INFORM/V User's Guide

HP 3000 MPE/iX Computer Systems

Edition 4

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Preface

The *INFORM/V User's Guide* serves as primary documentation for the INFORM/V report writer software.

The first ten sections of this guide, like the software they describe, are designed to be used by people who have had limited exposure to databases and may have had some experience extracting data from databases or files. Users are not expected to be programmers or to have more than a rudimentary knowledge of data structures.

Section 11 is much more technical in nature. It documents the DICTIONARY/V commands that are used to set up INFORM/V groups and security. This section is designed for use by database administrators, and assumes that the reader has prior experience using DICTIONARY/V.

If the capabilities of INFORM/V do not give you sufficient scope to serve more complex reporting requirements, Hewlett-Packard offers a utility program that will convert existing INFORM/V report definitions to REPORT/V programs. Once the definitions have been converted, they can then be expanded or tailored as necessary. See the *REPORT/V User's Guide* (32245-90001) for documentation of the conversion program.

1   Introduction to INFORM/V

INFORM/V is an on-line report generator that makes information retrieval quick and easy for managers and other business people who need quick access to their data. The simple interactive menus allow people to get at their data, and to view that data in meaningful ways, without having to request costly and time-consuming programming.

INFORM/V has many key features that make management report-writing quick and simple:

- Report definitions are easy to create, by means of one-key responses to prompts, and can be easily modified.

- Reports can be produced immediately during a single terminal session.

- Report definitions can be saved for future use.

- Report formatting is automatic.

- You can get summary-only reports.

- On-line training makes it very easy to learn INFORM/V.

Five Easy Steps to Produce A Simple Report

INFORM/V is a menu-driven system. This means that you create reports by responding to a series of questions, or prompts, printed on the screen by INFORM/V. You do not even have to be a good typist, as most of your answers can be single letters or numbers.

The first menu you see when you run INFORM/V is the Main Menu. This menu contains ten options; among them are: define a report, produce a report, modify a report definition, and preview the report layout. In turn, each of these ten options calls up other menus and prompts.

It only takes five easy steps to produce a report with INFORM/V:

1. On the Main Menu, choose option 1, which stands for DEFINE A REPORT.

2. Tell INFORM/V what data structure--database or INFORM/V Group--you want to report from. Your database administrator will tell you whether you are reporting from Groups or databases.

3. Tell INFORM/V the name of the specific database or group from which you want data.

4. Tell INFORM/V what data you want by typing in a series of numbers. The menu lists the data names that are available, and you enter the numbers for the ones you want.

5. Tell INFORM/V whether you want the report displayed at the terminal or printed by the printer.

In addition to these basic reporting steps, INFORM/V also includes powerful optional features to enhance the reports and make them even more meaningful for you.

- You can sort the data in ascending or descending sequence, and can subdivide it for readability.

- You can get several kinds of summaries (totals, averages, counts, maximums, and minimums) on the subgroups of data within the reports.

- You can limit or restrict the data you retrieve: for example, you might get sales data for one district instead of the whole organization, or you might get a list of customers whose account balance is above a certain amount.

- If you choose, you can control certain format specifications, such as page size, printing of heading or title line, etc.

Communicating with INFORM/V

The following paragraphs tell you how to enter and leave INFORM/V, and also offer a few basic guidelines that will help you in responding to INFORM/V prompts.

Entering INFORM/V

After logging on, you gain access to the INFORM/V program by typing the following command in response to the MPE/V colon prompt:

```
:RUN INFORM.PUB.SYS
```

When this command is accepted, INFORM/V is in control.

INFORM/V Security Password

If a password is required, INFORM/V will prompt you for it as follows:

```
TYPE YOUR INFORM PASSWORD>
```

You must enter the password exactly as it was communicated to you:

capitals for capitals, lower case for lower case.

INFORM/V Menus

After you have entered the correct password (if one is required), INFORM/V immediately displays the Main Menu (see Figure 1-1). This is the starting point for all INFORM/V activities.

The first line is the same on all INFORM/V menus, but it will differ slightly from that shown in Figure 1-1. The letters v.uu.ff will be replaced by the number of the INFORM/V version that you are using.

Figure 1-1. Main Menu

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


INFORM OPTIONS:


        1: DEFINE A REPORT

        2: DISPLAY REPORT CATALOG

        3: SELECT A REPORT DEFINITION

        4: PREVIEW REPORT LAYOUT

        5: PRODUCE THE REPORT

        6: ADD REPORT DEFINITION TO CATALOG

        7: DELETE A REPORT DEFINITION FROM CATALOG

        8: SET FORMAT OPTIONS

        9: MODIFY THE REPORT

       10: EXIT FROM INFORM/V


  TYPE AN OPTION NUMBER>
```

Many INFORM/V menus are similar to the Main Menu in that they contain a numbered list from which you must make a selection.

Prompts

All INFORM/V menus contain prompts, or questions, to which you respond. The first prompt on the Main Menu is

```
        TYPE AN OPTION NUMBER>
```

Prompts always end with a greater-than sign (>) and the cursor is always to the right of the prompt. Frequently, a single menu may include several prompts which are displayed one at a time.

Responses

Responses to prompts may be numbers, such as an option number you pick from the Main Menu, single letters, or words, as for a report title. A carriage return (RETURN) is also considered to be a response and is described below.

Although the examples throughout this guide are shown in upper case letters, you can use either upper or lower case in all the material you enter, with one exception. Passwords, whenever they are requested, must be typed exactly as they were communicated to you: upper case for upper case and lower case for lower case.

Carriage Return

After you select an option (from the Main Menu, for example), you press RETURN. Because the information you type in response to the prompts is not recognized by INFORM/V until you press RETURN, you can correct mistakes at any time up until that point by backspacing and retyping.

You can sometimes specify information by pressing RETURN only. This is true when INFORM/V supplies a default value --a preprogrammed response to the prompt. For example, in the prompt

```
RETURN TO CURRENT DATA NAMES MENU(Y/N)?>
```

the default answer is Y (yes). That is the answer INFORM/V assumes if you simply press RETURN in response to the question.

By the same token, in the prompt,

```
DISPLAY OR PRINT(D/P)?>
```

the default is D, and that is the response you specify by entering RETURN alone.

If there are two values in parentheses in the prompt, the first value is always the default. If one value is given in the prompt, that is the default. After you learn to use INFORM/V, you will find you can work much faster by using RETURN to enter default values.

Errors

INFORM/V checks each answer you enter to see if it is appropriate. If it is not, INFORM/V displays an error message. The error messages from INFORM/V are generally self-explanatory and are followed by a prompt telling you what to do next. For example, if you make a mistake entering a database name, INFORM/V will print the message

```
BASE DOES NOT EXIST IN DICTIONARY

TYPE 'RETURN' KEY TO CONTINUE
```

When you press RETURN, INFORM/V returns you to the Main Menu.

You may occasionally see error messages from the operating system or from other software used by INFORM/V. If you see an error message that you do not understand, refer to Appendix B, which contains an alphabetical list of error messages and a brief explanation of each. If Appendix B does not solve the problem, talk with your database administrator.

Characters & Keys that Control Execution

If INFORM/V prompts you for an entry and you respond with only a RETURN, one of two things will happen:

- If there is a default value for the prompt, INFORM/V assumes the default value and presents the next prompt.

- If there is no default value for the prompt, INFORM/V will redisplay the preceding prompt so that you can change the value you entered there.

Entering one right bracket (]) terminates the current operation and returns you to the previous prompt.

Entering two right brackets (]]) terminates the current operation and returns you to the menu that is in control of the current operation.

CONTROL Y causes an operation break and returns you to the Main Menu. To generate CONTROL Y, press the CONTROL (CNTL or CTRL) key and hold it down while you press Y.

Exiting from INFORM/V

To exit from INFORM/V, return to the Main Menu. Type 10 and press RETURN to select the EXIT FROM INFORM/V option, as shown in Figure 1-2. MPE/V responds with the following message:

```
END OF PROGRAM
```

and you will see the system prompt.

Figure 1-2. Exiting from INFORM/V

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

INFORM OPTIONS:

    1: DEFINE A REPORT

    2: DISPLAY REPORT CATALOG

    3: SELECT A REPORT DEFINITION

    4: PREVIEW REPORT LAYOUT

    5: PRODUCE THE REPORT

    6: ADD REPORT DEFINITION TO CATALOG

    7: DELETE A REPORT DEFINITION FROM CATALOG

    8: SET FORMAT OPTIONS

    9: MODIFY THE REPORT

  10: EXIT FROM INFORM/V

TYPE AN OPTION NUMBER>   10

END OF PROGRAM

:

2 Defining a Report

The steps required to define a simple report can be summarized as follows:

- Choose option 1, DEFINE A REPORT, on the Main Menu.
- Tell INFORM/V whether you will use data from a Group or a database, and supply the name of that Group or base.
- Choose the names of data items that you want to include in the report.
- Provide a title for the report.

Figure 2-1 represents the menus that are used in the process of defining a report. Beginning on the Main Menu, you call up the Data Organization Menu, then either the Group or Database Menu, depending on where your data is located, and finally the Data Names Menu, where you decide what data to include in the report.

These menus, and the details of moving through them, are the subject of the following paragraphs.

Figure 2-1. The Menus Used in Defining a Report

After you have gained access to the INFORM/V program (and entered the necessary passwords), INFORM/V displays the Main Menu, shown in Figure 2-2.

Figure 2-2. Main Menu — Choosing Define a Report

```
    INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


    INFORM OPTIONS:


        1: DEFINE A REPORT

        2: DISPLAY REPORT CATALOG

        3: SELECT A REPORT DEFINITION

        4: PREVIEW REPORT LAYOUT

        5: PRODUCE THE REPORT

        6: ADD REPORT DEFINITION TO CATALOG

        7: DELETE A REPORT DEFINITION FROM CATALOG

        8: SET FORMAT OPTIONS

        9: MODIFY THE REPORT

       10: EXIT FROM INFORM/V


     TYPE AN OPTION NUMBER>   1
```

To define a report, type a 1 in response to the prompt

```
    TYPE AN OPTION NUMBER>
```

The Data Organization Menu

As the Data Organization Menu shows, it is possible to report from two different kinds of structures: INFORM/V Groups and databases.

INFORM/V will then display the Data Organization Menu, shown in Figure 2-3.

Figure 2-3. The Data Organization Menu — Reporting from Groups

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


DATA ORGANIZATION


INFORM/V GROUPS:


    1: DISPLAY GROUP NAMES
    2: SELECT A GROUP


DATA BASE ONLY:


    3: DISPLAY DATA BASE NAMES
    4: SELECT A DATA BASE


TYPE A NUMBER> 1
```

The **INFORM/V Group** is a special collection of data item names that has been established expressly to meet the reporting needs of your department or organization. The database administrator defines a Group and stores the definition in the data dictionary, using the data management software called DICTIONARY/V. Data that makes up an INFORM/V Group may be stored in KSAM files, MPE/V files, or TurboIMAGE databases. The actual storage structure is not important once the Group has been established. For information about how to set up INFORM/V Groups, see Section 11.

Your database administrator can tell you whether INFORM/V Groups have been established for your organization or whether you can report directly from the databases.

Notice that there are four options on the Data Organization Menu shown in Figure 2-3. All four lead to the same point: the Data Names Menu (Figure 2-12), where you choose the names of data items that are to be included in the report. The intermediate steps are simply ways of zeroing in on the particular collection of data names from which you want to report. The paragraphs below discuss each of these four options in turn. Figure 2-4 graphically represents the four options shown on the Data Organization Menu in Figure 2-3, and shows that all four paths lead to the same menu.

Figure 2-4. The Four Options on the Data Organization Menu
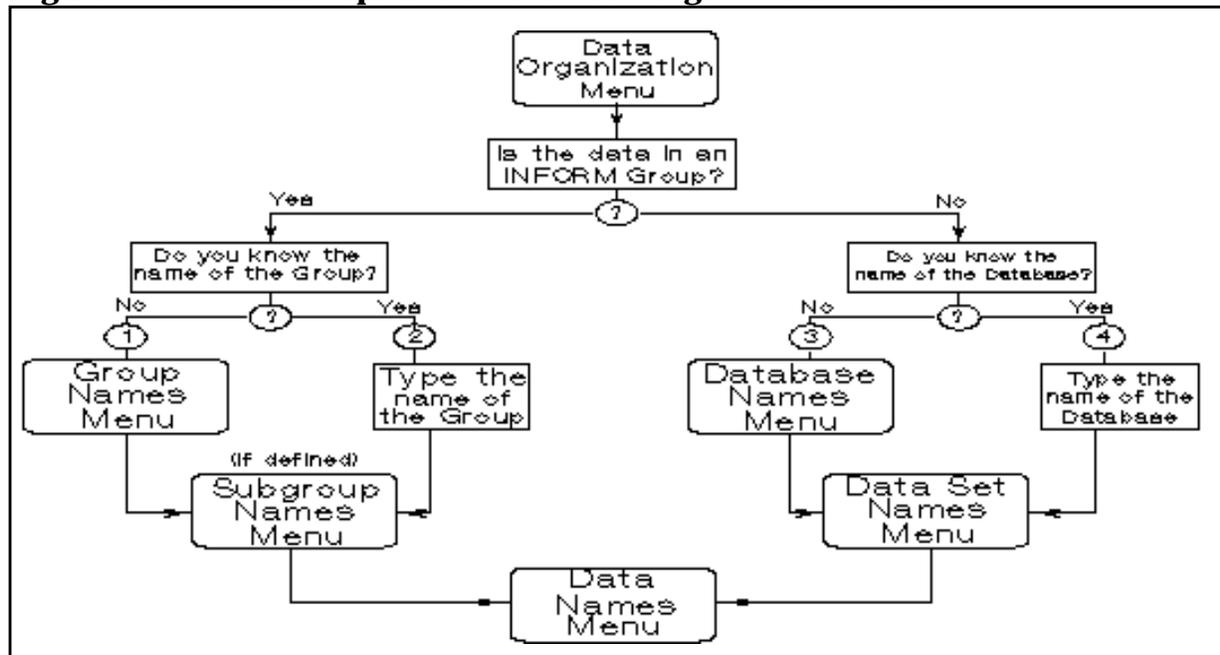
Selecting Data from an INFORM/V Group

To define a report from a Group, you may use either option 1 or 2 on the Data Organization menu. Option 1 is used if you need to see the names of the Groups available for reporting. Option 2 is used if you already know the name of the Group that you want to use.

Option 1: Display Group Names. If you select option 1 on the Data Organization Menu, INFORM/V displays the Group Menu, which lists all the INFORM/V Groups to which you have access. An example of a Group menu is shown in Figure 2-5.

INFORM/V then prompts you to select one of the Groups by printing

```
TYPE A GROUP NUMBER>
```

Enter the number of one of the Groups listed on the menu.

In the example in Figure 2-5, the user chooses Group 3, MFG MANAGER.

Figure 2-5. Group Menu

```
    INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


    INFORM/V GROUPS:


        1: ORDER INFORMATION     4: SHIPPING INFORMATION
        2: CREDIT INFORMATION     5: ACCOUNTING INFORMATION
        3: MFG MANAGER


    TYPE A GROUP NUMBER> 3
```

After you select a Group number, the next display will be either a Subgroup Menu or the Data Names Menu. The database administrator has the option of creating subgroups within Groups, and may do so to simplify data presentation in complex Groups. If subgroups exist in your account, the next menu you see will be a Subgroup Menu. An example is shown in Figure 2-6.

If no subgroups have been defined for the chosen Group, INFORM/V goes directly to the Data Names Menu, shown in Figure 2-12.

Figure 2-6. Subgroup Menu

```
    INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


    NAMES OF INFORM/V SUBGROUPS IN MFG MANAGER


      1: INVENTORY      2: WAREHOUSES      3: LEAD TIME


    TYPE A SUBGROUP NUMBER> 1
```

On the Subgroup Menu, you select the subgroup that contains the data names you want. In the example in Figure 2-6, the user chooses the INVENTORY subgroup. INFORM/V will next display the Data Names Menu for that Subgroup.

Option 2: Select a Group. When you know the name of the INFORM/V Group from which you want to create a report, you can bypass the Group Menu and go to the Subgroup Menu or go directly to the Data Names Menu. To do so, choose option 2 on the Data Organization Menu in response to the prompt

```
    TYPE A NUMBER>
```

INFORM/V immediately displays the following prompt:

```
TYPE THE INFORM/V GROUP NAME>
```

Figure 2-7 shows an example of a Data Organization Menu with this interaction.

Figure 2-7. Skipping the Group Menu by Selecting a Group Name

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


DATA ORGANIZATION


INFORM/V GROUPS:


    1: DISPLAY GROUP NAMES
    2: SELECT A GROUP


DATA BASE ONLY:


    3: DISPLAY DATA BASE NAMES
    4: SELECT A DATA BASE


TYPE A NUMBER> 2


TYPE THE INFORM/V GROUP NAME> MFG MANAGER
```

If the Group has Subgroups, the Subgroup Menu comes up next. If not, INFORM/V goes directly to the Data Names Menu for the Group specified.

Selecting Data from a Database

To define a report from a database, you may use either option 3 or 4 on the Data Organization Menu. Option 3 is used if you need to see the names of the databases available for reporting. Option 4 is used if you already know the name of the database that you want to use.

Option 3: Display Database Names. If you decide to look at the database names, choose option 3", as in the example in Figure 2-8. INFORM/V then displays the Database Menu; an example is shown in Figure 2-9.

Figure 2-8. The Data Organization Menu — Reporting from Databases

```
    INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


    DATA ORGANIZATION


    INFORM/V GROUPS:


        1: DISPLAY GROUP NAMES
        2: SELECT A GROUP


    DATA BASE ONLY:


        3: DISPLAY DATA BASE NAMES
        4: SELECT A DATA BASE


    TYPE A NUMBER> 3
```

On the Database Menu, when the prompt

```
        TYPE A DATA BASE NUMBER>
```

Figure 2-9. The Database Menu

```
    INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


    DATA BASE NAMES


        1: ORDMGT        2: FINANC        3: MANUFG


    TYPE A DATA BASE NUMBER> 1
```

appears, type the number of the database from which you want to report. INFORM/V
responds by displaying the Data Set Menu (Figure 2-10) for that database.

Figure 2-10. The Data Set Menu

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


DATA SET NAMES IN DATA BASE ORDMGT


    1: CUSTOMER       3: PRODUCT       5: INVENTORY

    2: DATE-MASTER    4: SALES


TYPE A DATA SETNUMBER> 5
```

INFORM/V can display up to 199 data set names per database. If there are more data sets in the selected database than will fit on the screen, INFORM/V presents all data set names, one screen full at a time. At the end of each display, INFORM/V prompts with

        TYPE 'RETURN' KEY TO CONTINUE

When you press RETURN, INFORM/V presents the next screen full of data. After all the data set names have been displayed, INFORM/V prompts with

TYPE A DATA SET NUMBER>

Type the number of the data set from which you want to report. INFORM/V responds by displaying the Data Names Menu, which is shown Figure 2-12.

Option 4: Select a Database. INFORM/V allows you to bypass the Database Menu and go directly to the Data Set Menu if you know the name of the database from which you want to report. To do so, type 4 in response to the prompt

        TYPE A NUMBER>

on the Data Organization Menu. As is shown in the example in Figure 2-11, INFORM/V responds with the prompt

        TYPE THE DATA BASE NAME>

When prompted, type the name of the database you want to report from.

Figure 2-11. Skipping the Database Menu by Selecting a Database Name

```
     INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


     DATA ORGANIZATION


     INFORM/V GROUPS:


         1: DISPLAY GROUP NAMES
         2: SELECT A GROUP


     DATA BASE ONLY:


         3: DISPLAY DATA BASE NAMES
         4: SELECT A DATA BASE


     TYPE A NUMBER> 4


     TYPE THE DATA BASE NAME> ORDMGT
```

INFORM/V responds by displaying the Data Set Menu for the database. After you select the data set name, INFORM/V presents the Data Names Menu (see Figure 2-12) for that data set. You may then define a report.

The Data Names Menu

The Data Names Menu is the one on which you select the data to be included in the report, as well as specifying other properties of the report. This menu displays all the names of data items that are available in the selected data set, Group, or subgroup for reporting.

An example of the Data Names Menu is shown in Figure 2-12. The Data Names Menu, unlike the menus you have seen so far, includes a series of prompts. The prompts appear one at a time.

See Appendix C for information about the number of data names that can be included in a Data Names Menu.

Figure 2-12. Data Names Menu

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN ACCOUNTING INFORMATION

1: NAME	7: DESCRIPTION	13: PRICE
2: ADDRESS	8: PURCHASE NUMBER	14: TOTAL
3: ACCOUNT	9: PURCHASE DATE	15: SHIPDATE
4: DATE	10: BACKORDERFLG	16: DELVDATE
5: CREDIT	11: QUANTITY	
6: PRODUCT NUMBER	12: UNIT COST	

TYPE NUMBER(S) FOR DATA NAME(S):

TO INCLUDE IN REPORT> **1,6,11**

TO SORT BY> **!**

REPORT TITLE>

PREPARING REPORT

Defining the Report

After all data names have been displayed, INFORM/V prompts with

```
TYPE NUMBER(S) FOR DATA NAME(S):

        TO INCLUDE IN REPORT>
```

You respond to the prompt by typing the numbers corresponding to the data names you want to include in your report. Type the numbers in the order in which you want data items shown, from left to right, in the report. In the example shown in Figure 2-12, the user asks for NAME, PRODUCT NUMBER, and QUANTITY (data names 1, 6, and 11, respectively).

There are several different ways that you can enter the numbers. One way is as follows:

number[,number,...]

This form means that you can enter data name numbers, separated by commas. For example, 2,11,3 would present data names represented by 2, 11, and 3 in order from left to right on the report.

The second possible form is

```
n/m
```

where n and m stand for the beginning and ending numbers in a range. All data names beginning with the first number and ending with the last number will be included in the report. For example, if you specify 5/9, data names 5, 6, 7, 8, and 9 will be included in the report.

You can mix these two forms: for example,

```
TO INCLUDE IN REPORT>1,3/5,10,15
```

The third way to enter numbers is to say

```
ALL
```

If you enter the word ALL, INFORM/V will include in the report all the data names that are shown on the menu. A maximum of 128 data names can be included in a report.

The next prompt is TO SORT BY>. In Figure 2-12, the user responds by entering an exclamation point (!). This symbol tells INFORM/V to skip the next few prompts and to go directly to the prompt for the report title.

You can also skip through the prompts on this menu (except the first) by entering RETURN. On this menu, INFORM/V does not go back to the preceding prompt. Instead, it assumes that you do not want to enter any values for the prompt, and moves to the next one.

The prompts that are being skipped in this example provide several powerful reporting capabilities, including

- Sorting, subdividing, and summarizing

- Limiting the report to selected data (using selection criteria)

- Defining new data names for use in reports

Each of these options is so important that it is discussed in a separate section (see Section 5, 6, and 7).

Specifying the Report Title.   After you define the report you want, INFORM/V asks you to provide a title for the report with the prompt

```
REPORT TITLE>
```

You can enter a title of up to 79 characters, or, if you do not want to supply a title, just type a RETURN. (Section 9 describes several optional features that can be used in report titles.)

If you Want to Produce the Report.   After you have responded to the prompt for a report title, INFORM/V tells you the report is being prepared, and begins to prompt for the information that it needs to produce the report:

```
PREPARING REPORT

PRODUCE THE REPORT(Y/N)?>
```

The prompts and responses used to produce the report are shown in the next section (Section 3).

If You Do Not Want To Produce the Report.   If you choose not to produce the report, answer N to the prompt

```
PRODUCE THE REPORT(Y/N)?>
```

INFORM/V then asks

```
RETURN TO CURRENT DATA NAMES MENU(Y/N)?>
```

The reason for this prompt is to allow you to change the report that you have just defined. If you answer Y, INFORM/V goes back to the first prompt on the Data Names Menu and waits for you to enter new information. Section 10 describes how to modify a report.

If you do not want to change the report, answer N, and INFORM/V will redisplay the Main Menu. You can then choose any of the ten options there. The report that you have just defined is still available, and you could still produce it by choosing option 5 (PRODUCE THE REPORT) on the Main Menu.

3   Producing or Previewing the Report

It is possible to produce a report from many points in INFORM/V. As a general rule, if there is a report currently available, either newly defined or called up from the catalog (the report catalog is described in Section 4), the assumption is that you want to produce the report.

The first subsection below describes how to produce a report from the Data Names Menu right after the report has been defined or modified. A later discussion in this section described the steps used to produce a report from the Main Menu.

A feature that is closely related to producing the report is previewing the report. This feature, option 4 on the Main Menu, allows you to see a "dummy" of the first few lines, so that you can be sure the report is in the format you want. The steps required to preview a report are described at the end of this section.

Producing a Report from the Data Names Menu

Section 2 described the steps used to define a simple report. When you have finished defining the report, INFORM/V prints the message

```
PREPARING REPORT
```

The next prompt on the Data Names Menu will ask if you want to produce the report.

You have the choice of producing the report interactively or in batch mode. The complete set of prompts and responses are described below, first, for interactive processing and, second, for batch processing.

Producing the Report Interactively. When INFORM/V prompts with

```
PRODUCE THE REPORT(Y/N)?>
```

answer Y no matter how you want to produce it. The next prompt will then be

```
PRODUCE REPORT IN BATCH MODE?(N/Y)>
```

At this point, answer N if you want to produce the report interactively. The interaction is shown in Figure 3-1.

Figure 3-1. The Data Names Menu — Preparing a Report

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


DATA NAMES IN ACCOUNTING INFORMATION


        1: NAME              7: DESCRIPTION         13: PRICE

        2: ADDRESS           8: PURCHASE NUMBER     14: TOTAL

        3: ACCOUNT           9: PURCHASE DATE       15: SHIPDATE

        4: DATE             10: BACKORDERFLG        16: DELVDATE

        5: CREDIT           11: QUANTITY

        6: PRODUCT NUMBER   12: UNIT COST


TYPE NUMBER(S) FOR DATA NAME(S):


    TO INCLUDE IN REPORT> 1,6,11
              TO SORT BY> !


REPORT TITLE>


PREPARING REPORT


PRODUCE THE REPORT(Y/N)?>Y


 PRODUCE REPORT IN BATCH MODE?(N/Y)>N
```

INFORM/V presents the Report Process Menu and prints the message

```
REPORT PROCESS STARTED
```

If the data you are accessing comes from a database, the next prompt may be:

```
PASSWORD FOR database>
```

This prompt may appear even if you are reporting from an INFORM/V Group, depending on how security is structured for your data. Because the information you want may be located in more than one database, INFORM/V may prompt for a password more than once. The password does not appear on the screen when you type it, so that security will be maintained. The password that you enter must be identical to the password as it was assigned to you--upper and lower case characters must match exactly. If you make a mistake, INFORM/V reprompts for the password.

MPE/V and KSAM files are often secured with **lockwords**. Like passwords, lockwords protect files that contain sensitive or privileged information. If a lockword exists for a file, you may be prompted for it.

Finally, the following prompt appears:

```
DISPLAY OR PRINT(D/P)?>
```

Figure 3-2. Producing a Report Interactively

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

REPORT PROCESS STARTED

PASSWORD FOR PURCHA>

DISPLAY OR PRINT(D/P)?> D

Type D or RETURN to display the report on your terminal. Type P to have the report printed. Printing a report interactively ties up your terminal until the report is finished, so you cannot do any other work. If the report that you are going to print is long, it is therefore better to use the batch option. You can change the destination of a printed file by issuing an MPE/V file equation before you enter INFORM/V. See Appendix B for the default output file name.

If you choose to display the report on your terminal, INFORM/V clears the screen and displays the first page of the report. The Report Process Menu in Figure 3-2 shows an example of the interaction to display a report at the terminal. The report produced is shown in Figure 3-3.

Figure 3-3. Simple Report Produced by INFORM/V

NAME	PRODUCT NUMBER	QUALITY
Lewis Charles	55C	20
Peterson Paul P	70A	20
Albertson John B	90C	100
Lewis Charles	90C	700
Limburger Frank	60D	15
Albertson John B	60D	130
Baker Bill B	80B	55
Albertson John B	50B	30
Albertson John B	50B	5
Smith John Q	11A	40
Smith John Q	11B	400
Smith John Q	11C	400

```
*****END OF REPORT*****


RETURN TO DATA NAMES MENU(Y/N)?>
```

If the report is longer than one screen, INFORM/V fills the screen, then prints the prompt

```
CONTINUE(Y/N)>
```

If you answer Y, INFORM/V will display the next screen full of data, then prompt again.

If you answer N, INFORM/V displays

```
***** END OF REPORT *****
```

After the report is displayed, you have the option of changing the report and looking at it again or returning to the Main Menu. The prompt is

```
RETURN TO CURRENT DATA NAMES MENU(Y/N)?>
```

To return to the Main Menu, enter N. Once you return to the Main Menu, you can use any option displayed there.

CAUTION   If you want to save the report that you have just defined, that should be your next move. Invoking other options might destroy your report before you have a chance to save it. See Section 4 for a description of how to save the report by adding it to the catalog.

If you want to modify the report just defined, answer Y or RETURN. The Data Names Menu you used to select data names is redisplayed so that you can change the report if you want to. The process of modifying a report is described in Section 10.

Batch Mode. The batch mode option is a very easy way to have your report printed without tying up your terminal during the process. If you choose batch mode, INFORM/V prompts for all the information needed, creates the batch job, and streams it. Once the job is streamed, you can then use your terminal for other tasks.

The process of producing the report by batch begins just like the process for producing a report interactively. On the Data Names Menu, after you respond to the prompt for a report title, INFORM/V prompts with

```
PRODUCE THE REPORT(Y/N)?>
```

If you respond with Y, the next prompt is

```
PRODUCE REPORT IN BATCH MODE?(N/Y)>
```

If you also answer Y to this prompt, the Report Process Menu then appears, and you are prompted for user, group, and account passwords. INFORM/V then builds a jobfile called INFJOBnn, where nn can be any number between zero and 99. The number is assigned randomly, just to assure that the job file name is unique.

INFORM/V allows you to control many of the parameters that apply to the batch job, such as its priority and the naming or disposition of files created by the job. If you want to see what these parameters are, and the default values, refer to the discussion of format options in Section 8.

An example of the procedure for creating a batch job is shown in Figure 3-4. For this example, default values are used for all the batch parameters.

The prompt

```
PASSWORD FOR database>
```

will appear if the database administrator has not programmed a link between database security and INFORM/V security (details of setting up security are described in Section 11).

The next prompts are for logon passwords:

```
ENTER USER PASSWORD>

ENTER ACCOUNT PASSWORD>

ENTER GROUP PASSWORD>
```

Figure 3-4. Creating a Report in Batch Mode

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


REPORT PROCESS STARTED


PASSWORD FOR PURCHA>


PREPARE TO STREAM BATCH JOB


ENTER USER PASSWORD>


ENTER ACCOUNT PASSWORD>


ENTER GROUP PASSWORD>


#J93
BATCH JOB SUCCESSFULLY STREAMED


RETURN TO CURRENT DATA NAMES MENU(Y/N)?>
```

When the system sets up a batch job, that job in many respects looks like you are logged onto the system a second time. The system must have your logon passwords, just as you enter them when you log on, in order to set up that job. The passwords will not show when you enter them, so as to maintain security.

INFORM/V next tells you the job number and says that it has been successful in establishing the batch job. The messages are

```
#Jnn

BATCH JOB SUCCESSFULLY STREAMED
```

It pays to make a note of the job number (#Jnn). If you need to query the system about the job, or if you ask your database administrator about the job, the job number is the quickest and most direct identifier of the job once it has been streamed.

After you have completed the batch job, INFORM/V asks whether you want to see the Data Names Menu again, so that you can change the report. The prompt is

```
RETURN TO CURRENT DATA NAMES MENU(Y/N)?
```

Interaction from this point is identical to that just described for interactive processing.

Producing a Report from the Main Menu

If you are at the Main Menu and want to produce the current report, choose option 5 (an example is shown in Figure 3-5). You will immediately be prompted with the question

```
PRODUCE REPORT IN BATCH MODE(N/Y)?>
```

If you respond N, INFORM/V assumes that you want to produce the report interactively. The interaction would then be as described earlier in this section for interactive reporting.

If you respond Y, INFORM/V will then begin prompting for the responses for batch production. The interaction would be as described earlier in this section for batch mode.

Figure 3-5. Choosing to Produce a Report on the Main Menu

```
    INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


    INFORM OPTIONS:


        1: DEFINE A REPORT

        2: DISPLAY REPORT CATALOG

        3: SELECT A REPORT DEFINITION

        4: PREVIEW REPORT LAYOUT

        5: PRODUCE THE REPORT

        6: ADD REPORT DEFINITION TO CATALOG

        7: DELETE A REPORT DEFINITION FROM CATALOG

        8: SET FORMAT OPTIONS

        9: MODIFY THE REPORT

       10: EXIT FROM INFORM/V


    TYPE AN OPTION NUMBER>   5


    PRODUCE REPORT IN BATCH MODE?(N/Y)>
```

Previewing the Report Layout

INFORM/V allows you to check the appearance of a report before you produce it. It displays the headings and a few simulated rows of data, and then allows you to change the report definition or to produce the report.

To preview the current report layout, type 4 in response to the following Main Menu prompt:

```
TYPE AN OPTION NUMBER> 4
```

Figure 3-6. Choosing to Preview a Report Layout

```
   INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


   INFORM OPTIONS:


       1: DEFINE A REPORT

       2: DISPLAY REPORT CATALOG

       3: SELECT A REPORT DEFINITION

       4: PREVIEW REPORT LAYOUT

       5: PRODUCE THE REPORT

       6: ADD REPORT DEFINITION TO CATALOG

       7: DELETE A REPORT DEFINITION FROM CATALOG

       8: SET FORMAT OPTIONS

       9: MODIFY THE REPORT

      10: EXIT FROM INFORM/V


   TYPE AN OPTION NUMBER>   4


   DISPLAY OR PRINT(D/P)?>


   NUMBER OF LINES TO PREVIEW>
```

If there is no current report, INFORM/V displays the following message:

```
CURRENT REPORT HAS NOT BEEN SPECIFIED

TYPE A REPORT NAME(6)>
```

If a current report is present, the following prompt appears:

```
DISPLAY OR PRINT(D/P)?>
```

Press RETURN or D to preview the report layout on the terminal. Type a P to have the preview listed on the line printer. When the report layout is displayed, 9's are substituted in numeric fields, and X's are substituted in character fields. The plus (+) preceding the 9's in a numeric field is called a sign field. If the actual data contains a negative number, for example, the sign field will contain a minus sign (-).

The next prompt to appear is:

```
NUMBER OF LINES TO PREVIEW>
```

You may not want to preview the entire report. You may simply want to look at a few lines.

This prompt gives you that chance. Press **RETURN** to have five lines of the report displayed. Five lines is usually enough for you to get a good idea of the report's layout. Enter another number to have more or fewer lines printed. A report preview is shown in Figure 3-7.

Figure 3-7. Preview of a Report

```
SALES


NAME                                      PRODUCT NUMBER  QUANTITY

------------------------------------------------------------------------------------
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXX    +9999999

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXX    +9999999

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXX    +9999999

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXX    +9999999

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXX    +9999999




*****END OF PREVIEW*****


PRODUCE THE REPORT(Y/N)?>
```

After the preview, INFORM/V asks you if you want to produce the report:

```
PRODUCE THE REPORT(Y/N)?>
```

Type Y or press RETURN if you want to produce the report, then follow the steps described earlier in this section.

If you type N, INFORM/V displays the following prompt:

```
TYPE 'RETURN' KEY TO CONTINUE
```

When you press **RETURN**, the Main Menu is displayed.

4   Using the Report Catalog

Once a report has been defined and produced, you may want to save the report definition for later use. To provide a vehicle for storing reports, INFORM/V includes a report catalog. You can look at the names and descriptions of all reports that have been saved, save reports by adding them to the catalog, recall saved reports for later production, and delete report definitions when they are no longer of value.

Note that it is the report definition that is saved in the catalog, not the data in the report. Thus, when you produce the report again at a later date, if the data in the files or database has changed, your report will contain up-to-date data.

The Current Report

INFORM/V can store many reports in the catalog, and any one can be called up and made available for production or modification. The report that is available for use is called the **current report**.

If you have just defined a report, that one is current even after you return to the Main Menu. You can also make a report current by recalling it from the catalog. It is important to understand that you can only have one report current at a time. If you should call a report up from the catalog before you save a newly defined report, then the new report will be lost.

INFORM/V keeps a report current until you do one of the following:

- Define a new current report (Main Menu option 1).
- Select a saved report definition from the catalog (Main Menu option 2 or 3).
- Exit from INFORM/V (Main Menu option 10).

You can also modify the current report to have a different definition. If you have not saved the current report before doing the modifications, then you have in effect destroyed the current report. If you have saved the current report before modifying it, then you can recall the saved version at any time.

Adding the Report Definition to the Catalog

After you have defined a report and produced it, you may want to save the definition for later use. To perform this function, you must return to the Main Menu. To do so, type N in response to the prompt

```
RETURN TO CURRENT DATA NAMES MENU(Y/N)?>
```

on the bottom of the Data Names Menu. INFORM/V then displays the Main Menu and prompts with

```
TYPE AN OPTION NUMBER>
```

To add a report definition to the catalog, type 6 in response.

Figure 4-1. Choosing to Save a Report Definition

```
    INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


    INFORM OPTIONS:


        1: DEFINE A REPORT

        2: DISPLAY REPORT CATALOG

        3: SELECT A REPORT DEFINITION

        4: PREVIEW REPORT LAYOUT

        5: PRODUCE THE REPORT

        6: ADD REPORT DEFINITION TO CATALOG

        7: DELETE A REPORT DEFINITION FROM CATALOG

        8: SET FORMAT OPTIONS

        9: MODIFY THE REPORT

       10: EXIT FROM INFORM/V


    TYPE AN OPTION NUMBER>   6


    TYPE A REPORT NAME(6)> CREDIT


    TYPE REPORT DESCRIPTION(50)> CREDIT INFORMATION
```

Figure 4-1 shows an example of the interaction to save a report in the INFORM/V catalog.

After you respond to the OPTION prompt by typing 6, INFORM/V then prompts with

```
        TYPE A REPORT NAME(6)>
```

Type the name as you want it to appear in the catalog. The name may be up to six characters long, and it may be qualified by a group name and an account name. For example:

```
        CREDIT
```

or

```
        CREDIT.ACCTING.FINAN
```

If you do not specify a group and account name, INFORM/V uses your logon group and account.

If you type an existing report name, INFORM/V responds with:

```
REPORT FILE ALREADY EXISTS,

PURGE OLD FILE(N/Y)?>
```

Type Y to purge the saved report definition and replace it with the new. If you type N or RETURN, INFORM/V prompts you again for a report name.

The next prompt you see is:

```
TYPE REPORT DESCRIPTION(50)>
```

You may type up to 50 characters to describe the report. You do not have to type a description, but it is a good way to explain exactly what the report contains.

As soon as you enter the description, INFORM/V saves the report definition in the catalog, then redisplays the Main Menu.

When you display the report catalog (see next discussion in this section), both the report name and the description are shown for all saved reports.

If you choose option 6 on the Main Menu, to save a report in the catalog, and no current report exists, INFORM/V responds with:

```
CURRENT REPORT HAS NOT BEEN SPECIFIED

TYPE 'RETURN' KEY TO CONTINUE>
```

When you press RETURN, INFORM/V redisplays the Main Menu so that you can choose another option.

Displaying the Report Catalog

To display the report catalog, which lists the report names and descriptions, choose option 2 on the Main Menu. Assuming no security restrictions, you have access to all the reports defined by all users in your logon group. There may be many users in a single account or logon group.

An example of the interaction used to display the INFORM/V catalog is shown in Figure 4-2.

Figure 4-2. Choosing to Display the Report Catalog

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

INFORM OPTIONS:

    1: DEFINE A REPORT

    2: DISPLAY REPORT CATALOG

    3: SELECT A REPORT DEFINITION

    4: PREVIEW REPORT LAYOUT

    5: PRODUCE THE REPORT

    6: ADD REPORT DEFINITION TO CATALOG

    7: DELETE A REPORT DEFINITION FROM CATALOG

    8: SET FORMAT OPTIONS

    9: MODIFY THE REPORT

  10: EXIT FROM INFORM/V

TYPE AN OPTION NUMBER> **2**

TYPE COMPUTER GROUP NAME

After you type 2, the following prompt appears:

```
TYPE COMPUTER GROUP NAME>
```

Simply type RETURN if you want to see the catalog for your logon group and account. If you want to look at the catalog for another group, enter that group name. If the catalog that you want to view is for a group in an account other than your own, you must also enter the account name. You may be asked to supply a password if you try to access another group or account, depending on what security protection has been established. If you do not have access, you will receive an error message.

Next, you are asked to respond to the following prompt:

```
DISPLAY OR PRINT(D/P)?>
```

Press **P** to send the catalog to the printer.

Press **RETURN** or **D** to display the catalog on your terminal.

The catalog listing will look similar to the one shown in Figure 4-3. NAME is the report name that the user who created the report entered when adding the report to the catalog. The CREATOR is the user name of the person who saved the report. If the person

requesting this listing is the same person who created the report definition, the creator is shown as USER. The DATE is given in the format year/month/day. The DESCRIPTION is that supplied by the creator when the report was cataloged.

Figure 4-3. The INFORM/V Report Catalog

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986;


NAME:    CREATOR:    DATE:    DESCRIPTION:


CREDIT    MGR       850622   CREDIT INFORMATION
CUSTOM    USER      850701   CUSTOMERS AND PRODUCTS
PROFIT    USER      850706   PROFIT MARGIN BY CUSTOMER BY PRODUCT
SALES     HENRY     810622   TOTAL SALES


*****END OF LIST*****


TYPE A REPORT NAME(6)>
```

After displaying the catalog, INFORM/V prompts with:

```
TYPE A REPORT NAME(6)>
```

The report that you name becomes the current report. INFORM/V assumes that you want to produce the report, and prompts with

```
PRODUCE THE REPORT(Y/N)?>
```

If you try to produce a report that was defined by another user who has access to data elements to which you do not have access, you will be prevented from producing that report. INFORM/V will respond with the error message

```
YOUR PASSWORD DOES NOT ALLOW YOU TO RUN THIS REPORT
```

You will then be prompted to select another report name from the catalog.

Section 3 describes the steps to produce a report.

Selecting a Report Definition

If you know the name of the report that you want to produce, you can bypass the display of the report catalog and go right to the Report Process Menu by selecting option 3 on the Main Menu (see Figure 4-4).

Figure 4-4. Selecting a Report Definition from the Main Menu

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


INFORM OPTIONS:


    1: DEFINE A REPORT

    2: DISPLAY REPORT CATALOG

    3: SELECT A REPORT DEFINITION

    4: PREVIEW REPORT LAYOUT

    5: PRODUCE THE REPORT

    6: ADD REPORT DEFINITION TO CATALOG

    7: DELETE A REPORT DEFINITION FROM CATALOG

    8: SET FORMAT OPTIONS

    9: MODIFY THE REPORT

   10: EXIT FROM INFORM/V


TYPE AN OPTION NUMBER>  3


TYPE A REPORT NAME(6)>


PRODUCE THE REPORT(Y/N)?>
```

When you type the option number 3, INFORM/V responds with the following prompt:

```
TYPE A REPORT NAME(6)>
```

Type the name of the report. If you are not sure of the exact name of the report, return to the Main Menu and select option 2 to display the report catalog.

When you type a valid name, the following prompt appears:

```
PRODUCE THE REPORT(Y/N)?>
```

If you want to produce the report, answer Y. The interaction then becomes identical to that described in Section 3.

If you do not want to produce the report, press N. The following prompt then appears:

```
TYPE 'RETURN' KEY TO CONTINUE>
```

When you press RETURN, the Main Menu is displayed.

Deleting a Report Definition from the Catalog

To delete a report definition from the catalog, choose option 7 on the Main Menu (see Figure 4-5). INFORM/V responds with the prompt

```
TYPE REPORT NAME TO BE DELETED>
```

Type the name under which you added the report definition to the catalog. If you type a name not listed in the catalog, INFORM/V responds with:

```
NO SUCH REPORT NAME
```

To check for the name, press RETURN to go back to the Main Menu, then type 2 to display the report catalog.

If you type a valid name, INFORM/V responds with the following prompt:

```
DELETE REPORT reportname (N/Y)?>
```

This prompt gives you a chance to change your mind if you like.

Figure 4-5. Deleting a Report from the Catalog

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


INFORM OPTIONS:


    1: DEFINE A REPORT

    2: DISPLAY REPORT CATALOG

    3: SELECT A REPORT DEFINITION

    4: PREVIEW REPORT LAYOUT

    5: PRODUCE THE REPORT

    6: ADD REPORT DEFINITION TO CATALOG

    7: DELETE A REPORT DEFINITION FROM CATALOG

    8: SET FORMAT OPTIONS

    9: MODIFY THE REPORT

   10: EXIT FROM INFORM/V


 TYPE AN OPTION NUMBER>   7


 TYPE REPORT NAME TO BE DELETED>
```

If you confirm that you want the report deleted, INFORM/V deletes the report and prints

```
REPORT DELETED
```

then returns to the Main Menu.

If you do not confirm the deletion, that is, if you answer N to the DELETE prompt, INFORM/V displays the following message:

```
DELETE NOT CONFIRMED - REPORT UNCHANGED
```

The Main Menu is then redisplayed and you are prompted to enter an option number.

Changes to Underlying Data Sets or Files

The INFORM/V catalog interacts with the data dictionary only when a user activates the catalog to recall a saved report definition and produce the report. Therefore, if any modifications are made to the structure of underlying databases or files, INFORM/V is not aware of them until it attempts to create a report.

Missing Data Names. If you see any of the following messages when you try to call up a report from the catalog, it means that structural changes have been made to the databases or files so that data needed for the report no longer exists or cannot be identified under its previously specified name.

```
GROUP DOES NOT EXIST IN DICTIONARY

BASE DOES NOT EXIST IN DICTIONARY

DATA SET DOES NOT EXIST IN DICTIONARY

*ERROR data-name  DOES NOT BELONG TO THIS GROUP OR DATA SET
```

INFORM/V follows any of these messages with

```
TYPE 'RETURN' KEY TO CONTINUE>
```

When you enter RETURN, INFORM/V returns you to the Main Menu.

Renumbered Data Names. If an element (data name) in a Group, data set, or file has been deleted from the data dictionary after the report definition was saved and if that element is not used in generating the report, INFORM/V will renumber the Data Names Menu and the items selected in the report to reflect the changes. The report itself will not be affected. For example, compare Figure 4-6 and Figure 4-7. If LOCATION is deleted from the Group INVENTORY, the next time the Data Names Menu appears, LOCATION will not appear, and the data names following it will be renumbered.

Figure 4-6. The Original Report Definition

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN INVENTORY

   1: PART   3: COST   5: PRODUCT LINE

   2: LOCATION   4: PRICE   6: QTY ON HAND

TYPE NUMBER(S) FOR DATA NAME(S):

      TO INCLUDE IN REPORT> **1,4,3,6**

            TO SORT BY> **1,4,3**

         TO SUBDIVIDE BY> **1,3**

     TO SUMMARIZE FOR: PART> **!**

REPORT TITLE> **PARTS ON HAND REPORT**

Figure 4-7. After a Data Item Has Been Removed from the Dictionary

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN INVENTORY

   1: PART   3: PRICE   5: QTY ON HAND

   2: COST   4: PRODUCT LINE

TYPE NUMBER(S) FOR DATA NAME(S):

      TO INCLUDE IN REPORT(OLD): 1,3,2,5

      TO INCLUDE IN REPORT(NEW)>

5   Sorting, Subdividing, Summarizing

The discussion in Section 2 described how to use the Data Names Menu to produce a simple report. That discussion skipped over several of the prompts on the Data Names Menu. Now that the basic tasks of defining a simple report, saving and producing it, and using the catalog have been presented, it is time to look at the prompts that were passed over in Section 2. Those prompts provide several powerful capabilities that allow you to tailor your reports to more clearly answer you needs. The three that are discussed in this section are sorting, subdividing, and summarizing. The other prompts are discussed in Sections 6 through 9.

After you have selected the data names to be included in a report, the next step is to decide whether you want data sorted, and, if so, what data name to sort them on. For example, if you sort a sales report on sales persons' names, then the data will appear in alphabetical order on names. If you sort on sales district, then all the data for each sales district will appear together, and the districts themselves will be in numerical or alphabetical order.

If data for a report is sorted, it can also be subdivided. The data names that are used for the sort are the only ones that can be used for subdividing. Subdividing is simply a way to clarify the structure or organization of the data in a report. For example, in a sales report that is sorted on district, and then sorted on name within district, you would probably want to subdivide on district, but not on name, because there will be many records for each district, but only one for each name. Subdividing causes INFORM/V to print only the first of a set of duplicate values for a given data name. This simple device makes it very easy to see when a new subdivision of data begins. For example, compare Figure 5-4 and Figure 5-6. Exactly the same data is presented in the two figures, sorted in the same way, but only Figure 5-6 is subdivided.

If data in a report is subdivided, it can also be summarized. You can get sub-summaries (subtotals, etc.) for subdivisions of data within the report, or get grand summaries for all data in the report. The kinds of summaries that are available are total, minimum, maximum, average, and count.

This section describes the steps used to sort, subdivide, and summarize data in reports.

Sorting

On the Data Names Menu, after you type the numbers for the data names you want to appear in your report, the following prompt appears:

```
TO SORT BY>
```

You may type more than one number in response to this prompt. When the report is produced, the first number listed is sorted first, the second number second, and so on. In the example in Figure 5-1, the user sorts on only one data name, SALES-PERSON. The resulting report is shown in Figure 5-2.

Figure 5-1. Sorting On a Single Data Name

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN INVENTORY

    1: AREA   3: SALES-PERSON   5: YTD-SALES

    2: DIST   4: QUOTA

TYPE NUMBER(S) FOR DATA NAME(S):

        TO INCLUDE IN REPORT> **1/5**

                TO SORT BY> **3**

            TO SUBDIVIDE BY> **!**

REPORT TITLE>

PREPARING REPORT

PRODUCE THE REPORT(Y/N)?>

PRODUCE REPORT IN BATCH MODE?(N/Y)>

Figure 5-2. A Report Sorted on the Data Name SALES-PERSON

```
AREA    DIST   SALES-PERSON                    QUOTA        YTD-SALES

-------------------------------------------------------------------

MW     IOWA    ALVAREZ                      80000.00         38000.00

NW     CAL     BONNANO                     145000.00        152000.00

MW     IOWA    CHU                          85000.00         56000.00

MW     MINN    DRAGER                       90000.00         61000.00

SW     ARIZ    PHRAM                       150000.00        123000.00

SW     TEX     FITZPATRICK                 120000.00         84000.00

SW     TEX     GRODIN                      140000.00         97000.00

NW     WASH    HOUDINI                     130000.00         85000.00

NW     CAL     JONES                       130000.00         87000.00

NW     CAL     KROEGER                     170000.00        103000.00

NW     OREG    LAROUS                       90000.00         50000.00

MW     IOWA    MARTINEZ                    105000.00         77000.00

NW     WASH    OP                          105000.00        100000.00

NW     OREG    PASTERNAK                    65000.00         30000.00

MW     MINN    RADOSLAVICH                 125000.00         89000.00


*****  END OF REPORT  *****
```

Data are sorted in ascending order by default. To specify descending order, type a D after the number of the data name. In Figure 5-1, for example, you would sort the values in SALES-PERSON in descending order by typing 3D.

In Figure 5-3, the user sorts on three data names, AREA, DISTRICT, and SALES-PERSON. The resulting report is shown in Figure 5-4.

Figure 5-3. Sorting Data on Three Data Names

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN INVENTORY

      1: AREA   3: SALES-PERSON   5: YTD-SALES

      2: DIST   4: QUOTA

TYPE NUMBER(S) FOR DATA NAME(S):

         TO INCLUDE IN REPORT> **1/5**

               TO SORT BY> **3**

            TO SUBDIVIDE BY> **!**

REPORT TITLE>

PREPARING REPORT

PRODUCE THE REPORT(Y/N)?>

PRODUCE REPORT IN BATCH MODE?(N/Y)>

When you sort on more than one data name, the second is sorted within the scope of the first, the third within the second, etc. For example, in Figure 5-3, there are many sales people in each district, and there are many districts in each area. Therefore the user sorts area first, district second, and sales person third. If the user specified 3,2,1 instead of 1,2,3 for the sort, a simple alphabetical sort by sales person would be obtained, since there is only one district and one area for each sales person.

Figure 5-4. A Report Sorted On Three Data Names

```
AREA    DIST   SALES-PERSON                    QUOTA          YTD-SALES

---------------------------------------------------------------------

MW      IOWA   ALVAREZ                      80000.00           38000.00

MW      IOWA   CHU                          85000.00           56000.00

MW      IOWA   MARTINEZ                    105000.00           77000.00

MW      MINN   DRAGER                       90000.00           61000.00

MW      MINN   RADOSLAVICH                 125000.00           89000.00

SW      CAL    BANNANO                     145000.00          152000.00

NW      CAL    JONES                       130000.00           87000.00

NW      CAL    KROEGER                     170000.00          103000.00

NW      OREG   LAROUS                       90000.00           50000.00

NW      OREG   PASTERNAK                    65000.00           30000.00

NW      WASH   HOUDINI                     130000.00           85000.00

NW      WASH   NORTH                        70000.00           45000.00

NW      WASH   OP                          105000.00          100000.00

SW      ARIZ   EPHRAM                      150000.00          123000.00

SW      TEX    FITZPATRICK                 120000.00           84000.00

SW      TEX    GRODIN                      140000.00           97000.00

*****  END OF REPORT  *****
```

If you do not need to sort the data, respond to the SORT prompt with a RETURN. The prompts for subdividing and summarizing will then not appear, since there is no data name on which to subdivide.

Subdividing

If you responded to the SORT prompt by entering one or more numbers, you then have the opportunity to subdivide the data. The prompt is:

```
TO SUBDIVIDE BY>
```

If you want to emphasize the organization of the sorted information, respond to this prompt by typing one (or more) of the numbers you specified for sorting. INFORM/V will then print the value for a subdivision data name only when it changes, that is, only when a new subdivision starts.

In Figure 5-5, the user wants to subdivide on AREA and DISTRICT.

Figure 5-5. Subdividing on Two Data Names

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN INVENTORY

    1: AREA   3: SALES-PERSON   5: YTD-SALES

    2: DIST   4: QUOTA

TYPE NUMBER(S) FOR DATA NAME(S):

        TO INCLUDE IN REPORT> **1/5**

                TO SORT BY> **1,2,3**

            TO SUBDIVIDE BY> **1,2**

      TO SUMMARIZE FOR: AREA> **!**

REPORT TITLE>

PREPARING REPORT

PRODUCE THE REPORT(Y/N)?>

PRODUCE REPORT IN BATCH MODE?(N/Y)>

The resulting report is shown in Figure 5-6. If you compare Figure 5-6 with Figure 5-4, you can quickly see how much subdividing improves the readability of the report.

Figure 5-6. A Report Subdivided on Two Data Names

```
AREA   DIST   SALES-PERSON                QUOTA           YTD-SALES

------------------------------------------------------------------

MW     IOWA   ALVAREZ                  80000.00            38000.00

              CHU                      85000.00            56000.00

              MARTINEZ                105000.00            77000.00

       MINN   DRAGER                   90000.00            61000.00

              RADOSLAVICH             125000.00            89000.00

SW     CAL    BANNANO                 145000.00           152000.00

              JONES                   130000.00            87000.00

              KROEGER                 170000.00           103000.00

       OREG   LAROUS                   90000.00            50000.00

              PASTERNAK                65000.00            30000.00

       WASH   HOUDINI                 130000.00            85000.00

              NORTH                    70000.00            45000.00

              OP                      105000.00           100000.00

SW     ARIZ   EPHRAM                  150000.00           123000.00

SW     TEX    FITZPATRICK             120000.00            84000.00

              GRODIN                  140000.00            97000.00

*****  END OF REPORT  *****
```

Summarizing

The next step in creating a report is to decide whether you want to summarize any data at the subdivision level. INFORM/V offers five arithmetic functions, shown in Table 5-1, that allow you to get summary information without having to do any programming. You simply enter the number of the data item that you want summarized, along with the name or abbreviation of one of the five functions. For example, 6AVG means that you want to see the average of values for data name 6 for each subdivision of the data.

It is also possible to summarize data for the whole report. The "Report Summary" capability is discussed later in this section.

The prompt for summarizing data at the subdivision level is

```
TO SUMMARIZE FOR: dataname >
```

INFORM/V repeats the SUMMARIZE prompt for each data name on which you asked for subdividing. For each subdivision for which you want summary data, type the number corresponding to the data name, followed immediately by the function. If you want a summary on more than one data name at a given subdivision, separate the number-function pairs by commas. For example,

```
1COUNT,2AVERAGE,5TOTAL
```

Table 5-1. Arithmetic Functions

Function	Purpose	Specification	Example of Output
AVERAGE	Averages values for the data name	6AVERAGE 6avg 6A	264A
COUNT	Tallies the number of entries of a particular data name	7COUNT 7c	43C
MAXIMUM	Finds the highest value of a data name	8MAXIMUM 8max 8MA	1120>
MINIMUM	Finds the lowest value of a data name	4minimum 4MIN 4MI	13<
TOTAL	Adds all values of a data name; when used with sorted data, the value is a subtotal; when used with report summary, the value is a grand total	9total 9T 9	9961*

You may use only one arithmetic function per data name. For example, if you typed the following:

```
11AVERAGE,11MINIMUM
```

INFORM/V would reject this entry and prompt for the summary information again.

In the example in Figure 5-7, the user is requesting totals on data name 5, YTD-SALES, for each area and for each district; that is, for each subdivision of the report.

Figure 5-7. Requesting a Report with Sorts, Subdivisions, and Summaries

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN INVENTORY

      1: AREA   3: SALES-PERSON   5: YTD-SALES

      2: DIST   4: QUOTA

TYPE NUMBER(S) FOR DATA NAME(S):

         TO INCLUDE IN REPORT> **1/5**

              TO SORT BY> **1,2,3**

          TO SUBDIVIDE BY> **1,2**

     TO SUMMARIZE FOR: AREA> **5TOTAL**

     TO SUMMARIZE FOR: DIST> **5TOTAL**

     TO SUMMARIZE FOR: AREA> **!**

REPORT TITLE>

PREPARING REPORT

PRODUCE THE REPORT(Y/N)?>

PRODUCE REPORT IN BATCH MODE?(N/Y)>

The specifications given in Figure 5-7 produce the report shown in Figure 5-8. Summary data - - in this case subtotals - - are computed each time AREA and DISTRICT change. The totals are marked with an arrow (=>) and an asterisk (*) to the right of the value.

Figure 5-8. A Report with Summaries for Two Subdivisions

```
AREA    DIST   SALES-PERSON                  QUOTA         YTD-SALES
------------------------------------------------------------------

MW      IOWA   ALVAREZ                    80000.00          38000.00
               CHU                        85000.00          56000.00
               MARTINEZ                  105000.00          77000.00
=>                                                         171000.00*
        MINN   DRAGER                     90000.00          61000.00
               RADOSLAVICH               125000.00          89000.00
=>                                                         321000.00*
SW      CAL    BANNANO                   145000.00         152000.00
               JONES                     130000.00          87000.00
               KROEGER                   170000.00         103000.00
=>                                                         342000.00*
        OREG   LAROUS                     90000.00          50000.00
               PASTERNAK                  65000.00          30000.00
=>                                                          80000.00*
        WASH   HOUDINI                   130000.00          85000.00


CONTINUE(Y/N)>

AREA    DIST   SALES-PERSON                  QUOTA         YTD-SALES
------------------------------------------------------------------

NW      WASH   NORTH                      70000.00          45000.00
               OP                        105000.00         100000.00
=>                                                         230000.00*
                                                           652000.00*
SW      ARIZ   EPHRAM                    150000.00         123000.00
=>                                                         123000.00*
        TEX    FITZPATRICK               120000.00          84000.00
               GRODIN                    140000.00          97000.00
=>                                                        1810000.00*
                                                          3040000.00*


***** END OF REPORT *****
```

Report Summary

In addition to summarizing data for each subdivision, you can summarize data for the entire report by responding to the prompt:

```
FOR REPORT SUMMARY>
```

The procedure used to summarize report data is identical to that used to summarize subdivided data. For example, if you want a grand total of all year-to-date sales and a count of all sales people, respond as shown in Figure 5-9. You would type the following:

```
FOR REPORT SUMMARY> 5TOTAL,3COUNT
```

(The prompt

```
FOR SELECTION CRITERIA>
```

is described in Section 6.)

Figure 5-9. Specifying a Report Summary on the Data Names Menu

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


DATA NAMES IN INVENTORY


    1: AREA           3: SALES-PERSON            5: YTD-SALES
    2: DIST           4: QUOTA


TYPE NUMBER(S) FOR DATA NAME(S):


         TO INCLUDE IN REPORT> 1/5
                  TO SORT BY> 1,2,3
              TO SUBDIVIDE BY> 1,2
       TO SUMMARIZE FOR: AREA> 5TOTAL
        TO SUMMARIZE FOR: DIST> 5TOTAL
          FOR REPORT SUMMARY> 5TOTAL,3COUNT
          FOR SELECTION CRITERIA>


REPORT TITLE>


PREPARING REPORT


PRODUCE THE REPORT(Y/N)?>


PRODUCE REPORT IN BATCH MODE?(N/Y)>
```

When you summarize data for the whole report, the process is independent of any sorting or subdividing done for the report. You can apply any of the five arithmetic functions to any data name that makes sense. For example, the COUNT function can be applied to any data name, and the other four functions can be applied to any data name on which arithmetic is appropriate.

Figure 5-10 shows the report produced by the interaction in Figure 5-9. The total number of values for the data name SALES-PERSON in this report (3COUNT) is shown at the end of the report below the last entry for SALES-PERSON. The designation 16C means that for this report, the total count of names is 16. The grand total of year-to-date sales for the whole report is shown on the same line. The designation * tells you that the value is a total.

Figure 5-10. Data Summarized for Whole Report

```
AREA    DIST   SALES-PERSON                  QUOTA        YTD-SALES
-------------------------------------------------------------------

MW     IOWA   ALVAREZ                     80000.00        38000.00
               CHU                        85000.00        56000.00
               MARTINEZ                  105000.00        77000.00
=>                                       171000.00*
       MINN   DRAGER                      90000.00        61000.00
               RADOSLAVICH               125000.00        89000.00
=>                                       321000.00*
SW     CAL    BANNANO                    145000.00       152000.00
               JONES                     130000.00        87000.00
               KROEGER                   170000.00       103000.00
=>                                       342000.00*
       OREG   LAROUS                      90000.00        50000.00
               PASTERNAK                  65000.00        30000.00
=>                                        80000.00*
       WASH   HOUDINI                    130000.00        85000.00


CONTINUE(Y/N)>


AREA    DIST   SALES-PERSON                  QUOTA        YTD-SALES
-------------------------------------------------------------------

NW     WASH   NORTH                       70000.00        45000.00
               OP                        105000.00       100000.00
=>                                                       230000.00*
                                                         652000.00*
SW     ARIZ   EPHRAM                     150000.00       123000.00
=>                                                       123000.00*
       TEX    FITZPATRICK                120000.00        84000.00
               GRODIN                    140000.00        97000.00
=>                                                      1810000.00*
                                                         204000.00*
               16C                                      1277000.00*


***** END OF REPORT *****
```

Summary-Only Reports.   The first prompt on the Data Names Menu is

```
TO INCLUDE IN REPORT>
```

Up to this point, all examples of how to define reports have shown the user responding by entering one or more numbers, representing the data names to be included in the report.

It is also possible to get just summary information in a report, without listing the individual data items. If you do not list any numbers in response to this prompt, then INFORM/V produces a summary-only report. The way in which you sort and subdivide determines the points at which you will get summary data, as the following example shows.

Suppose a user has a personnel information database and wants to know how many employees are in each division. If each employee in each division is listed in the report, it will be very long and the summary information (which is all the user wants) will be hard to find (see Figure 5-11).

Figure 5-11. Employee Report with Summary Counts

```
    EMPLOYEE COUNT AT EACH DIVISION


    DIVISION              EMPLOYEE

    _____

    ABC               ACTON, JOE
                      ANDERSON, BARBARA
                             .
                             .
                             .
                      ZINK, STEVEN
                      235C


    RST               ARRON, JUDY
                      ARRON, LEWIS
                             .
                             .
                             .
                      ZORN, JACK
                      127C
```

For a large database, this would be a very long report with extraneous information that is of no particular interest. It would be preferable to define the report as shown in Figure 5-12.

Figure 5-12. Defining a Summary-Only Report

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


DATA NAMES IN INVENTORY


   1: DIVISION            4: EMPLOYEE NUMBER      7: PHONE EXT

   2: DIVISION NUMBER     5: MANAGER              8: MAIL STOP #

   3: EMPLOYEE            6: DATE HIRED


TYPE NUMBER(S) FOR DATA NAME(S):
             TO INCLUDE IN REPORT>
                    TO SORT BY> 1
                TO SUBDIVIDE BY> 1
     TO SUMMARIZE FOR: DIVISION> 3COUNT
```

The report produced by the example in Figure 5-12 is shown in Figure 5-13.

Figure 5-13. A Summary-Only Report

```
   INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


   EMPLOYEE COUNT AT EACH DIVISION


   DIVISION              EMPLOYEE

   --------------------------------------------------------
   ABC                   235C

   RST                   127C

    .                     .

                          .

    .                     .

   XYZ                   303C
```

6 Selection Criteria

INFORM/V allows you to produce a report that includes only a particular part of the available data by specifying selection criteria --values that the data must match in order to be included in the report. For example, you can specify that the report contain information only for the first six months of the year, or you can request a report for only certain values of NAME Any data name shown on the Data Names Menu can be selected for use in selection criteria.

Specifying selection criteria is generally a two-step process (the exception is data-name to data-name comparison, which is discussed at the end of this section). For most selection criteria, the first step occurs on the Data Names Menu, where you specify the data names that will be used in specifying criteria. The second step occurs on the Report Process Menu, when you are producing the report. INFORM/V will ask you to give the selection criteria for each data name that you specified in the first step. The process is shown in Figure 6-1 and Figure 6-2.

The First Step

On the Data Names Menu, the user responds to the prompt

        FOR SELECTION CRITERIA>

by entering the number of the data name that will later be used to specify selection criteria.

An example of the interaction is shown in Figure 6-1. Here the user enters 1 to tell INFORM/V that later selection criteria will apply to the data name NAME.

Figure 6-1. Specifying Data Names for Selection Criteria

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN ACCOUNTING INFORMATION

    1: NAME   7: DESCRIPTION   13: PRICE

    2: ADDRESS   8: PURCHASE NUMBER   14: TOTAL

    3: ACCOUNT   9: PURCHASE DATE   15: SHIPDATE

    4: DATE   10: BACKORDERFLG   16: DELVDATE

    5: CREDIT   11: QUANTITY

    6: PRODUCT NUMBER   12: UNIT COST

TYPE NUMBER(S) FOR DATA NAME(S):

           TO INCLUDE IN REPORT> **1,6,11**

                TO SORT BY> **1**

       TO SUMMARIZE FOR: NAME> **11**

         FOR REPORT SUMMARY> **1COUNT,11AVERAGE**

       FOR SELECTION CRITERIA> **1**

The Second Step

After the user tells INFORM/V to produce the report, the Report Process Menu (Figure 6-2) appears, and the user is prompted for passwords. INFORM/V then displays the prompt for selection criteria:

```
SELECTION CRITERIA FOR

        data name>
```

Figure 6-2. Specifying Selection Criteria

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


REPORT PROCESS STARTED


PASSWORD FOR ACTG>


SELECTION CRITERIA FOR


                NAME> ALBERTSON JOHN B

```

The user enters ALBERTSON JOHN B in response to this prompt, thereby requesting information for only one value of NAME. The report produced in this case is shown in Figure 6-3.

Figure 6-3. Report for a Specified Name

```
PROFIT REPORT


NAME                      PRODUCT NUMBER  QUANTITY  PROFIT MARGIN

-----------------------------------------------------------------


Albertson John B       90C                       100         $200.00

                       60D                       130          $19.50

                       50B                        30          $37.50

                       50B                         5           $6.25

=>                                               265*        $263.25*



*****END OF REPORT*****
```

The data names that are specified for use in selection criteria are saved as part of the report, but the values supplied on the Report Process Menu are not. It is therefore easy to get the same kind of report for many different subsets of data. For example, if the user saves the report definition shown in Figure 6-1, INFORM/V will prompt for selection criteria for NAME every time the report is produced in the future. The user could therefore get the same kind of report for different individuals, or for different groups of individuals.

General Forms for Selection Criteria

The example shown above uses a very simple response to the prompt for selection values. More complex selection criteria are possible. There are two different general forms that can be used in specifying selection criteria, one of which it to use a wild card and the other of which uses an operator. You can also connect different criteria for even more restrictive or complex specifications.

Selection Using a Wild Card. The first general form for selecting values is generally used with character data, but can also be used with numeric data.

This form uses the **wild-card** character ^ within a string of literal characters. When INFORM/V searches the data, it selects values in which the literal characters match, and the wild cards can be anything. The wild card character can be used before, after, or within the literal string, and is interpreted as follows:

xyz^   A single wild-card character after a string of literal characters tells
                INFORM/V to report data for all values that begin with the characters
                specified. For example, the selection criterion CHAMB^ would select
                CHAMBERLAIN, CHAMBERLIN, CHAMBERS, and any other name that
                begins with CHAMB.

xyz^^   Two wild-card characters appearing after a string of literal characters tells INFORM/V to report data for all values that have the specified characters in any position. For example, the selection criterion BERT^^ would select BERTHOLD, ALBERTSON, HERBERT, and any other name that contains the characters BERT.

^xyz   A single wild-card character preceding a string of literal characters tells INFORM/V to report data for all values that end with the specified characters. For example, the selection criterion ^SON would select JOHNSON, ALBERTSON, HANSON, and any other name, of any length, that ends in SON.

w^x^yz   When wild-card characters are within the string of literal characters, the exact position of each character becomes important. The values that are found must be the same length as the value given, and the characters must match on a one-for-one basis. This form tells INFORM/V to find all values in which the literal characters appear exactly as specified, in the specified positions, and the characters in the positions of the wild-card characters can be anything. For example, the selection criterion HANS^N would find both HANSEN and HANSON, but would not find HANSAAN.

Selection Using a Comparison Operator. The second general form is generally most appropriate to numeric data, but can be used with data of any type.

It can be represented simply as follows:

    [operator] value

where operator may be any of the following:

`< or LT`   less than

`<= or LE`   less than or equal to

`> or GT`   greater than

`>= or GE`   greater than or equal to

`<> or NE`   not equal to

`= or EQ`   equal to (this is the default when no operator is given) and value can be any string or number (so long as it is appropriate to the data name).

For example,

```
 > 1    is equal to    GT 1
```

and both selection criteria would select all records for which the data name value is greater than one.

Connectors in Selection Criteria. It is possible to use two or more general forms together in one selection criterion. Connectors that can be used within or between general forms to specify more that one search value are:

TO   Specifies that the record reported must contain one of a range of values bounded by the value before and the value after this connector. For example,

```
        7000 TO 10000
```

finds all values of the data name that are between 7000 and 10000 inclusive.

AND   Specifies that the record must satisfy the expression before and after this operator. For example,

```
>7000 AND <10000
```

specifies that the value must be greater than 7000 and less than 10000.

OR   Specifies that the record reported must satisfy the expression either before this operator or after it. For example,

```
94306 OR 94304
```

would retrieve only those records for which the data value is 94306 or 94304.

If both AND and OR are included in the same specification, the AND takes precedence over the OR. For example, in the following expression:

```
>1 AND <3 OR GT 10
```

the value must be either between 1 and 3 OR greater than 10.

need 4 If you enter one of the connectors as the last item before RETURN on a line, INFORM/V responds with the following prompt:

```
(CONTINUATION LINE)>
```

This prompt gives you the opportunity to add to your selection criteria.

Examples of both general forms and connectors are shown in Table 6-1.

Table 6-1. Examples of Selection Criteria

Selection Criteria	Interpretation
20 TO 30	From all the values of this data name select those between and including 20 and 30.
50 OR 99	From all the values of this data name, select only 50 and 99.
>50 AND <100	Picks all values between 50 and 100.
JOE AND MARY	Results in NO RECORD FOUND, since no value can be both JOE and MARY.
^SON AND IL^^	From all the values of this data name, select those that end with the letters SON and those that contain the letters IL in any position; for example, Bill Johnson William Peterson
"Baker Bill B"	From all the values of this data name, select only "Baker Bill B". NOTE: If there are blanks in the value you want to select, you must put the value in quotation marks.
20	From all the values of this data name, select only those represented by the number 20; an equal sign is understood.
LAX OR SFO	From all the values of this data name, select LAX or SFO only.
JONES TO SMITH	From all the values of this data name, select only the names between and including JONES and SMITH.
NE 99	From all the values of this data name, select only those that are not equal to 99.
JONES TO SMITH OR BLACK	From all the values of this data name, select JONES TO SMITH, or select any value equal to BLACK.
^BOB AND BR^ OR JOE	From all the values of this data name, first select those ending with BOB and beginning with BR, then select all values equal to JOE; for example, BROWN BOB JOE

Data-Name to Data-Name Comparison

INFORM/V also allows you to select data by comparing the value in one data name with the value in another data name. This specialized kind of selection criterion is different from that just described in that the whole specification is done on the Data Names Menu, at the FOR SELECTION CRITERIA prompt. The values that are used must be numbers representing the data names available on the Data Names Menu.

Any of the comparison operators listed above for normal selection criteria can be used in data-name to data-name comparisons, with the following restrictions:

- For data names that contain character data (type X, U, or 9), the only operators allowed are =, EQ, <>, and NE. Item lengths do not have to be the same for the data names being compared.

- For all numeric data types, the types and lengths must be identical. All operators are valid.

It is not necessarily possible to tell from the data what type has been specified for the data name. For technical reasons, data names that only contain numerical data are sometimes identified as one of the character types. If you have any problems specifying data-name to data-name comparisons, see your database administrator.

Figure 6-4 shows an example of a typical data-name to data-name comparison.

Figure 6-4. Menu Responses for a Data-Name to Data-Name Comparison

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN INVENTORY

    1: AREA   3: SALES-PERSON   5: YTD-SALES

    2: DIST   4: QUOTA

TYPE NUMBER(S) FOR DATA NAME(S):

TO INCLUDE IN REPORT> **1/5**

TO SORT BY> **1,2,3**

TO SUBDIVIDE BY> **1**

TO SUMMARIZE FOR: AREA> **5**

FOR REPORT SUMMARY>

FOR SELECTION CRITERIA> **5 > 4**

REPORT TITLE> **SALES WINNERS**

PREPARING REPORT

In this case, the user wants to see if any of the sales force have yet gone over their sales quota. On the Data Names Menu, the user responds to the prompt

```
FOR SELECTION CRITERIA>
```

by answering 5 > 4. This response tells INFORM/V to report data only when YTD-SALES is greater than QUOTA.

Figure 6-5 shows the resulting report. Only one person has so far exceeded his personal sales quota.

Note that this selection criterion is saved if the report is saved. Therefore, whenever this report is produced in the future, it will always report only those sales people who are over quota.

Figure 6-5. The Report Produced by a Data-Name to Data-Name Comparison

```
SALES WINNERS


AREA    DIST    SALES-PERSON                    QUOTA      YTD-SALES

-----------------------------------------------------------------------------------------------------

NW      CAL     BONNANO                      145000.00       152000.00
                                                             152000.00*


***** END OF REPORT *****



RETURN TO CURRENT DATA NAMES MENU(Y/N) ?>
```

7 Creating Your Own Data Names

INFORM/V allows you to create your own user-defined data names. A user-defined data name is one that you create when you want to include in the report a column of data that is derived from one of the data names in the Group or data set.

The total number of user-defined data names you can add depends on the present number of data names in the Group or data set. The limits on the number of data names allowed are shown in Appendix C. You can add data names up to those limits.

For each user-defined data name, you must specify an existing data name and a computational expression. You may also specify an edit mask — a format that tells INFORM/V how to display the resulting values. The steps to accomplish both tasks are described below.

User-defined data names cannot be used when specifying selection criteria.

Defining a Data Name

An example of how a user-defined data name is created is shown in Figure 7-1. To create one, respond to the prompt:

```
     TO INCLUDE IN REPORT>
```

with a plus sign (+). INFORM/V next prompts with

```
   NEW DATA NAME>
```

to which you respond with the user-defined data name. The name may be up to 20 characters long (upper and lower case), including spaces. The data type for a user-defined data name is always P (11,0,6).

In the example shown in Figure 7-1, the user-defined data name is PROFIT MARGIN.

Figure 7-1. Creating a User-Defined Data Name

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN ACCOUNTING INFORMATION

1: NAME	7: DESCRIPTION	13: PRICE
2: ADDRESS	8: PURCHASE NUMBER	14: TOTAL
3: ACCOUNT	9: PURCHASE DATE	15: SHIPDATE
4: DATE	10: BACKORDERFLG	16: DELVDATE
5: CREDIT	11: QUANTITY	
6: PRODUCT NUMBER	12: UNIT COST	

TYPE NUMBER(S) FOR DATA NAME(S):

TO INCLUDE IN REPORT>

NEW DATA NAME> **PROFIT MARGIN**

COMPUTATIONAL EXPRESSION> **N14 * .50**

EDIT MASK> **$$,$$$.^^**

Defining the Computational Expression. Next, INFORM/V prompts you with:

```
COMPUTATIONAL EXPRESSION>
```

to which you respond with an expression that will produce values for the user-defined data name. You can specify a simple expression, such as the addition of two data names, or a more complex expression. (The operators that may be used in computational expressions are shown later in this section.) You can use numbers for data names (N1 for data name 1, N2 for data name 2, and so on) and digits for values (digits may include decimal points). It is also possible to define data names in terms of other user-defined data names.

In the example in Figure 7-1, the user-defined data name PROFIT MARGIN is determined by multiplying data name 14 (TOTAL) by .50. This computational expression looks like this:

```
N14 * .50
```

The N identifies the first number in the expression as a data name number.

Defining the Edit Mask. Next, INFORM/V allows you to specify an edit mask — a format used to display values — for each user-defined data name. The prompt is

```
EDIT MASK>
```

In Figure 7-1 the edit mask $$,$$$.^^ specifies that the value, when shown in the report, should be preceded by a dollar sign ($) and that a decimal point should appear two positions from the right.

If you wish to show digits to the right of the decimal point for a user-defined data name, you must specify an edit mask. For example, if the computed value of a data name is .6 and no edit mask is specified, the value will be rounded to the nearest integer, in this case, 1. However, if you specify the following edit mask, ^.^, the value .6 will appear as 0.6. (The edit mask characters and examples of their use are shown later in this section.) If you do not want to supply an edit mask, respond to the prompt by entering RETURN.

After you provide an edit mask (if you want to), INFORM/V redisplays the prompt:

```
NEW DATA NAME>
```

If you do not want to add another user-defined data name, press RETURN. INFORM/V redisplays the Data Names Menu, adding any user-defined data names to the menu. Then it prompts you as usual. Figure 7-2 shows the Data Names Menu after a user-defined data name has been added to it. The user-defined data name PROFIT MARGIN appears as the last data name.

If you save the report definition in the catalog (option 6 on the Main Menu), the user-defined data names are retained as part of that report definition. However, they do not become a part of the underlying data sets or files. Values for the user-defined data names are calculated anew each time the report is produced.

Figure 7-2. A Data Names Menu that Includes a User-Defined Data Name

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN ACCOUNTING INFORMATION

     1: NAME   7: DESCRIPTION   13: PRICE

     2: ADDRESS   8: PURCHASE NUMBER   14: TOTAL

     3: ACCOUNT   9: PURCHASE DATE   15: SHIPDATE

     4: DATE   10: BACKORDERFLG   16: DELVDATE

     5: CREDIT   11: QUANTITY   17: PROFIT MAR

     6: PRODUCT NUMBER   12: UNIT COST

TYPE NUMBER(S) FOR DATA NAME(S):

          TO INCLUDE IN REPORT> **1,6,11,17**

                  TO SORT BY> **1**

              TO SUBDIVIDE BY> **1**

       TO SUMMARIZE FOR: NAME> **11,17**

           FOR REPORT SUMMARY>

          FOR SELECTION CRITERIA>

REPORT TITLE> **PROFIT REPORT**

After you respond to the reporting prompts shown in Figure 7-2, INFORM/V produces the report shown in Figure 7-3.

Figure 7-3. A User-Defined Data Name Included in a Report

```
PROFIT REPORT


NAME                    PRODUCT NUMBER  QUANTITY  PROFIT MARGIN
--------------------------------------------------------------
Albertson John B        90C                  100        $200.00

                        60D                  130         $19.50

                        50B                   30         $37.50

                        50B                    5          $6.25

=>                                           265*       $263.25



Baker Bill B            80B                   55         $27.50

=>                                            55*        $27.50



Lewis Charles           55C                   20          $.75

                        90C                  700       $1400.00

=>                                           720*      $1400.75



Limburger Frank         60D                   15         $22.50

=>                                            15*        $22.50



Peterson Paul           70A                   20         $15.00

=>                                            20*        $15.00



Smith John Q            11A                   40          $2.00

                        11B                  400         $20.00

                        11C                  400         $20.00

=>                                           840*        $42.00



*****END OF REPORT*****
```

Computational Expressions

A computational expression may be used to calculate the value of a user-defined data name. All values for the user-defined data name are automatically initialized to 0, and computations are carried out before the data is sorted or displayed in the report. The arithmetic operators available and their meanings are:

+	add
-	subtract
*	multiply
/	divide; give the quotient
//	divide; give the remainder

All arithmetic operations are performed in the following order:

1.   Division giving the remainder

2.   Division giving the quotient

3.   Multiplication

4.   Subtraction

5.   Addition

You can vary the order of operations by using parentheses to group expressions.

Edit Masks

An edit mask is a tool used to modify the way data is presented without changing the data itself. Edit masks can be defined for any user-defined data name.

An edit mask used to express data in dollars and cents is:

```
EDIT MASK> $$$,$$$!^^
```

This edit mask specifies that for every value to which this mask applies, a decimal point should be inserted two positions from the right, a comma should be placed at the third position to the left of the decimal point, and the entire value should be preceded by a dollar sign. This edit mask works for all values up to $99,999.99.

Edit masks cannot be greater than 30 characters. The INFORM/V edit mask characters are shown in Table 7-1. Examples are shown in Table 7-2.

Table 7-1. Edit Masks

Edit Mask Character	Meaning
^	Insert the actual data in this position.
Z	Suppress leading zeros.
$	Leading zeros are suppressed; the right-most leading zero is replaced with a "$"
*	Asterisks are displayed in place of leading zeros.
.	Add a decimal point in the position specified in the source data.
!	Add a decimal point at the position indicated regardless of where a decimal point is in the source data.
-	When used at the end on an edit mask, this character denotes a negative value.
DR or CR	When used as the last characters of the edit mask, values are displayed with a trailing DR (DEBIT) or CR (CREDIT).

Table 7-2. Examples of Edit Masks

Value	Edit Mask	Value Display
000123.4	$$,$$$!^^	$12.34
0001234	$$,$$$!^^	$12.34
000123.4	$$,$$$.^^	$123.40
0001234	$$,$$$.^^	$1,234.00
0001234	***,**$.^^	*$1,234.00
0001234	zzzzzzz.^^	1234.00
0001234	zzzzzzz!^^	12.34
0001234	^^/^^/^^	00/12/34
0001234	^^^^.^^	1234.00
0001234	^^^^!^^	0012.34
-0001234	$,$$$.^^CR	$1,234.00CR
0001234	$,$$$.^^CR	$1,234.00
-0001234	$,$$$.^^DR	$1,234.00DR
0001234	$,$$$.^^DR	$1,234.00

8   Report Format Options and Batch Job Options

This section contains the information you need to alter the appearance of a report on the terminal or on printer paper, or to control the default parameters for creating reports in batch mode. Normally, without any instructions from you, INFORM/V formats reports or creates batch jobs according to preset values called **defaults**. If you want to override these default values, choose option 8 on the Main Menu, as is shown in Figure 8-1. You can also use this option to see what options are available, and what the default values are, without changing them.

Figure 8-1. Choosing to Change Format or Batch Options

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


INFORM OPTIONS:


        1: DEFINE A REPORT

        2: DISPLAY REPORT CATALOG

        3: SELECT A REPORT DEFINITION

        4: PREVIEW REPORT LAYOUT

        5: PRODUCE THE REPORT

        6: ADD REPORT DEFINITION TO CATALOG

        7: DELETE A REPORT DEFINITION FROM CATALOG

        8: SET OPTIONS

        9: MODIFY THE REPORT

       10: EXIT FROM INFORM/V


TYPE AN OPTION NUMBER> 8
```

When you select option 8, the Format Options Menu is displayed, and the prompts shown in Figure 8-2 appear one at a time. Each prompt shows you what the current value of the option is. If you have changed any option during the current INFORM/V session, then the value you have set appears here. If not, this menu will show all default values.

Figure 8-2. Format Options Menu

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


FORMAT OPTIONS:


CURRENT VALUES IN PARENTHESES


                  TERMINAL PAGE WIDTH (79)>
                 TERMINAL PAGE LENGTH (22)>
                  PRINTER PAGE WIDTH (132)>
                  PRINTER PAGE LENGTH (58)>
                    SHOW TITLE LINE (YES)>
                       SHOW HEADING (YES)>
              ELIMINATE BLANK LINES (NO)>
            ELIMINATE DUPLICATE LINES (NO)>
         USE DEFAULT BATCH RESPONSES(YES)>
              NATIVE LANGUAGE(NATIVE-3000    )>


 TYPE 'RETURN' KEY TO CONTINUE
```

When you leave INFORM/V, all options are automatically reset to their default values.

Any report definition that you add to the INFORM/V catalog (option 6 on the Main Menu) includes the format options that were in effect when the report was created. When you activate a saved report, not only is it produced with the format options with which it was saved; it also changes the default environment so that any new reports created during the session have the same options. You can reset the options to default values by leaving INFORM/V and reentering it, or by calling up the Format Options Menu and resetting the options to their default value.

To change format options on a saved report, first call up the report from the catalog, then call up the Format Options Menu and make the changes you want, then use option 6 to save the report again. Note that any changes in format will not become part of the report unless it is resaved.

Formatting Prompts

There are eight ways to change the format of a report, each corresponding to the prompts shown on the Format Option Menu. The numbers in parentheses are the preset (or current) values. These values may be changed by typing a different value next to the prompt.

The final two prompts on the Format Option Menu control two related parameters: the next to last controls use of batch options, and the last controls the language that INFORM/V uses.

All the prompts are described in order below.

TERMINAL PAGE WIDTH (79)> — This prompt may be used to change the number of characters per line you want to display on a terminal. If your terminal can display more than 79 characters per line, then you can change the terminal page width to take advantage of the terminal's capacity. You may set terminal page width to any value between 1 and 300.

TERMINAL PAGE LENGTH (22)> — The number of lines displayed on the terminal can be changed using this prompt. The range of values you can give in response to this prompt is 1 to 500 lines. When the report is displayed, the message:

        CONTINUE (Y/N)>

appears following the specified number of lines. If you type Y or RETURN, the next 22 lines (or whatever number you specify) are displayed, and you are reprompted with:

        CONTINUE (Y/N)>

You may want to display the report continuously from beginning to end. To do so, type C (for "continuous") in response to the PAGE LENGTH prompt.

PRINTER PAGE WIDTH (132)> — This prompt may be used to change the number of characters displayed on each printed line. This number may range from 1 to 300. A line length greater than 132 should only be used if you are printing in compressed mode or using a laser printer.

PRINTER PAGE LENGTH (58)> — The number of lines printed per page. After the specified number of lines are printed, the printer goes to the top of the next page, prints the header, report title, and column headings, then continues with the report. The range of acceptable values is 1 to 500 lines. If you type C, INFORM/V prints the report continuously from beginning to end.

SHOW TITLE LINE (YES)> — If you change the preset value from YES to NO, the header (which consists of the date, time, and page number) will not be printed at the top of each printed page. Note that this option does not apply to the title that you specify when you define a report. It applies to the header line normally printed by the printer on the top of each page, above the report title.

SHOW HEADINGS (YES)> — Normally, each time a new screenful of information is displayed or a new page of the report is printed, column headings (data names) are shown. By typing NO to this prompt, you will suppress the column headings.

ELIMINATE BLANK LINES (NO)> — This prompt gives you the option of keeping or deleting all blank lines that might result when no data is available for some lines of the report.

ELIMINATE DUPLICATE LINES (NO)> — This prompt specifies that only the first of a series of duplicate lines is to be displayed on the terminal or printed on the printer.

USE DEFAULT BATCH RESPONSES (YES)> — This prompt allows you to override the default parameters that are normally used when producing reports in batch mode. If you answer N to this prompt, then when you produce a report in batch, you will be prompted for several options on the Report Process Menu after you have supplied the required passwords. The prompts are shown and explained at the end of this section.

NATIVE LANGUAGE (*default language*) — This prompt allows you to choose the language to be used. INFORM/V looks for a specified user language and if it finds one, it puts that language in as the default: for example,

```
NATIVE LANGUAGE (FINNISH)>
```

The response to the LANGUAGE prompt must be a one- or two-digit code that signifies the language. See the Native Language Support Reference Manual (32414-90001) for a table of the allowed codes.

Batch Options

By default, when a batch job is set up, the system supplies a job name, prints out information about the job in a job listing, and cleans up the files created during the batch operation. INFORM/V allows you to override the normal processing features. If you want to do so, you need to call up the Format Options Menu by choosing option 8 on the Main Menu, then answering N to the following prompt on the Format Options Menu:

```
USE DEFAULT BATCH RESPONSES (YES)>
```

Then, when you produce a report in batch mode, you will be prompted to supply values for the following options:

SAVE REPORT IN CATALOG?(N/Y)> — If you are sure at this point that the report is the way you want it, you can save it right away by answering Y to this prompt. INFORM/V will then prompt for the report name and the description to store in the catalog.

TYPE REPORT NAME(6)> — This prompt occurs only if you have decided to save the report. Enter the name under which you want to save the report in the catalog, up to six characters.

TYPE REPORT DESCRIPTION(50)> — You may enter a description, up to fifty characters, that will be saved in the report catalog. This description is shown whenever the catalog is displayed or printed.

ENTER JOB NAME (INFJOB)> — If you respond by typing RETURN, the default job name INFJOBnn will be used; the nn will be replaced by a two-digit number to make the job name unique. Alternatively, you can enter a name of your choice. It can be up to eight characters, and the first character must be alphabetic.

PURGE $STDLIST UPON COMPLETION OF JOB?(N/Y)> — If you respond by typing RETURN or N, the file $STDLIST will be retained after the job is done. If you respond with Y, $STDLIST will be purged.

PURGE JOB FILE UPON COMPLETION OF JOB?(Y/N)> — If you respond with RETURN or Y, the job file will be purged after the job is done. If you answer N, the job file will be retained.

Figure 8-3 shows the Data Names Menu as it appears when batch options are under manual control.

Figure 8-3. Prompts for Batch Options

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN CUSTG

  1. CUSTOMER ACCOUNT   3. CUSTOMER ADDRESS   5: CCUSTOMER STATE
  2. CUSTOMER NAME   4. CUSTOMER CITY   6: CUSTOMER COUNTRY

TYPE NUMBER(S) FOR DATA NAME(S):

        TO INCLUDE IN REPORT> **1**
            TO SORT BY> **!**

REPORT TITLE> **CUSTOMER LIST**

PREPARING REPORT

PRODUCE THE REPORT (Y/N)?>

PRODUCE REPORT IN BATCH MODE? (N/Y)> **Y**

TYPE OF REPORT NAME(6)> **CUSTLI**

TYPE REPORT DESCRIPTION (50)> **COMPLETE CUSTOMER LIST**

ENTER JOB NAME (INFJOB)> **XJOB10**

PURGE $STDLIST UPON COMPLETION OF JOB? (Y/N)>

PURGE JOB FILE UPON COMPLETION OF JOB? (Y/N)>

One additional batch prompt occurs on the Report Process Menu when batch options are under manual control.

ENTER JOB PRIORITY> — This option should be used if you want to defer the job for processing overnight. Job priority levels differ from installation to installation, and are determined by the system operator. If you want to defer processing, your database administrator can tell you what information to enter in response to this prompt.

Figure 8-4 shows the Report Process Menu as it appears when batch options are under manual control. All prompts are the same as for normal processing except the PRIORITY prompt.

Figure 8-4. Report Process Menu when Batch Options Are Under Manual Control

```
INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


REPORT PROCESS STARTED


PASSWORD FOR PURCHA>


PREPARE TO STREAM BATCH JOB


ENTER USER PASSWORD>


ENTER GROUP PASSWORD>


ENTER JOB PRIORITY> 2


#J93
BATCH JOB SUCCESSFULLY STREAMED


RETURN TO CURRENT DATA NAMES MENU(Y/N)?>
```

9 Variables in Report Titles

When you are defining a report on the Data Names Menu, the final part of the definition process is to supply a report title. The title you specify may be up to 79 characters long (including spaces) and starts at the left margin. You may also want to include information in the title that changes, such as the current date, the time, the page number, and the selection criteria. To allow you to do so without having to modify the title each time you produce the report, you can use one or more of the INFORM/V variables shown in Table 9-1. Each time INFORM/V encounters one of these variables while it is producing the report, it substitutes the current value for that variable.

For example, if you specify $TODAY in the title line, and if the report is produced on July 16, 1986, the title will include 7/16/86. If you specify $TIME in the title, then the current time will be displayed each time the report is produced. Use of $TODAY and $TIME will help you track different versions of a report that is run repeatedly with constantly changing data.

You can combine two or more variables in one title. For example, Figure 9-1 shows the use of several variables in a title line.

Table 9-1. Variables That Can be Used in Report Titles

Variable*	Values Used in Title	Example
$TODAY	today's date (MM/DD/YY)	11/24/86
$MONTH	month (characters)	AUGUST
$M	month (number)	8
$YEAR	year (four numbers)	1986
$Y	year (two numbers)	86
$DAY	day of the month	17
$TIME	present time (HH:MM AM/PM)	10:45 AM
$DATELINE	today's date (MPE/V format)	Fri. May 23, 1986, 12:06 PM
$PAGE	report page number	53
$SELECT	all selection criteria	PROD-NO > 1600

*Variable names need not be capitalized.

If the report is displayed on the terminal, the title appears at the top of the screen each time a new page is displayed. If the report is sent to the line printer, the title appears on each new page of the report.

Figure 9-1. Specifying Variables in a Report Title

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN ACCOUNTING INFORMATION

1: NAME	7: DESCRIPTION	13: PRICE
2: ADDRESS	8: PURCHASE NUMBER	14: TOTAL
3: ACCOUNT	9: PURCHASE DATE	15: SHIPDATE
4: DATE	10: BACKORDERFLG	16: DELVDATE
5: CREDIT	11: QUANTITY	
6: PRODUCT NUMBER	12: UNIT COST	

TYPE NUMBER(S) FOR DATA NAME(S):

TO INCLUDE IN REPORT> **1,6,11**

TO SORT BY>

TO SUMMARIZE FOR: NAME> **11TOTAL**

FOR SELECTION CRITERIA> **1**

REPORT TITLE> **SALES REPORT ON $TODAY AT $TIME, PAGE: $PAGE**

The report produced by the specifications in Figure 9-1 is shown in Figure 9-2.

Figure 9-2. Report Titles with Values Replacing Variables

SALES REPORT ON 12/20/85 AT 10:25:33 PM, PAGE: 1

NAME	PRODUCT NUMBER	QUALITY
Lewis Charles	55C	20
Peterson Paul P	70A	20
Albertson John B	90C	100
Lewis Charles	90C	700
Limburger Frank	60D	15
Albertson John B	60D	130
Baker Bill B	80B	55
Albertson John B	50B	30
Albertson John B	50B	5
Smith John Q	11A	40
Smith John Q	11B	400
Smith John Q	11C	400
		1915*

*****END OF REPORT*****

10 Modifying a Report Definition

One of the most important features of any report writer is the capability to change reports once they have been defined. INFORM/V provides a framework for modifying reports that is particularly helpful and easy to use. It presents each prompt, with the current responses, then prompts you for changes. You are quickly reminded of the exact existing specification, then can compare your new entry with the old one.

You can modify a report from three points in INFORM/V: from the Main Menu, from the bottom of the last page of a displayed report, or from the bottom of the Data Names Menu if you choose not to produce a report that has just been defined. If you have just defined or produced a report, INFORM/V prompts with

```
RETURN TO CURRENT DATA NAMES MENU(Y/N)>?
```

When you respond with Y, INFORM/V displays the modify version of the Data Names Menu for the current report, and you can begin making changes.

If you are beginning on the Main Menu, you can modify the current report by selecting option 9. An example is shown in Figure 10-1.

If there is no current report, INFORM/V prompts you as follows for the report definition name:

```
CURRENT REPORT HAS NOT BEEN SPECIFIED

TYPE A REPORT NAME(6)>
```

When you supply a report definition name, INFORM/V reads it in as the current report and prints the Data Names Menu corresponding to that report.

Figure 10-1. Choosing to Modify a Report

```
  INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986


  INFORM OPTIONS:


     1: DEFINE A REPORT

     2: DISPLAY REPORT CATALOG

     3: SELECT A REPORT DEFINITION

     4: PREVIEW REPORT LAYOUT

     5: PRODUCE THE REPORT

     6: ADD REPORT DEFINITION TO CATALOG

     7: DELETE A REPORT DEFINITION FROM CATALOG

     8: SET OPTION

     9: MODIFY THE REPORT

    10: EXIT FROM INFORM/V


  TYPE AN OPTION NUMBER>   9
```

Every prompt acts the same when you are modifying a report as when you are defining one except that the prompt is displayed first with (OLD) appended, followed by the existing responses. Then the prompt will be repeated with (NEW) tagged to it. An example is shown in Figure 10-2.

At this point, you can respond in one of the following ways:

- Type in new value(s).

- Press RETURN to keep the old values.

- Type a space and press RETURN to remove all the old value(s).

- Type] to return to the previous prompt (or if used with the first prompt, return to the Main Menu).

- Type]] to redisplay the Data Names Menu and start over from the INCLUDE prompt. Any modifications done up to that point will be saved in the current report.

- Press CONTROL Y to return to the Main Menu.

Figure 10-2. Modifying a Report

INFORM/V   HP32246v.uu.ff - (C) Hewlett-Packard Co. 1986

DATA NAMES IN INVENTORY

    1: PART   3: COST   5: PRODUCT LINE

    2: LOCATION   4: PRICE   6: QTY ON HAND

TYPE NUMBER(S) FOR DATA NAME(S):

      TO INCLUDE IN REPORT (OLD): **1,4,2,6**

    TO INCLUDE IN REPORT (NEW)>

           TO SORT BY (OLD): **1,4,3**

         TO SORT BY (NEW)> **1,4**

       TO SUBDIVIDE BY (OLD): **1,3**

     TO SUBDIVIDE BY (NEW)>

INVALID ENTRY IGNORED(DATA NAMES SELECTED MUST BE IN SORTED LIST):3

       TO SUBDIVIDE BY(OLD): **1,3**

      TO SUBDIVIDE BY(NEW)> _

    FOR REPORT SUMMARY(OLD):

   FOR REPORT SUMMARY(NEW)> **]**

       TO SUBDIVIDE BY(OLD):

      TO SUBDIVIDE BY(NEW)> **]]**

In the example in Figure 10-2, the user's responses are interpreted as follows:

The user responds to the first prompt,

```
TO INCLUDE IN REPORT(NEW)>
```

by entering a RETURN, signaling that the same four data items should be included in the modified report.

Next, in response to

```
TO SORT BY(NEW)>
```

the user enters 1,4, and thereby changes the sort specification.

Next, the prompt

```
TO SUBDIVIDE BY(NEW)>
```

is answered by RETURN, meaning that the old values should be retained here. However, INFORM/V requires that the user change the old response, since the sort data names have been changed and the old SUBDIVIDE response is no longer valid. When reprompted, the user enters a space, followed by RETURN, thereby erasing the old response without entering a new response.

When prompted with

```
FOR REPORT SUMMARY(NEW)>
```

the user decides that he wants to subdivide after all, and so enters], to recall the preceding prompt. When the SUBDIVIDE prompt appears again, the user decides that he should start again at the beginning. Entering]] will cause INFORM/V to clear the screen, then redisplay the Data Names Menu down through the first (NEW) prompt, thereby allowing the user to start the modification over again.

11 Technical Administration

This section presents the technical aspects of preparing data for access by users of INFORM/V. It describes, first, the procedures for establishing INFORM Groups, then the mechanics of file linkage when the elements for a report are drawn from more than one file, and, finally, the procedures for defining INFORM/V security.

Unlike Sections 1 through 10 of this Guide, this section is written for database administrators. It is assumed that the reader has a thorough knowledge of DICTIONARY/V, IMAGE/V or TurboIMAGE/V databases, and MPE/V.

DICTIONARY/V is used to establish INFORM Groups and to define the security for INFORM/V users. It is the job of the database administrator to define the data elements in the dictionary and to organize the data appropriately for the reporting needs of the INFORM/V users.

The first step in preparing the data dictionary for INFORM/V users is to be sure that all elements the user needs are defined in the data dictionary. In addition, each of these elements must be associated with its file (MPE, KSAM, or data set file), and each data set must also be associated with its database file.

Once the data elements are defined in the data dictionary and are associated with a file, you can begin organizing the data for use with INFORM/V. You use the dictionary maintenance program DICTDBM to establish INFORM/V Groups and to associate elements and files with them. You also use DICTDBM to establish INFORM/V security.

Establishing INFORM/V Groups

It is possible, of course, to access databases directly through INFORM/V without creating Groups. The user can be given access to any data set that is defined in the data dictionary. Then why bother to establish INFORM Groups? Because they provide a logical view of data as defined by business needs. More specifically, there are three reasons for setting up Groups:

1. To conceal the details of a data set or database structure from the user.

2. To make data from an MPE or KSAM file available to INFORM/V users. Data in MPE or KSAM files can only be accessed if it is related to an INFORM Group.

3. To combine data elements from different files and data sets into one reporting Group.

The real power of INFORM/V lies in the ability to pull together data from various sources to create one reporting environment.

INFORM Groups follow the same hierarchical plan as other data dictionary structures. At the top of the hierarchy is $MENU, which is the INFORM/V parent Group. $MENU is automatically created for you when you initialize your data dictionary. Other Groups are related to $MENU as child Groups. Child Groups can in turn be parent Groups to other Groups. As many as sixteen levels of nesting are allowed for subgroups under one Group. Elements can be associated only with the lowest level child Groups. When an INFORM/V user makes the Group and subgroup selections on the INFORM/V menus, the user will be following the hierarchy of menus that you have created in the data dictionary.

INFORM/V security allows you to specify which Groups and subgroups will appear on which user's menus. If INFORM/V security is not established, all Groups related to $MENU will appear on the INFORM/V Group Menu for all users of the data dictionary; the next and all subsequent levels of Groups will appear on INFORM/V Subgroup Menus for all users. (The effect of INFORM/V security on the hierarchy of Groups is described at the end of this section.)

The hierarchy of $MENU, Groups, subgroups, and elements is represented in Figure 11-1.

Figure 11-1. The INFORM/V Hierarchy
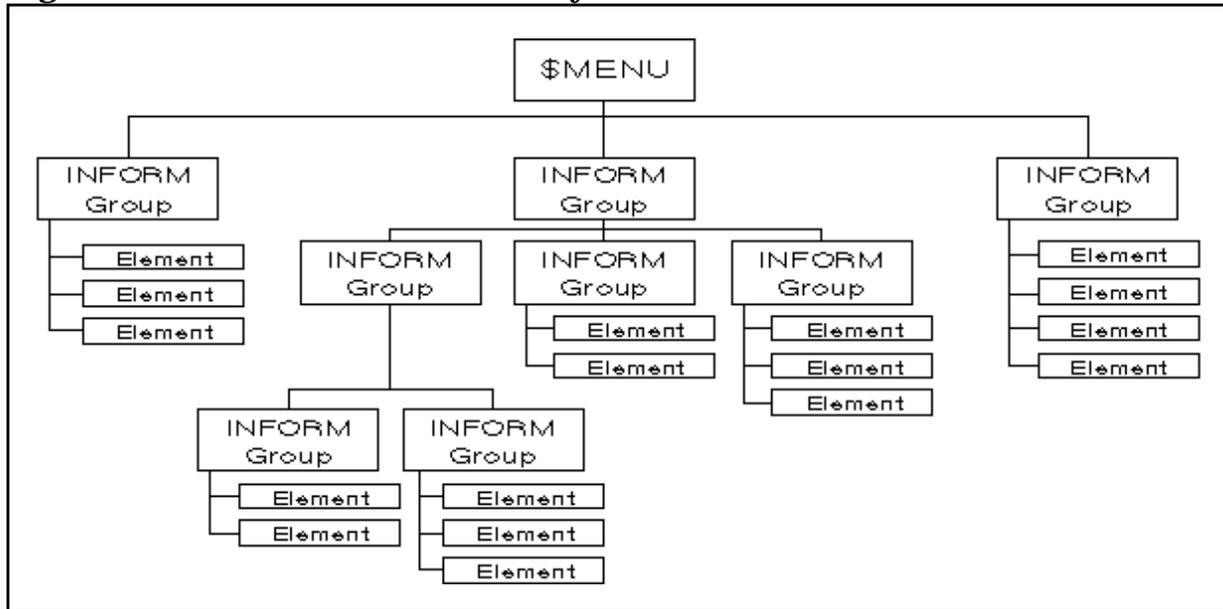
The following paragraphs describe the way to set up a Group, first, for the simplest case of a single file, then for two data sets, then three data sets. These simple cases provide a vehicle for explaining the DICTIONARY/V commands used and the mechanics of setting up INFORM/V for users.

The discussion "Linking Files" then examines in detail the principles of linking data sets and files - - both the default rules that INFORM/V uses and the way in which you can control the linking process. These principles become quite important when you are designing complex INFORM/V Groups that combine many files with data sets, combine data sets from different databases, or use intermediate data sets to serve as indirect links between data sets.

Creating a Group from a File

To use data from an MPE or KSAM file in INFORM/V, you must create an INFORM/V Group from the file. Though the data in databases can be accessed directly, the data in MPE and KSAM files cannot.

You use the DICTDBM utility to establish an INFORM/V Group from a file. The process requires three steps:

1. Use the CREATE command to create the Group.

2. Associate the appropriate elements with the Group via the ADD command.

3. Use the RELATE command to establish the place of this Group within the INFORM/V hierarchy.

For complete documentation of these commands, see the *DICTIONARY/V Reference Manual* (32244-90001). The discussion here assumes that you are familiar with the commands and their options.

For example, assume that you want to create a Group from a KSAM file called CREDIT that contains the following data elements:

    ACCOUNT-NUMBER
    CREDIT-CODE
    MAX-CREDIT

After verifying that the data elements already exist in the data dictionary and that all are associated with a file, invoke the dictionary maintenance utility and issue the command

```
CREATE GROUP
```

The name that you supply for GROUP is the one that will be displayed on the Group Menu. All the other prompts are optional in this situation.

Figure 11-2 shows an example of the prompts that will be displayed and the user's responses. The user establishes the Group called CREDIT and chooses to give it a DESCRIPTION.

Figure 11-2. Prompts to Create a Group

    > CREATE GROUP

                        GROUP CREDIT

                  LONG NAME

                        TYPE

            RESPONSIBILITY

                  DESCRIPTION **CREDIT STATUS BY ACCOUNT NUMB**

      >

The next step is to associate the elements that you want to appear as data names on the Data Names Menu with the Group. The ADD command is used for this purpose. An example of the command and the prompts is shown in Figure 11-3. In this case, the user wants the Group to contain only two of the three data elements that are in the file.

Figure 11-3. Associating Elements with the Group

```
> ADD GROUP

                   GROUP CREDIT


                   ELEMENT ACCOUNT-NUMBER
           ELEMENT ALIAS
                       FILE
       VALUE AS A LINK
DISPLAY ELEMENT ON MENU (Y/N)?
                   DESCRIPTION


                   ELEMENT CREDIT-CODE
           ELEMENT ALIAS !


                   ELEMENT
>
```

The only prompts to which you must respond when making up a Group from a single file are

```
            GROUP

        ELEMENT
```

The other prompts become important when data for a Group is taken from more than one file, and they will be discussed later in that context.

The final step is to use the RELATE command to define the place of the Group within the hierarchy. In the example in Figure 11-4, the Group just created is related to $MENU as the parent. The Group CREDIT will therefore be displayed on the Group Menu when the user invokes INFORM/V.

Figure 11-4. Relating the New Group to the Hierarchy

```
> RELATE GROUP

                    PARENT GROUP $MENU


                    CHILD GROUP CREDIT
                    DESCRIPTION


                    CHILD GROUP



>
```

After the three steps are completed, it is advisable to check the work just done. The example in Figure 11-5 uses the SHOW command to do this.

Figure 11-5. Displaying the New Group

```
> SHOW GROUP


                       GROUP CREDIT


 GROUP            TYPE: RESPONSIBILITY
   CREDIT


     ELEMENT(ALIAS):      PROPERTIES:      ELEMENT(PRIMARY):
       ACCOUNT-NUMBER     X (10,0,10)        ACCOUNT-NUMBER
       CREDIT-CODE        X (10,0,10)        CREDIT-CODE


>
```

If you need to change a Group after it has been established, use the MODIFY, CHANGE, or UPDATE command. These commands are all fully documented in the *DICTIONARY/V Reference Manual*.

Creating a Group from Two Files or Data Sets

You may find that users frequently need to generate reports from information contained in more than one file or data set. The most important thing to remember in defining INFORM Groups across files is that files are linked through common elements and that, for data sets and KSAM files, the common element must be a search item or key item in the file being linked to. In other words, in order to take data from file A and file B, the two files must have a data element in common.

For example, consider the two data sets shown in Figure 11-6.

Figure 11-6. Two Data Sets Used to Create a Group
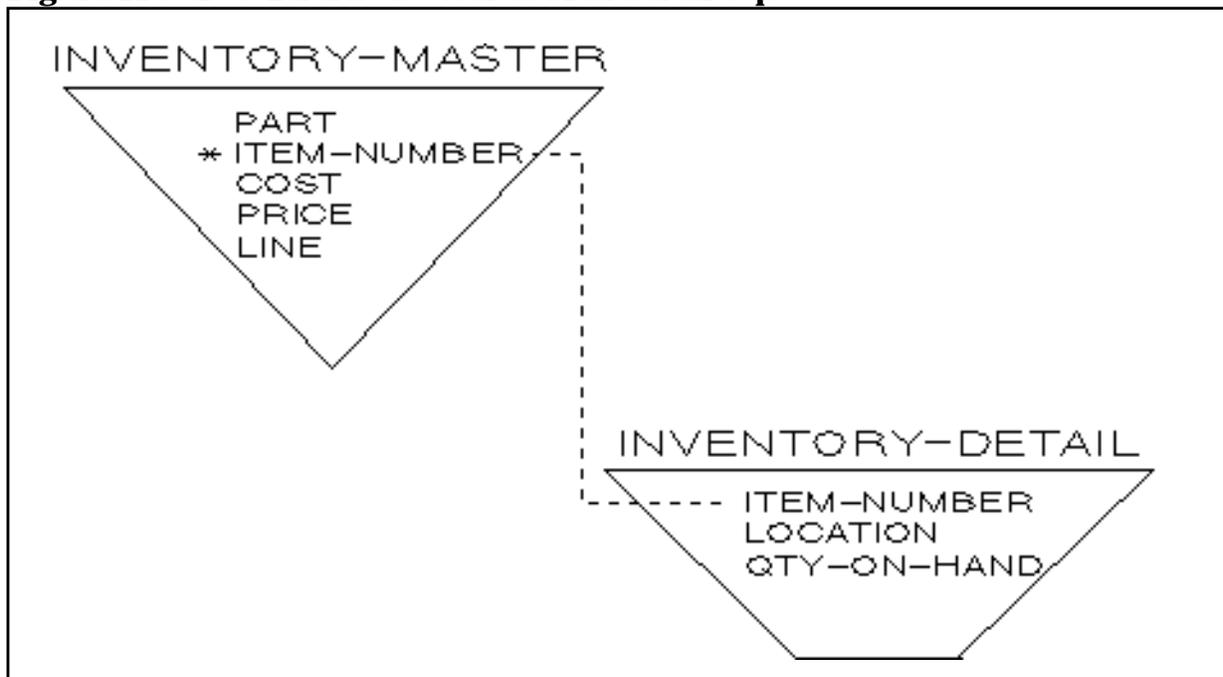
Assume that from these two data sets the user wants to create one Group called INVENTORY. For simplicity, assume that all elements are to be used from both data sets. The two sets have in common the element called ITEM-NUMBER, and that element is a search item in the data set INVENTORY-MASTER. (Search items are marked by an asterisk in all figures.)

The process of creating the Group involves the same three steps described earlier for creating a Group from a file: (1) create the Group, (2) associate the elements with it, and (3) establish its place in the hierarchy. However, the responses to the prompts are slightly different. An example of the first step in the process is shown in Figure 11-7. Here the user names the Group being created INVENTORY. The response to all other prompts is optional.

Figure 11-7. Creating Another Group

> > CREATE GROUP
>   GROUP **INVENTORY**
>   LONG NAME
>   TYPE
>   RESPONSIBILITY
>   DESCRIPTION
> >

The association of elements with the Group is shown in Figure 11-8. This step is very similar to that shown in Figure 11-3, when a Group was being established from a single file.

Figure 11-8. Associating Elements from Two Data Sets with a Group

```
> ADD GROUP


                          GROUP INVENTORY


                        ELEMENT PART
              ELEMENT ALIAS
                        FILE
              VALUE AS A LINK
   DISPLAY ELEMENT ON MENU (Y/N)?
                    DESCRIPTION


                        ELEMENT ITEM-NUMBER
              ELEMENT ALIAS !


                        ELEMENT COST
              ELEMENT ALIAS !
                        ELEMENT PRICE
              ELEMENT ALIAS !


                        ELEMENT LINE
              ELEMENT ALIAS PRODUCT LINE
                        FILE !


                        ELEMENT LOCATION
              ELEMENT ALIAS !


                        ELEMENT QTY ON HAND
              ELEMENT ALIAS QTY_ON_HAND
                        FILE !


                        ELEMENT

   >
```
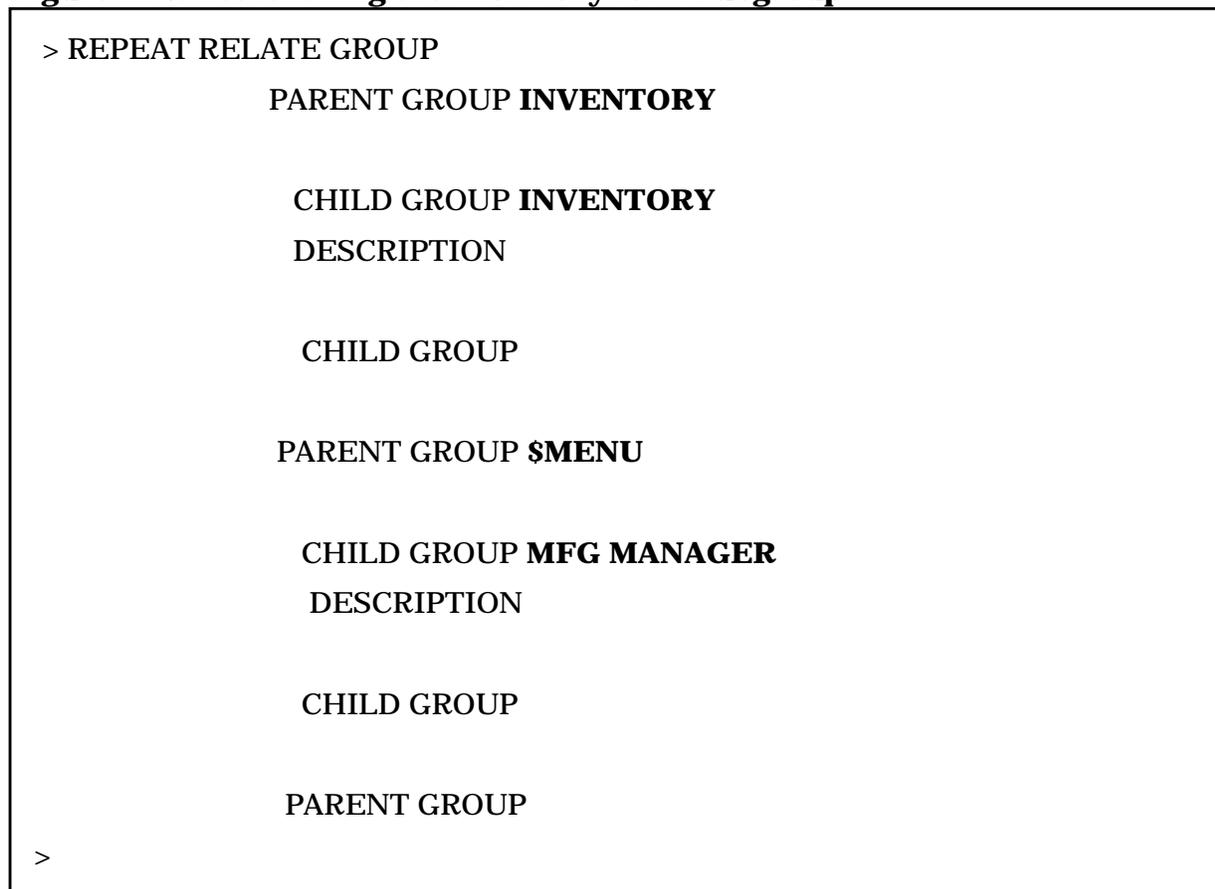
One of the elements in this Group, ITEM-NUMBER, is located in both files. By default, INFORM/V will take the data for this element from the detail set. If you want to force INFORM/V to take the values from the master set, you can do so be supplying the master set file name in response to the FILE prompt. Which file is used may affect what data is included in the report. The discussion "Linking Files" later in this section describes in detail the factors involved in specifying the file for any element.

When adding the element LINE, the user specifies the alias PRODUCT LINE. This more meaningful name for the element will appear on the Data Names Menu. An alias is also specified for the element QTY-ON-HAND. Note that an alias specified when adding elements to a Group applies only to the INFORM/V Data Names Menu. It should not be confused with aliases used in other contexts by DICTIONARY/V.

The next step is to establish the place of this Group in the hierarchy. An example of the interaction is shown in Figure 11-9. Since the Group INVENTORY is to be a subgroup, it is first identified as a child of the parent Group MFG MANAGER, then the Group MFG MANAGER is identified as a child of the parent Group $MENU.

Figure 11-9. Establishing the Hierarchy for a Subgroup

```
> REPEAT RELATE GROUP
              PARENT GROUP INVENTORY


              CHILD GROUP INVENTORY
             DESCRIPTION


             CHILD GROUP


         PARENT GROUP $MENU


              CHILD GROUP MFG MANAGER
              DESCRIPTION


              CHILD GROUP


              PARENT GROUP

  >
```

The Data Names Menu for the INFORM Group established by Figure 11-7 through Figure 11-9 is shown in Section 10 (Figure 10-2).

The final step is to check the new Group with the SHOW command. Figure 11-10 shows the Group INVENTORY.

Figure 11-10. Checking the Subgroup Inventory

```
> SHOW GROUP


                         GROUP INVENTORY




    GROUP                 TYPE: RESPONSIBILITY:

      INVENTORY


ELEMENT(ALIAS):          PROPERTIES:        ELEMENT(PRIMARY):

PART                     X (6,0,6)          PART

ITEM-NUMBER              U (4,0,4)          ITEM-NUMBER

COST                     9 (6,2,6)          COST

PRICE                    9 (6,2,6)          PRICE

PRODUCT LINE             X (10,0,10)        LINE

LOCATION                 X (4,0,4)          LOCATION

QTY ON HAND              9 (10,3,10)        QTY-ON-HAND



>
```

Creating a Group from Three or More Files

It is possible to link three, four, or even more files to produce one INFORM Group. It is also possible to link through files from which you show no elements on the Data Names Menu. Both possibilities are simple extensions of the techniques already described.

For example, consider the three files (data sets) shown in Figure 11-11. These data sets are similar to the ones shown in Figure 11-6, but in this case one of the elements that is to be included, LOCATION, is not in the detail set, but is instead in a third set called LOCATION-MASTER. It is linked to the detail set through the common element called LOCATION-CODE.

Figure 11-11. Three Data Sets Used to Create a Group,
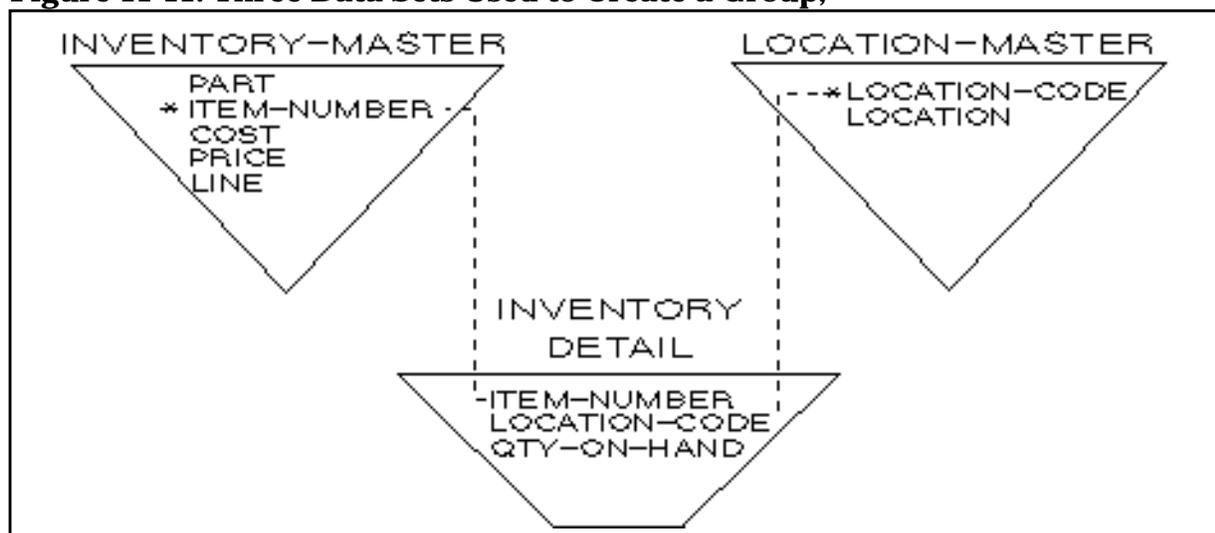
If the user wants to create the same Group that was established in Figure 11-7 through Figure 11-9, the procedure would be almost the same as in those figures. The CREATE step (Figure 11-7) and the RELATE step (Figure 11-8) would be identical. The only differences would be in adding elements to the Group; that is, there will be one additional element added in the ADD GROUP interaction in Figure 11-8.

The additional element LOCATION-CODE must be defined to link ITEM-NUMBER in the detail set to LOCATION in the second master set. LOCATION-CODE can be used as a link item because it is a search item in the set LOCATION-MASTER. The additional interaction is as follows:

```
                    ELEMENT LOCATION-CODE

                ELEMENT ALIAS

                         FILE

                VALUE AS A LINK

        DISPLAY ELEMENT ON MENU (Y/N)? N

                    DESCRIPTION
```

Notice that in this case the user responds N to the prompt to display the element on the menu. The element LOCATION-CODE is to serve only as a link to the element LOCATION in the third set, and will not be displayed on the Data Names Menu.

Linking Files

The examples above have described the process of creating Groups from data sets - - first two, and then three - - within a single database. It is also possible to link KSAM and MPE files to data sets, and to link data sets in one database with data sets in other databases.

The exact way in which INFORM/V links the files determines whether it is possible to generate the requested report and, if so, what specific data will be printed in the report. This subsection describes the ways in which files can be linked, the default considerations that INFORM/V uses in linking files, and the ways in which you can control the linking process.

Direct Links

A link between two files that each contain one or more data elements needed for a report is called a **direct link**.

When two files are linked, the value of the link element is retrieved from the first file and is used to determine the correct record to retrieve from the second file. Obviously, the link element must exist in both files. Either file can be a detail data set, master data set, KSAM file, or MPE file.

Regardless of what type of file it is, the file linked from is read serially. It can be a detail data set, master data set, KSAM file, or MPE file.

In contrast, the way that the file being linked to is read depends on the type of file it is:

- If the file being linked to is an MPE file, it is read serially, and there is no restriction on the element being linked to, except that it exist in the file.

- If the file being linked to is a KSAM file, the link element must be a key element in the file.

- If the file being linked to is a data set, either master or detail, the link element must be a search item in the file. This is the only requirement, even when the link is from a file outside the database.

Figure 11-12. Files to be Directly Linked for Data Access
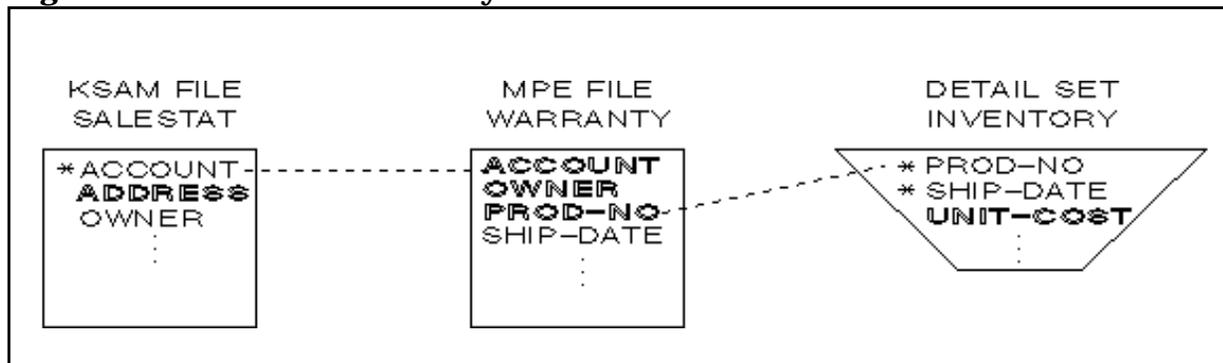
For example, Figure 11-12 shows three files that contain data elements needed for a Group called ACCOUNT ORDERS (an asterisk marks a key item or search item). The group will be used to get reports about the orders for each customer account. The Group, called ACCOUNT ORDERS, consists of the following data elements:

ACCOUNT
ADDRESS
OWNER
PROD-NO
UNIT-COST

By accessing the files SALESTAT and INVENTORY the user could obtain all the elements in the Group; however, it is not possible to link these two files, since there is no element common to both of them. The MPE file WARRANTY contains elements needed for the Group and, in particular, contains the element ACCOUNT, which is also a key element in the KSAM file; hence a direct link can be made from WARRANTY to SALESTAT. In addition, the MPE file contains two elements, PROD-NO and SHIP-DATE, which are also search items in the detail data set; hence a direct link can also be made from WARRANTY to INVENTORY.

The **driving file** is the one that INFORM/V accesses first. When an MPE file is part of the picture, it is most efficient if it is the driving file, since an MPE file must be serially read each time it is accessed (see "How INFORM/V Picks the Driving File" later in this section).

In the example in Figure 11-12, the MPE file allows a direct link to the other two files, and so the user wants to make it the driving file. This is done by specifying the file name WARRANTY in response to the FILE prompt and a link value of 1 when adding one of the elements from the file WARRANTY to the Group (see Figure 11-13).

It is also important to pick elements that will allow INFORM/V to link the driving file, which is WARRANTY in this example, directly with other files that contain as many elements for the Group as possible.

The elements ACCOUNT and PROD-NO are the two possibilities. (Since SHIP-DATE is not in the Group, it does not make sense to use it. OWNER cannot be used because it is not a key element in the KSAM file.) The element ACCOUNT links WARRANTY to SALESTAT, where ADDRESS can be retrieved. The element PROD-NO links WARRANTY to INVENTORY, where UNIT-COST can be retrieved. (Note that the values for ACCOUNT, OWNER, and PROD-NO will all be retrieved from the MPE file, since it is accessed first.) Since both data elements allow you to link to one other file where one required element can be retrieved, it does not matter which one we use.

After linking WARRANTY to SALESTAT through the element ACCOUNT, INFORM/V will try to use the element in the Group with the next highest priority link value to directly link WARRANTY or SALESTAT with INVENTORY - - assuming that the element PROD-NO or UNIT-COST is requested for the report. To make this most efficient, the element PROD-NO should be given a link value of 2. The interaction is shown in Figure 11-13.

Figure 11-13. Establishing Direct Links between Files for Data Retrieval

```
> ADD GROUP

                        GROUP   ACCOUNT ORDERS


                       ELEMENT   UNIT-COST
                 ELEMENT ALIAS   COST OF UNIT
                         FILE    !


                       ELEMENT   ADDRESS
                 ELEMENT ALIAS   !


                       ELEMENT   OWNER
                 ELEMENT ALIAS   !


                       ELEMENT   ACCOUNT
                 ELEMENT ALIAS
                         FILE    WARRANTY
               VALUE AS A LINK   1
     DISPLAY ELEMENT ON MENU (Y/N)?!


                       ELEMENT   PROD-NO
                 ELEMENT ALIAS   PRODUCT NUMBER
                         FILE
               VALUE AS A LINK   2
     DISPLAY ELEMENT ON MENU (Y/N)?!


                       ELEMENT
>
```
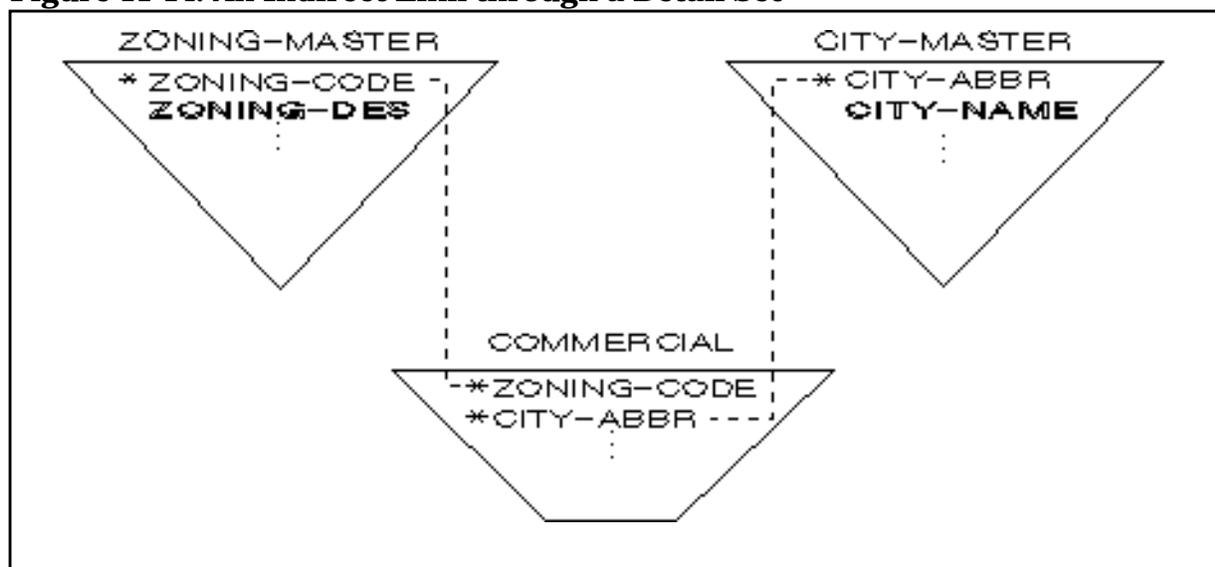
Indirect Links

If two files containing elements needed for a report are linked through other files that contain no elements needed for the report, the link is called an **indirect link**. Indirect links can only occur between data sets within one database. They cannot go from one database to another, nor can they link a KSAM or MPE file to a data set.

There are two kinds of indirect links allowed: (1) a master set to another master set through an intermediate detail, and (2) a detail set to master set through two intervening sets, a master and then a detail. The examples below illustrate each kind.

As an example of the first kind of indirect link, consider the database shown in Figure 11-14.

**Figure 11-14. An Indirect Link through a Detail Set**

The user wants to report the data element ZONING-DES from the master set ZONING-MASTER and the element CITY-NAME from the master set CITY-MASTER. An indirect link can be made by going through the detail set COMMERCIAL. The master set ZONING-MASTER has the search item ZONING-CODE, which forms a path to the detail set COMMERCIAL, and the master set CITY-MASTER has the search item CITY-ABBR, which also forms a path to COMMERCIAL. When the element ZONING-CODE is added to the Group, the prompt

> DISPLAY ELEMENT ON MENU (Y/N)?>

will be answered N, since this element is only included to serve as a link and is not wanted for inclusion in a report.

The second possibility for indirect linking, going through two intermediate sets, is shown in Figure 11-15.

Figure 11-15. Indirect Link through Two Intermediate Sets
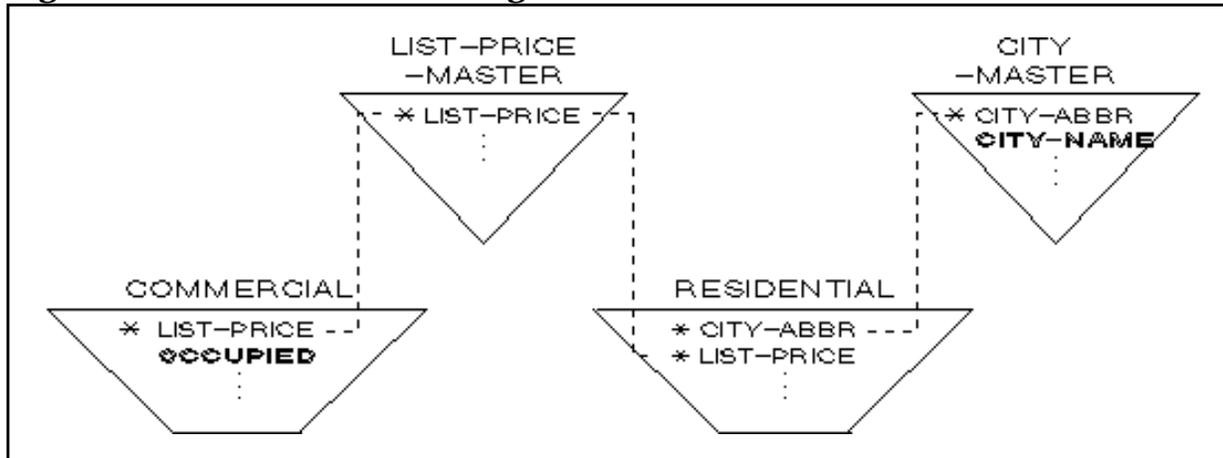
In this example, the user wants to include in a report the data element OCCUPIED from the detail set COMMERCIAL and the data element CITY-NAME from the master set CITY-MASTER. An indirect link can be formed by going through the detail set RESIDENTIAL. The detail set COMMERCIAL and the detail set RESIDENTIAL both have the search item LIST-PRICE, which forms paths to the common master set LIST-PRICE-MASTER. The detail set RESIDENTIAL has a second search item CITY-ABBR which forms a path to the master set CITY-MASTER.

How INFORM/V Picks the Driving File

The **driving file** is the one that is accessed first when INFORM/V creates a report. This file is read serially, and at least one line of the report will be generated for each record retrieved from it. The contents of a report could therefore be quite different, depending on which file is the driving file.

When INFORM/V is selecting the driving file, it first looks for a file that meets the following two criteria:

- The file must contain an element having a positive link value (greater than zero); it is not important whether this element is included in the report.

- The file must also contain an element that is to be included in the report.

What happens next depends on whether one, none, or more than one file meet the two criteria.

1. If only one file meets the two criteria above, that file will be chosen as the driving file.

2. If no files meet the two criteria above, the files which contain an element to be included in the report are considered in the following order:

   MPE file
   KSAM file
   Detail data set
   Master data set

   If more than one file exists in the highest possible category, the file with the most elements to be included in the report is chosen as the driving file. If there are two such files or more, one of them is arbitrarily chosen.

3. If more than one file meets the two criteria above, the file that has the highest priority link value specified (lowest positive integer) is chosen as the driving file. If more than one of these files has the highest priority link value, then the driving file is chosen from among them as in case 2.

If any of the files that contain elements for the Group is an MPE file, it is desirable to use that file as the driving file. This is because INFORM/V must perform a serial read every time it accesses an MPE file. If the MPE file is the driving file, this serial read is done only once.

This process of picking the driving file is shown graphically in Figure 11-16.

Figure 11-16. Picking the Driving File
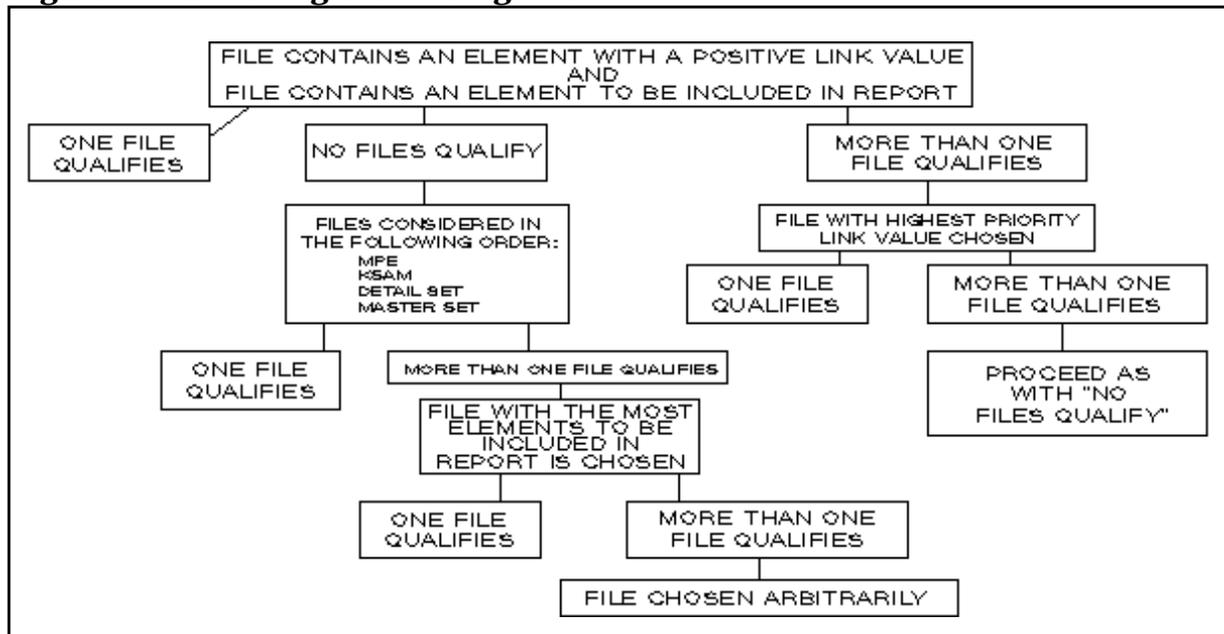
You can ensure that a particular file is the driving file by doing the following when adding elements to the Group.

- Add an element from that file to the Group.

- Specify the name of that file in response to the FILE prompt.

- Specify a positive link value in response to the LINK prompt.

The element used should be one that allows INFORM/V to link directly with other files to obtain as many elements from the Group as possible.

The following example shows the importance of picking the right driving file and of selecting the best element within that file for linking to the other files needed for the Group.

Figure 11-17. Specifying Link Values
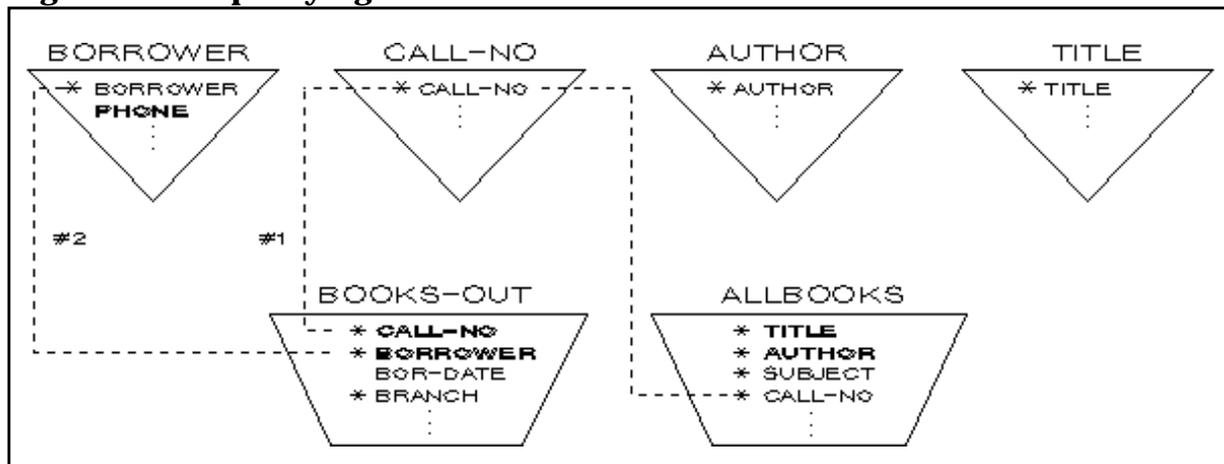
Working with the database shown in Figure 11-17, the user wants to create a Group called BORROWED BOOKS. The purpose of the Group is to generate reports about books that are checked out of the library. The Group consists of the data elements

      TITLE

      AUTHOR

      CALL-NO

      BORROWER

      PHONE

Since the purpose of the Group is to report on books that are checked out, it makes sense to access the detail set BOOKS-OUT as the first file; since BOOKS-OUT has only one entry for every book checked out, there will be at least one line of the report for each book that is checked out of the library. That is, BOOKS-OUT contains the appropriate subset of data for the reports that will be generated from the Group. The data sets ALLBOOKS, TITLE, and CALL-NO, on the other hand, have one entry for each book in the library; if one of these files is the first file accessed, there will be at least one line of the report for every book in the library. Accessing BORROWER or AUTHOR as the first file would also not be satisfactory, since BORROWER has one entry for each person registered to check out books from the library and AUTHOR has one entry for each author.

To make BOOKS-OUT the driving file, the user specifies the file name BOOKS-OUT in response to the FILE prompt and a link value of 1 in response to the LINK prompt when adding an element from the file BOOKS-OUT to the Group. The user needs to pick an element that will allow INFORM/V to link BOOKS-OUT directly with other files to retrieve as many elements for the Group as possible. The elements CALL-NO and BORROWER are the two possibilities, since they are search items. The element CALL-NO links BOOKS-OUT and ALLBOOKS, where TITLE and AUTHOR can be retrieved; the data element BORROWER links BOOKS-OUT and BORROWER, where only PHONE can be retrieved. Hence, the user picks the element CALL-NO.

After linking BOOKS-OUT and ALLBOOKS through the element CALL-NO, INFORM/V will try to use the element in the Group with the next highest priority link value to directly link BOOKS-OUT or ALLBOOKS with BORROWER, if PHONE is requested for the report. To make this most efficient, the user gives BORROWER a link value of 2. The steps to add these elements to the Group are shown in Figure 11-18.

Figure 11-18. Interaction to Pick the Driving file and the Linking Elements

```
> ADD GROUP


                          GROUP  BORROWED BOOKS


                        ELEMENT  TITLE
                  ELEMENT ALIAS  !


                        ELEMENT  AUTHOR
                  ELEMENT ALIAS  !


                        ELEMENT  PHONE
                  ELEMENT ALIAS  TELEPHONE NUMBER
                           FILE  !


                        ELEMENT  CALL-NO
                  ELEMENT ALIAS  CALL NUMBER
                           FILE  BOOKS-OUT
                VALUE AS A LINK  1
    DISPLAY ELEMENT ON MENU (Y/N)?!


                        ELEMENT  BORROWER
                  ELEMENT ALIAS
                           FILE
                VALUE AS A LINK  2
    DISPLAY ELEMENT ON MENU (Y/N)?!


                        ELEMENT
>
```

How INFORM/V Links Files

All elements in a Group that have been assigned a positive link value form a prioritized list for use by INFORM/Vs. access algorithm when linking files. Elements that have been added to a Group that will not be displayed on INFORM/V Data Names Menu are included in this list if they have been assigned a positive link value. The following steps outline how INFORM/V links files. If, at any particular step, all files containing elements needed for the report are linked, the steps following that one do not occur.

1. INFORM/V first tries to use the element in the Group with the highest priority link value to directly link the driving file with any other files containing elements needed in the report.

2. INFORM/V next tries to use the element in the Group with the second highest priority link value to directly link those files linked in step 1 with any other files containing elements needed for the report.

3. Next, the elements in the group with the next highest priority link value are used to try to directly link those files linked in steps 1 and 2 with any other files containing elements needed for the report, and so on until the prioritized list of elements with positive link values is exhausted.

4. INFORM/V next tries to use elements in the Group with a link value of zero (the default) to directly link those files linked in steps 1, 2, and 3 with any other files containing elements needed for the report. The elements with a link value of zero are tried in an arbitrary order.

5. If all the files have still not been linked successfully, INFORM/V tries to use elements that are not in the Group to directly link any of the files linked in steps 1, 2, 3, and 4 with any of the remaining files. As always, a direct link is successful if the element exists in both files and if any additional requirements on the file being linked to are met (see earlier discussion of direct links).

6. If still no link can be made and if the files that INFORM/V is attempting to link are data sets, INFORM/V will try the two allowable indirect links. If this fails to link all the needed files, the report cannot be generated, and the user will receive an error message.

Default File Access

INFORM/V provides defaults designed to maximize performance of the file accesses necessary during report production. One such default, which was explained in the discussion on the driving file, is that an MPE file will be used as the driving file whenever possible. In addition, if file names (in response to the FILE prompt) and link values that override the defaults have not been specified, INFORM/V will try to following these guidelines:

- Involve as few files as possible.

- Access a KSAM file in preference to a database, since there is less overhead involved.

- Open as few databases as possible.

- Use master data sets whenever possible, since they will need to be accessed only once per key value, whereas detail data sets and KSAM files may require several accesses per key value.

When a file name is specified in response to the FILE prompt, the INFORM/V access algorithm may not work efficiently, and possibly not at all. It is best not to specify a file name in response to the FILE prompt unless it is necessary to ensure that the correct values of an element are retrieved. If a file name is specified when it is not necessary to do so, it is possible that more files will be accessed than INFORM/V would otherwise use. In the worst case, INFORM/V might be unable to create a link - - when there is no link element to the designated file.

It is also advisable to specify link values sparingly. Link values allow you to override default processing, and in certain circumstances their use will make a critical difference in the reports generated. However, their use when they are not necessary may degrade performance.
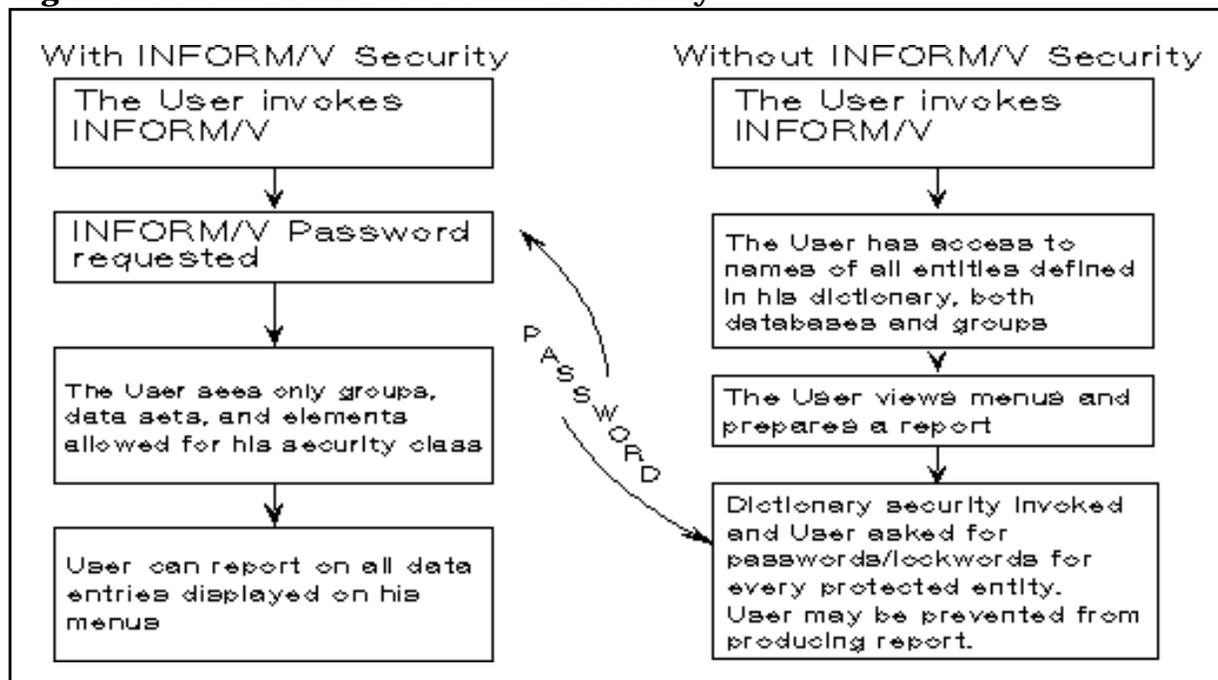
INFORM/V Security

INFORM/V security allows you to limit the names of the databases, data sets, data elements, and Groups that are displayed in INFORM/V menus.

If INFORM/V security is not established, all data dictionary entities are available for display. The data can still be protected, as the user will be prompted for passwords and lockwords for each data set or file accessed. However, these prompts occur after the report has been defined, and so the user has already viewed the names of all data elements in the Groups or data sets requested.

If INFORM/V security is established, the user must supply the password when INFORM/V is first invoked. The passwords for individual entities can be embedded in the INFORM/V security structure, and so, once the user has supplied the INFORM/V password, he need not be prompted for any passwords when the report is produced.

The two different situations are described graphically in Figure 11-19.

Figure 11-19. The Value of INFORM/V Security

To establish INFORM/V security, you establish an INFORM class for each kind of user. Each INFORM class is assigned a password, and all users in that class must supply the password when they run INFORM/V. Different INFORM classes (i.e., different passwords) are created for the different classes of users who require access to different data in the same dictionary.

It is then necessary to tie the individual entities in the data dictionary to the INFORM classes that have been set up. To do this, INFORM/V security takes advantage of the complete security capabilities already available in DICTIONARY/V for IMAGE/V and TurboIMAGE. All data elements, files (data sets), and data bases are tied to the

INFORM/V classes through the intermediate step of one or more IMAGE classes. One view of the kinds of relationships that are established is shown in Figure 11-20.

INFORM/V goes to the data dictionary and checks to see that the password entered is valid. If the password is correct, INFORM/V then checks for the INFORM class number associated with that password. INFORM/V then checks all the IMAGE classes that are related to that INFORM class and builds an IMAGE class list. The information displayed on INFORM/V menus consists of the database files, Groups, and elements that are associated with the IMAGE classes on the IMAGE class list.

The next subsection describes the simplest case of establishing INFORM/V security for a single database. For this discussion, it is assumed that no INFORM/V Groups have been established.

The final discussion in this section then takes up the question of how to relate INFORM/V security to INFORM/V Groups, and explains how to establish security when Groups are drawn from multiple files and data sets.

Establishing Security for a Database (Without Groups)

If you want to allow users to access a database directly, without establishing INFORM/V Groups, but still want to use INFORM/V security, it is very simple to establish that security. The best plan is to establish a one-to-one correlation between the IMAGE class and the INFORM class.

Figure 11-20 shows a simplified view of the relationships that are established. A single database serves two different classes of users, who require access to different data elements in the database. The database administrator establishes two INFORM classes and relates a single IMAGE class to each. The elements needed by each INFORM class are then related to the IMAGE class.

It is important to relate only one IMAGE class for a given data set to an INFORM class. When INFORM/V builds the class list, it includes all references to the database, but, when the class list is used, INFORM/V always stops at the first IMAGE class it finds on the class list for that database.

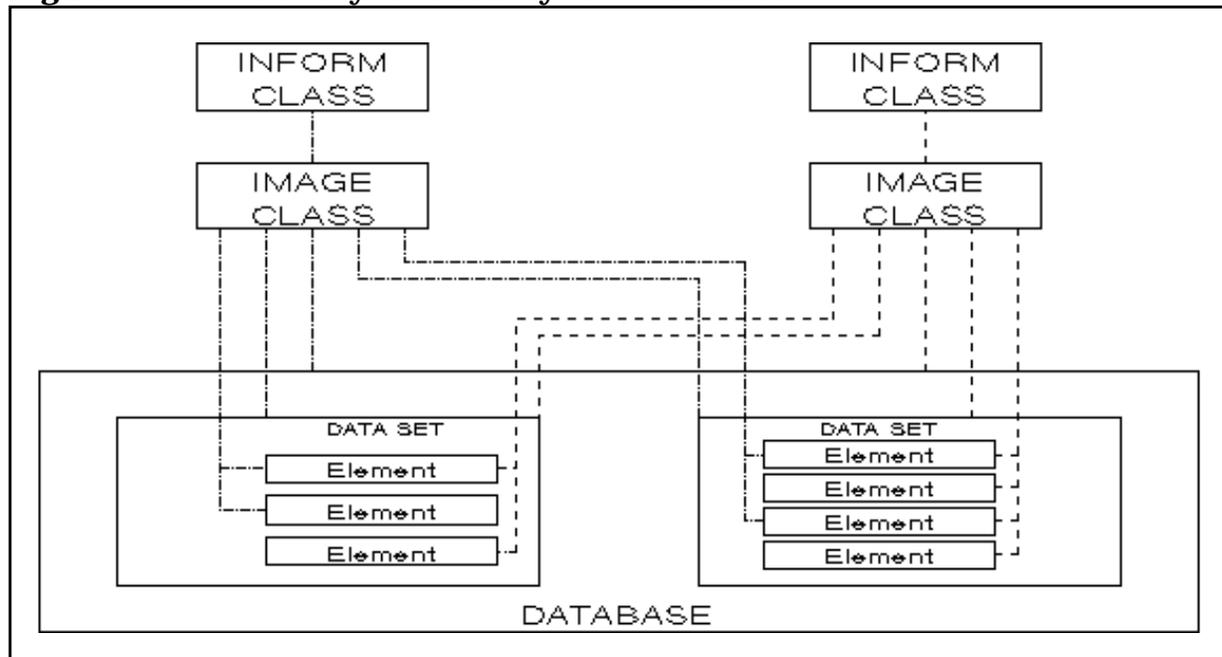**Figure 11-20. Hierarchy for Security for a Database**

Figure 11-20 illustrates another important requirement: not only is the data element related to the IMAGE class, but also the data set that contains the element and the database that contains the data set must also be related to the IMAGE class.

The steps that will be used in the example shown here are as follows:

- Create the INFORM classes.

- Create IMAGE classes, one for each INFORM class.

- Relate each IMAGE class to one of the INFORM classes.

- Add (or secure) database file, data set files, and elements to each IMAGE class.

The optimal situation is to plan the INFORM/V security and IMAGE security at the same time, when you are designing the database. Or, it is quite likely that the IMAGE security designed for the database will also fit the requirements of INFORM/V security. It makes sense that reporting access requirements will match database access requirements.

Figure 11-21. The Database Used to Establish INFORM/V Security
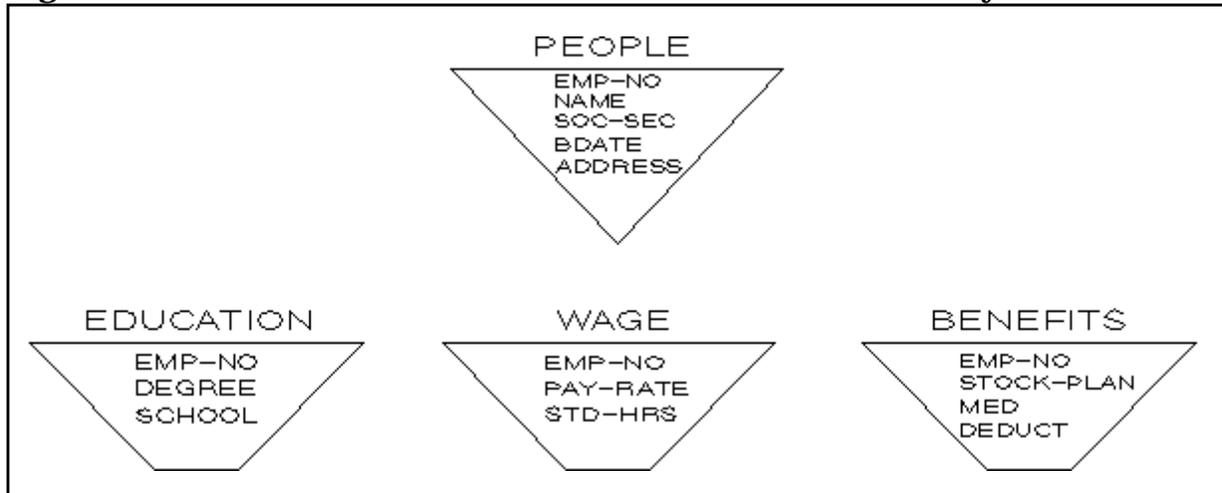
The example shown here will use the database shown in Figure 11-21. Four IMAGE security classes will be established, one each for benefits clerks, for records clerks, for compensation clerks, and for the manager. Each of these four IMAGE classes will be related to a parallel INFORM class.

Table 11-1. IMAGE and INFORM Classes to Establish Security

INFORM CLASS		IMAGE CLASS		ELEMENTS AND DATA SETS
Number	Password	Number	Password	
650	CLK	50	CLK1	All elements in PEOPLE except BDATE All elements in BENEFITS
660	RECORDS	60	REC	All Elements in PEOPLE All elements in EDUCATION STD.HRS in WAGE All elements in BENEFITS
670	SALARY	70	SALMGR	All elements in PEOPLE All elements in WAGE
680	BOSS	80	VP	All elements in all data sets

Table 11-1 identifies which elements each of the four classes of users can see. The first three classes are limited to read-only access to certain parts of the database. The fourth user, the manager, can see and modify the entire database. The table also shows the numbering pattern that the user has established for the classes to make it easy to correlate each INFORM class with its IMAGE class.

The passwords assigned to the IMAGE classes are the same as the passwords for the
EMPBAS database. When INFORM/V is producing a report, it opens the database using
these passwords.

Figure 11-22. Creating the Four INFORM/V Classes

```
> REPEAT CREATE CLASS

                        CLASS  650

                         NAME

                         TYPE  INFO

                     PASSWORD  CLK

               RESPONSIBILITY

                  DESCRIPTION


                        CLASS 660

                         NAME

                         TYPE INFO

                     PASSWORD RECORDS

               RESPONSIBILITY

                  DESCRIPTION


                        CLASS 670

                         NAME

                         TYPE INFO

                     PASSWORD SALARY

                RESPONSIBILITY !


                        CLASS 680

                         NAME

                         TYPE INFO

                     PASSWORD BOSS

                RESPONSIBILITY !


                        CLASS

  >
```

Figure 11-22 shows the first step in establishing security for the example database. The four INFORM classes are established. Although TYPE is usually an optional prompt, the response INFO is required when an INFORM class is being established. The INFORM class number can be an integer between 0 and 9999.

Figure 11-23. Creating IMAGE Classes to Parallel the INFORM/V Classes

```
> REPEAT CREATE CLASS

                       CLASS  650

                        NAME

                        TYPE

                    PASSWORD  CLK1

            RESPONSIBILITY


                       CLASS 60

                        NAME

                        TYPE

                    PASSWORD REC

            RESPONSIBILITY


                       CLASS 70

                        NAME

                        TYPE

                    PASSWORD SALMGR

            RESPONSIBILITY !


                       CLASS 80

                        NAME

                        TYPE

                    PASSWORD VP

            RESPONSIBILITY !


                       CLASS

>
```

The next step is to create the parallel IMAGE classes. An example is shown in Figure 11-23. For IMAGE classes, the TYPE is not important, though you can use this field to identify the type of file for which the class is being created, or as a short comment field.

Figure 11-24. Relating the IMAGE Classes to the INFORM/V Classes

```
> REPEAT RELATE CLASS
                    PARENT CLASS  680
                     CHILD CLASS  80
             DESCRIPTION


                     CHILD CLASS


                    PARENT CLASS  670
                     CHILD CLASS  70
                     DESCRIPTION


                     CHILD CLASS


                    PARENT CLASS  660
                     CHILD CLASS  60
                     DESCRIPTION


                     CHILD CLASS


                    PARENT CLASS  650
                     CHILD CLASS  50
                     DESCRIPTION


                     CHILD CLASS


                    PARENT CLASS


>
```

Once all the IMAGE and INFORM classes have been created, they must be related to one another. The INFORM class is the parent, and the IMAGE class is the child. An example is shown Figure 11-24.

The first step of each hierarchy has been established, and the next requirement is to associate the database file, the data set files, and the individual elements with the appropriate IMAGE class. Two different commands can be used: SECURE associates a file and all its contents, whereas ADD-CLASS is more selective and associates only the named element or file.

Figure 11-25. Securing Database and Data Sets to the IMAGE CLasses

```
> REPEAT SECURE FILE
                              FILE EMPBAS
                              CLASS 80
                ACCESS CAPABILITY M
        ELEMENTS WILL BE SECURED TO CLASS.
         SECURE FILE(S) TO CLASS(N\Y)?Y
          FILE ACCESS CAPABILITY W


                              FILE BENEFITS
                              CLASS 50
                ACCESS CAPABILITY R
        ELEMENTS WILL BE SECURED TO CLASS.
         SECURE FILE(S) TO CLASS(N\Y)?Y
          FILE ACCESS CAPABILITY R


                              FILE PEOPLE
                              CLASS 60
                ACCESS CAPABILITY R
        ELEMENTS WILL BE SECURED TO CLASS.
         SECURE FILE (S) TO CLASS(N\Y)?Y
          FILE ACCESS CAPABILITY R


                              FILE EDUCATION
                              CLASS 60
                ACCESS CAPABILITY R
        ELEMENTS WILL BE SECURED TO CLASS.
         SECURE FILE(S) TO CLASS(N\Y)?Y
          FILE ACCESS CAPABILITY R


                              FILE BENEFITS
                              CLASS 60
                ACCESS CAPABILITY R
        ELEMENTS WILL BE SECURED TO CLASS.
          SECURE FILE(S) TO CLASS(N\Y)?Y
           FILE ACCESS CAPABILITY R


                              FILE PEOPLE
                              CLASS 70
                ACCESS CAPABILITY R
        ELEMENTS WILL BE SECURED TO CLASS.
           SECURE FILE(S) TO CLASS(N\Y)?Y
           FILE ACCESS CAPABILITY R


                              FILE WAGE
                              CLASS 70
                ACCESS CAPABILITY R
        ELEMENTS WILL BE SECURED TO CLASS.
           SECURE FILE(S) TO CLASS(N\Y)?Y
           FILE ACCESS CAPABILITY R


                              FILE
```

Figure 11-25 shown an example of using the SECURE command. This command secures not only the file that is named, but also all the elements within that file. If the file being secured is a database, SECURE secures not only the database, but also all data sets and all elements.

Therefore, the first series of prompts in Figure 11-25 shows SECURE being used to secure files to the manager class, which is allowed to modify all the elements in all the data sets. Note that the ACCESS CAPABILITY is M, for modify. INFORM/V needs only read access, but this IMAGE class will also be used by the data dictionary for other tasks, and so the broader category is specified.

The remaining interactions in Figure 11-25 secure those data sets in which all elements are to be available to the given classes. The prompt

```
SECURE FILE(S) TO CLASS (N\Y)?>
```

will be answered with Y in all cases, since for every file the user wants to secure both the file and the elements within the file.

The next step is to add to each class those data set files that have not already been secured. These are the files in which not all elements are going to be available in the respective classes. Therefore, the file must be added as a separate entity, then the individual elements that are to be available to the given class are added to it.

Figure 11-26 shows the ADD CLASS-FILE interactions that are required by the example. The database file EMPBAS is added to class 50, 60, and 70. In addition, the data set file WAGE is added to the class 60, so that records clerks can access the element WAGE.

The next, and final step, is to add the elements to the IMAGE classes. Figure 11-27 shows an example. First, all elements from data set PEOPLE are added to class 50 except EMP-NO and BDATE. EMP-NO is left out because it will be picked up from the BENEFITS data set, which was already secured to IMAGE class 50. BDATE is not added because it is not to be available to class 50.

For INFORM class 660 (IMAGE class 60), STD-HOURS is the only element from data set WAGE that is to be available.

Figure 11-26. Adding Files to the IMAGE Class

```
< REPEAT ADD CLASS-FILE

                      CLASS 50


                         FILE EMPBAS
              DESCRIPTION


                         FILE PEOPLE
          ACCESS CAPABILITY R
                DESCRIPTION


                          FILE


                      CLASS 60


                         FILE EMPBAS
              DESCRIPTION


                   FILE WAGE
          ACCESS CAPABILITY R
                DESCRIPTION


                          FILE


                      CLASS 70


                         FILE EMPBAS
              DESCRIPTION


                          FILE


                      CLASS

  >
```

Figure 11-27. Adding Individual Elements to Each IMAGE Class

```
> REPEAT ADD CLASS

                            CLASS 50


                         ELEMENT NAME
           ACCESS CAPABILITY R
                 DESCRIPTION


                         ELEMENT SOC-SEC
           ACCESS CAPABILITY R
                 DESCRIPTION


                         ELEMENT ADDRESS
           ACCESS CAPABILITY R
                 DESCRIPTION


                         ELEMENT


                            CLASS 60


                         ELEMENT STD-HOURS
           ACCESS CAPABILITY R
                 DESCRIPTION


                         ELEMENT


                            CLASS
 >
```

The INFORM/V security is now completed for EMPBAS, and users can begin using
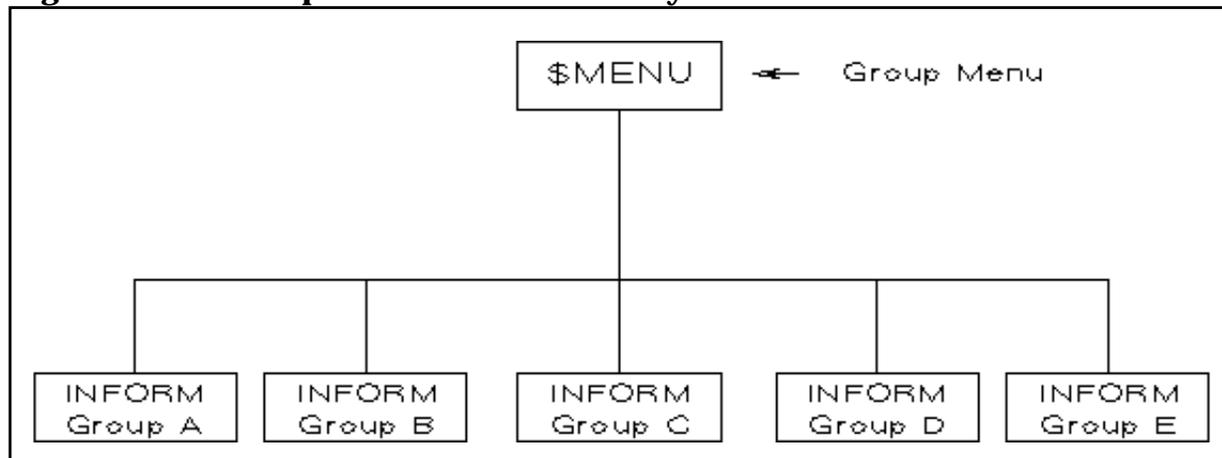INFORM/V.

Relationship of INFORM/V Security to Groups

Earlier in this section, the process of setting up INFORM/V Groups was described. Recall that all Groups and subgroups fit into a hierarchy under the primary Group $MENU, which is established automatically when the data dictionary is created.

If you do not define INFORM/V security, then the complete hierarchy off all Groups and subgroups defined under $MENU is available to all users of the data dictionary.

The job of INFORM/V security is to overlay a filter that presents different views of the hierarchy to different users. For example, assume that you have set up five INFORM/V Groups, all directly related to $MENU. This hierarchy is shown in Figure 11-28. If you do not define INFORM/V security, then any user of the data dictionary who runs INFORM/V will see all five Groups on his Group Menu.

Figure 11-28. A Simple INFORM/V Hierarchy

Suppose that you want to restrict the view of users in department 50 to Groups A, B, and C, whereas users in department 60 need access to Groups B, C, D, and E. You establish two security classes (called INFORM classes), one for department 50 and one for department 60. Each class is assigned a password, and the Groups to be used by each class are related to it. The result is shown in Figure 11-29.

Now any user in department 50, when accessing INFORM/V, is asked for department's password. When the Group Menu comes up, it will show only Groups A, B, and C. By the same token, a user in department 60, after supplying the password, will see only Groups B, C, D, and E on his Group Menu.

Figure 11-29. INFORM/V Security Limits Access to Groups
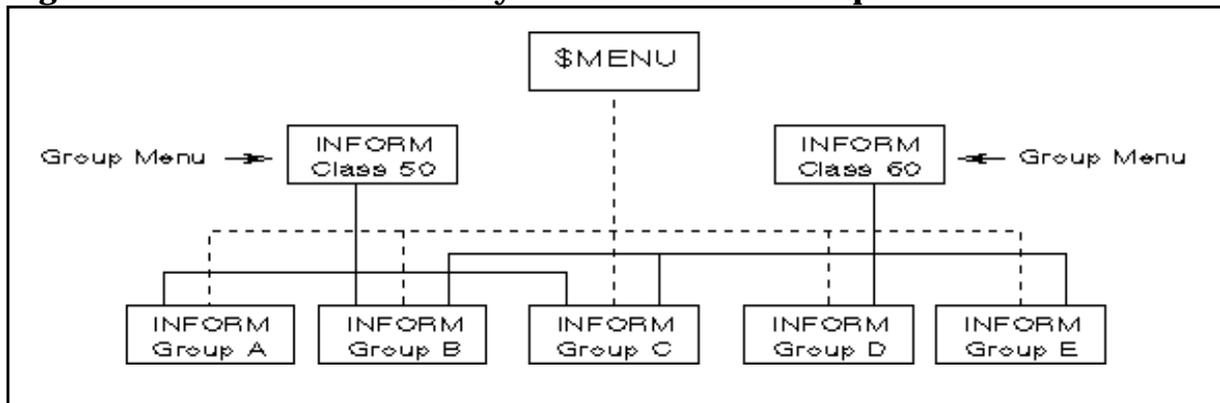
The preceding subsection described a way to establish INFORM/V security for four classes of users working with one database when Groups have not been established. The procedure for establishing security when INFORM/V Groups have been established is very similar. Exactly the same commands are used, and the hierarchical pattern is similar. However, there are two important differences:

- You need to be sure that all the elements in all the Groups for a given INFORM class have been related to IMAGE classes for the same INFORM class. If you have added elements to an INFORM/V Group, but have neglected to add those elements to the IMAGE classes that are related to the same INFORM class, the security feature will prevent the elements from being displayed in the Group.

- When security was established for a database with no Groups, each INFORM class had only one IMAGE class related to it. However, if you have established Groups, you will very likely have more than one IMAGE class per INFORM class, particularly if you have established Groups to take advantage of INFORM/Vs. ability to create one Group from multiple files. It would then be most practical to set up an IMAGE class for the elements from a given file, and relate all IMAGE classes that pertain to one set of Groups to the INFORM class for those Groups.

Consider Figure 11-30, which show the relationship of INFORM/V Groups to one INFORM class. As was described in the first part of this section, a given Group can be drawn from multiple files and data sets, so long as the elements are reasonably linked.

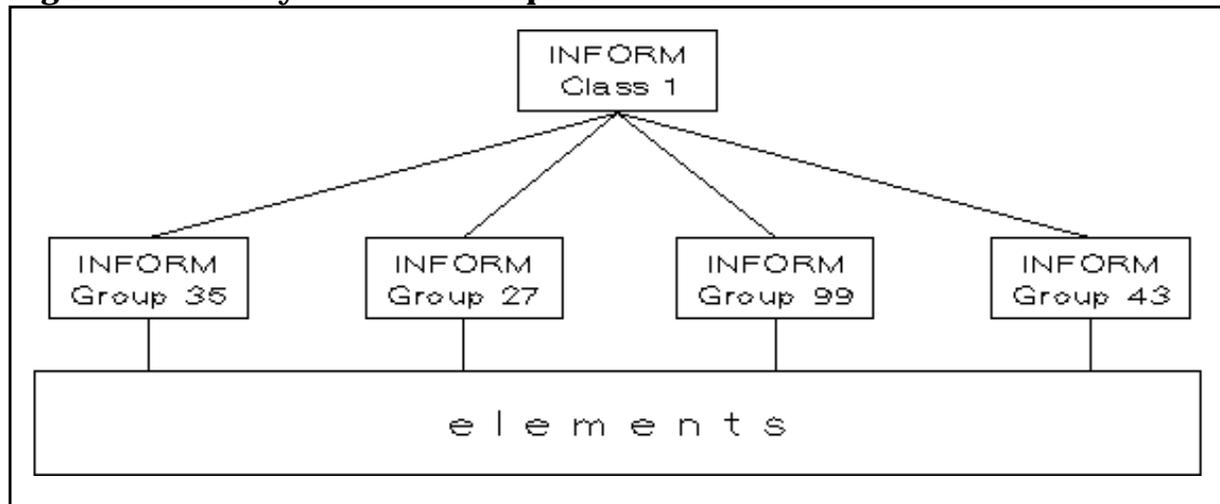**Figure 11-30. Many INFORM Groups Can Be Defined for One INFORM/V Class**

Figure 11-31 shows the IMAGE classes for the same INFORM class. Each IMAGE class will probably contain the elements from only one file or database. The only important relationship between the two figures lies in the elements. All of the elements related through IMAGE classes to INFORM class 1 must also be related through INFORM/V Groups to INFORM class 1. However, there need not be any correlation between the INFORM/V Groups and the IMAGE classes themselves.

**Figure 11-31. IMAGE Classes for the same INFORM Class**
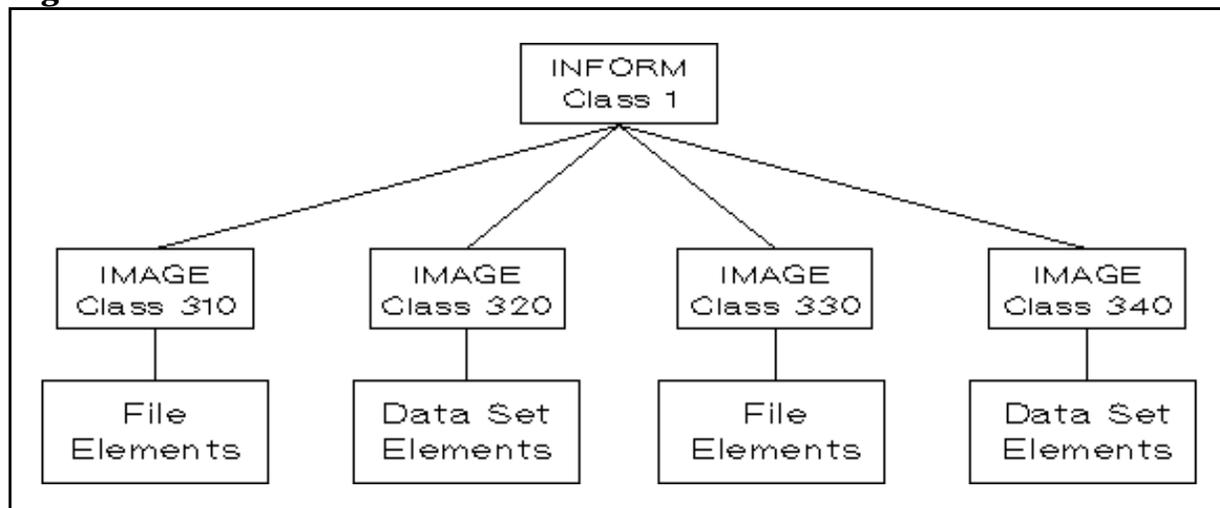
A given INFORM Group can be related to more than one INFORM class. In other words, if an INFORM Group is appropriate to more than one class of user, it can be used by each of those classes. The relationship is shown in Figure 11-32.

Figure 11-32. An INFORM Group Can be Used by More than One INFORM Class
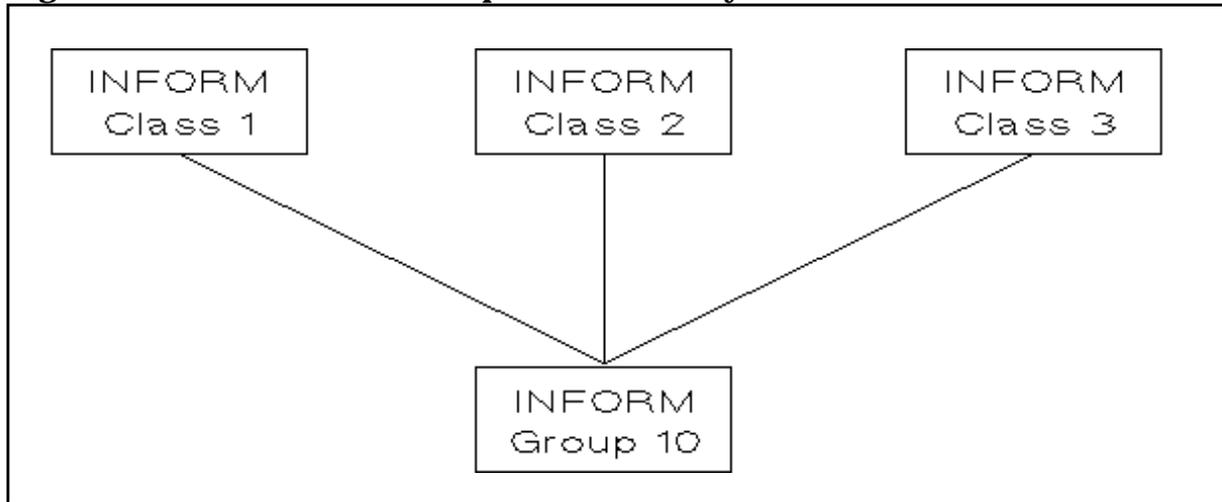
One IMAGE class can also be associated with more than one INFORM class. The relationship is shown in Figure 11-33.

Figure 11-33. An IMAGE Class Can be Used by More than One INFORM Class
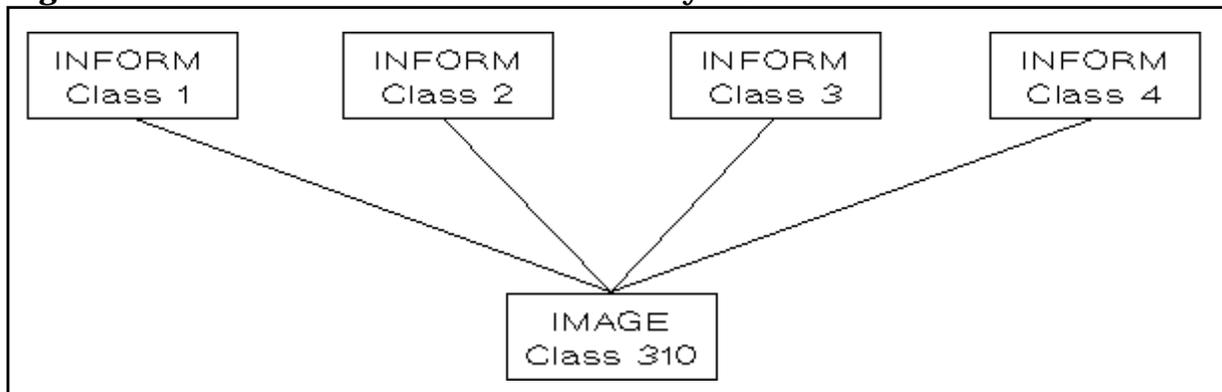
How will INFORM/V know what to display on the Data Names Menu for a Group? When the user enters his password. INFORM/V checks the data dictionary to see what IMAGE classes are related to the INFORM class that has that password. It also checks to see what Groups are related to that INFORM class, and then checks for the elements in those Groups. Only if the elements are associated with one of the IMAGE classes are they displayed on the menu.

When INFORM/V opens an MPE or KSAM file that has a lockword, INFORM/V uses the password of the IMAGE class as the lockword of the file. Therefore, you must assign a password to the IMAGE class that is the same as the lockword on the file. If the password and lockword are not identical, then the user will be prompted for the lockword when the report is being produced.

MPE and KSAM files do not have to be added to the IMAGE classes unless they have lockwords.

Summary of Security Commands

Use the REPORT command to see the elements related to an IMAGE class. REPORT will not work with INFORM classes, however, because elements are directly related to them. For INFORM classes, use SHOW CLASS. This displays all the associations for class and all the related child classes as well.

Use DISPLAY CLASS ! (for all classes) to see the attributes for a class plus the directly related classes. This command will also show you the passwords.

The following list includes all the DICTIONARY/V commands that will be used for setting up and maintaining INFORM/V security.

Table 11-2. Dictionary Commands Used to Establish and Maintain INFORM Security

Function	Command
Creating IMAGE or INFORM classes	CREATE CLASS
Modifying IMAGE or INFORM classes	MODIFY CLASS RENAME CLASS PURGE CLASS
Reporting IMAGE or INFORM classes	LIST CLASS DISPLAY CLASS
Adding entities to an IMAGE class	ADD CLASS ADD CLASS-FILE SECURE FILE
Modifying entities added to an IMAGE class	UPDATE CLASS UPDATE CLASS-FILE DELETE CLASS DELETE CLASS-FILE
Reporting entities added to an IMAGE class	REPORT CLASS SHOW CLASS
Relating IMAGE classes to INFORM classes	RELATE CLASS
Modifying relationship of IMAGE and INFORM classes	CHANGE CLASS REMOVE CLASS
Reporting relationship of IMAGE and INFORM classes	SHOW CLASS DISPLAY CLASS
Adding INFORM Groups to INFORM classes	ADD CLASS-GROUP SECURE GROUP
Modifying INFORM Groups	UPDATE CLASS-GROUP DELETE CLASS-GROUP
Reporting INFORM Groups	DISPLAY GROUP

A Stacking Responses to Prompts

Experienced users can save time by stacking their input to options on the Main and other menus. You may stack responses for the interactions that begin with the first four options on the Main Menu. These options are:

1. DEFINE A REPORT — Data Organization Menu through Data Names Menu

2. DISPLAY REPORT CATALOG — account and group name through display or print

3. SELECT A REPORT DEFINITION — report name through produce report

4. PREVIEW REPORT LAYOUT — display/print through number of lines

To stack responses, you enter input to consecutive prompts, beginning on the current menu, as a series of numbers, separated by commas. For example, suppose you have the Main Menu on your screen and want to define a report using the fifth data set in the first database. You would respond to the prompt as follows:

   TYPE AN OPTION NUMBER> 1,3,1,5

The numbers in this response have the following effect:

1 = Main Menu option 1, Define a Report, which goes to the Data Organization Menu.

3 = Data Organization Menu option 3, Display Data Base Menu, where you would be prompted for a database number.

1= On the Data Base Menu, database number 1 is selected.

5 = On the Data Set Menu, data set number 5 is selected.

Instead of reading and responding to three intermediate menus, you go directly to the one needed. Stacking responses reduces screen display considerably.

You are not restricted to stacking responses starting with the Main Menu and you may stop at any prompt that allows stacked responses. In the example above, you might not begin to stack until you were in the Data Organization Menu. If you entered 3, 1, 5 at the prompt on that menu, the results would be the same.

Frequent use of INFORM/V is the best preparation for using the stacking feature. You must know your menus and data to make stacking an efficient and useful shortcut. Also, changes to the data dictionary, such as adding or deleting databases, or changes within databases, may make selection numbers invalid.

Default Values in Stacked Responses.   The default value is always the first displayed when there are two in parenthesis. Display (D)is the default value in the following instance: DISPLAY OR PRINT (D/P). When you wish to use a default value, type a comma for the associated prompt. If, for example, you are in the Main Menu and want to display the cataloged report definitions under your logon group, you could respond to the prompt

for an option in the following way:

```
TYPE AN OPTION NUMBER> 2,,D
```

Any extra input, beyond the last prompt for which stacking is allowed, will be ignored. Suppose you were in the Main Menu and responded to the option prompt in the following way:

```
TYPE AN OPTION NUMBER> 1,3,1,5,7
```

Since stacking is not allowed beyond the Data Names Menu, the last number, 7, would be ignored.

B Files Used by INFORM/V

INFORM/V often creates and uses files that are not apparent to the user. For the most part, you need not concern yourself with these files or the formal file designators that INFORM/V uses. Information about the files that INFORM/V uses is collected here for those advanced users who need to change the default file environment.

Names of Files

INFORM/V considers your terminal as a file from which it reads the responses to prompts; the formal file designator that INFORM/V uses for this file is INFOIN. The default for INFOIN is the MPE file $STDINX. If you want INFORM/V to get your responses from some other file, you must have a file equation that tells it the name of your file, and you must put your responses in this file in the same order that INFORM/V issues the prompts. For example, if you want to put your responses in a file named RESPOND, you would type the following file equation before running INFORM/V:

```
:FILE INFOIN=RESPOND
```

When INFORM/V prepares the report it will look in the file named RESPOND for responses to prompts. The file must be unnumbered ASCII.

Similarly, when INFORM/V sends prompts or a report to your terminal, it uses the formal file name INFOOUT for the terminal (known to MPE/V as $STDLIST). If you do not want prompts or your report sent to the terminal, you can type a file equation. For example:

```
:FILE INFOOUT=MYFILE
```

In this case, anything that normally appears at the terminal goes to a file named MYFILE.

INFOLIST is the INFORM/V formal file designator for sending your report to the line printer. As previously explained, this destination can be changed with a file equation. To save output in a disc file, type

```
FILE INFOLIST=filename,NEW;DEV=DISC;REC=132,1,F,ASCII;SAVE
```

If you request sorting on one or more data names, INFORM/V uses a file named INFOSORT. The default size of this file is 10,000 records divided into 30 extents (an extent is a way of grouping records). You can change the size of this file by using the MPE FILE command. For example, if you want to decrease the size of INFOSORT to 5000 records, type the following:

```
:FILE INFOSORT;DISC=5000
```

For further information, see the *MPE/V File System Reference Manual* (30000-90236), and the *MPE/V Commands Reference Manual* (30000-90009).

These files are represented graphically in Figure B-1.

File Locations

DICTIONARY/V supplies the location for any files needed by INFORM/V in the form of a file equation, which has the syntax shown below. The locations of each file must have been specified in the data dictionary by your dictionary administrator. If there is more than one location related to the file or data base, the first one specified is used. INFORM/V issues the file equation before opening the file and resets it afterwards.
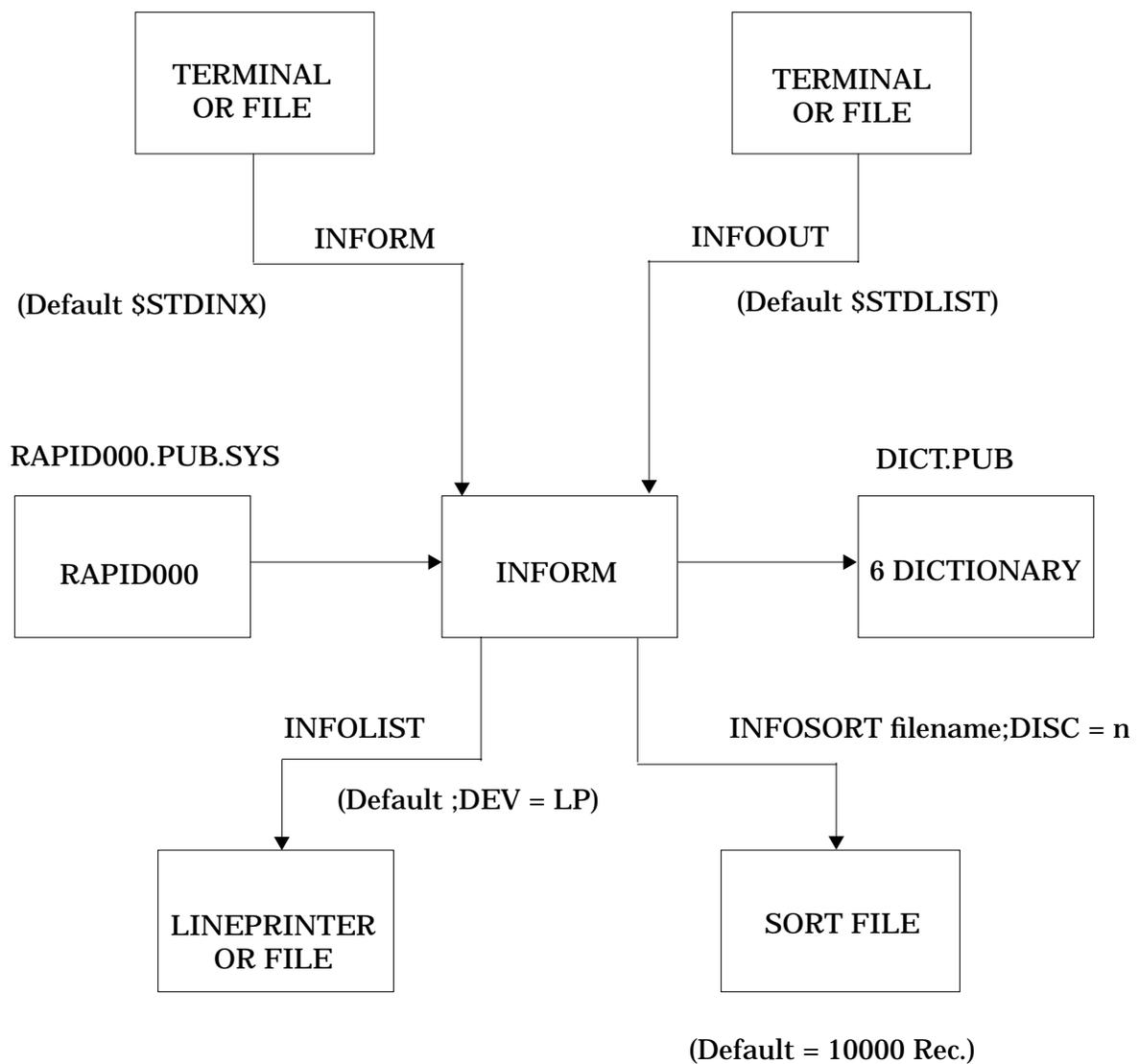
    :FILE filename = alias [/lockword] [.group [.account]][;DEV=cpu #DISC]

where:

filename   is the file's primary name.

alias   is the file's alias within the location.

 lockword   is the file's lockword, if the file is a MPE and KSAM file, or the password that was related to the file, if the file is a database file.

group   is the group the location is in. (optional)

account   is the account the location is in. (optional)

cpu   is the nodename specified on the already open DSLINE to the desired system.

Figure B-1. File Designators Used by INFORM/V

TERMINAL OR FILE

TERMINAL OR FILE

INFORM

INFOOUT

(Default $STDINX)

(Default $STDLIST)

RAPID000.PUB.SYS

DICT.PUB

RAPID000

INFORM

6 DICTIONARY

INFOLIST

INFOSORT filename;DISC = n

(Default ;DEV = LP)

LINEPRINTER OR FILE

SORT FILE

(Default = 10000 Rec.)

C Limits

Data names (items)
per Data Names Menu

The number of items that can be displayed on an INFORM/V Data Names Menu depends on the database that the user is reporting from:

IMAGE/V databases — 128 items can be displayed.

TurboIMAGE/V databases — 256 items can be displayed.

These limits apply both when Groups are made up from the databases and when databases are accessed directly.

KSAM or MPE file

The number of data names that can be included in a KSAM or MPE file record is limited by the DICTIONARY/V requirements that only 128 items can be defined for a KSAM or MPE record.

Items in a report

The number of items that can be included in a report is 128.

User-defined data names

The number of user-defined data names allowed depends on the number of permanent data names in the Group. User-defined data names can be added to a Group until the limits given above for Groups are met.

When a report is being drawn from a KSAM or MPE file, INFORM/V includes all items defined in the data dictionary for that file in its internal table, even though all items are not being reported. If items are being drawn from more than one file, it is therefore possible that limits will be exceeded even though very few items are included in a report.

For example, assume that a KSAM file having 50 items defined in the data dictionary has 5 items defined in a Group. A second KSAM file has 20 items defined in the data dictionary, but only 5 defined in the Group. If a report calls for one item from each file, the internal table will contain 70 items (50 plus 20).

When a child item is being reported, INFORM/V includes the parent item, as well as the child item, in the internal table.

D Error Messages

Table D-1 lists all the error messages that might appear when you are using INFORM/V. Table D-2 contains a list of fatal processing error messages; i.e., those messages that are identified by the message FATAL PROCESSING ERROR number at your terminal. The information in Table D-2 will be of particular value to your database administrator if you should get a fatal processing error message.

Table D-1. User Error Messages

Message	Explanation and/or Action
ACCOUNT CAPABILITIES DO NOT ALLOW A JOB TO BE STREAMED	The user's account does not have batch (BA) capability.
ACCOUNT PASSWORD EXPECTED	An account password must be entered.
ARGUMENT REGISTER OVERFLOW	Report error to DBA.
ARITHMETIC CONVERSION FOR ITEM: *item-name*	Report error to DBA.
ARITHMETIC CONVERSION FOR TABLE LITERAL	A program constant cannot be converted to the binary equivalent as the current statement requires.
ARITHMETIC TRAP	Processor has detected an arithmetic trap condition in its internal processing. Report the error to the DBA.
ATTEMPT TO ASSIGN NEGATIVE VALUE TO ITEM: *item-name*	The processor has detected an attempt to assign a negative value to a positive-type field.
BAD PASSWORD — GRANTS ACCESS TO NOTHING	An invalid password was entered.
BASE DOES NOT EXIST IN DICTIONARY	The database selected does not exist in the data dictionary.
BATCH FILE INTERNAL SET UP ERROR	MPE/V cannot set up the batch job.
BATCH FILE INTERNAL WRITE ERROR	MPE/V cannot set up the batch job.
BROKEN WORKSPACE CHAIN	Processor has detected a break in a work space link list. Report the error to the DBA.
CANNOT ACCESS REPORT FILE, ERROR=*number*	The report file cannot be found or accessed — an MPE File System error number is indicated.

Table D-1. User Error Messages

Message	Explanation and/or Action
CANNOT CREATE A REPORT FILE	The report file cannot be created, e.g., not enough disc space.
CANNOT OPEN DATA BASE: *basename*	Data base needed by INFORM/V cannot be accessed. Report error to DBA.
CANNOT OPEN PRINT FILE	The processor is unable to open the print file.
CHILD ITEMS ARE NOT VALID IN COMPARISON EXPRESSION	The data name chosen cannot be used in a data-name to data-name comparison.
COMMAND INTRINSIC ERROR PLEASE REPORT	INFORM/V cannot create or stream the batch job.
COMPUTATION WORKSPACE OVERFLOW	Internal error. Report the error to DBA.
COMPUTE ITEMS ARE NOT VALID IN COMPARISON EXPRESSIONS	Temporary data names cannot be used in data-name to data-name comparisons.
COMPUTED NAMES CANNOT BE USED FOR SELECTION CRITERIA	A computed data name added to the group with "+" cannot be used with selection criteria.
CURRENT REPORT HAS NOT BEEN SPECIFIED	To produce a report, a report must be defined or specified (option 1, 2, or 3 of the Main Menu).
DATA DICTIONARY INACCESSIBLE	The dictionary database cannot be accessed; see the DBA.
DATA DICTIONARY INFORMATION ERROR: *number*	Report error to the DBA.
DATA NAMES MUST BE SPECIFIED TO PRODUCE A REPORT	No data names have been specified. Since there is nothing to report, no report can be produced.
DATA NAME MUST BE 20 CHARACTERS OR FEWER	Check length of data name; cannot be greater than 20 characters.
DATA NAMES SELECTED MUST BE IN SORT LIST	Sorted data names are the only ones that can be used to subdivide a report.
DATA NOT NUMERIC	Data must be of numeric type to be used in a computational expression.
DATA SET DOES NOT EXIST IN DICTIONARY	The data selected does not exist in the data dictionary.
DECIMAL DIVIDE BY ZERO	Processor has detected a divide by zero in a packed decimal computation.
DECIMAL LENGTHS OF ITEMS IN COMPARISON EXPRESSION MUST BE EQUAL	Data names used in comparisons must be defined with the same length.

Table D-1. User Error Messages

Message	Explanation and/or Action
DECIMAL OVERFLOW	Processor has detected an overflow in a packed decimal computation.
DELETE NOT CONFIRMED — REPORT UNCHANGED	User indicated that report was not to be purged.
DISC SPACE NOT AVAILABLE FOR SORT FILE SORT	Not enough space available for operation.
DISPLAY FORMAT LEVEL OVERFLOW	Processor has detected an overflow in managing format levels. Report the error to the DBA.
DISPLAY FORMAT LEVEL UNDERFLOW	Processor has detected an underflow in managing format levels. Report the error to the DBA.
DUPLICATE ENTRY IGNORED	Data name has been specified more than once.
EDIT MASK CANNOT BE GREATER THAN 30 CHARACTERS	Edit mask entered was greater than 30 characters.
EDIT MASK WORKSPACE OVERFLOW	The total number of characters allowed for all edit masks for new data names is too large. The total must be less than 512 characters. Calculate the total number of characters with the following formula: (number of characters in edit mask 1 +' 4) + (number of characters in edit mask 2 + 4) +...+ (number of characters in edit mask n + 4) < 512 characters.
EMPTY REPORT FILE	The report selected is empty, possibly because of an internal error. Report the error to the DBA.
ENTRY CANNOT BE NEGATIVE	The data name is defined in the data dictionary as being positive.
ENTRY NOT NUMERIC	Data type is integer, floating point, or numeric ASCII and a nonnumeric character has been detected in the data entry field.
*ERROR DETECTED IN SELECTION EXPRESSION AT FIELD *n*	An error has been detected in the selection criteria at the position indicated.
*ERROR: ILLEGAL DATA TYPE FOUND, DATA NAME: *data name*	A data name with unsupported data type is found.
*ERROR: INTERNAL ERROR number PLEASE REPORT	An unexpected error occurred.

Table D-1. User Error Messages

Message	Explanation and/or Action
*ERROR: MPE ERROR number IN MESSAGE CATALOG	A MPE error occurred.
*ERROR: MPE FILE SYSTEM ERROR number ON TERMINAL	An error occurred while prompting or writing a message.
* ERROR: WORKSPACE ENTRIES FULL	Ran out of entries of an internal table, report the error to the DBA.
*ERROR: WORKSPACE FULL	An internal table is full, report the error to the DBA.
EXCEED MAXIMUM PERFORM	Report the error to the DBA.
EXPRESSION CANNOT BE GREATER THAN 50 CHARACTERS	The computational expression given for the new data name must be 50 characters or fewer.
EXPRESSION ERROR	The computational expression contains an error, such as a missing arithmetic operator.
EXTENDED PRECISION DIVIDE BY ZERO	Processor has detected a divide by zero in a double-precision floating point computation.
EXTENDED PRECISION OVERFLOW	Processor has detected an overflow in a double-precision floating point computation.
EXTENDED PRECISION UNDERFLOW	Processor has detected an underflow in a double-precision floating point computation.
FATAL PROCESSING ERROR *number*	Refer to Table D-2.
FLOATING POINT DIVIDE BY ZERO	Processor has detected a divide by zero in a single-precision floating point computation.
FLOATING POINT OVERFLOW	Processor has detected an overflow in a single-precision floating point operation.
FLOATING POINT UNDERFLOW	Processor has detected an underflow in a single-precision floating point operation.
FOLLOWING DATA NAMES ARE NOT IN ANY DATA SET OR FILE: *datanames*	INFORM/V is unable to make a link between the first and second group of file names. Check with the DBA.
FOLLOWING FILE(S) CANNOT BE RELATED: *filename(s)* TO FILES: *filename(s)*	The two specified groups of files have not been linked to each other in the data dictionary.
GROUP DOES NOT EXIST IN DICTIONARY	The INFORM/V Group selected does not exist in the data dictionary.
GROUP PASSWORD EXPECTED	A group password must be entered.
IMAGE ERROR *number* ON DICTIONARY	An error occurred getting some security or file equate information from the data dictionary.

Table D-1. User Error Messages

Message	Explanation and/or Action
IMAGE ERROR *number* ON FILE	An error occurred on an open. The file is the name of the file it tried to open.
INCOMPATIBLE REPORT FILE	Report was created by an earlier version of INFORM/V and, for internal reasons, can no longer operate with the current version of INFORM/V.
INPUT FIELD LONGER THAN *n*	Length of data entered exceeds n, the size defined for the data name.
INSUFFICIENT STACK FOR SYSTEM LOAD	Report the error to the DBA.
INSUFFICIENT STACK FOR WORKSPACE RELOAD	Report the error to the DBA.
INTEGER DIVIDE BY ZERO	Processor has detected a divide by zero in an integer arithmetic computation.
INTEGER OVERFLOW	Processor has detected an overflow in an integer arithmetic operation.
INTERNAL FILE ERROR, PLEASE REPORT	An error occurred in creating the batch file.
INVALID ACCOUNT, USER, OR GROUP PASSWORD	Password is not correct; batch job cannot be streamed.
INVALID ARITHMETIC FIELD FOR ITEM: *item-name*	The processor is attempting to execute an arithmetic operation using a data name defined as character, zoned or packed decimal (type=X,U,Z or P), and has detected an invalid data storage format for the name.
INVALID DATA NAME FORMAT	Format of data name not consistent with format defined in the data dictionary.
INVALID DATA NUMBER	Number indicated does not appear on menu of data names.
INVALID ENTRY IGNORED	Entry is either non-numeric or not within the range of available options.
INVALID FILE NAME FORMAT	Name given to report does not conform to file naming conventions.
INVALID ITEM TO ITEM COMPARISION	The syntax for the data-name to data-name comparison is not valid.
INVALID LOCKWORD	The lockword entered was invalid.
INVALID LOGICAL CONNECTOR	Connector must be AND or OR.

Table D-1. User Error Messages

Message	Explanation and/or Action
INVALID MODE	The mode used in opening the database must be numeric and must be between 1 and 8 inclusively.
INVALID MODE, RE-ENTER MODE >	Data base open mode specified was invalid.
INVALID NUMBER: *expression*	Expression indicated is not a valid number.
INVALID NUMBER, RANGE IS *x – y*	Number entered falls outside the given range.
INVALID NUMERIC ENTRY	A numeric value was expected in response to the prompt.
INVALID OPEN MODE. DATA BASE WILL BE OPENED IN MODE 5.	You can respond password, mode to any database password prompt, where mode is a number from 1 to 8, representing the access mode you want to open the database in.
INVALID RELATIONAL OPERATOR	Operator must be EQ, GT, LE, GE, LT, or NE.
ITEM SIZES IN COMPARISON EXPRESSION MUST BE EQUAL	Data names used in comparison must be defined with the same length.
ITEM TYPES IN COMPARISON EXPRESSION MUST BE THE SAME	Data names used in comparison must be of the same data types.
LOCKWORD CANNOT CONTAIN SPECIAL CHARACTERS	MPE lockwords cannot contain special characters.
LOCKWORD MUST NOT BE GREATER THAN EIGHT CHARACTERS	MPE lockwords cannot contain more than eight characters.
MISMATCHED PARENTHESES: *expression*	The computational expression indicated did not contain a matching number of open and close parentheses.
MPE COMMAND ERROR	An error occurred setting or resetting a file equation.
MPE FILE SYSTEM *number* ON FILE *filename*	An error occurred on an open. The file is the name of the file it tried to open.
NO DATA BASES ARE IN THE DICTIONARY	No databases are identified in the data dictionary.
NO DATA NAMES ARE DEFINED IN THIS DATA SET	No data names have been assigned to this data set in the data dictionary.
NO DATA NAMES ARE DEFINED IN THIS SUBGROUP	No data names have been assigned to this subgroup in the data dictionary.
NO DATA SETS ARE IN THIS DATA BASE	The data dictionary shows no association between this database and its corresponding data sets.

Table D-1. User Error Messages

Message	Explanation and/or Action
NO INFORM GROUPS ARE IN THE DICTIONARY	No INFORM/V Groups have been set up in the data dictionary.
<NO RECORDS FOUND>	The report processor could not find any matching record in the file or database.
NO REPORTS FOUND UNDER groupname	Within the specified computer group, no reports appear in the catalog.
NO SUCH REPORT NAME	The report name specified is not listed in the report catalog.
NUMERIC DECIMAL PART LONGER THAN n	Decimal part of a decimal number exceeds the length n defined for the associated data name.
NUMERIC INTEGER PART LONGER THAN n	Integer part of a decimal number exceeds the length n defined for the associated data name.
ONLY ONE ENTRY EXPECTED — REMAINDER IGNORED	Only one entry can be made.
ONLY *number* ENTRIES EXPECTED — REMAINDER IGNORED	Only the specified number of entries can be made.
OUT OF RANGE PCODE ADDRESS	Report the error to the DBA.
OUTPUT FILE ACCESS	The output device is unavailable. Check FILE statement or call system operator.
PASSWORD CANNOT CONTAIN SPECIAL CHARACTERS	Passwords cannot contain special characters.
PASSWORD MUST BE 8 CHARACTERS OR LESS	Password entered was longer than eight characters.
PASSWORD MUST NOT BE GREATER THAN EIGHT CHARACTERS	Password entered was longer than eight characters.
PRINT FILE ACCESS	The print device is unavailable. Check FILE statement or call system operator.
RELATIONAL OPERATOR IN EXPRESSION INVALID WITH ITEM TYPE	The operator entered is not compatible with the type of these data types.
REPORT FILE ALREADY EXISTS, PURGE OLD FILE(N/Y)?>	The report file name already exists in the report catalog. Should the existing report definition be replaced with the new one?
REPORT FILE CLOSE FAILURE	The report cannot be added to the catalog-see the DBA.
REPORT FILE ERROR	Report the error to the DBA.
REPORT FILE RENAME FAILURE	Contact the DBA.

Table D-1. User Error Messages

Message	Explanation and/or Action
SELECTED DATA IS NON-NUMERIC	Data name selected is not defined as numeric type in the data dictionary.
SORT END	Error in MPE SORT Utility during exit procedures. If cause is not apparent to the resident system programmer, contact the DBA.
SORT FILE WRITE	Error on releasing record to the MPE SORT Utility. If cause is not apparent to the resident system programmer, then contact the DBA.
SORT INITIALIZATION	Error in call to MPE SORT Utility. The probable cause is insufficient disc space for sorting.
SORT OUTPUT	Error on requesting record from MPE SORT Utility. If cause is not apparent to the resident system programmer, then contact the DBA.
THAT PASSWORD IS UNKNOWN	An invalid password (one that does not belong to any of the classes in DATA-CLASS that are of type INFO) has been entered.
TITLE CANNOT BE LONGER THAN 79 CHARACTERS	A report title longer than 79 characters was entered.
TOO MANY _____DEFINED IN _____ DATA NAMES/GROUP DATA NAMES/SET DATA BASES/DICTIONARY DATA SETS/DATA BASE GROUPS/DICTIONARY SUBGROUPS/GROUP	Blank spaces may contain any of the following combinations: The limit of 255 data names per dataset or 128 data names per Group has been exceeded. After this message appears, the current Data Names Menu is redisplayed and will include all new data names up to but not including the name that caused the error. Report the error to the DBA.
TOO MANY FILES	The data names to be included in the report are listed in more than 255 files — the maximum number files that can be accessed.
TOO MANY FILE ELEMENT RELATIONSHIPS	There are too many file-element relationships defined for the particular list of data names selected for the report. Report the error to the DBA.
TOO MANY FILES EXIST; UNABLE TO CREATE A UNIQUE FILE	INFORM/V job files and cataloged reports must total fewer than 99.

Table D-1. User Error Messages

Message	Explanation and/or Action
TOO MANY SUBDIVISIONS, SUBTOTALS, AND TOTALS	The total number of data names selected to be subdivided, subtotaled, and totaled exceeds the maximum of 255.
TOO MANY VARIABLES IN REPORT TITLE	No more than six variables can be used in the report title.
UNDELIMITED TEXT STRING	A string value must begin and end with quotes.
UNEXPECTED EOF IN REPORT FILE	The processor encountered an unexpected end-of-file while reading the report file. Notify the DBA.
USER OR ACCOUNT DOES NOT POSSESS THE CAPABILITY TO STREAM A JOB	User or account does not have the authority to stream a batch job.
USER CAPABILITIES DO NOT ALLOW A JOB TO BE STREAMED	The user does not have the authority to stream a batch job.
WARNING: DATA IS TYPE X OR U	Data name used in the computational expression is of type X or U. Conversion error might occur if data is not numeric.
WARNING: DATA NAME * IS OF TYPE X OR U, DATA MAY NOT BE NUMERIC	Data name used at the SUMMARIZE FOR prompt is type X or U. Conversion error might occur if data is not numeric.
WARNING ** REPORT MAY CONTAIN A MAXIMUM OF 128 ENTRIES	No more than 128 data names can be included in the report.
YOUR PASSWORD DOES NOT ALLOW YOU TO RUN THIS REPORT	User is attempting to produce a report created by another user having different access authority.

Table D-2. Fatal Processing Errors

Number	Explanation and/or Action
2	Too many file set links (file/element relationships); the limit is 255.
3	Exceeded allowable p-code instructions; the maximum is 255.
6	Overflowed internal registers. Over 255 entries or 1024 words data.
7	Too many data elements to fit into data register. Maximum is 1024 words.
11	Link table overflow; limit is 128 items.
12	Zsize error; ran out of stack.
13	Too many items selected; the maximum is 128.
100	Table holding files overflowed; the maximum is 32 files.
101	Too many databases to load; the limit is 16 databases.
102	Too many file/element relationships; the maximum is 255.
112	Table holding items overflowed; the maximum is 128 items.
113	Cannot find a starting file for the report; missing file/element relationship.

Glossary

A

ASCII American Standards Committee on Information Interchange. A standard used by computers for interpreting binary numbers as characters.

account name The name which when combined with a computer group name and user name identifies you as a user on the HP 3000.

C

CONTROL Y The combination of terminal keys that returns you to the Main Menu.

computational expression

The expression that determines the values of new, temporary data names.

computer group name The name which when combined with an account name and a user name identifies you as a user on the HP 3000.

connector AND, OR, or TO. A word that expresses the connection between two or more selection values in the selection criteria.

current report The report definition you are currently working on.

cursor The flashing underline that shows where the next character you type will appear on the terminal.

D

data name The name given to a collection of similar data, for example, address.

data name, temporary Data name which is not present in an INFORM/V Group but may be defined by a user for a particular report.

Data Names Menu The menu that lets you choose the data names on which you want to report.

Data Organization Menu The menu from which you specify whether the information you want is contained in an INFORM/V Group or a single database.

data set A file within a database.

Data Set Menu The menu that lets you choose the data set from which you want to report.

database A collection of logically related files containing both data and structural information.

Database Menu The menu that lets you choose the database from which you want to report.

DBA Database administrator.

default value The value that takes effect automatically if the user does not specify one.

DICTIONARY/V The centralized source of information about the data processing system used with the HP 3000; among other things, it lists and defines data names and defines INFORM/V Groups.

E

edit mask A formatting tool used to transform stored data into commonly accepted forms, e.g., when an edit mask is applied to the value 2943, it may be displayed as $29.43.

F

file A collection of related data treated as a unit.

G

Group, INFORM/V A collection of data names you can choose from to produce report specifications; INFORM/V Groups are defined in DICTIONARY/V by the database administrator.

Group Menu The menu that lets you choose the INFORM/V Group from which you want to report.

I

INFORM/V Group A collection of data names you can choose from to produce report specifications; INFORM/V Groups are defined in DICTIONARY/V by the database administrator.

K

KSAM/V Keyed Sequential Access Method; a system that organizes files on the HP 3000 in such a way as to provide quick access to data records.

L

layout Specifies how information is arranged or presented.

lockword The secret word used as a security measure to protect MPE and KSAM files.

log on The process of establishing communication between a user and the computer.

M

Main Menu The menu that is the starting point for all INFORM/V operations.

menu A list of information from which you can choose certain options.

menu-driven An application program in which the user accomplishes tasks by choosing responses from lists displayed on the terminal screen.

MPE Multiprogramming Executive; a system that maintains files on the HP 3000; it also executes all user programs, including INFORM/V.

O

operator A symbol denoting a mathematical or logical relationship between a data name and a value.

P

password The secret word that allows you to use data bases for INFORM/V reports and in some cases to log on; password must be typed exactly the way it appears in the Dictionary.

preview An option in INFORM/V that allows the user to look at the layout of a report; the preview contains dummy data.

prompt A question posed to you by INFORM/V.

R

report, current The report definition you are presently working on.

report description Descriptive text (up to 50 characters long) that the user can supply when a report is saved in the catalog.

report name Six-character identifier supplied when the report definition is stored in the catalog.

report title The text (up to 79 characters) that prints at the top of each page of a report when the report is displayed or printed.

response The answer you give to an INFORM/V prompt.

S

selection criteria The expression you type when you produce a report that specifies which values of data should be displayed on your report; the expression that makes up the selection criteria usually contains an operator, a numeric or character constant, and (optionally) a connector.

sort To arrange data in ascending or descending order, either alphabetically or numerically.

T

temporary data names See data names, temporary.

U

user name The name which when combined with a computer group name and an account name identifies you as a user on the HP 3000.

user-defined data name A data name that you create which is contains data derived from permanent data names.

V

variable, title A placeholder in a Report Title which will be replaced with the appropriate information when the report is run.

W

wild card character The caret character (^), which tells INFORM/V to accept any character in this position when matching on selection criteria. Is used with literals that must be matched exactly.