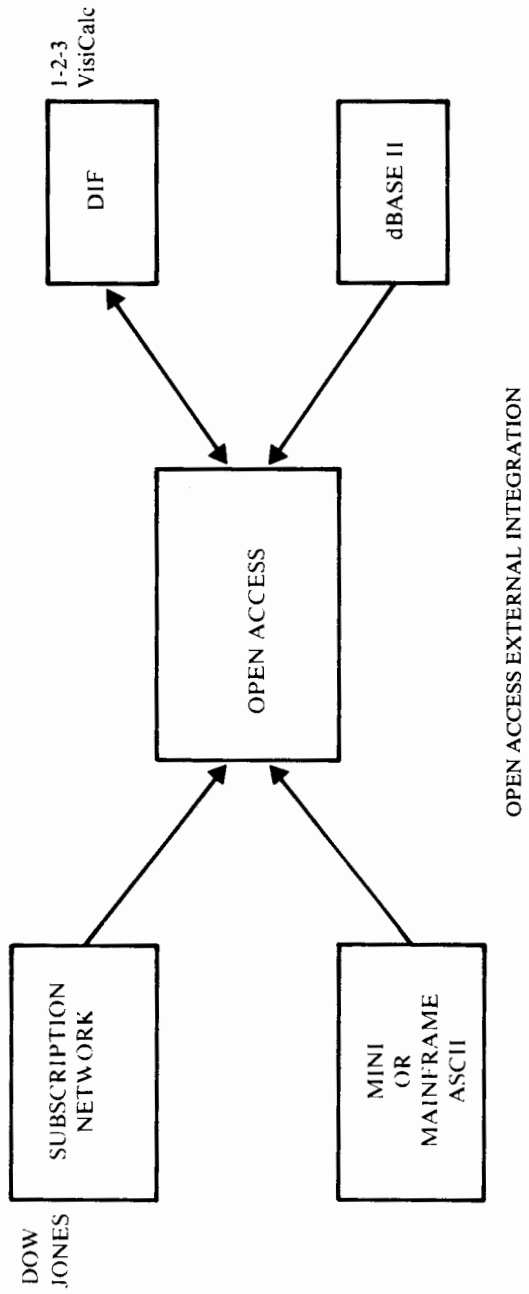
IG.20

The SIF Interchange Utility provides a number of options designed to convert certain kinds of "external" files to SIF files. The Interchange options are outlined below. For more details on this utility, please refer to Getting Started/Installation Guide.

DIF to SIF

This option allows you to move information from a DIF format file into a SIF file. This enables you to transfer information from other software packages, such as VisiCalc and Lotus 1-2-3, to OPEN ACCESS. Once the DIF file is converted to a SIF file, you can import it to OPEN ACCESS modules as instructed in Part Two.

- Select Utilities from the Options menu, then select SIF Inter- change, and select DIF to SIF.

- Enter the name of your existing DIF file. Then enter the name you wish to be assigned to your SIF file.

- When the conversion is complete you can use the SIF file in an OPEN ACCESS module. Follow the instruction in the previous section titled TO the appropriate module.

SIF to DIF

The SIF to DIF option allows you to transfer information from OPEN ACCESS to a file format which may be used by other microcomputer software packages, such as VisiCalc or Lotus 1-2-3. This may be useful if you have some applications already established on other packages, but you also want to use information which has been entered into the OPEN ACCESS environment. The steps are outlined below.

From Information Management or Spreadsheet: Use the Export command to move the data into a SIF file.

From Word Processor: Save the file as a Text type file ; then use the Text to SIF Utility option to create a SIF file.

From Communications: Use the SIF Interchange Utility's Text to SIF conversion to create a SIF file from this data.

From Graphics: not available for this communication pathway.

- Select Utilities from the Options menu, then select SIF Inter-   change, and select SIF to DIF.

- Enter the name of your SIF file which has been created with OPEN   ACCESS. Then enter the name you wish to be assigned to your   DIF file. Once the conversion is complete you can use this   information in other microcomputer programs which may load   and use the DIF file.

DBase II to SIF

OPEN ACCESS can convert a dBase II copy delimited file into a SIF file. This lets you to use information contained in your DBase I! applications in the OPEN ACCESS environment without discarding all the work you have already done in building your DBase II applications.

To move information from a DBase II copy delimited file to OPEN ACCESS, follow the steps below.

— Select Utilities from the Options menu, then select SIF Inter- change, and select DBase II to SIF.

— Enter the name of your DBase II copy delimited file which has been created with DBase II. Then enter the name you wish to be assigned to your SIF file. Once the conversion is complete you can use this information in the OPEN ACCESS program. See the instructions listed under importing TO the module you want to use.

Text to SIF

The Text to SIF option converts information in a standard DOS text file into a SIF file. It allows you to transfer information from any microcomputer package which can write information to a DOS text file, or to transfer information from a mini or mainframe computer which can download a DOS text file, or to transfer information which has been saved into a DOS text file from a subscription network into OPEN ACCESS. It makes it possible to receive information from a wide variety of software packages and use it in OPEN ACCESS.

Before you execute the Text to SIF conversion utility, you need to make sure that the information contained in your DOS text file is in one of three formats acceptable by the Text to SIF conversion. Please see "SIF Structure" above for details about formatting a SIF file. You can use the Word Processor to edit your file into the appropriate format.

In "array" format, each database record or spreadsheet row or graphics level is contained on one line in your text file. All database fields, spreadsheet cells, or graphics positions contained in that record, row, or level are of the same length. Values are padded with blanks if they are not long enough to fill the cell. An example is shown below.

Smith	27	15000.00	sales
Hollingsworth	49	45000.00	operations
Hu	15 ·	110000.00	research

In " stream" format, fields, cells, or positions do not have to be of the same length. Records, rows, or levels are simply separated by a carriage return and fields, cells, or positions are separated by a space.

Smith 27 15000.00 sales
Hollingsworth 49 45000.00
operations Hu 15 110000.00 research

The Dow Jones current quote (CQ) or historical quote (HQ) format can be converted as a special type of text file. OPEN ACCESS makes it simple to move information about the stock market into the Spreadsheet, Information Manager, or Graphics modules.

Once the DOS text file is in an acceptable format, follow the steps outlined below.

— Select Utilities from the Options menu, then select SIF Inter-change, and select Text to SIF.

— Enter the name of your DOS text file. If applicable, answer the prompts asking for row and column offset. This is most useful if your DOS text file is in the array format and you do not want to move all of the information into your SIF file.

Note: If your file is in Dow Jones format, you can use the "Skip Lines" prompt to remove the Dow Jones header, but you may not "Skip Columns" (press <ret> in response). The conversion program looks for the keyword "STOCK" with two spaces following; do not "skip line" where this keyword appears.

— Next, enter the format style for this Text file and the name to be assigned to the SIF file. Once the conversion is complete you can use this information in an OPEN ACCESS module. See above under the importing module for more information.

The picture on the next page shows all of the communication pathways available in the OPEN ACCESS program. This can serve as a reference chart to summarize the information you need to integrate OPEN ACCESS.

DBASE II ADDENDUM

There is a new, easier to use procedure that converts dBase II information to a SIF file. Please update your Getting Started and User's Manual as follows.

User's Manual, Integration Guide, "dBase II to SIF" (IG.22)

Open Access can convert a dBase II **DBF file** (not copy delimited file) into a SIF file. To move information from a dBase **DBF file** to Open Access, access the SIF interchange, then enter the name of the **DBF file** which was created with dBase II.

OPEN ACCESS COMMUNICATION PATHWAYS

FIG.24

O·P·E·N
ACCESS
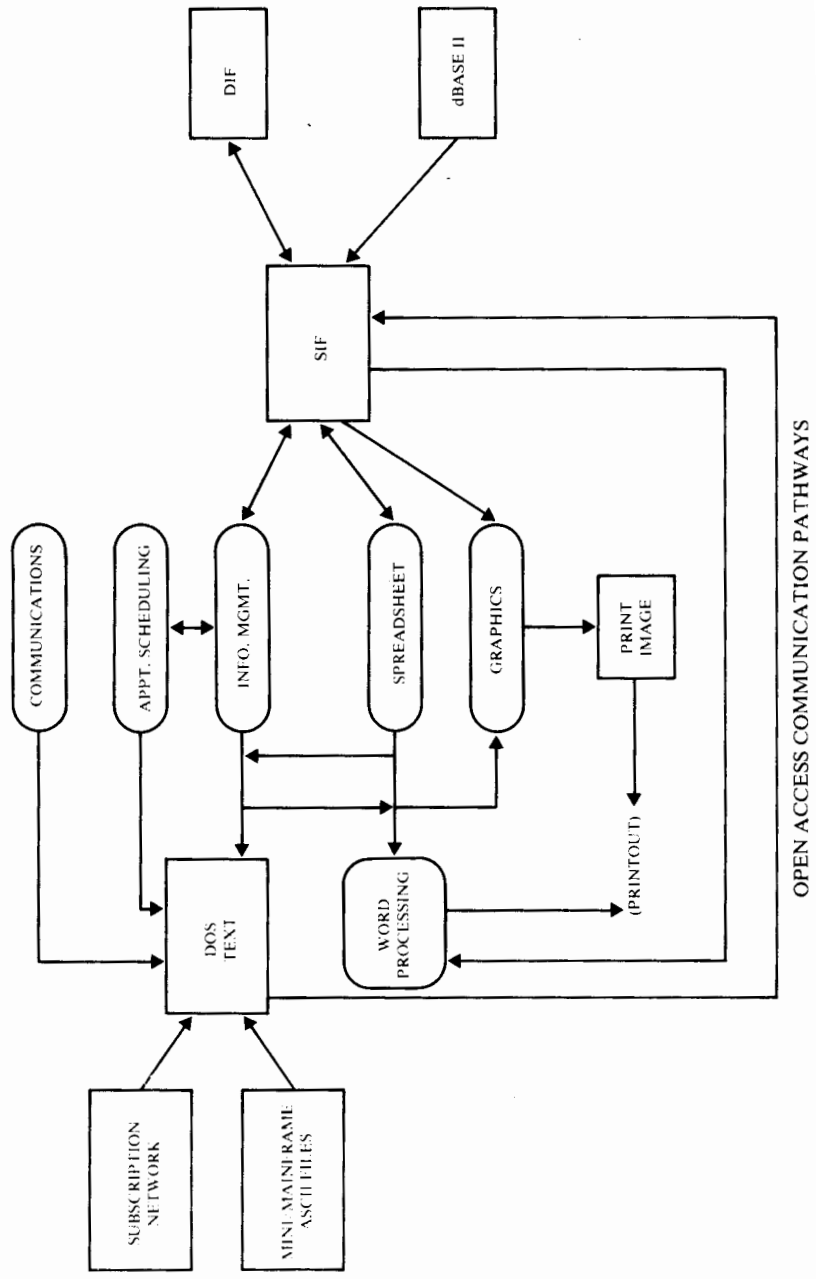
SOFTWARE PRODUCTS INTERNATIONAL, INC.

MACROS

VOLUME II — USER'S MANUAL

O·P·E·N
ACCESS

MACROS
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MACROS

As you become familiar with the power and versatility of Open Access, you will find yourself repeating tasks. To save time and increase efficency you can have the computer "learn" these repeating procedures.

The computer "learns" by monitoring all the keys strokes you enter to perform a procedure once. It records the key strokes in a "monitor file." Once a procedure has been "learned," you can tell the computer to "execute" it. The computer will then perform the key strokes recorded in the monitor file exactly as if you had pressed the keys.

Each procedure that the computer learns is called an automatic procedure or "Macro." Macros are especially helpful in two types of instances. The first is an often used process where you simply do not want to have to press the same keys over and over again. The second is an infrequently repeated but critical process. The process must be done without mistakes, but is done so seldom that it is difficult to remember the exact steps. Once the procedure is automated, you can be sure that it will always be done the same way.

Macros can be used in the following instances for each of the Open Access modules:

Information Management	- Generating weekly, monthly or yearly reports.
	- Printing mailing labels.
	- Updating a field repeatedly.
	- Purging and appending a file frequently.
	- Entering an often used complex query.
Time Management	- Scheduling the same appointment for every calendar owner.
Graphics	- Loading a Slide Show for a repeating demonstration.
Word Processing	- Setting the printer page for an often used format and output device.
	- Copying in often used files like a header or "boiler plate" information.
Spreadsheet	- Creating a new model for repeatedly contexted data and formating the data.
Communications	- Dialing and entering the password for often accessed sources.

You will find many other situations where macros are useful. And remember that macros can help people learn too. The demonstation in Getting Started is a macro.

MG.1

LEARN A MACRO

Getting your computer to learn a macro involves the following steps:

1. Start procedure at strategic place.
2. Press <macro> to access the Macro Selection Window.
3. Select Learn.
4. Enter file name.
5. Enter keystrokes.
6. Press <macro> to access Macro Options Window and select one of the following options:
   a. Save   - to save the procedure
   b. Pause   - to insert a pause in the procedure then return to step 5
   c. Message   - to insert a message and pause in the procedure then return to step 5
   d. Abort   - to end without saving the procedure

Start at a strategic place.

When you execute the macro, you must begin at the exact same point that you started "learn." Everything must be the same: the cursor position, the defaults, everything. The following guidelines will keep you out of trouble. Start a macro at a main menu. After the first keystroke in your macro, insert a "message" that indicates the correct starting point, or write the macro name and starting point on the disk.

Some starting points are illegal (for various reasons) and are therefore "locked-out" by Open Access. If you want to begin the learning process but are locked out, back up a few steps and try from there.

Press <macro> to Access Macro Selection Window

In any module of Open Access you can press <macro> to bring up the Macro Selction Window.

| Execute | Learn |

The Window presents two choices, Execute or Learn. Execute is highlighted.

Select learn

There are two ways to select "Learn." The easiest is to simply press <L>. Or you can press the right arrow once to highlight "Learn" and then press <do>.

Enter the file name.

After you have made your selection, the prompt "File Name:" appears. Enter a file name and press <ret>. The file name you enter labels the monitor file that records the new automatic procedure. Later, when you want to execute this macro, you will identify it by this file name.

File names have to conform to MS-DOS standards. They may not be longer than eight characters and some special characters are not allowed. Open Access will automatically append the type ".MON" (for MONITOR) to the file name. While it isn't required, you will find it helpful if the name indicates the kind of Procedure being recorded, such as "GLUPDATE" or "MONTHEND".

If the name you enter duplicates the name of another macro, you will be asked if you want to delete the existing macro. If you don't, press <undo> and enter another name.

Enter the keystrokes.

Now begin the procedure. Each key you press is recorded. If you make a typo and back up to erase and reenter, the macro stores all those keystrokes, the error, the backspace and correction. As long a you don't make a fatal error the macro will work fine. However you can't "erase" a big mistake. When you get into trouble the best bet is to abort and start over.

We suggest you use letter keys to select the various options from menus and windows rather than arrows. This way, you will always get the correct option regardless of where the cursor happens to be.

There is one place where the keystrokes are not recorded while in learn mode. This is the graph mode of the Graphics module. While graphs (not text characters) are showing on the screen, the keystrokes you use to view the graph in different orientations are not recorded. The recording process continues automatically once you return to the text mode of Graphics.

Press <macro> to access Macro Options Window and select an option.

At the beginning, end or during a procedure, you press <macro> to bring up the Macro Options Window.

Save	Pause	Message	Abort
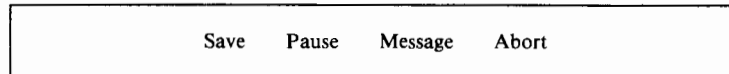
When <macro> is pressed in learn mode, a menu appears in the middle of your screen offering you four choices: Save, Pause, Message, and Abort.

If you have completed recording your procedure, highlight "Save" and press <do>. Your procedure is stored in the monitor file you specified.

When you select "Pause," you insert a pause and "press macro to continue" message in the automatic procedure. At this point during Execution the macro will stop to allow the user to view a display or enter data. After you select pause you are put in pause mode. While in pause mode, key presses are not recorded. You can enter something similar to what the user will enter in Execute to get the macro to the next step. When you press <macro>, you return to the learn mode.

The "Message" option does almost the same thing. When you select Message you are prompted to enter a one line message that is displayed during the pause in the macro. Since this replaces the "press macro to continue" message, you may want to include a direction to press <macro> in your message. After you enter the message and press <ret> you are in pause mode. Key presses will not be recorded until you press <macro> to return to learn mode. Usually you insert a message in a macro to tell the user what is happening, or what should be done during the pause.

Suppose you need to update various months' files and you are recording a procedure to do so. Somewhere in the procedure you will need to enter the name of the file to be updated. Now you don't want to have a different procedure for each file; that would defeat the purpose for the macro. Pause or Message allows you to stop the macro, enter the file name manually, and continue the macro.

Remember to use Message to insure that the macro user executes the procedure at the correct starting point. If the user is not at the right place he can move to that point while the macro pauses. When the user presses <macro>, the macro will continue.

The "Abort" option aborts the macro without saving the steps. This is handy when you make a mistake and want to start over.

EXAMPLE SITUATION: You have to print mailing labels every month for a customer newsletter. You decide to put this repetitive task in a macro.

First you begin the macro at a good place then access the Macro Selection Window.

PROMPT	RESPONSE	EXPLANATION
Options Window Window	Press <macro>	Accesses Macro Selection
Macro Selection Window	Press <L>	Selects "learn a macro"
"File name:"	Enter [MAIL] and press <ret>	Labels the new monitor file

To make sure the macro user starts at the right place you enter a message.

PROMPT	RESPONSE	EXPLANATION
"MAIL.MON in Learn mode"	Press <macro>	Accesses Macro Options Window
Macro Options Window	Press <M>	Selects the message option
Blank Message Window	Enter [Start at Options Window, then press macro.] and press <ret>	Enters message
"Pause mode, press macro to leave."	Press <macro>	Exits pause mode, reenters learn mode

Now you start the procedure for the macro.

PROMPT	RESPONSE	EXPLANATION
Options Window	Press <I>	Accesses Information Management
Data Base Operations menu	Press <M>	Selects mailer command
FROM	Enter [CUST] and press <do>	Enters query
"Form letter file:"	Enter [LABEL] and press <ret>	Enters mailing label format, Output Device Selection Window appears

Since you are not sure which device the macro user will be printing the mailing labels on month to month, you insert a pause that lets the macro user select the output device.

PROMPT	RESPONSE	EXPLANATION
Output Device Selection Window	Press <macro>	Access Macro Options Window
Macro Options Window	Press <M>	Selects message option
Message Window appears	Enter [Highlight output device then press macro.] and press <ret>	Enters message
"Pause mode, press <macro> to leave"	Highlight CONLABEL	Selects a device as macro user will
"Pause mode, press <macro> to leave"	Press <macro>	Exits pause mode, returns to learn mode
Output Device Selection Window	Press <do>.	Enters highlighted choice

Since the macro user may not press <do> the same number of times to print all the mailing labels, you put the macro in pause while the labels print.

PROMPT	RESPONSE	EXPLANATION
First page of labels prints to the screen	Press <macro> and then <M>	Accesses Macro Options Window and Selects Message option
Blank message appears	Enter [Press <do> until DB Operations Menu then press macro.] and press <ret>	Enters message
"Pause mode, press <macro> to continue"	Press <do> until Data Base Operations Menu appears	Prints all the mailing labels
Data Base Operations Menu	Press <macro>	Exits pause mode, returns to learn mode

The procedure is complete so you save the macro.

PROMPT	RESPONSE	EXPLANATION
Data Base Operations Menu	Press <macro>	Accesses Macro Options Options Window
Macro Options Window	Press <S>	Selects Save, "End of Macro Command".appears

EXECUTE A MACRO

Once your procedure is stored, you can Execute it. To execute, follow these steps:

1. Execute at the exact same place where the macro was learned.
2. Press <macro> to Access the Macro Selection Window.
3. Select Execute.
4. Enter the file name.
5. Macro enters keystrokes.
   a. Take actions as directed by messages.
   b. Press <macro> to continue from pause mode.
6. "End of Macro Command".

Execute at the exact same place where the macro was learned.

Be certain that you are at the correct starting point. The macro will not work correctly if you start off in the wrong place.

Press <macro> to access Macro Selection Window

In any module of Open Access you can press <macro> to bring up the Macro Selection Window.

```
┌─────────────────────────────────────────────────────────┐
│   ┌──────────────┐                                        │
│   │  Execute     │        Learn                           │
│   └──────────────┘                                        │
│                                                           │
└─────────────────────────────────────────────────────────┘
```
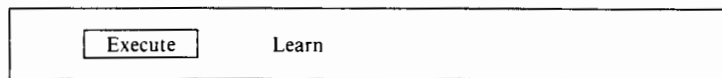
The Window presents two choices, Execute or Learn. Execute is highlighted.

Select Execute

You can press <E> to select "Execute". Or since "Execute" is already highlighted you can just press <do>.

Enter file name.

After you make a selection the prompt "File name:" appears. The prompt asks you for the name of the file to be executed. Enter the name you used when you recorded the procedure and press <ret>. If you don't remember the name of the monitor file you can press <search> to view a list of available monitor files. You can select a name from the list by highlighting it and pressing <do>.

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Macro enters the key strokes.

The procedure begins and automatically continues until the task is completed or it reaches a recorded pause.

During execution, pauses are generally at times when you must perform a function before the procedure can continue. Perhaps you need to insert special forms into the printer or need to verify that you have reached a good number and not a busy signal before continuing with a Communications procedure. Hopefully the macro maker has included a message to indicate what's expected.

Answer the prompts as indicated on your screen; then press <macro> to continue the execution.

"End of Macro Command".

When your task is completed, you will see a prompt telling you, "End of Macro command" You are returned to your Open Access module.

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EXAMPLE SITUATION: You are ready to print out this month's customer mailing labels.

PROMPT	RESPONSE	EXPLANATION
Data Base Operations Menu	Press <macro>	Accesses Macro Selection Window
Macro Selection Window	Press <do>	Selects Execute
"File Name:"	Enter [MAIL] and press <ret>	Retrieves monitor file, macro starts with prompt "Start at Option Window then press macro."

Now here is a problem. You are on the Information Management, Data Base Operations Menu but you are suppose to start the macro on the Options window. You can move to the Options Window without affecting the macro because you are in pause mode until you press <macro>.

PROMPT	RESPONSE	EXPLANATION
Data Base Operations Menu	Press <change> Maintenance Menu	Accesses the File
File Maintenance Menu	Press <O>	Accesses the Options Window
Options Window, in pause mode	Press <macro>	Exits pause mode, reenters execute mode

Now the macro is doing all your work for you, accessing the Mailer command, entering the query and the form letter file name. Now the Output Device Selection Window appears and you must highlight your selection.

PROMPT	RESPONSE	EXPLANATION
Output Device Selection Window	Highlight CONSOLE and press <macro>	Selects CONSOLE as the output device

The macro enters the output device selection and starts printing the labels.

PROMPT	RESPONSE	EXPLANATION
One page of labels prints, macro goes into pause mode, message "Press do to change page."	Press <do> as prompted until Data Base Operations Menu appears	Prints the mailing labels
Data Base Operations Menu	Press <macro>	Macro ends with message, "End of Macro Command"

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MONITOR FILE MAINTENANCE

The way in which you change the name of a monitor file, or copy or delete a monitor file is different than for most other files. All these monitor file maintenance tasks are done from the monitor file Search Window which is accessed from the Macro Selection Window.

Follow these steps:

1. Press macro to access the Macro Selection Window.
2. Select Learn.
3. On "File Name:" press <search> to access the monitor file Search Window.
4. Highlight the name of the file.
5. Do one of the following:

    a. To change the name of a monitor file
      1. press <change>
      2. enter new name and press <do>

    b. To copy the monitor file
      1. press <line__ins>
      2. enter copy's name and press <do>

    c. to delete the monitor file
      1. press <line__del>
      2. confirm delete with <do>, abort delete with <undo>

6. Press <undo> to leave Search Window.
7. Press <undo> to leave Macro Selection Window.

EXAMPLE SITUATION: The manager has ended the monthly customer newsletter so you no longer need the MAIL macro.

PROMPT	RESPONSE	EXPLANATION
Data Base Operations Menu	Press <macro>	Accesses Macro Selection Window
Macro Selection Window	Press <L>	Selects learn
"File Name:"	Press <search>	Accesses Search Window
Search Window	highlight [MAIL.MON] and press <line__del>	Selects MAIL.MON for deletion
"Confirm deletion"	Press <do>	Monitor file is deleted
Search Window	press <undo>	exits Search Window
Macro Selection Window	press <undo>	Exits Macro Selection Window

MACRO GUIDE

ADDENDUM

The Macro Modification Utility

Purpose: The Macro Modification Utility converts files between macro (.MON) and text (.TXT) formats. You can convert macro files to text files for editing, then reconvert the text files to macro files.

The Macro Modification Utility is a reserved utility in Open Access. You can use this utility to edit your macros in text format, then convert the text files to macro format. It is possible to write your macro with the Word Processor and convert the resulting text to macro format without first recording the macro. You also need not re-record your macro each time you want to make a change.

1. Accessing the Macro Modification Utility

The Macro Modification Utility is accessed through the Options window. Once you have accessed the Options window, follow the steps below to access the utility.

PROMPT	RESPONSE	EXPLANATION
Options window	Press <U>	Accesses the Utilities option
Utilities window	Press <R>	Selects the Reserved option
Prompt line	Enter [MAC] and press <do>	Selects the Macro Modification Utility

You can use <ins> and <del> to help you enter the utility name on the prompt line. If you decide not to use the Macro Modification Utility at this time, press <undo> to leave the prompt line and select another utility. To leave the Utilities window and return to the options window, press <undo> once more.

The Macro Modification Utility is located on the BOOT disk. If you are accessing the utility from this disk, you need not follow the next step. If you are accessing the utility from the CODE disk, proceed as follows:

PROMPT	RESPONSE	EXPLANATION
Insert MACED disk and press <do>	Remove the CODE disk and insert the BOOT disk; press press <do>	Accesses the Macro Modification Utility

When you have accessed the Macro Modification Utility, the following screen appears:

Macro/Text file conversion
Macro__To__Text   Text__To__Macro
<do>   <undo>

2. Macro to Text Conversions

If you have a macro that requires editing or revisions, you must convert the macro file to a text file. The text file can be edited using symbols that correspond to the function keys. These key symbols are described in the chart in Section Three.

To convert a macro file to a text file, press <M> to select the Macro__To__Text conversion. When the prompt "From Macro File:" appears, enter the name of your macro file and press <do> or <ret>. The prompt, "To Text File:" then appears.

The default text file name is the same name as the macro file. You can choose this name by pressing <ret>, or enter another name and press <ret>. The conversion process then begins. The example below illustrates these steps.

PROMPT	RESPONSE	EXPLANATION
Macro__To__Text Text__To__Macro	Press <M>	Selects macro to text conversion
"From Macro File:"	Enter [MEND] and press <ret> or <do>	Enters MEND.MON for conversion
"To Text File:"	Press <ret>	Enters the default name, MEND.TXT, and begins the conversion process

As your macro file is converted, the new text file is displayed on your screen. You can see the symbols in the text that are used to represent the recorded keystrokes. If you spot any errors or problems in the conversion, you can begin again, or use the Word Processor to make editing corrections. The use of the Word Processor is described in the following section.

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3. Editing the Text for a Macro File

Macro files that are converted to text files are written in a specific format. Each key that is pressed in the recording of a macro file is written into the file as a symbol. The text of the macro file used in the example above appears as follows:

```
<do> <search> <do> <down> <down> <down> <down> <down> <down> <do>
<do>
<macro>
This__is__a__list__of__the__Sales__data.__Press__ <less-than>Macro>.
<macro>
<menu>n <change>o
<macro>
```

Each of the symbols represents a key or function on your keyboard. Many of the symbols are similar to the key names used throughout the manuals. A chart of the macro symbols appears on the next few pages.

MACRO KEYSTROKE SYMBOLS

Operation	Symbol	Operation	Symbol
Return or Enter	<newline>	Backspace	<back space>
Up arrow	<up>	Insert	<ins>
Down arrow	<down>	Delete	<del>
Left arrow	<left>	Line Insert	<line-ins>
Right arrow	<right>	Line Delete	<line-del>
Page Up	<page-up>	Help	<help>
Page Down	<page-down>	Print	<print>
Jump Up	<jump-up>	Search	<search>
Jump Down	<jump-down>	Change	<change>
Jump Left	<jump-left>	Calc	<calc>
Jump Right	<jump-right>	Do	<do>
Tab	<tab>	Undo	<undo>
Backtab	<back-tab>	Programmable Function Key 1	<pf1>
		Programmable Function Key 2	<pf2>
		Programmable Function Key 3	<pf3>

MODULE DEPENDENT KEYS

Information Management

Operation	Symbol
Delete Entry	<p1a>
Move Entry	<p2a>
Make Entry	<p3a>
Evaluate	<calc>

Spreadsheet

Operation	Symbol
Window	<p1a>
Justify	<p2a>
Calculate/All	<calc>
Next Column/Row	<p3a>

Word Processor

Operation	Symbol
Paragraph Forward	<p1a>
Paragraph Backward	<p1b>
Sentence Forward	<p2a>
Sentence Backward	<p2b>
Word Forward	<p3a>
Word Backward	<p3b>

Time Manager

Operation	Symbol
Scratch (pad)	<p1a>
Change (Delete Calendar)	<change>
Date	<p2a>
Next (Appointment)	<p3a>

Communications

Operation	Symbol
Start	<p1a>
Stop	<p2a>
Break	<p3a>

Graphics

Operation	Symbol
Graph	<p2a>

ADDITIONAL CHARACTERS

Operation	Symbol
Spacebar (spaces in text)	<_>
"_____" (underline)	<underline>
"(" (left paren)	<left-paren>
"<"	<less-than>
Comment	<comment> Comment <comment>
Non Printable Control Characters	(ASCII value)

THE MACRO KEY

The <macro> key is important because it allows you to enter messages and pauses into your macro. It also designates the end of a macro. The use of this key in a macro procedure is explained below. For each use, the format and an example of that format are given.

Messages — A message is any text that you want to be seen during the execution of the macro. Messages appear in small windows on the screen. When the message appears, you must press <macro> to continue the automatic procedure. Messages are limited to 55 characters in length, and must use the macro keystroke symbols.

Format: <macro>
　　　　[Message]
　　　　<macro>

Example: <macro>
　　　　This__is__a__macro__message.__ Press__<less-than<Home>.
　　　　<macro>

Pause — A pause is a break in the automatic procedure. During the pause, you may enter data or perform other activities. The pause is not time dependent; you can return to the automatic procedure by pressing <macro> whenever you are ready. A pause always occurs at the end of any message. Prompts on the screen tell you if you are in Pause mode.

Format: <macro>
　　　　[empty line]
　　　　<macro>

Example: <macro>

　　　　<macro>

End of — The <macro> key must be used to end the procedure you want to
Macro 　　automate. Enter <macro> at the very end of your macro text file.

Things to Remember

When you edit a macro text file, there are some fine points to be remembered. These concern messages, the use of parentheses and angle brackets, and comments.

It is also important to remember that all spaces and carriage returns in the text of a macro are ignored. If you want spaces and carriage returns to be used in your macro procedure, you must enter the special characters for them.

Messages

Messages must be 55 characters or less in length. For spaces to appear between words, you must insert an underscore, "__". Messages must be preceded and followed by <macro>.

Parentheses and Angle Brackets

If you want to place parentheses ( ) or angle brackets < > in a message or in the text of the macro, you must use the special characters for the left paren or left angle bracket.

      — Left paren   <left-paren>

      — Left angle bracket   <less-than>

Examples of characters enclosed in parentheses and angle brackets are shown below.

      — Parentheses   <left-paren>Message)

      — Angle brackets   <less-than>Message>

Comments

You can enter comments into the text of the macro. They are for personal use when you or another person must edit the macro. Comments are useful for keeping track of the activity taking place at certain points in your procedure.

Comments are written between <comment> symbols.

      <comment> This comment might appear in macro text.
      <comment>

These comments do not appear when you execute the macro.

4. Text to Macro Conversion

When you finish editing the text of your macro with the Word Processor, you are ready to convert it into an executable format. The Macro Modification Utility is used for this purpose. Be sure to check your macro text for the fine points listed above, and be sure that it ends with <macro>. Then, save your file as you exit the Word Processor to the Options window.

Follow the steps below to access the Macro Modification Utility from the Options window.

PROMPT	RESPONSE	EXPLANATION
Options window	Press <U>	Accesses the Utilities option
Utilities window	Press <R>	Selects the Reserved option
Prompt line	Enter [MAC] and press <do>	Selects the Macro Modification Utility

When the Macro/Text file conversion screen appears, you select the Text_to_Macro option, then enter the name of the text file and press <ret>. Next, enter the name of the macro file and press <ret> to begin the file conversion. The steps are outlined in the example below.

PROMPT	RESPONSE	EXPLANATION
Macro/Text conversion screen	Press <T>	Selects Text_to_Macro option
"From_Text_File:"	Enter [MEND] then press <ret>	Enters name of text file to be converted
"To_Macro_File:"	Enter [MEND] and press <ret>	Enters name of macro file
"Remove old "B:MEND.MON"?"	Press <do>	Removes old macro file; begins conversion of updated macro to MEND.MON

You can use the default file name for your macro, or you can give it a new name. If you are updating a previously recorded or edited macro, this prompt appears:

Remove old "B:(File name).MON"?

If you want to update the old macro, press <do> to remove the old macro and use this file name with the updated macro. If you want to save both old and new macros, press <undo> to return to the Macro_File prompt, and enter a new name.

If you enter a new name, or this is a new macro text, the prompt does not appear, and the conversion process begins.

The conversion process starts when the macro file name is entered. The text of your macro scrolls on the screen. When the conversion process is completed, you are returned to the Options window.

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O·P·E·N
ACCESS

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GLOSSARY & ERROR MESSAGES

VOLUME II — USER'S MANUAL

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GLOSSARY

Address A name or a number that identifies a specific location in a storage device.

Alphanumeric A character set consisting of any letter, number, and symbol combination.

Application Program A program that performs a user function.

Array A tabular arrangement of data.

ASCII American Standard Code for Interface Interchange. An eight bit binary code representation of each letter, number, and special character.

ASCII Name The file name to which the user chooses to send Graphics output. The ASCII Name is accessed through the Print/Slide window in Graphics.

Axis Division In Graphics, used to change the number of segments along the ordinate axis of the graph. The standard setting is "10", and the minimum setting is "1".

Back Up The process or product of copying disks. It is essential to maintain backup copies of the most recent data on your disks.

Background In Graphics, the color settings available to adjust Top, Side, and Bottom title backgrounds in a graph. In Word Processor, the window in which paragraph settings and abbreviations are entered and stored.

Bar In Graphics, one of the three level Types where a diagram represents a system of interrelations among two or more things by a number of distinctive blocks.

Batch Processing A process in which a batch of like transactions are input to a program and handled without further user directions. These transactions are usually stored together in a file or a group of files.

Baud Rate The serial transmission speed of your computer or modem measured in changes per second. Because your modem has only two possible changes, 1 and 0, the baud rate is equal to the bit rate. For instance, a transmission speed of 300 is equal to 300 bits per second.

Bit A binary digit equal to 0 or 1. A bit is the smallest unit of data. In many systems, eight bits are required for a single data word.

Boot The initial program load necessary for acceptance of the program disk by the computer's operating system.

Bottom (Three-D/View option) In Graphics, the bottom of a three-dimensional grid used for setting outline, color, and texture.

Bug A software error that causes the computer to malfunction.

Byte The amount of space necessary to store one data word, or character. A byte is usually 8 bits (8 binary digits) long.

Carousel Name (Print/Slide) In Graphics, the name given to a series of slides that make up a carousel; maximum number of characters in the name is 8.

Carriage Return The key on the keyboard which indicates to the computer that the user wishes to proceed, or has completed data entry. Two commonly used notations are <ret> and <enter>.

Channel Model In Spreadsheet, a model which can be viewed and referenced as the user works with another model. A channel association must be established in order to work with the models simultaneously.

Character A letter, digit, or special symbol that is used to represent data.

Chart Description Window In Graphics, a term used to describe the window in which the main parameters are to be found.

Chart Maximum In Graphics, exhibits largest integer in a graph representation.

Chart Minimum In Graphics, exhibits smallest integer in a graph representation.

Chart Name In Graphics, the title given to the chart series; maximum characters allowed in the name is 8, excluding volume prefix or suffix.

Code A set of instructions that tells the computer how to perform a certain function, as in program code.

Color (View Window) In Graphics, determines the hue of a graph representation.

Command A specific function performed by the program when so instructed by the user.

Console The user-portion of the computer, used to implement a program. It is usually a keyboard and screen combination.

Context A term used to describe interface interaction with other SPI modules (Integrated packages ONLY).

Copy In Word Processor, a command used to duplicate a portion of text and move the duplicate to another position in the same file or a different file. In Spreadsheet, a command used to duplicate the contents of a cell to other cells in the matrix.

Crash A term used to describe the event in which the program and/or computer ceases to function.

Create The event of making a new model, document, graph, or file.

Current Level Name In Graphics, the title or name assigned to a Level Number.

Current Level Number In Graphics, the present position assigned from Total Levels in the Chart Description Window.

Current Level Type In Graphics, the style of graphic display (Bar, Line, Pie).

Cursor The solid or flashing light or marker which indicates your next entry position on a display screen.

Dash (View Window/Line Option) In Graphics, signifies the type of appearance a line is to have in a line graph. There are 5 different textures available for line graphs.

Data Information.

Data (Three-D Option) In Graphics, used to tailor the Outline, Color, Texture and View of the three-dimensional data that is shown.

Data Base A "file" which stores "records" of information which may be retrieved by a data base management system.

Data Base Management System (DBMS) A software system capable of supporting and managing an integrated collection of files. It stores, retrieves, updates, and reports information on a specific application designed and implemented by the user.

Data Maximum In Graphics, defines the largest data point.

Data Minimum In Graphics, defines the smallest data point.

Data Set-up (Import/Data Window) In Graphics, a data entry resource window.

Debug The act of removing program errors.

Default Chart In Graphics, the "blank slate" of the screen upon entry.

Default Value A specified value assigned by the computer for use when no alternative information is entered by the user.

Delete To remove or take away characters or information.

Dependent Variable A variable whose value is determined by the value of one or more other variables.

Dependency In Information Management, designates a field entry to be a dependent variable: the value of the field entry is determined by the value of one or more separate field entries.

Desired Maximum In Graphics, proportions the data to the scale by indicating the highest data point desired in the graph.

Desired Minimum In Graphics, proportions the data to the scale by indicating the smallest cut-off point desired in the graph.

Device A piece of hardware used for input or output of data. A device is on-line if it is plugged in, switched on, connected to, and recognized by the operating system.

Device (Print/Slide Window) An entry found in the Print/Slide Setup Window which is used to access compatible printing devices.

Direct Entry A system that is oriented toward getting its data from the keyboard.

Diskette A module storage device used by the computer which resembles a 45 RPM phonograph record. Also known as a disk, floppy disk, or floppy.

Display Slide Show (Print/Slide) In Graphics, provides sequenced visuals of slides contained in a specified carousel.

Documentation User-oriented, written instructions accompanying software and hardware packages that explain the product and its applications.

Double (Print/Slide Window) In Graphics, the larger hardcopy size found in the Print/Slide Setup window.

Draw the Graph In Graphics, illustrates the current Graph Display for reference purposes when composing a succession of slides for a carousel.

Entering The act of typing in information on the terminal keyboard.

Exchange In Word Processor, a command used to replace, or "write over," characters in your document.

Execute The computer's attempt to carry out a user initiated command.

Explode Key (Import/Data) In Graphics, an exclamation mark <!> applied after an entry in the "Data" column of the Data Set-up Window. It is used to emphasize individual pieces of pie charts by separating certain pieces of the pie.

Field The space reserved within a record for the storage of items such as names; dates, numbers, or quantities. A record may have more than one field.

File A collection of "records" of information about a particular subject (e.g. a file of customer records). The file is perceived by the computer as a single unit.

Find In Word Processor, a feature used to locate a specific pattern of text.

Foreground In Graphics, the color setting of the characters which make up Graph Titles.

Format A procedure used to prepare a disk for work; the parameters are defined.

Format (Report and Screen Masks) In Information Management, the design of information to be printed or presented on the screen. The format defines the physical position of the information.

Format (Word Processor) Formats or positions a paragraph on a page according to the current margins and paragraph indentation. This includes block right margins and proportional spacing.

Full Duplex In Communications, a basic rule of data transfer. In full-duplex communication, data may travel in both directions at once (e.g. your telephone is full duplex).

Graph (Command Line) In Graphics, the command used to output the graph to the screen.

Graphs (View Window/Windowed Option) In Graphics, the prompt used to initiate scheme changes in a graph.

Graph Types Options that can determine whether the perspective of the graph is Simple, Overlay, Windowed, or Three-D.

Graph Key In Graphics, graphs the display immediately from the Chart Description Window.

Graph Title In Graphics, the data description entries in a graph which are located at the top, side, and bottom locations of the screen.

Grid (View Window) In Graphics, a feature which changes the appearance of the background on which data is graphed.

Half Duplex In Communications, a basic rule of data transfer. In half-duplex communication, data can travel in two directions (sending or receiving) but not simultaneously.

Hardcopy A paper print-out of data generated by the computer.

Hardcopy (Print/Slide Window) In Graphics, an entry in the Print/Slide Setup that indicates print-out size (Normal or Double).

Hardware The physical computer equipment, such as console, keyboard, disk drives (if separate), printer, etc.

Import/Data In Graphics, a command used to input and refresh data and position descriptions.

Independent Variable A variable whose value is determined independently of any other variables.

Initialization The process of setting up initial values prior to module execution.

Input The information given to the computer.

Insert In Word Processor, the command used to enter characters into a text or document file.

Integer A whole number, without decimal point.

Interactive Processing A process where transactions are alternately entered into a program by an operator, usually through a keyboard, and processed by a computer.

Interface A link between two or more application programs, pieces of hardware, etc.

Iteration One calculation in a repeated series of calculations.

Join In Information Management, the combination of two or more data base files for the retrieval of specific information from those files simultaneously.

Justification The positioning of an entry in a column (in Spreadsheet), or the positioning of a line in a paragraph (in Word Processor); the entry or line may be left, right, or center justified. In Word Processor, a line may be left and right justified with proportional spacing.

K (as in 256K) Shorthand notation for one thousand (actually 1024). (e.g. 64K is equal to 65,536)

Key Field A field in Information Management that is designated for use in retrieving "records" from a data base file, or for organizing a file in a specific order. Fields that are not key fields cannot be used to retrieve data or sort files. A special key field, called a unique key field, contains one unique field value per record within a file.

Left (View Window/Three-D Option) Command used to change the color, texture, and view which affect the left side of bars in a three- dimensional graph.

Levelbreak In Information Management, a feature which generates subtotals whenever the value within a specified field changes. Levelbreaks are used in reports which contain subtotals for certain field values. They are specified on fields used to sort the records to be printed.

Levels Window In Graphics, a command used to change the names and types of all levels. A maximum of thirty levels is possible.

Line In Graphics, one of the three Level Types in which a diagram represents a system of interrelations among two or more items by a series of distinctive dashes.

Load Inserting a disk into the computer.

Load (Data) In Graphics, a command used to enter the data for selected charts into the Chart Description Window. Data disk change can occur when the Load window is active.

Logical Operator In Information Management, one of two operators that serve as links which combine search conditions used for retrieving records. The two logical operators are AND and OR. In Spreadsheet, one of two such operators used in conditional expressions.

Lower Screen In Graphics, the data description title located at the bottom of a record; the maximum number of characters in this title is thirty nine.

Matrix A set of data arranged in rows and columns.

Megabyte One million bytes. (Actually, 1024 x 1024 = 1,024,576 bytes).

Menu A screen display of available options from which the user makes a selection (much like a restaurant menu).

Microcomputer A small computer usually capable of running only one program at a time.

Modem In Communications, the device which connects your computer with other computers. Modem is short for modulator-demodulator. It is a device which converts your data, in bits, to and from a form which can be transmitted over a phone line.

Movetext In Word Processor, a command used to remove a portion of text and place it in a new position in the same file.

Normal (Print/Slide Window) In Graphics, selects the normal or double hardcopy size.

Numeric Consisting exclusively of numbers.

Numlock Key (View Window) In Graphics, makes the cursor movements smaller for graph alteration.

Operating System The software that functions as an intermediary between the module disk and the hardware.

Options A command within the Open Access modules that is used to access each of the modules, to exit to the Operating System, or to access the Utilities.

Outline (View window Option) Defines the outer brightness of bars and three-dimensional grids.

Output The material or information generated by the computer.

Output the Graph (Print/Slide) In Graphics, provides the hardcopy capability of a specified graph.

Overlay In Graphics, one of the four Graph Types in which one level is imposed upon another to produce one single graph.

Palette In Graphics, the control of the color of three tones available for changing the Foreground and Background appearances of Graph Titles.

Parallel In Communications, the act of sending data more than one bit at a time.

Parameter A piece of information used in the configuration of a software application package.

Personal Computer A single-user computer; also known as a "PC" or microcomputer.

Pie In Graphics, one of three Level Types in which the summation of data is placed sequentially in circular form, from the largest to the smallest figures.

Port A physical device where input/output is sent and received.

Positions (View Window/Windowed Option) In Graphics, used to draw the positions of a desired group of records directly on the screen window. There is a maximum of thirty positions.

Print The process of outputting data onto paper for reading, filing, sending, etc.

Print Attributes In Word Processor, used to specify certain characteristics of the printed copy, such as bold type, italics, line spacing, header lines, footer lines, etc.

Print Mask In Information Management, a file containing the format for the appearance of your reports. The format for a print mask contains four separate parts: header, footer, record, and total.

Print Key (Print/Slide Window) In Graphics, this is the immediate hardcopy output, or printout, of a slide from the carousel during a Slide Show display.

Print/Slide In Graphics, a command which produces a hard copy of an existing graph, and groups together several graphs at random to produce a slide presentation using the carousel feature.

Printer Output device which produces a written copy from the computer.

Program A sequence of instructions telling the computer to perform one or more functions.

Prompt A computer message appearing on the screen directing the user to respond.

Query A request for records to be retrieved from the data base management system, Information Management. The data base management system answers by retrieving information which satisfies the conditions specified in the request (query).

RAM "Random Access Memory", the internal hardware used by most microcomputers to locate and retrieve data.

Read The act of creating a copy of the contents of an existing file in the computer's memory. The copy can then be edited or changed. This copy can be discarded, or used to update the permanent copy on the disk.

Record In Information Management and Time Manager, a collection of categories of information (fields) about a particular subject (e.g. a customer record would contain the information about a customer, such as name, address, balance due, etc).

Refresh Context (Import/Data Window) Automatically loads data from a SIF file, and changes the data and positions within the parameters set earlier. Only available with integrated packages.

Refresh Data (Import/Data Window) Used to change the data manually, and reposition the graph within the parameters set earlier.

Relational Operator In Information Management, used to establish a relationship between two fields or between a field and a specific constant value. These operators are also used to establish relationships between values in Spreadsheet. The relational operators are: equal (-), less than (<), less than or equal to (< -), greater than (>), greater than or equal to (> -), and not equal to (<>). For example, "balance>0" is a true condition if the value in the balance field is greater than zero.

Replace In Word Processor, a feature which locates a specific pattern of text and replaces it with another pattern of text. In the Configure utility, the Replace command saves any changes you made in that session with Configure.

Reset The act of returning to a previously determined starting point, usually the beginning of a module.

Right (View Window/Three-D Option) In Graphics, a command that changes the color, texture, and view affecting the right side of bars in a three-dimensional graph.

Rotate (View Window/Three-D Grid Option) In Graphics, the change in position of a grid in a three-dimensional graph by tipping the grid on a horizontal axis.

Save A command used to store information in its present form.

Screen Color In Graphics, a tilt adjustment of the screen in graph mode.

Screen Mask In Information Management, a file which contains the format for the appearance of fields on the screen, and the attributes associated with those fields.

Scroll The act of using the arrow keys to view various areas of the screen. The screen display usually moves in a smooth, flowing manner as the arrow key is pressed.

SIF File A Standard Interface Format file. This is a text file which contains information in a specific format which can be converted into a form usable by the module to which it is transported. SIF files are the means of transporting data between modules, or between systems.

Simple In Graphics, a Graph Type which illustrates the standard Bar, Line, or Pie level types.

Size (View Window/Windowed Option) In Graphics, this option controls the size of window drawing in relation to screen space available.

Slide Name (Print/Slide) In Graphics, the name given to a particular graph that has been included in a Carousel. A slide name can be up to eight characters long.

Slides in Carousel (Print/Slide) In Graphics, the directory of Slide Names that make up the Carousel. There is a maximum number of 32 slides per carousel.

Software A set of programs, procedures, and documentation concerning the operation of a data processing system.

Sort The act of organizing files, records, or other data into a specific order, such as alphabetically.

SQL In Information Management, a "query" language used to communicate with the data base management system for retrieving and sorting records. The query language is the set of words which you use in a specific format to make requests of the data base management system.

String A series or group of characters that include blank spaces; for example, "Information Management" and "data entry."

Symbol (View Window/Line Option) In Graphics, a feature that offers four different alternatives for defining data points in a line graph.

Take a Slide (Import/Data Window) In Graphics, an option used to take a copy of an existing graph and label it as a slide.

Texture (View Window) In Graphics, a feature that determines how the bars in a graph will be filled in.

Three-D A graph type in which the Bar Level Type is used to represent all the levels rather than just one.

Tilt (View Window/Three-D/Grid Option) A Graphics option which changes the slanting position in the grid of a three-dimensional graph.

Toggle To switch back and forth between two options, using the same key.

Top (View Window/Three-D Option) In Graphics, used to change the color and texture affecting the top portion of bars in the three- dimensional graph.

Total Levels In Graphics, indicates the number (1-30) of different sets of graphs. Equivalent to "record" in Information Management and to "row" in Spreadsheet.

Total Records In Graphics, indicates the total number of graphs that make up one chart series.

Total Positions In Graphics, the total number of positions (1-30) of data in one record. Equivalent to "field" in Information Management and "column" in Spreadsheet.

Upper Screen In Graphics, the data description entry located at the top title graph; a maximum of thirty-nine characters is allowed for the entry.

View In Graphics, a command used to alter the cosmetic appearance of all Graph Types except Pie level Type.

Virtual File A temporary file in Information Management that consists of a group of files joined together in a query. the file remains temporary until it is made permanent by the user. When a new query is introduced into the module, the virtual file no longer exists.

Volume A medium that is able to contain data. Volumes are referred to by a volume name. Volumes are on-line if they are connected to an on-line device. An example of a volume is a floppy diskette.

Windows (View Window/Windowed Option) In Graphics, a feature used to designate the size and location of windows shown under <Windowed> in the Graph Display Option.

Windowed In Graphics, one of the Graph Types that provides simultaneous window illustrations.

ERROR MESSAGES

If the User's Manual leaves you with an unanswered questions, this appendix may be able to help. When something goes wrong, look at the error message that is displayed in the window at the top of the screen. This appendix lists each error message that can occur and offers brief explanations and possible solutions. Error messages are listed in alphabetical order by module. A system error message list has also been included at the end of this section for thoses messages that are not module-specific.

If you cannot find the answer to your problem in the manual or this troubleshooting guide, contact the support phone lines.

INFORMATION MANAGEMENT/TIME MANAGER

Error Message	Explanation
Bad field name	Field name is a duplicate; name is too large (>10 characters). Name incorrectly spelled. This error is not destructive. The field remains and a default name is used unless another name is specified.
Bad file header.	This is usually fatal. Use your backup.
Bad free space list	Involves problems within the file structure. Use Check in File Repair Utility Program.
Bad index	Your records are not properly aligned within the file. If Recover cannot fix it, use your backup.
Bad number of records	The number of valid records doesn't match the total number of records in the file. Use the Recover option in File Repair Utility.
Bad printer configuration	The output configuration file selected for your device is not correct or contains incorrect information. Check output configuration choices for the proper configuration; check your device manual.
Can't have >15 key fields	Only 15 key and unique key fields permitted per file. The 16th key field defaults to a non-key field.
Can't sort more than 15 key fields	In a joined file, no more than 15 key fields can be used to sort or order the file.
Can't sort non-key fields	Only key and unique key fields can be used for sorting. Enter key fields to sort.
Cannot exceed 16 expressions	Up to 16 expressions permitted in a Query or update clause (Update command).

Cannot exceed 4 must match fields	Only 4 must match fields permitted per data base file.
Cannot have more than 8 screen messages	A maximum of 8 screen pages permitted in screen mask files.
Duplicate field name	No two fields in a file can have the same name. You must change one of the names.
Error during Context or Error during Import	Problem during read of SIF file having to do with record length or size, field type, file definition. Check to make sure the file has a file definition header.
Error in constant expression	Constant expression has incorrect syntax or the value changes; value is not a constant. Field name misspelled in Select clause.
Error in date expression	Using incorrect date format; date not in quotes.
Error in field name	Field name is a duplicate; name is too large (>10 characters). Name incorrectly spelled. Field name misspelled; field name too large. Field name may have letters, numbers, "#" or "_", and a letter **MUST** be the first character. This error is non destructive.
Index does not match records	Indices keep track of the space occupied records by records. If Recover cannot fix it, use your trusty backup. (Remember to always make another backup, too.)
Mask file [name] incompatible	Mask file is not compatible with data base file, or mask file not updated with data base file. The mask file must use the corresponding data base file information.
Max key field size is 40	A text key field can have a maximum size of 40. Change the field size in the text attribute window.
Mismatched parenthesis	Parenthesis must be single or double, not both. Left and right parenthesis must be present.
Multiple file whereline cannot be empty	Joined file conditions are located in the Whereline. Check the Whereline and add join conditions.
Must fill field not entered	Value for a Must Fill field is not present; record cannot be processed.
Need at least one key field	At least one key field needed to make file retrieval possible. Check fields.
No fields associated	Default associations cannot be used as specified when Appending the file.

No field for cursor	There is no field in the file on which the cursor can rest. Fields are autoincrement, auto date, or skip. You must have a field in the file which can be accessed by the cursor.
No mask file defined for [NAME]	No screen mask exists; must have a screen mask to do record changes. Create a screen mask in Design.
No more room for entries	No more space for fields in the file; no more entries possible in a print mask.
No room for additional records	No more records space in the file. Use stretch to expand the file.
No previous page	No screen page preceeding the current page; cannot use <jump up> from this screen page.
No records found	File has no records; file has no appended records; mask file was not updated; file's records were purged. Enter some records.
Not enough room for [NAME] or Not enough room for file [NAME]	Not enough space on the disk to create this file. Specify a smaller number of records or check space left on disk.
Not same field type or Not same field size	The must match field must be the same type and size of the specfied matching field.
Only 55 fields allowed	Only 55 fields permitted per data base file.
Value not found in file.	Value stated for a field is not found in the file. Check the field values.

SPREADSHEET

Error message	Explanation
Attempted divide by zero.	You cannot divide a number by zero. Enter a new value or expression.
Auto forms mode ABORTED.	The Auto command has been aborted.
Bad coordinate.	The entered coordinate does not exist or is not in the correct format.
Bad format in Import file Record#___ Field#___ Token=___	The SIF file you want to import is not set up properly. Check the format of the SIF file.
Bad numeric format.	The format of your numeric entry is not correct.
Bad row or column numbers.	The entered row or column references do not exist or are not in the correct format.
Bad syntax [coordinate].	The entry at the indicated coordinate has bad syntax. Edit or reenter the data.
Bad table format.	Your table cannot is not in the proper format to be used with the Table function.
Blank entry.	The referenced entry does not contain any data.
Can't unsplit. Window was never split or was split again.	You cannot unsplit a window that has not been split yet or has been split again. Try unsplitting other windows first.
Circular reference loop.	There is a reference loop in your between the dependent and independent variables in your Goal Seeking problem.
Column is wider than the printer. Print aborted.	The width of the column you are trying to print is greater than the width of your paper. The printing procedure has been aborted.
Could not find a solution.	The program was unable to find a solution to your Goal Seeking problem. See the User's Manual for more explanation.
Could not write Export file [file name].	Your model cannot be written to a a SIF file.
Cyclic list relationship.	Your Consolidation Setup list contains a circular relationship. Check your Setup list.

DISK ERROR Couldn't swap model in from the disk.	The program cannot access the model from your disk. Make sure that disk drive doors are closed properly; check for bad areas on disk.
DISK ERROR Couldn't swap model out to the disk.	The model cannot be stored on your disk. Make sure that disk drive doors are closed properly; check for bad areas on disk.
DISK ERROR Ran out of disk space.	There is no more room on your disk to store data.
Enter password to consolidate [model name].	You must enter the password for this model before it can be consolidated.
Equation as independent variable at [coordinate] – value not saved.	The new value of your independent variable will not be saved because it would cause a loss of the existing expression at that coordinate.
Equation too long — must shorten.	The entered expression is too long.
Error reading model from disk.	Model cannot be loaded from your disk. Check for bad areas on disk.
ERROR WRITING MODEL Model is probably non-existent.	The model cannot be written to your disk.
External Channel not open.	The external channel you are trying to work with has not been opened yet.
First character must be a letter	The first character of all names must be a letter.
FORM ERROR You are trying to enter the wrong kind of data.	You are entering the wrong type of data in this coordinate. It requires specifically text or numeric data.
FORM ERROR You cannot enter data here.	You cannot enter data at this coordinate.
Illegal character.	The character you entered cannot be used here.
Illegal named area combination [name].	The area you are trying to name is not acceptable.
Import file not readable Record#____ Field#____ Token=____	The SIF file you are trying to access cannot be read by the program. Check SIF file.
Impossible to include [model name]	The model cannot be included in consolidation.

Improper conditional expression.	Your conditional expression is not in the correct format. Check for position of operators and missing parentheses.
Improper coordinate. Bad syntax or out of range.	The entered coordinate is not in the proper format or is not in the range of your model.
Incorrect password - file will be omitted	You did not enter the correct password for this model; it will not be included in consolidation.
INCORRECT PASSWORD You may not open model without password.	You did not enter the correct password for this model. You must enter it correctly to open an external channel.
Index out of range.	Your index value cannot be found in the range of the named area.
Linear estimation inputs in error	A solution cannot be found for the LNEST function.
List cannot contain own model - entry removed from list.	Your Consolidation Setup list contains the same model being consolidated into. It will be omitted from the list.
List too large - shorten list or start over.	Your Consolidation Setup list contains too many models. You should remove some models from the list or create a new one.
May not have converged.	A Goal Seeking solution cannot be found because the value of the variable does not converge.
Model not found.	The model you want to select cannot be found. Check for proper spelling of the model name and correct data disk.
[Model name] not found - will be omitted.	This model cannot be found on your disks and will be omitted from Consolidation.
Model number not compatible.	The structure of your model is not compatible with this version of the program.
?n?	The entered expression does not have a solution or cannot be interpreted by the program.
!n!	The entry is too wide to fit in the column. Widen the column or make a new entry.
n	The bar graph is too wide to fit in the column.

Named area [name] not found.	The named area you referenced does not exist. Check the Name window for list of named areas for this model.
Names apply to one model only.	You can only name areas of your main model. Areas of external models cannot be named here.
Names must be all letters and digits. No punctuation.	The name you entered is not in the proper format. Enter a new name.
No consolidation attributes found in [model Name].	The model you are trying to Consolidate into does not contain entries with the consolidation attribute on. Check the model.
No consolidation list setup.	There is no Setup list for the model you are trying to consolidate into.
No entry to get default attributes from.	You are trying to get attributes from a blank entry. Make sure that the pointer is positioned on an entry that contains the desired attributes.
No names defined.	You have not defined any names in this model.
No room to copy model to this volume.	There is no room left on your disk to copy the model.
No self indexing allowed.	You cannot index a named area by itself. The index must be another named entry or area.
No strings or 'l' allowed.	Substitution expressions cannot be used as variables in Goal Seeking.
No value at these coordinates.	The referenced coordinates do not contain any values. Make sure that you are referring to the correct area.
Non-numeric entry at [coordinate].	The entry at the specified coordinate should be numeric
Numeric/text can't be mixed.	You cannot sort columns that contain both text and numeric data.
Only [number] channels available.	There are only a certain number of channels available to access external models.
Out of memory.	The Goal Seeking problem you have entered is too large or too complex.
Print error.	An error has occurred in the printing process. Check file and hardware.
Protected. Cannot change this entry without unprotecting.	The protection attribute has been set on for this entry. To change the entry, you must turn this attribute off.

Protected entry at [coordinate].	The entry at the specified coordinate is protected. To change this entry, you must turn the protection attribute off.
Referenced model not open.	The referenced model cannot be accessed. Make sure that the volume containing that model is on-line.
Rows/columns at extreme edge of Spreadsheet will be lost	If you insert rows or columns, the data at the edges of your Spreadsheet will be lost.
SORRY No room for the new window if split here	You cannot create a new window at the specified coordinate because there is not enough room on the screen.
SORRY No room to store more names.	There is no room to store more names. To create more named areas, you need to change one or more of the existing ones.
Sort area too large — row limit.	The area you want to sort is too large. You can sort up to 50 rows at once.
Sort incomplete. Repeat sort operation	The sort procedure was not completed. You should try again after making the necessary corrections.
Sort keys must all exist. No empty rows!	You cannot sort a column that contains blank entries. You can insert a null character such as 0 in the blank entry if you want to include that row at the top or bottom of your model.
Specified Spreadsheet entry does not exist.	The referenced entry does not exist.
That channel is already open.	The external channel you want to establish has already been opened.
That channel is not open to any model.	The external channel you are referring to does not exist.
That is more columns or rows than you have	You have referenced more rows or columns than you have in your model.
That model already exists.	The name you entered for your new model is already being used. Enter another name.
That model is already open as channel #[number].	The model you want to open is already open as the specified external channel.
That model is open as a channel.	The external model you want to open is already open as a channel.
There are no further instances of that text.	The Locate command cannot find any other occurrences of the string you entered.

This is a substitution entry. Please enter numeric information.	The current entry contains a substitution expression. Enter a number or expression to be evaluated.
Those are not compatible for indexing.	The named area you want to index cannot be indexed by the other named area that you specified.
Titles not allowed when printing to screen	You cannot title your printouts when you select the Console as your output device.
Too complex.	The expression you entered is too complex.
Too many consolidation levels.	Your Consolidation Setup list has too many levels. You should divide the list into several lists with fewer levels and then consolidate individually.
Too many long strings in this area.	There are too many long entries in this area of your model.
Too many windows active. Only 6 are allowed on screen at once.	You cannot have more than six windows on your screen at once.
Unable to open output device.	Your data cannot be sent to the output device. Check printer, cables, and configuration.
Unable to write to output device.	Your data cannot be sent to the output device. Check printer, cables, and configuration.
Unknown function.	The program does not recognize the function you entered. Make sure that the function was entered correctly.
Value range error.	The value does not fall within a specified range.
Variable does not exist (was never named).	The Goal Seeking variable you entered does not exist. Check to see if you enter the correct name.
You made an error in your password.	You entered the password incorrectly. You cannot access the model until you enter it correctly.
'=' expected.	An equal sign (=) is missing from your expression. Insert where specified.
':' expected.	A colon is missing from your entry. Insert where specified.
')' expected.	A right parenthesis is missing from your expression. Insert where specified.

GRAPHICS

Error message	Explanation
The LOAD file that was specified has an incompatible version number for this release of Open Access. After resuming, you will be taken back to the default chart.	
There is no color graphics option installed on this machine.	If you do have graphics capabilities, make sure that you have configured Open Access correctly.
There is no CONTEXT to REFRESH.	Context data has not been received from another module.
There was NO ASCII OUTPUT FILE SPECIFIED	Make sure that you have specified an output file in the Print/Slide window.
There was no IMPORT FILE SPECIFIED.	Make sure that you have specified an import file in the Data Setup window.
There was NO SLIDE FILE NAME SPECIFIED.	Make sure that you have specified a slide file name in the Print/Slide window
There was trouble in FINDING THE SLIDE. Check to see if the Slide you want is on-line and that the volume table matches your disks.	Press <search> from the Print/Slide window to view a list of existing slide names.
There was trouble READING the DATA that was passed in CONTEXT. The problem may be that the context area contains more than 30 levels and/or 30 positions, or it may contain only non-numeric values. In the former case, the maximum number of levels and/or positions will be used for loading the CHART. In the latter case, a default chart is used with zero data values.	Check the Context data in the Data Setup Window.

There was trouble WRITING THE SlIDE FILE. You could be out of room on the disk.

Check the amount of space available on your disk.

There was trouble WRITING TO THE OUTPUT FILE. You could be out of room on the disk, the output device could have gone off line.

Check the amount of space available on your disk. Check printer, cables, and configurations.

You confirmed that it is ok to throw away the current workfile so you must reload a new CHART or work with the present empty workfile and start over.

You must specify a graphics enabled printer before the OUTPUT THE GRAPH option. This may be done by selecting a printer on the DEVICE line.

WORD PROCESSOR

Error message	Explanation
Bad number [#]	The entered number has a bad syntax. Reenter it.
Can't find file to COPY from	The file to be copied from cannot be found. Check the spelling or check the volume search table.
Can't find include [filename]	The file to be included cannot be found. Check the spelling or check the volume search table.
Can't move to there	The destination is in the block of text being moved. Redo the copy with destination being outside the copied area.
Can't open output file	The selected output device is not accessible. Check the Printer Configuration Window to be sure that the proper device name is specified.
Can't write output [printername]	An error was detected from the printer. Check the printer connections.
Centered text must double quoted	The quotes are missing in the text following the centering token. Check the format of the line.
Expected [token]	Formatting token was missing. Check the format of the line that caused the error message.
File too large - can't read it all	The text file being read in is too large. Source file should be divided into smaller files at the source of the file.
Header portion too large	The Header title defined in the Print screen is too large for the output device. Shorten the Header title.
Help! Lost scratch file necessary for COPY	Your disk has bad blocks. Try again and if it still fails, use your backup copy of the file.
Marker not found	The Marker being searched for was not found. Either the Marker does not exist or the spelling was incorrect.
Not enough room to copy	There is no more memory to copy in text. Divide the text file into two smaller files so there is more room to copy in text.
Old file not found	The text file was not found in the directory. Check the spelling then check the volume search table in Utilities.

OUT OF MEMORY - no more insertion will be allowed	There is no more memory to copy in text. Divide the text file into two smaller files so there is more room to copy in text.
Out of memory. REPLACE Aborted.	There is no more memory to copy in text. Divide the text file into two smaller files so there is more room for replaces that would expand the text.
Pattern not found	The pattern being searched for does not exist. Try again using the literal option.
Repeat factor too large	Repeat factor cannot be larger than 32000.
Replace old file [filename]?	The specified file already exists. Be sure that you do not need it before you proceed to overwrite it.
Saving/restoring for include	Your disk is full or there are bad blocks. Check the disk. Then remove or transfer old files to make more room.
SIF format error - check your tabline	Check to see that the SIF tab stops are positioned properly and that they correspond to the SIF being imported.
Trouble creating file	Your disk is full or there are bad blocks. Check the disk. Then remove or transfer old files to make more room.
Trouble opening file	There may be bad blocks in the text file. Try reading the file in again. If there are still problems, use the backup of the file.
Trouble writing file to disk	There may be bad block on the destination disk. Use a different disk.
Unable to initialize printer – missing printer info file	The Word Processor cannot find the Printer info file. Be sure your data disk is inserted properly.
Unable to read SIF file	The SIF file is improperly formatted. Redo the conversion to the SIF file.
Unable to save temporary file for COPY	The disk is full or there are bad blocks. Check the disk. Then remove or transfer old files to make more room.
Unknown control word $	The printing macro specified does not exist. Check the spelling and format of the macro.

COMMUNICATIONS

Error message	Explanation
File [name] already exists.	The name you have entered already exists as another file. Enter a new name.
Illegal filename "[name]"	The name you entered contains illegal characters or is too long. Enter a new name.
Logfile [name] is open close before printing.	You must close your logfile before you continue.
No room on volume.	There is not enough room on the disk to store your file.

SYSTEM ERROR MESSAGES

Error Message	Explanation
Bad argument	Part of an expression cannot be evaluated; invalid expression.
Bad constant	Constant value in Query cannot be identified. Make sure there is a closing ['] around text, date, or true false value; single quotes are apostrophes. Use double quotes for values with apostrophes. Make sure file names are correct.
Bad input formula	Formula used to input data is not valid; check possible results and expressions.
Cannot update data base	New information cannot be processed. Check diskette for write protection; check for bad areas on disk; check for duplicate unique key field value.
Could not get directory from [Vol]	System cannot find volume. Use the disk configuration utility to confirm proper drive configuration.
Could not load old database fields	Mask file cannot read information in the data base fields. Mask is not updated, data base file does not relate to mask.
Could not read the mask file	Mask file is not compatible with data base file, or mask file not updated with data base file. The mask file must use the corresponding data base file information.
Could not remove [name]	File could not be removed from the data base.
Could not write the mask file	Mask file cannot read information in the data base fields. Mask is not updated; data base file does not relate to mask.
Database corrupted	Data base no longer functions properly. Use File Repair Utility Program to attempt recovery, if no recovery, use a backup.
Divide by zero	Dividing by zero is not possible.
Error closing file	File cannot be removed from active status.
Error in Boolean Conditional	A conditional statement is incomplete; uses invalid operators; contains incorrect type of field; contains a mispelled field name.
Error in join clause	Whereline invalid. Check systax and spelling; check files and fields for validity.

Error in mask	Mask file not updated; possibly the mask file is corrupted.
Error opening file	File cannot be accessed by the system. Bad areas on disk or corrupted data base.
Error reading file	System misinterprets the file. Check for spelling and syntax error; check for file's presence on disk, and for bad areas on the disk.
Error reading header of screen file	Top portion of screen mask file cannot be interpreted by the system.
Error while removing records	Records cannot be purged from the file. Check spelling and syntax; check for files's existence, and for bad areas on the disk.
Error writing field	Field entry cannot be processed. Check field attributes and entry.
Error writing to file	Cannot enter new information into file. Possible bad areas on the disk; disk is not in place
Field name is too long (>10)	Field names cannot be longer than 10 characters. Field is still made and has a default name; give field a shorter name.
Field not found	One of the fields in the file cannot be found. Make sure all fields are in file; make sure Select, Where or Order clauses contain key fields; make sure field name is spelled correctly.
Field unknown	Field cannot be found by the system. (Refer to Field not found.)
File already exists	Modified files must be given new names; file names are unique. Give files original names.
File must have at least one key field	One field must be a key field for file to be retrieved. Make one of the fields a key field.
File not found	The system cannot find the file requested. Make sure file is "on line"; file name is spelled correctly; disk drive doors properly closed.
Illegal char in field name	Field name contains characters other than letters, numbers, "#", and "_"; field name contains blank spaces; field name does not begin with a letter.
Illegal character (Non-numeric)	Character is invalid. Use the appropriate characters in names; check the field attributes.

Illegal operation	Program cannot perform function requested.
Implementation Restriction	Action requested cannot be performed. Check the syntax of the join or search clause in the Query or Screen mask.
Index error	Involves problems within the file structure. Use Check in File Repair Utility Program.
Integer out of range	Integer does not fall within a specified range of values.
IO Error	Problem with the input and output of data to a device or volume, usually bad areas on disk.
Mask file already exists	Modified files must be given new names; all files have original, unique names.
Missing delimiter	Refer to "Missing paren"; missing part of a set of quotes.
Missing FROM clause	Query attempted without a FROM clause. File names are entered in Query.
Missing paren	One of a set of parentheses is missing in a statement.
Must have minimum of one field per page	Each page of a mask file must have at least one field on it.
No field at this location	No field exists at the location of the cursor. Field never placed there; field not defined.
No field [NAME] found	Refer to "Field not found".
No Mask [name] found	Mask file does not exist; is not on this volume; name is mispelled; has not been updated with data base file.
No room for scratch file	More room is needed on prefixed volume for temporary scratch space. Use Filer command to remove unecessary files; remove excess space between files; use a new data diskette.
No room on disk	Diskette is full; diskette has no space large enough for file. Check file directory; make more free space on the disk.
Not enough memory	Not enough memory in the system to process Query. Check the amount of memory in your system.
Not enough room for all field entries	Only 55 fields permitted per data base file; not enough room on disk; not enough room in print mask file; disk has bad areas.

Program Confused	The program is confused! (bug) This error message should NEVER appear. If it appears, note the steps taken to reach this message, call the SPI support line and explain how the message came about.
Range error	Value does not fall within a specified range.
Record has duplicate unique key values	Unique key contains one unique value per record in the file. Values must be different.
Record, as defined,is too long	The record you created is too many characters long, and you cannot add a field of the size you specified. You must either eliminate fields, or shorten your fields to make room for the new field.
Screen read error	Refer to "Cannot read the mask file."
System Error	There is a possible problem with the software. Make a list of the steps which lead up to the problem. Next, contact SPI support and describe how this message appeared.
Too many parenthesis	Statement contains an extra parenthesis.
Too many files	Only 55 fields permitted per data base file.
Too many functions	In record and totals sections of print masks, fixed number of system functions available in mask file.
Too many virtual fields	Finite number of virtual fields available in data base files. (print masks).
[type] Error during Context	Type of error can be lack of file definition, header, record length, record size, field type or field read. Check the SIF file being used.
Unable to create file	No room on disk; disk has bad blocks; file has no key fields; file name not valid; data base corrupted.
Unable to create file.	No room on disk for file; no fields defined. File cannot be made.
Unable to output, hardware problem	Cannot send output to printer device; check cables and configuration; check printer condition; make sure printer is on.
Unknown identifier	Value or name not identified by system. Use <search> to locate correct name; check spelling.
Value out of range	Refer to "Range error".
Volume [NAME] not found	System cannot find volume. Use the disk configuration utility to confirm proper drive configuration

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Please insert these pages into the
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The two long sheets will be placed
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corresponding modules.