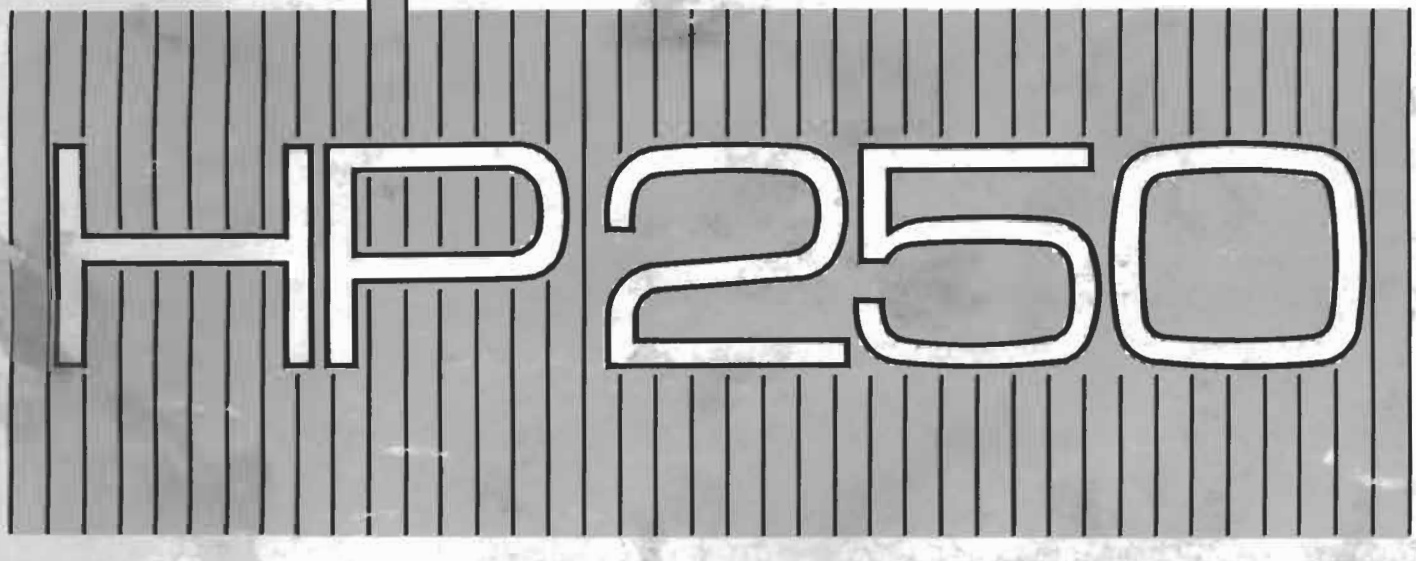
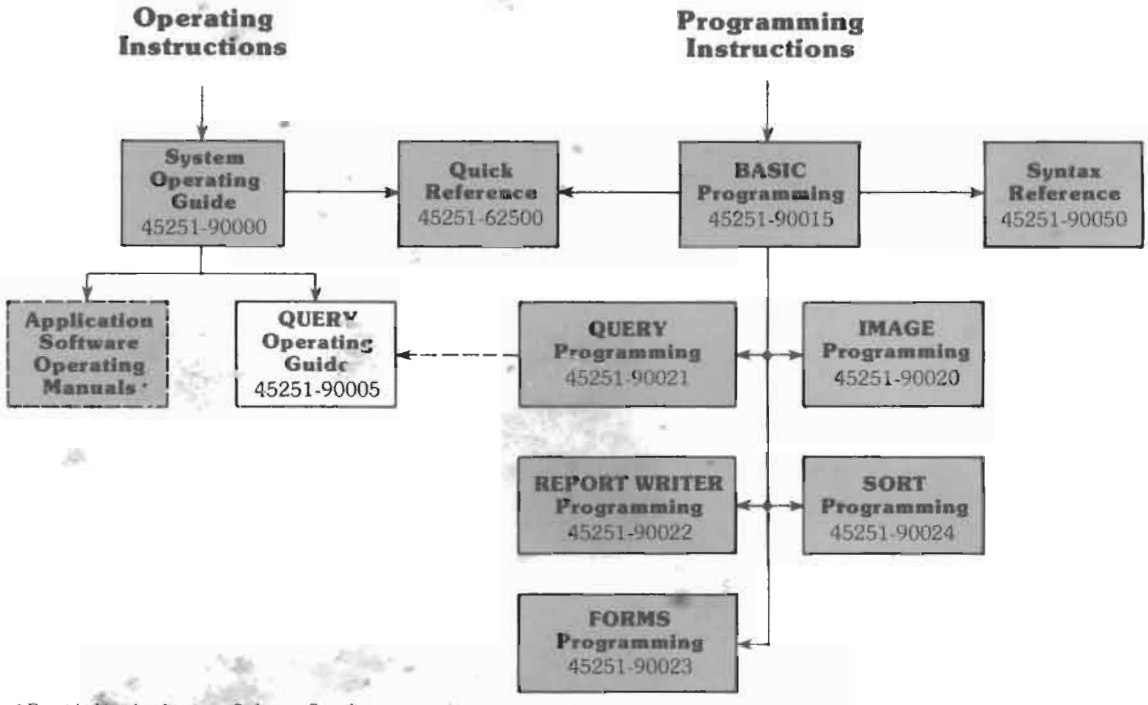
QUERY/250 Operators Guide





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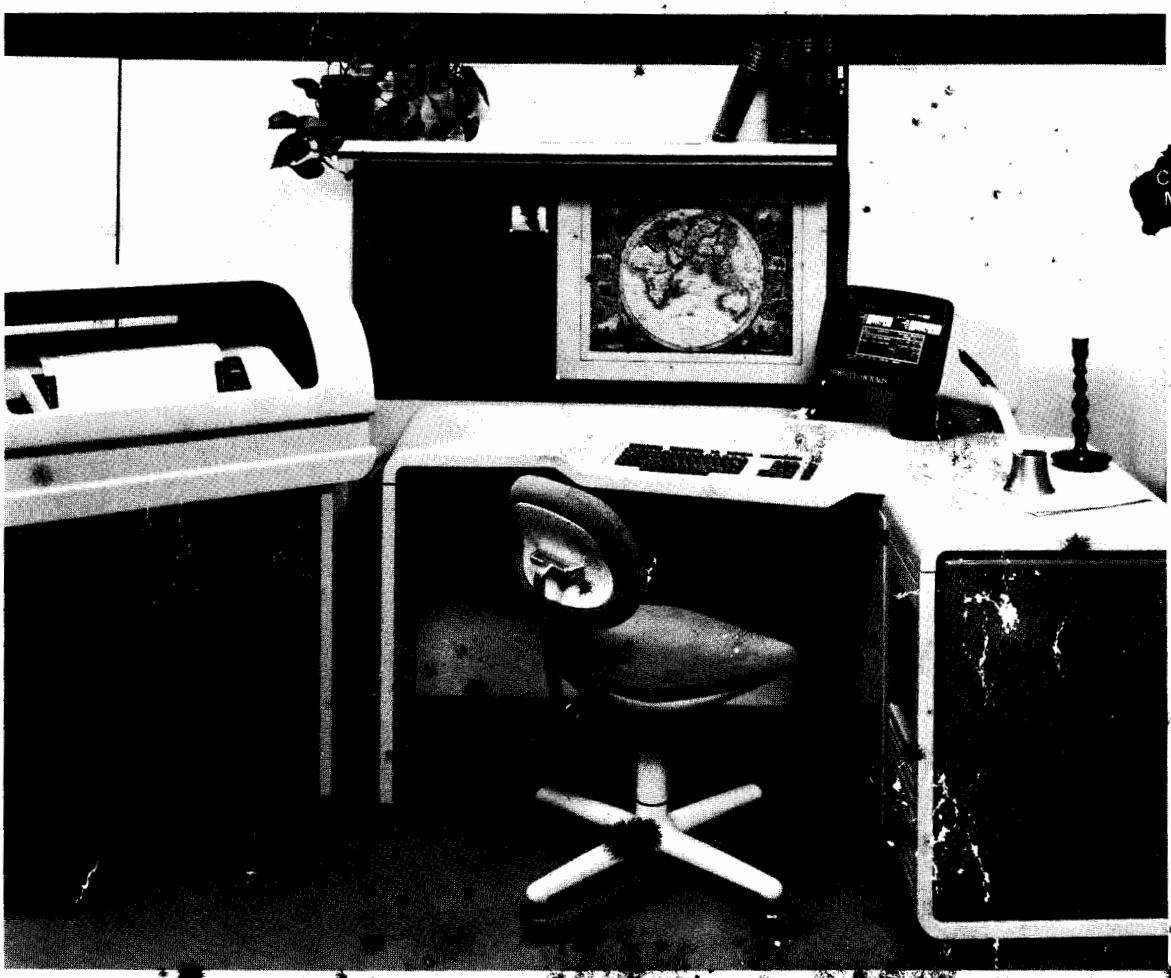
QUERY Operators Guide



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Preface

This manual is intended for an operator who knows little about computers or data bases. It is assumed that the reader is familiar with the HP 250 as described in the System Operator's Guide.

The operator should read Chapter 1 of this guide to gain a basic understanding of data bases. Chapter 2 is devoted to running QUERY/250 and learning to use the softkeys. Chapter 3 and 4 explain the commands.

Some QUERY operations require programming knowledge. These operations are described in the QUERY/250 Programming Manual. A summary of commands is also listed in that manual.

Table of Contents

CHAPTER 1
Introduction to QUERY

The QUERY/250 system software provides a simple method of accessing an IMAGE/250 data base without programming effort. You may use QUERY to do the following:

- retrieve data which meets selection criteria
- report on the data retrieved
- add or delete data entries
- modify data entries

You perform these operations by entering simple commands consisting of English language words such as FIND and LIST.

QUERY provides you with two ways of entering commands. You may type the command and press the ⇧ key, or you may use the softkeys (the Special Function Keys located below the display) and the displays to aid you in entering the command. This process will be described later. First the terms and concepts of data base management are described.

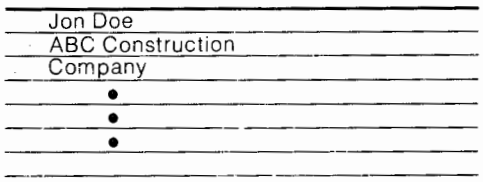
Introduction to Data Base Management

A **data base** is a collection of related information, commonly accessible, that has been stored in such a way that easy access to the information is made possible. The person who designs the data base decides what information will be in the data base and how each piece of information is related to each other. To use QUERY, you need not know the process the designer uses to create the data base but you do need to know what the information is and how it's organized.

The information stored in the data base depends upon the use of the data base. Throughout this manual a sales data base example will be used. This is only an example to show you how to work with the data base. After you have read this first chapter, ask your manager or the person in charge of the computer system what information your data bases.

Data Item

The smallest piece of information in a data base is called a **data item**. For example, the customer name would be a data item, the customer address would be another data item, etc. When the data base is designed, a certain amount of space is reserved for storing the contents of each data item. For example, assume the customer information is stored in a card file. The first line might be reserved for the customer's name, the next two lines for the address, and so on.



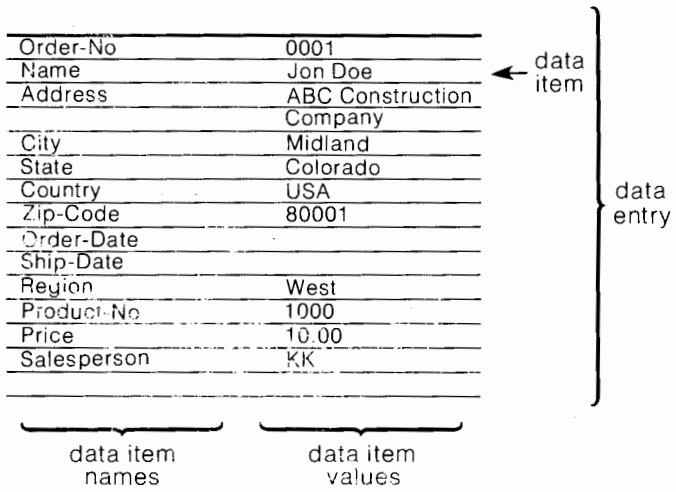
Example Data Items

Thus the first data item uses the first line and the second data item uses the next two lines. Note that cards are not really used for storage. This is only an example to help you visualize data items.

When it becomes necessary to find the card which contains the customer Jon Doe, you need a way to specify which line on each card is to be searched. Consequently, each data item is assigned a name and length. For example, the first data item has a name of customer and a length of one line. When stored in the data base, the length is a specific number of characters or digits.

Data Entry

The next level in the data base system is the **data entry**. All the data items on a card might be defined as a data entry.

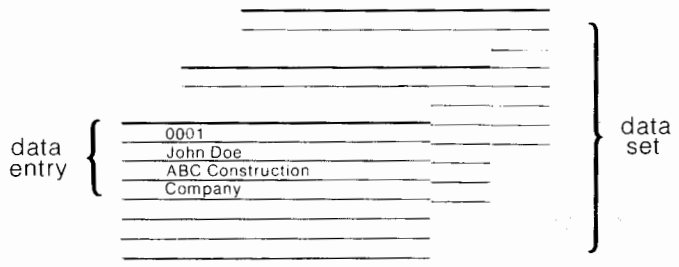


Data Entry Example

The figure shows a data entry that consists of 13 data items.

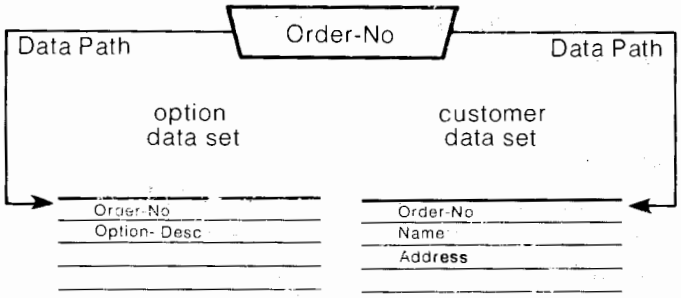
Data Set

A collection of similar data entries is known as a **data set**. The next figure contains three data entries which together make up a particular data set that will be referred to as the CUSTOMER data set. A data set is similar to a file.



Example Data Set

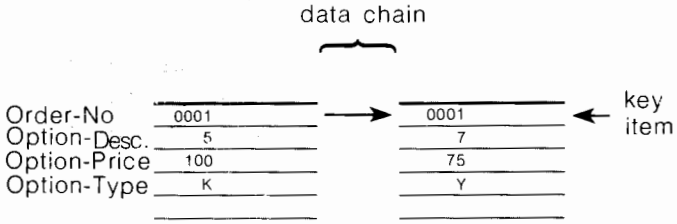
A collection of data sets is called a **data base**. The data sets in a data base are usually linked together. For example, a second data set in the Sales Analysis data base contains the data items ORDER_NO,OPTION_DESC,OPTION_PRICE and OPTION_TYPE. Because the information in this data set may be wanted with the information in the customer data set, the two are linked together through a third data set ORDER which has one data item ORDER_NO. This link from one data set to another is called a **data path**.



Example Data Paths

The data item which is linked is called a **key item**.

Now assume the customer orders two options on the same order. This would cause the option data set to have two entries with the same order number. These entries are also linked through the key item. This link, within a data set, is called a **data chain**.



Example Data Chain

Types of Data Sets

There are two types of data sets, **master data sets** and **detail data sets**.

There is only one data entry for each key item value in a master data set. There may be up to eight data paths from this key item.

In a detail data set, there may be more than one data entry for each key item value. There may be up to eight key items in a data entry. For every value of a key item in a detail data set, there is a corresponding value in its associated master data set.

For example, the order data set has one data entry for each ORDER_NO value. The option data set has two data entries for ORDER_NO 0001. Since there is a value of 0001 in the option data set

ORDER_NO data item, there must be a value of 0001 in the order data set ORDER_NO data item. However, there does not have to be the same value in the customer data set.

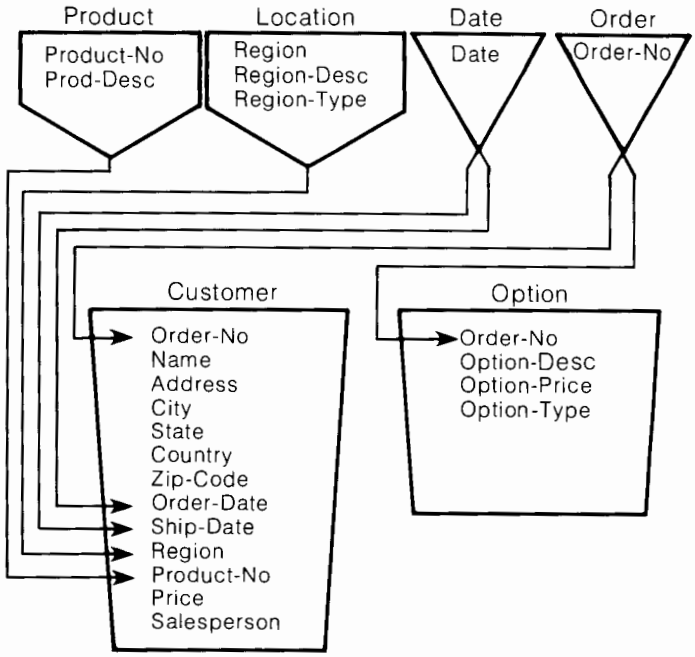
There are two types of master data sets. The **automatic master** data set contains one data item which is a key item. When a new value is added to the same key item in a detail data set, the value is automatically added to the automatic master data set. Deletions from the automatic master data set are made when the last data entry with a particular key item value is deleted from the detail data set.

The **manual master** data set contains one or more data items, one of which is a key item. Before a new key item value can be added to a detail data set that is linked to a manual master data set, the value must be first added to the manual master data set.

Data Base

The collection of multiple detail data sets and master data sets is collectively known as a **data base**. As the information is stored into the data base, no ordering is necessary since the links provide the ordering. All data chain maintenance is performed automatically.

Here is a diagram of the Sales Analysis data base showing the data paths between master and detail data sets.



Sales Analysis Data Base

Data Base Schema

A **data base schema** is used to define the data base. There are three parts to a schema. Part one gives the name of the data base and the passwords used for access to the data base. Part two lists all the data items and their size and type (type may be alphabetic, integer, etc., as described in Appendix C). Part three describes the individual data sets and the data items they contain.

Now let's look at the schema for the Sales Anaysis data base.

```
1  BEGIN DATA BASE    SAD;  ((CUSTOMER SALES ANALYSIS DATA BASE))
2
3  PASSWORDS:
4                10        SALESMAN;
5                15        MANAGER;
6                 3        SECRTARY; ((WILL HAVE READ ACCESS ONLY))
7
8  ITEMS:
9                ADDRESS,      2X30; ((2 LINES OF ADDRESS ALLOWED))
10               CITY,          X16;
11               COUNTRY,       X12;
12               DATE,          I; ((PATH FOR ORDER-DATE, SHIP-DATE))
13               NAME,          X30;
14               OPTION-DESC,   X10;
15               OPTION-PRICE,  L;
16               OPTION-TYPE,   I;
17               ORDER-DATE,    I;       ((MUST BE YYMM))
18               ORDER-NO,      X10;
19               PRICE,         L;
20               PRODUCT-NO,    I;
21               PROD-DESC,     X30;
22               REGION,        X6;
23               REGION-DESC,   X30;
24               REGION-TYPE,   I;
25               SALESPERSON,   X4;
26               SHIP-DATE,     I;       ((MUST BE YYMM))
27               STATE,         X6;
28               ZIP-CODE,      X8;
29
30 SETS:
31
32     NAME:     DATE,AUTOMATIC(3/10,15),SALES;
33     ENTRY:    DATE(2);
34     CAPACITY: 51;
35
36     NAME:     ORDER,A(3/10,15);
37     ENTRY:    ORDER-NO(2);
38     CAPACITY: 101;
39
40     NAME:     PRODUCT,MANUAL(3,10/15),SALES;
41     ENTRY:    PRODUCT-NO(1),
42               PROD-DESC;
43     CAPACITY: 11;
44
45     NAME:     LOCATION,M(3,10/15),SALES;
46     ENTRY:    REGION(1),
47               REGION-DESC,
48               REGION-TYPE;
49     CAPACITY: 17;
50
51     NAME:     OPTION,D(3/10,15);
52     ENTRY:    ORDER-NO(ORDER),
53               OPTION-DESC,
54               OPTION-PRICE,
55               OPTION-TYPE;
56     CAPACITY: 300;
57
58     NAME:     CUSTOMER,DETAIL(3/10,15);
59     ENTRY:    ORDER-NO(ORDER),
60               NAME,
61               ADDRESS,
62               CITY,
63               STATE,
64               COUNTRY,
65               ZIP-CODE,
66               ORDER-DATE(DATE),
67               SHIP-DATE(DATE),
68               REGION(LOCATION),
69               PRODUCT-NO(PRODUCT),
70               PRICE,
71               SALESPERSON;
72     CAPACITY: 100;
73
74          END.
```

Line 1: The name of the data base is given – SAD. When you use QUERY, you must give the data base name.

Lines 3, 4, 5, and 6: The passwords are given. The numbers (10, 15, 3) are used later in the schema. You use the words (SALESMAN, MANAGER, SECRTARY) when you first begin using QUERY (as explained in Chapter 2).

Lines 8 through 28: The name, size and type of each data item is given. 2X30 is a two item array of 30 characters each. X16 is 16 characters. I is an integer. L is a long precision number. If a data item is a number, then you can only enter a number for its value or an error will occur. If a data item is a string, specified by X, then you may enter up to the number of characters specified. (Entering values is described in Chapter 4.)

Lines 32, 33, 34: The automatic data set DATE is described. Line 32 gives the name (DATE), and the type (AUTOMATIC), the read/write passwords (3/10, 15) and the volume (SALES) on which the data set is located. The passwords (3/10, 15) mean that anyone who uses the password SECRTARY (3) can read and list the data in this data set, but cannot write new values, change values or delete values. Anyone who uses the password SALESMAN or MANAGER can read or write (add, delete, modify) the values in this data set. Line 33 gives the name of the data item (DATE) and the number of data items in detail data sets to which are pointed (2). Line 34 gives the maximum number of data entries that are possible in this data set.

Lines 36 through 49: The other master data sets are described.

Lines 51 through 56: The detail data set OPTION is described.

Line 52: Gives the name of the first data item (ORDER_NO) which is a key item pointed to from the master data set ORDER.

Lines 58 through 72: The detail data set CUSTOMER is described.

Line 74: This specifies the end of a schema.

Within the schema, comments are enclosed in << >> signs. These comments aid you in understanding the schema. They also provide additional information about data item values. Line 12 has a comment,

<<PATH FOR ORDER-DATE, SHIP-DATE>>

to tell that this data item is used as the link between ORDER-DATE data item and SHIP-DATE data item.

Lines 17 and 26 have the comment,

<<MUST BE YYMM>>

which says that the values entered for the date must be formatted as YYMM. This is not required by the schema, but because reports are written expecting this format, you should use it.

In the schema, some data item names contain a dash (e.g., ZIP-CODE). When you use this data item in QUERY, the dash must be changed to an underscore. Thus, ZIP-CODE would be written as ZIP_CODE.

CHAPTER 2

Enter the password:

You type your password and press ⇧ . For example, if your password is OPERATOR, you type the following:

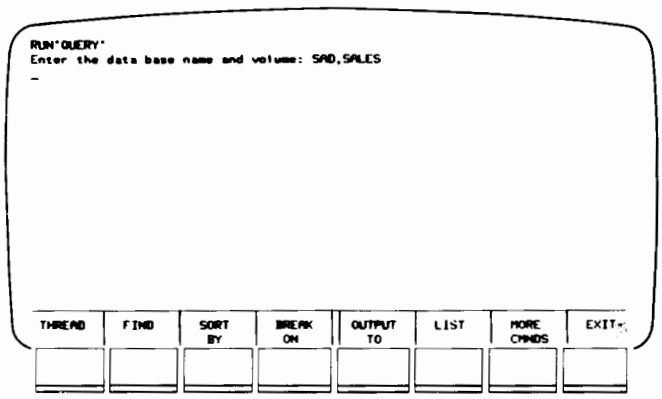
OPERATOR

After you press ⇧ , the password is cleared and you are now ready to use the data base.

The data base name and volume and the password must be given before you use any QUERY command except DO. If the first two commands in the DO file specify the name and password, you can just press ⇧ in response to the prompts. (The DO command is described on page 11.)

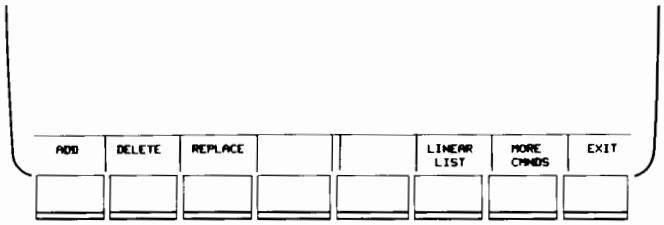
How to Use the Softkeys

Look at the display.

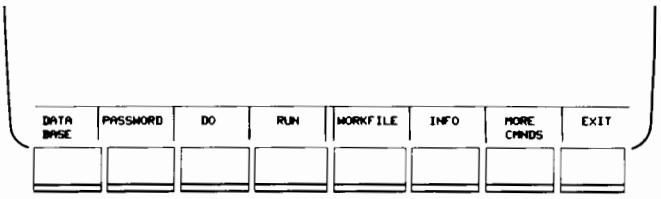


when pressed. Look at the display again. Just above the softkeys the key definitions are given.

The second softkey on the right has a definition of MORE CMNDS (more commands). When you press this key, the softkeys take on new definitions.



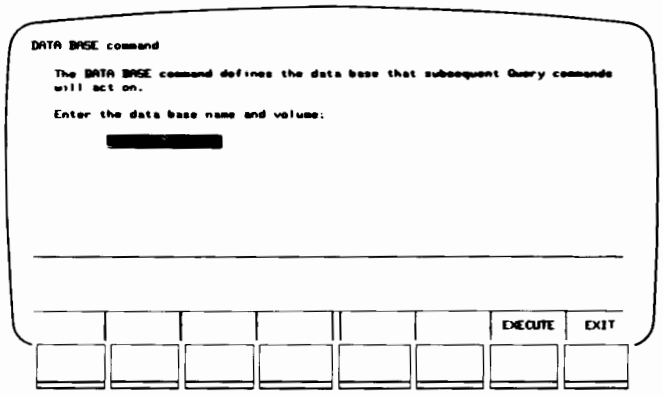
Now press MORE CMNDS again. Once more, the softkey definitions change:



Press MORE CMNDS again to return to the first display.

All the QUERY statements are shown on the three displays. If the statement you wish to execute is not shown on the current display, press MORE CMNDS until it is displayed. Then press the softkey under the statement name.

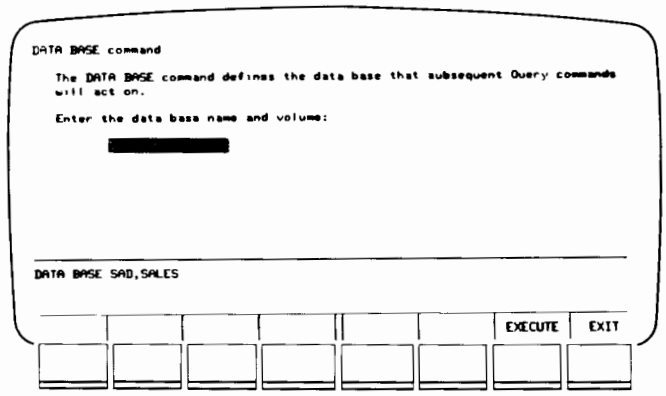
For example, press the softkey marked DATA BASE.



The command name and an explanation of the command is given on the display.

If, after reading the explanation, you decide not to use this command, press the EXIT softkey to return to the first command menu.

The cursor is located in the inverse video field. Type in a name (anything you want). Now press ⇧

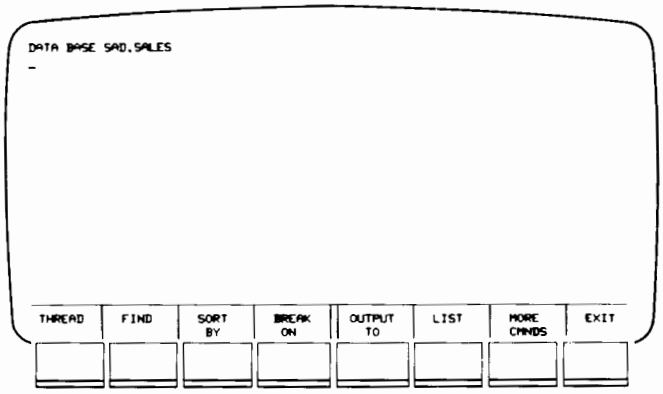


The command is written on the lower part of the display.

In many of the command displays, there is more than one field. You can use either the →| key or the ⇧ key to move the cursor from one field to the next. (You can use SHIFT →| to move back one field.) You can also use the line editing keys ← ↑ ↓ → to move the cursor. Only the ⇧ key, however, will cause the command to be displayed.

To change what you have entered, position the cursor to the incorrect field and retype the field. Then press ⇧ . The changed command is displayed.

When the command is printed exactly as you want it, press the EXECUTE softkey. The display changes back to the first command menu with the command to be executed at the top of the display. QUERY will then execute the command.



Or if an error is made, QUERY will point it out.

Changing Data Bases

Instead of using the softkeys, you can type in the command directly. For example, to execute the DATA BASE command enter:

DATA BASE name [volume spec]

The words in dot matrix must be entered exactly as shown. Anything in brackets [ ] is optional. So to enter the name SAD on volume FILES you enter:

DATA BASE SAD, FILES

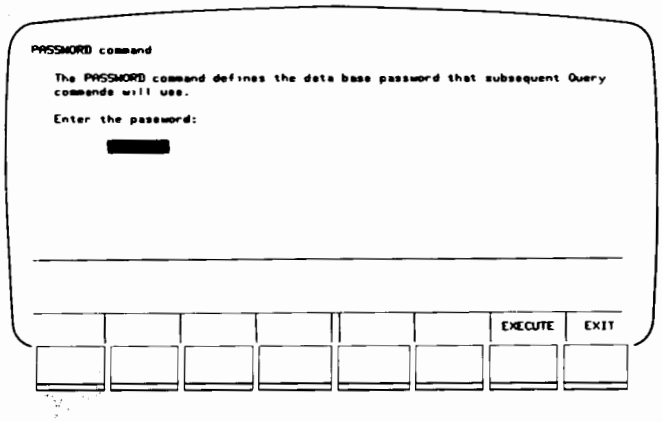
Volume specifiers are discussed in Appendix C.

Changing Passwords

To enter a new password, which is sometimes necessary when changing data bases, enter the PASSWORD command.

PASSWORD password

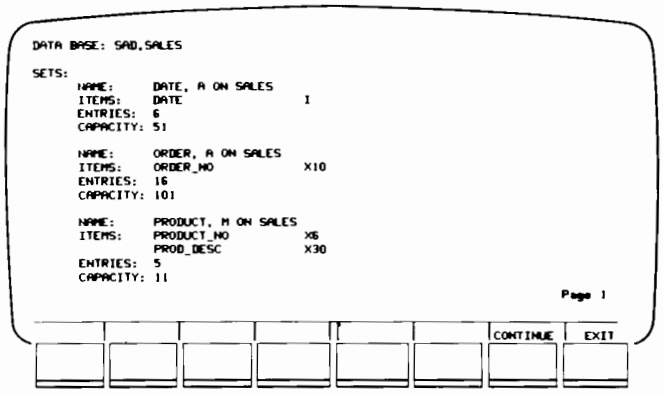
Or press the PASSWORD softkey to aid you in composing the command.



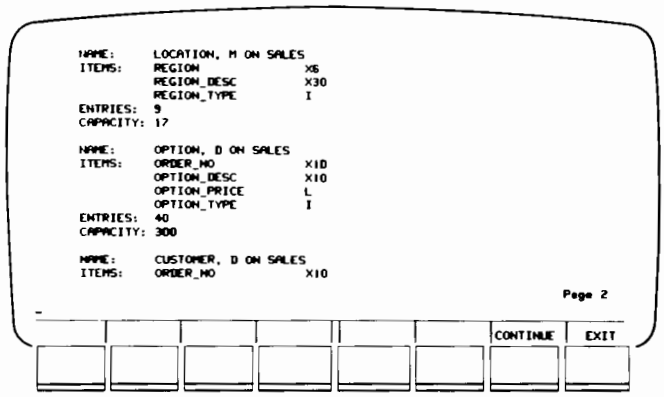
Data Base Information

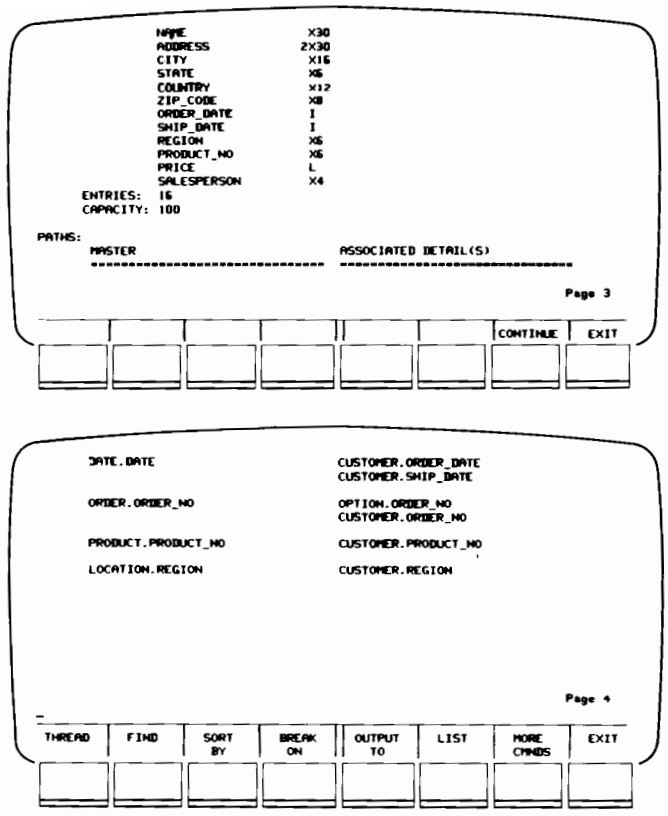
If you want information about the data base you are using, press the INFO softkey. The function of this key is to list a modified schema.

The listing for the data base SAD would appear as follows:



Note the softkey marked CONTINUE. Since the entire listing won't fit on one display page, QUERY pauses after each page. Press the CONTINUE key for the next page.





The first line of this listing gives you the name of the data base and the volume on which it is located. The next set of lines gives you the name and type of the data set and the volume on which it is located. The item names, the number of entries currently in the data set and the maximum capacity of the data set are listed. The third set of lines lists the data paths between data sets. In the data base SAD, six data paths exist.

You can compare this listing with the schema shown on page 5. Note that the INFO listing does not show the passwords. It does show the number of entries that have been made to the data set and shows the paths between master and detail data sets.

You do not have to use the INFO softkey to get this listing. You could type the INFO command the press the ⇧ key instead.

```
INFO
```

This is true for all the statements. You can either type the command yourself or use the softkeys.

Prewritten Procedures

Sometimes a sequence of commands is done repeatedly. This sequence of commands is called a **procedure** and can be put into a file and then executed with a single command. Once the procedure is in a file you can access it at any time. The process of writing the procedure and putting it into a file is discussed in the QUERY/250 Programming Manual.

To execute the procedure, use the DO command.

```
DO " file name [volume spec] "
```

QUERY looks at the file on the volume specified and expects to find a procedure. A procedure might look like the following (all the commands are explained later):

```
FIND OPTION FOR OPTION PRICE>"100"
SORT BY OPTION_DESC, ORDER_NO
OUTPUT TO PRINTER
TOTAL OPTION_PRICE
LIST
```

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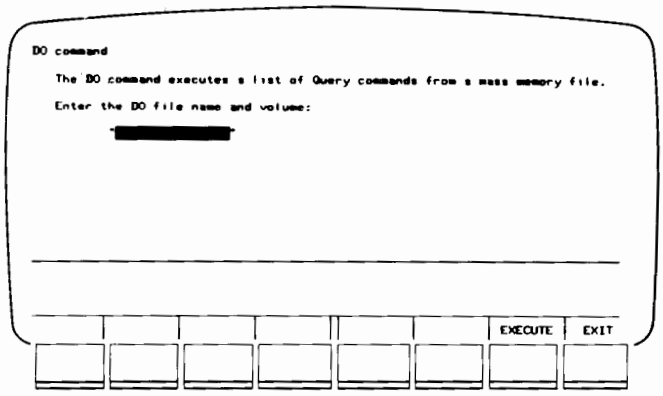
QUERY will use the commands to find certain options, sort them and then list them on the printer, giving a total of OPTION_PRICE. While QUERY is busy, you will not be able to type commands.

The cursor will re-appear when QUERY has finished the procedure, allowing you to enter the next command.

Instead of composing the DO command yourself you can press the DO softkey.



Type the file name and volume specifier of the procedure file and press ⇧ . Then press the EXECUTE softkey to execute the command.

Exit

When you have finished using QUERY, type EXIT and press ⇧ . The EXIT command logically terminates QUERY and closes the data base.

You can also press the EXIT softkey to terminate QUERY.

CHAPTER 3
Reporting

This chapter shows you how to list or report data in many forms and on different devices.

In order to report any data, you must tell QUERY what data items and data entries are to be listed, what order to list them in, and what device to list them on.

Finding Entries

There are three commands to use in finding entries. The first one, WORKFILE, specifies where the information is to be stored. The second one, THREAD, specifies how the data sets are connected, and the order in which they are searched. The third command, FIND, specifies which data items are to be found and puts them in the workfile.

WORKFILE

To specify a workfile you use the WORKFILE command.

WORKFILE ["file name [volume spec]"]

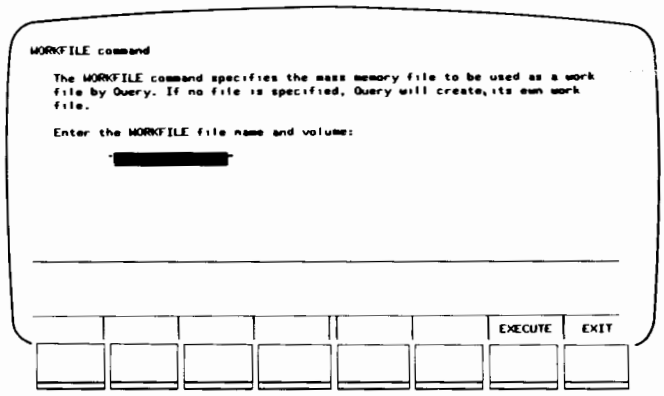
If you give this command without entering a specific file name, QUERY will create its own file. QUERY will also automatically create a file if this command is not given when the first FIND command is entered.

By entering a file name and volume specifier, QUERY will use that already-created file for storage. If space is limited on the disc and a workfile already exists, it is best to specify it so QUERY doesn't run out of room. (Refer to the QUERY/250 Programming Manual for the amount of room required.)

For example, if the workfile TEMP was located on the disc labeled FILES, you would enter the following:

WORKFILE "TEMP,FILES"

To help compose the command, you can press the WORKFILE softkey. The following will be displayed:



Finding Entries in One Data Set

Once you have specified the workfile (or decided to let QUERY create its own), you are ready to find entries. To find entries, you must know the names of the data sets and data items. If you don't know them, use the INFO command as described on page 10.

To find entries, you must specify which data items are to be found and what conditions they must satisfy.

FIND item list FOR search expression

For example, using the example data base, assume you wanted to find all the customers who ordered product number 92640. You type:

```
FIND NAME FOR CUSTOMER.
PRODUCT_NO="92640"
```

QUERY will find all the values for NAME that have a corresonding value of 92640 for the data item PRODUCT_NO in data set CUSTOMER. Then QUERY will put all the values in the workfile.

Item List

The item list parameter is a list of data items and data sets. QUERY finds a data entry that satisfies the search expression. Then it puts the values of all data items specified in the item list for that entry into the workfile. If a data set is specified, the entire data entry is put in the workfile.

There are two ways to specify a data item. If the data item's name is in only one data set, you enter the data item name. If the data item name is in two or more data sets, you precede the item name with the set name and a period.

data set name. data item name

For example,

```
FIND CUSTOMER.ORDER_NO FOR
CUSTOMER.PRODUCT_NO="92640"
```

will put the values of ORDER_NO and PRODUCT_NO (that qualify) into the workfile. And,

```
FIND CUSTOMER FOR CUSTOMER.
PRODUCT_NO="92640"
```

will put the entire data entry into the workfile. And,

```
FIND CUSTOMER.ORDER_NO, NAME
FOR CUSTOMER.PRODUCT_NO="92640"
```

will put the values for ORDER_NO, NAME and PRODUCT_NO into the workfile.

If you fail to specify the data set, QUERY will ask you from which data set you want a value. For example, if ORDER_NO was not preceded by CUSTOMER, QUERY will give the following message.

```
ORDER-NO is a member of these sets:
        1) ORDER
        2) OPTION
        3) CUSTOMER
Enter the number of the set you
wish to use:
```

You type the number of the set and press ⇧ .

If a data set and a data item have the same name, specify the data set name by adding a period to it:

set name.

QUERY will interpret the name alone as a data item name.

Search Expression

The search expression is a mathematical expression that is evaluated true or false. Data item names are used as variables. These data items cannot be arrays (such as the ADDRESS data item in the CUSTOMER data set).

Examples:

```
SALESPERSON="SAM"
NAME>"A" AND NAME<"B"
NAME>"A"ANDCUSTOMER.
                    PART_NO<"999"
```

The values SAM, A, B, and 999 must be enclosed in quotes.

QUERY looks at a data entry and inserts the value of the data items specified into the search expression. If the expression evaluates true, QUERY puts all the data items specified in the item list and in the search expression into the workfile. If the expression evaluates false, QUERY looks at the next entry. All entries are tested. A maximum of 60 data items may be contained in the item list and search expression combined.

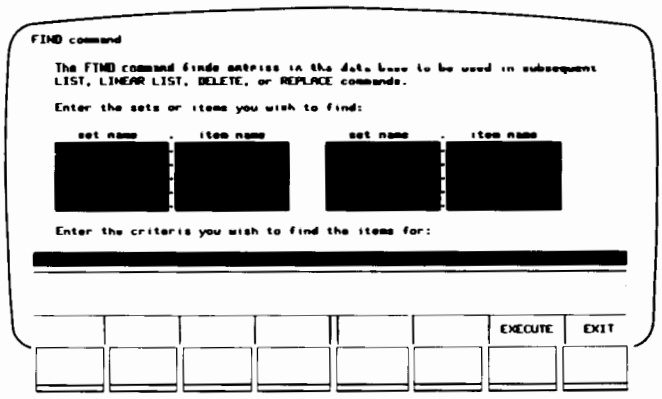
The search expression can be any expression using the operators: +,−,/,*,AND,OR,POS,>,<,=,#. These operators are explained in Appendix C.

If you want to find all the entries for the item list, use the word ALL as the search expression.

FIND item list FOR ALL

The FIND Softkey

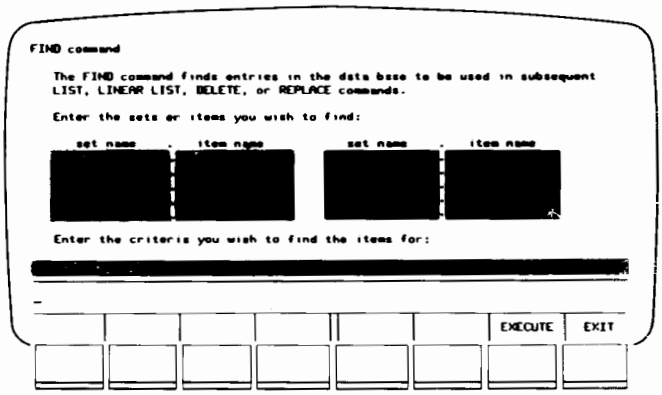
The FIND softkey changes the display as follows:



For example,

```
FIND OPTION.OPTION_DESC
FOR OPTION_PRICE>"100"
```

would appear as follows:



The command is shown above the softkey definitions. If it is not correct, use the editing key to move the cursor to the incorrect item in the inverse video boxes and retype the item. When the command is displayed correctly, press the EXECUTE softkey.

Finding Entries in Multiple Data Sets

In the previous paragraphs all data items specified were in the same data set. Before you can use multiple data sets, you must tell QUERY how and in what order the data sets are connected.

Threading Data Sets

Use the THREAD command to specify paths between data sets.

The data sets must be connected by a key item. For example, the ORDER data set is connected to the CUSTOMER data set with the key item ORDER_NO.

```
THREAD ORDER,CUSTOMER
```

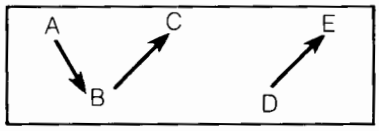
The data set OPTION is also connected to the ORDER data set.

```
THREAD OPTION,ORDER;ORDER,CUSTOMER
```

If you don't know how the data sets are connected, use the INFO command. The data paths are listed.

Note that you can only thread data sets from master to detail and detail to master.

You can extend the thread through ten data sets as long as there are no breaks. For example, assume you had sets A, B, C, D, and E, and A is connected to B, B is connected to C, and D is connected to E. You can thread A, B and C together, but D and E cannot be on the thread. If you wanted to find items in D and E, you could give a second THREAD command which would cancel the first.



Threading Data Sets

The formal syntax is:

THREAD set_1 ; set_2[; set_2 ; set_3[; set_3 ; set_4. . .]]

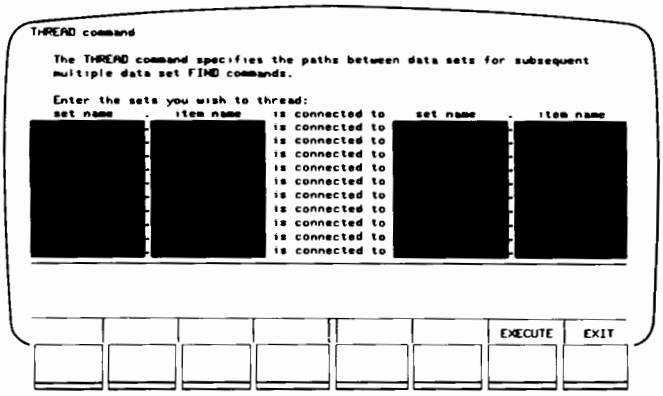
If one master data set has paths to more than one item in a detail data set, the data item to be threaded must be specified.

THREAD set_1 , $item_1$; set_2 , $item_2$; . . .

If you don't give the item name, QUERY will give an error message.

The THREAD command stays in effect until the next THREAD command is given or until a single set FIND command is executed.

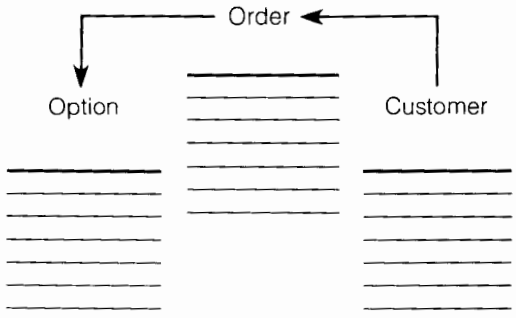
When you press the THREAD softkey, the following is displayed:



FIND

After the THREAD command is given, you can find entries in more than one data set. For example, assume you want to know what options were ordered with a specific product. You type:

THREAD CUSTOMER,ORDER;ORDER,OPTION
FIND OPTION FOR CUSTOMER.
PRODUCT_NO="100"



Example Thread

QUERY looks at the first data entry in the data set CUSTOMER and tests the search expression. If the expression is true, QUERY chains to the OPTION data set through the ORDER data set and stores all the values in the workfile. If the expression is false, or after the chain operation, QUERY tests the next entry in CUSTOMER. If the chain length is zero (there are no entries in the OPTION data set), then no values are put in the workfile even if the search expression (CUSTOMER.PRODUCT_NO = "100") is satisfied.

In any multiple data set find, QUERY searches the first data set sequentially and all other data sets on the thread via the data paths and data chains.

Listing the Workfile

Once QUERY has found entries and put them in the workfile, you can list them. Again there are three commands. The OUTPUT TO command specifies the device (printer, display) to output to. The LIST and LINEAR LIST commands cause specific data items to be listed in either a columnar or linear format.

OUTPUT TO

To specify the device on which reports and the output from the INFO command are written, you use the OUTPUT TO command.

OUTPUT TO device [, "width "[, "length "]]

The device can be PRINTER, DISPLAY or the address of the output device (device addresses are described in Appendix C). A device address must be enclosed in quotes. This device will be used until the next OUTPUT TO command is given.

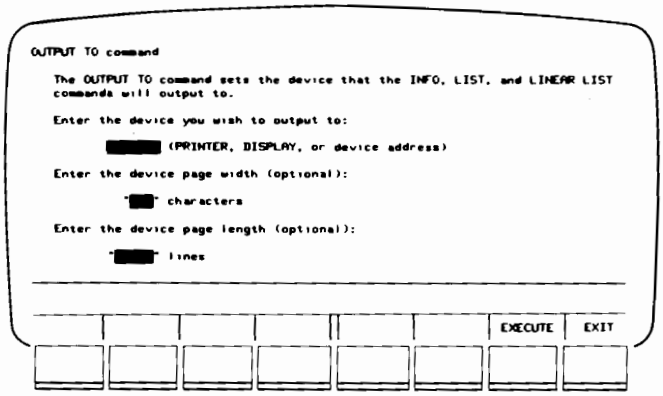
The width specifies the number of characters per line, between 20 and 264. If you don't specify it, QUERY assumes a width of 80 characters for the display, 130 characters for the printer and 80 characters for a device address.

The length is used to specify a page length in lines. QUERY assumes 20 lines for the display, 60 lines for the printer and 60 lines for a device address if this parameter is not used.

For example, assume you want to print on the printer and you are using narrow paper that holds 80 characters per line. You would type the following:

OUTPUT TO PRINTER,"80"

Alternately, you can use the OUTPUT TO softkey to help you compose the command.



The LIST Command

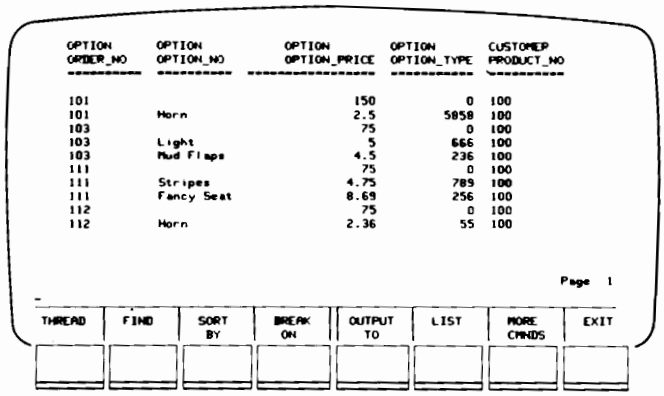
The LIST command is used to print a page heading and to print specific data items in a columnar format.

LIST ["heading"] [;item list]

The heading, specified in quotes, is printed at the top of each page in the report. The heading can be a maximum of 80 characters.

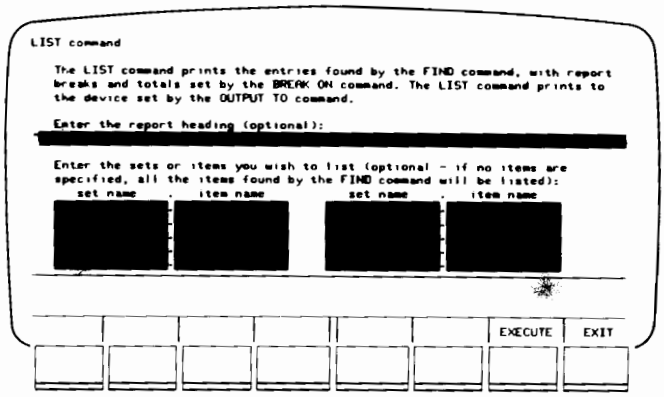
The values for the data items or data sets specified in the item list are listed in columns. The head of the column lists the data set name and data item name.

For example, in the previous FIND command, values for the OPTION data set, with corresponding PRODUCT_NO value of 100, were placed in the workfile. Now you can list these values:



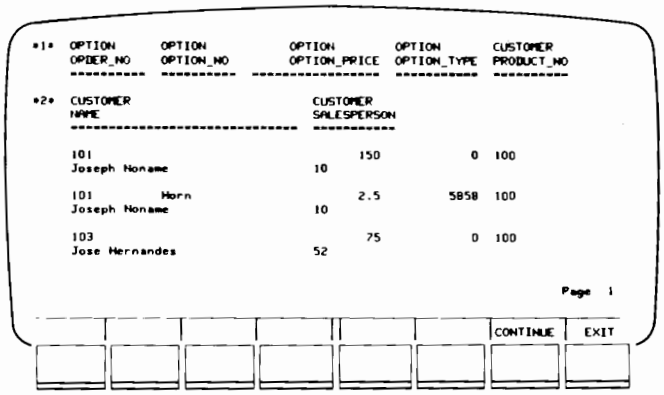
The order in which the data items are listed is the same order they are listed in the item list parameter. Or, if a data set is specified (or all items are to be listed), the order each data item was listed in the FIND command or in the schema determines the order they are listed with the LIST command.

You can use the LIST softkey to help you compose the command.



The LIST command uses a subset of the data items in the workfile. LIST with no item list specified lists the entire workfile.

If there are more columns than will fit on the specified (or default) width, QUERY will wrap the columns around. For example:



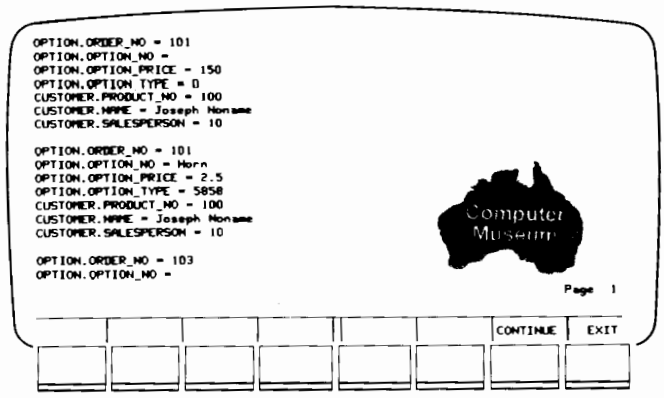
The second list command, LINEAR LIST, can be used to avoid wrap around.

LINEAR LIST

The parameters for the LINEAR LIST command are the same as for the LIST command.

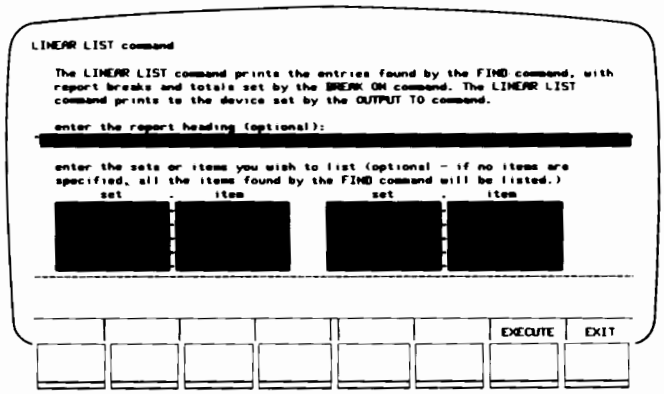
LINEAR LIST ["heading"] [item list]

The LINEAR LIST command lists the data items and data sets specified in the item list in a linear format (one data item per line). For example:



The order in which the data items are listed is the same order as in the item list parameter. Or, if a data set is specified (or all items are to be listed), the order each data item was listed in the FIND command or in the schema determines the order they are listed with the LIST command.

You can use the LINEAR LIST softkey to help you compose the command:



Formatting the Listing

Another three commands can be used to format the listing. The SORT BY, TOTAL and BREAK ON commands cause the listing to be in a sorted order, totals to be accumulated and breaks to occur.

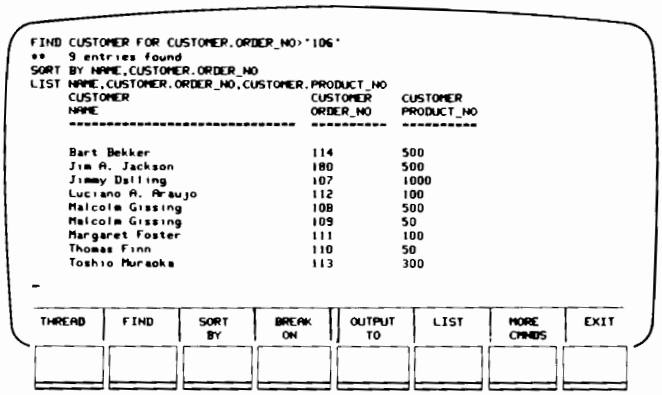
Sorting a Listing

To list the data items in a specific order, you sort the workfile.

SORT BY sort list

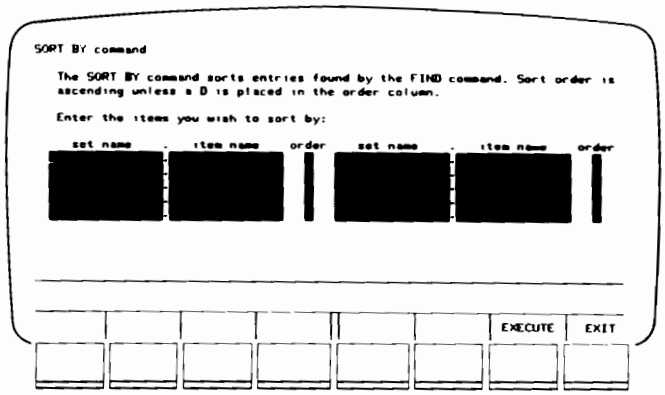
The sort list is a list of the data items to be sorted. They are sorted in ascending order unless the name of the item is followed by a D (descending). A maximum of 10 items may be sorted. An array cannot be sorted.

For example, assume the CUSTOMER data set is to be listed in ascending order by NAME and then by ORDER_NO if two NAMEs have the same value:



If you had entered SORT BY NAME,CUSTOMER. ORDER_NO D, then the order 108 and 109 would have been reversed in the listing.

You can use the SORT BY softkey to help you compose the command.



You specify descending order by placing a D in the order column.

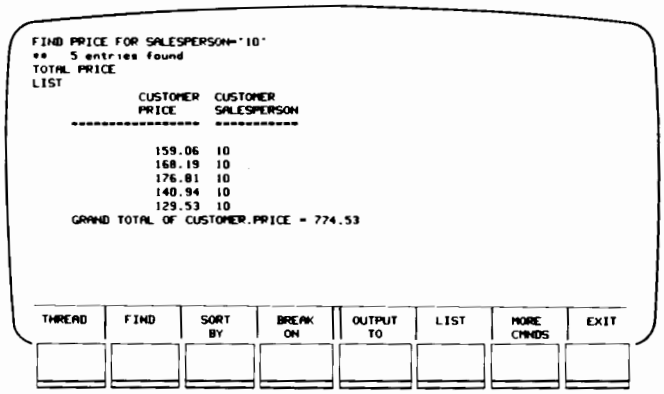
TOTAL

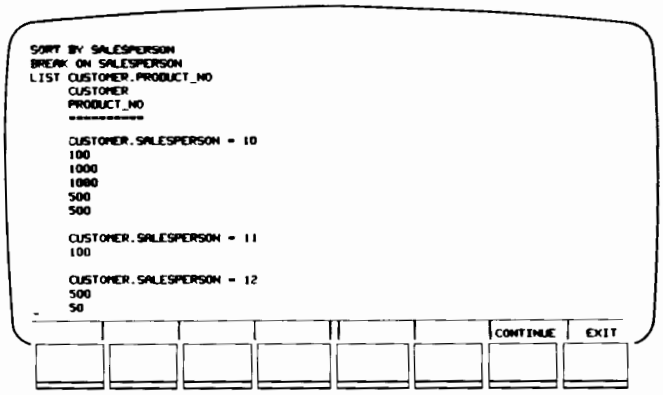
To compute and list the total of a numeric data item, use the TOTAL command.

TOTAL item list

The item list is a list of the data items you want to be totaled. The items must be numeric. A maximum of ten items may be totaled, and no arrays may be totaled.

For example, assume you want to know the total dollar amount one salesperson sold in a certain month:





While the SORT BY remains in effect until the next SORT BY statement or FIND statement is given, the TOTAL statement is in effect only until the next LIST statement. Thus, you must re-enter the TOTAL statement for every list.

BREAK ON

To break up a list by a change in the value of a single data item, you use the BREAK ON command.

BREAK ON item

The data item must be in the workfile.

For example, assume you want a list of the products each salesperson has sold and you want to list the salespeople in groups.

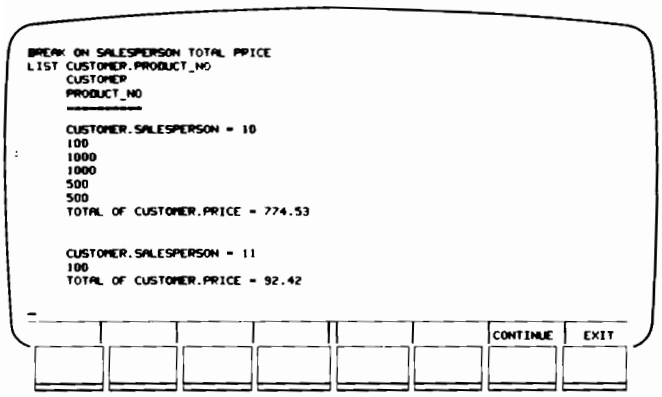
Even though SALESPERSON was not specified in the LIST command, the breaks still occur. Also note that a sort was done prior to the LIST. If a sort had not been done, the values of SALESPERSON would not have been in order and the breaks would not be what you wanted.

TOTAL with BREAK

Use of the TOTAL command will produce a grand total. You can also use TOTAL to produce subtotals.

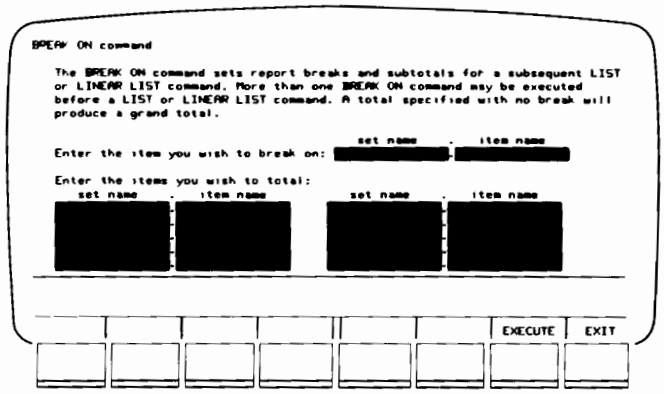
BREAK ON item TOTAL item list

For example, to list the products each salesperson has sold and the total amount used, type the following:



As with the BREAK ON item, the data items being totaled do not have to be listed.

You can use the BREAK ON softkey to help compose the BREAK ON ... TOTAL command:



Running a Report Program

Using SORT BY and BREAK ON allow some formatting of the lists. If you want editing capabilities and more complex formatting, however, the REPORT WRITER/250 software can be used.

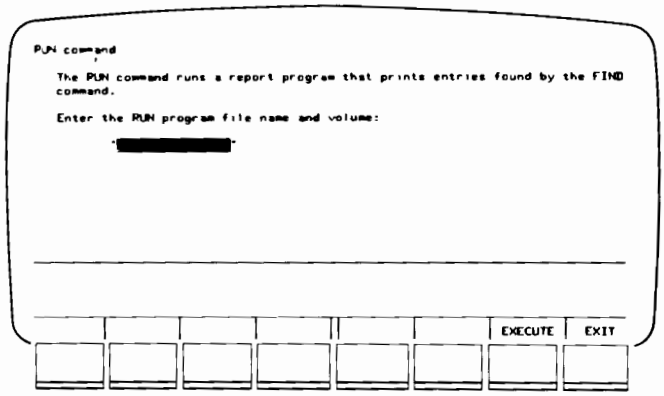
A subprogram can be written using REPORT WRITER statements and accessing the workfile. You run this subprogram from QUERY with the RUN command.

RUN "subprogram name[volume]"

How to write this subprogram is described in the QUERY/250 Programming Manual.

For example, assume you want to run the subprogram REPORT which is located on the second flexible disc. You type: RUN"REPORT:F2,6,1"

You can also use the RUN softkey.



CHAPTER 4
Modifying the Data Base

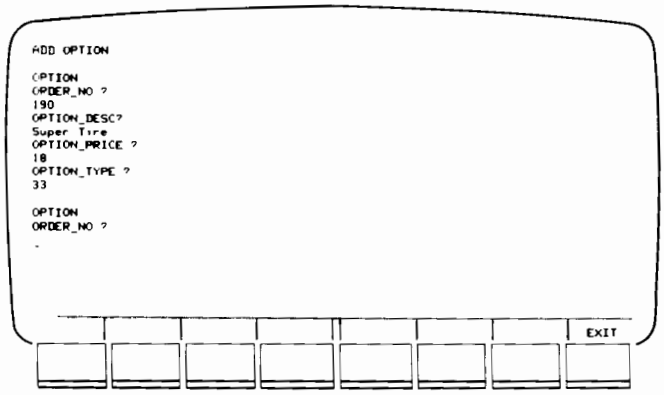
You can add, delete and replace the values of data items with QUERY.

Adding Entries

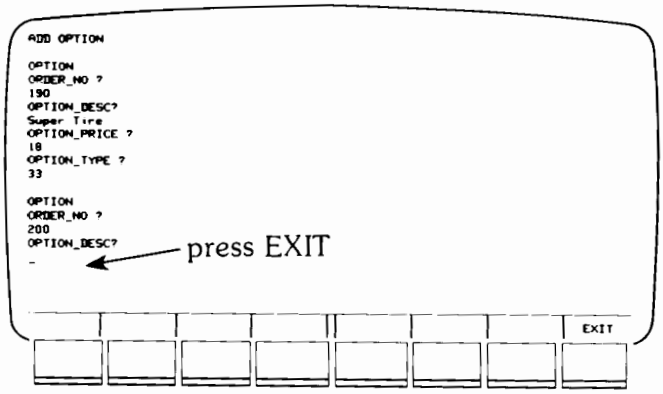
The ADD command is used to add entries to a data set.

ADD item list

If you specify a data set in the item list, then QUERY will ask you for each data item in the data set. You add entries to one data set at a time. For example:

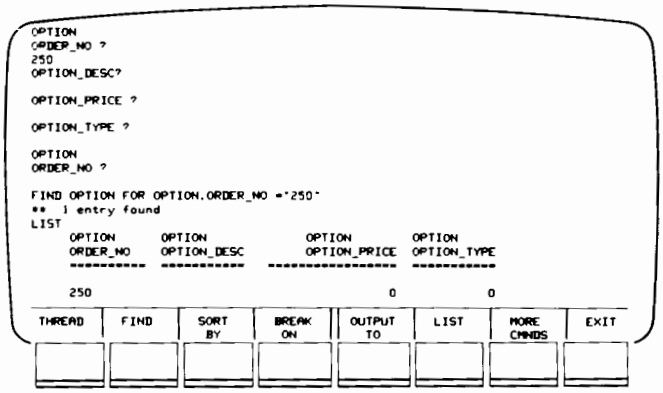


QUERY will continue to prompt for new entries until you press the EXIT softkey. If you press EXIT before you have entered a value for every data in the list, then QUERY will not add any of the data item values to the data base. For example:



The values 190...33 are added, but the value 200 is not added.

You can add specific data items in a data entry. The items not entered are given a null value (0 for numeric items and blank for alphabetic items). For example:



Later you can use the REPLACE command to give OPTION_DESC, OPTION_PRICE and OPTION_TYPE values. Note, however, that the REPLACE command does not operate on key items. Therefore, you should not leave the key item null.

You can add entries to detail data sets and manual master data sets but entries are added to an automatic master data set for you. Further, if you are adding a new key item to a detail data set and that item is pointed to by a manual master, then you must first add the new key item value to the manual master.

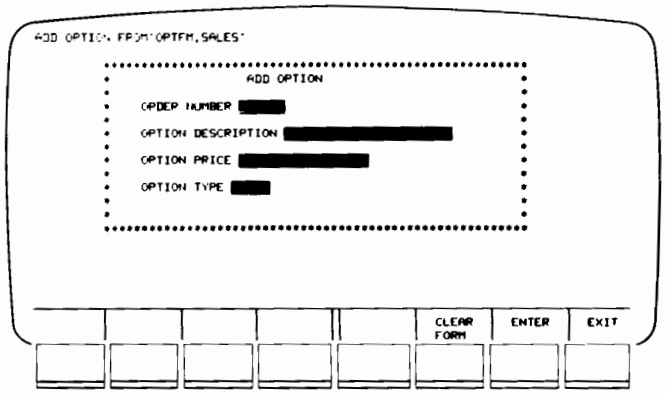
If you make an error in entering a value, you can either press EXIT to terminate the command (if the error was not made on the last data item in the list), or use the REPLACE command to change the value.

Forms

A form for formatted input can be written using the FORMS/250 software. Then the ADD command can display this form. Creating forms is described in the QUERY/250 Programming Manual.

ADD item list FROM "form name[volume spec]"

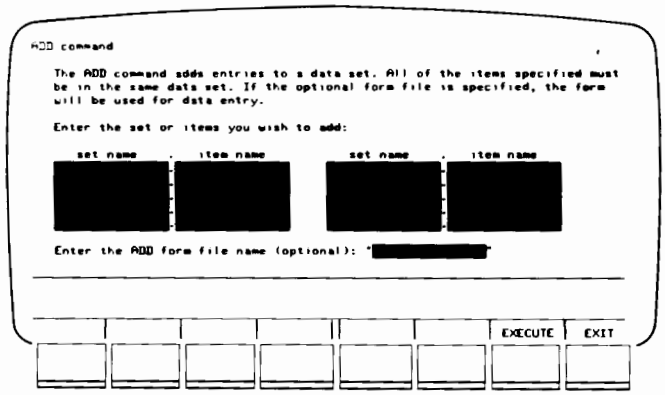
When a form name is used, the form is displayed and the softkeys take a new definition. For example:



You fill in the form moving the cursor with the ⇧ or ⇥ key. When you tab through the last field or press the ENTER softkey, QUERY asks if the information is correct. If it is, enter Y (yes). If not, enter N (no) and re-enter any incorrect value. Once the form is correct, QUERY reads the form and adds the data item values to the data base. QUERY then erases the entries so you have a blank form. You fill out the form again. If you enter wrong values and wish to start over, press the CLEAR FORM softkey. When you have made all the entries, press the EXIT softkey.

The ADD Softkey

When you press the ADD softkey, the following is displayed:



You enter a data set name (in the columns "set name") or data item names (in the columns "item name"). If a data item name is in more than one data set, you must specify the data set name. You can only add values to one data set at a time.

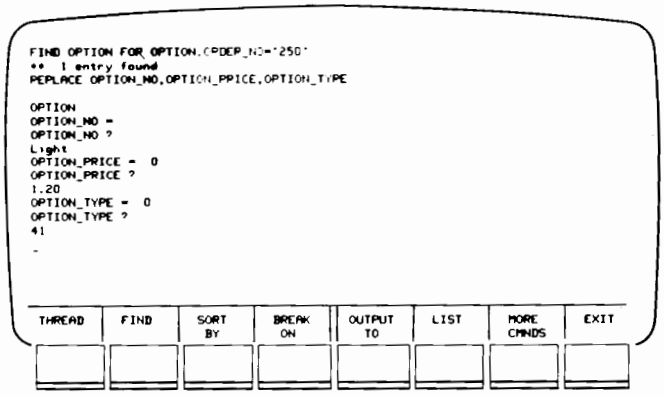
Replacing Entries

The REPLACE command is used to replace values in the data items which were found by the FIND command.

REPLACE item list

The item list is a list of data items, the values of which are to be changed. All the data items must be in the same data set. You cannot specify a data set name in the item list if any data item in the data set is a key item.

For example, when ORDER_NO 250 was added to OPTION, the values for OPTION_DESC, OPTION_PRICE and OPTION_TYPE were not entered. To change the values from null, you first find the entry and then use the REPLACE command.



In this example, only one entry was found. QUERY prompts you for the items specified in the REPLACE command. If more than one entry is in the workfile, then you are prompted for each item of each entry until either you press the EXIT softkey or all items have been modified. If you press ⇧ without typing a value, the current data item value is not changed.

After you make changes you can list the workfile again to make sure you entered the correct values.

If there is more than one data entry in the workfile, each entry is listed in the order it was placed in the workfile. Now if you want to change values of one data item based on the value of a second data item, you must know the order the entries are

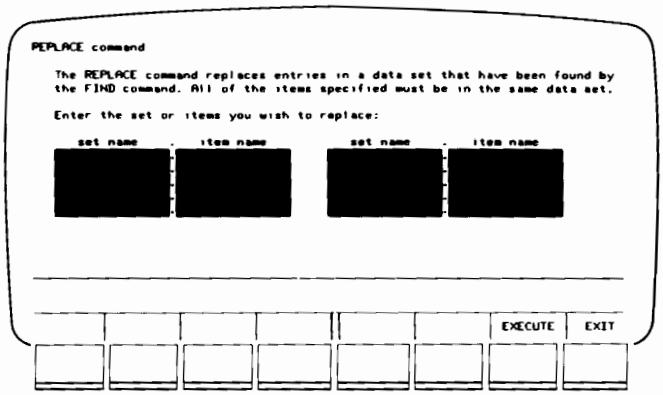
listed. There are two ways to do this. One, list the workfile to a printer and, two specify both data items in the item list and skip over the data item the value of which you don't want to change.

Key Items

The values of key items (such as ORDER_NO) cannot be changed with the REPLACE command. Therefore, the key items of master data sets cannot be changed. The non-key items of a manual master can be modified with the REPLACE command.

The REPLACE Softkey

The REPLACE softkey causes the following to be displayed.



You enter the data set name or data item names in the boxes. If a data item name is in more than one data set, you must specify the data set name. The data items listed must be in the workfile.

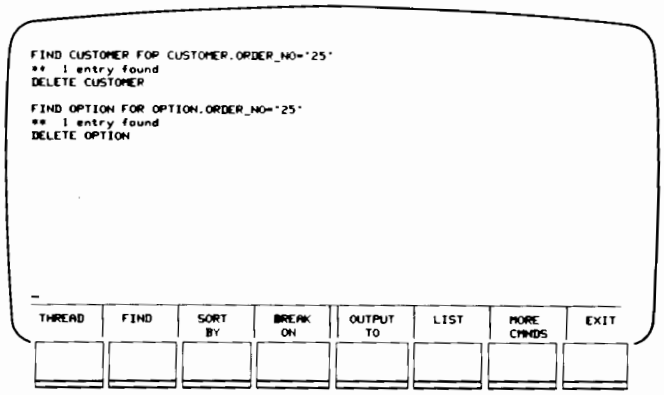
Deleting Entries

The DELETE command is used to delete entries found by the FIND command.

DELETE item list

The item list is a list of data items in one data set, the values of which are changed to null characters. If all the data items in the data set are in the item list, the data entry is deleted rather than the values being changed to null.

For example, assume the ORDER_NO 25 was cancelled. To delete the entry from the data base, you do the following:



Deleting Key Items

You cannot delete just the key item in a detail data set; you must delete the entire data entry.

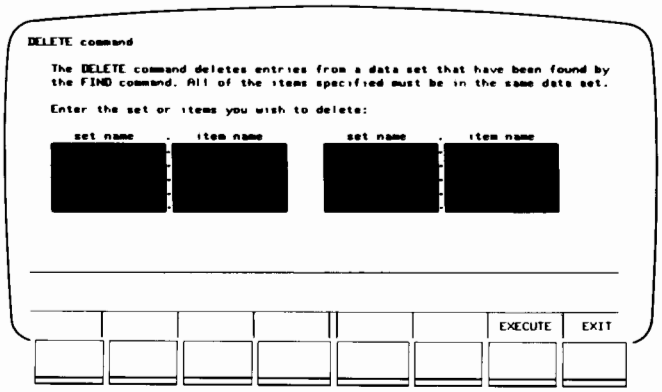
The entries in a manual master data set are deleted in the same manner as deleting an entry from a detail data set. An error will occur if there are entries in the associated detail data set with the same key item values.

Entries are deleted from an automatic master data set for you.

If one of the entries in a list cannot be deleted, QUERY will give an error message then go to the next entry and continue deleting. If the FIND command that was executed previous to the DELETE command is executed again and then the LIST command is executed, those entries which were not deleted can be seen.

The DELETE Softkey

The DELETE softkey causes the following to be displayed:



You enter the data set and/or data items to be deleted. All items must be contained in the workfile.

APPENDIX A

Syntax

RUN "QUERY[volume spec]"
Begins QUERY operation.

ADD item list[FROM "form name"]
Adds values to the data items or data set listed. A form can be used to input the values.

[BREAK ON item] [TOTAL item list]
Sets report breaks and their associated totals for the LIST or LINEAR LIST commands. TOTAL alone causes a grand total to be printed. A maximum of ten items can be totaled.

DATA BASE data base [volume spec]
Causes future commands to operate on the specified data base.

DELETE item list
Deletes data item values or entries from the data set. The data items must have been found by the previous FIND command.

DO "file name[volume]"
Transfers control to a file containing QUERY commands. At the end of the file, control transfers back to the operator.

EXIT
Terminates QUERY.

FIND item list FOR search expression
Finds entries which satisfy the search expression and places the data items listed in the item list or the entire data entry (if the set name is in the item list) into the workfile.

INFO
Prints information about the data base on the current output device.

LINEAR LIST ["string"][; item list]
Lists data items from the workfile in a linear format (one item per line) on the current output device using all BREAKS and TOTALS specified.

LIST ["string"] [, item list]
Lists data items from the workfile in columnar format (one data entry per line) on the current output device using all BREAKS and TOTALS specified.

OUTPUT TO device [, "width" [, "length"]]
Changes the output device for future LIST, LINEAR LIST and INFO commands.

PASSWORD password
Defines the password to be used for subsequent commands.

REPLACE item list
Replaces values for the data items specified which are in the workfile.

RUN " report name[volume spec] "
Causes a report subprogram to be run.

SORT BY item list
Sorts the entries in the workfile by the data items listed. Data items are stored in ascending order unless a D follows the data item name.

THREAD set 1, set 2 [, set 2, set 3...]
Defines the order in which data sets are accessed during the FIND command.

WORKFILE "file name[volume spec] "
Specifies the workfile to be used for subsequent commands.

APPENDIX B

Error Messages

If an error is made in entering a command, QUERY points to the error with a ^ sign and outputs a message.

For example:

```
OUTPUT PRINTER
       ^

EXPECTED 'TO'
```

A QUERY FILE IS MISSING FROM THE DISC. One of the programs or data files that QUERY uses is not on the QUERY disc.

ABNORMAL QUERY TERMINATION. You have caused QUERY to abort operation. This may have caused the data base to be destroyed.

ARITHMETIC OPERATOR IN STRING EXPRESSION. In the FIND search expression a string type data item is being evaluated to a numeric expression (e.g., NAME="1"+"1") or a string is being used in numeric expression (e.g., "ABC"+"3"=PRICE).

ATTEMPTED DIVISION BY ZERO. The divisor in an equation is zero. Check all the values for the data items used in the search expression.

ARRAY ITEM NOT ALLOWED HERE. The data item in the FIND search expression and sort list and in the item list of a BREAK ON or TOTAL command must be a simple item. The INFO command will list all the data items and their types.

AUTOMATIC MASTER IS FULL. You cannot add any more entries which have a key item value not in the automatic master data set. The schema must be changed and the entire data base reloaded to correct this.

CANNOT MODIFY KEY ITEM. A key item value cannot be changed with the REPLACE command. You must delete the entire entry and then add it with the change.

CLOSING PARENTHESIS MISSING. You have omitted a closing parenthesis.

CLOSING QUOTE MISSING. You have omitted a closing quotation mark.

DATA BASE IN USE. Some one or some program is using the data base you specified. QUERY must have exclusive use of the data base.

DATA BASE NOT CREATED. The data base has not been prepared for use. The DBCREATE utility must be run (refer to the IMAGE/250 Programming Manual).

DATA BASE NOT FOUND OR IN USE. QUERY cannot open the data base, either because it could not find it on the disc or because it is open to another user. Check the disc directory to see if the data base is on the disc. Also check that there is no other user.

DATA BASE NOT SOUND. The data base is not stored correctly. Do not attempt further use of the data base. The data base needs to be unloaded then re-loaded (refer to the IMAGE/250 Programming Manual).

DATA BASE ROOT FILE NOT FOUND. QUERY cannot find the root (main) file of the data base. Check the disc file directory with a CATalog command. If this error occurs during an EXIT, the disc with the root file must be returned to the disc drive and the EXIT performed again. Otherwise, the data base will be corrupt and you will not be able to use it again.

DATA SET IS FULL. You cannot add any more entries to the data set. The schema must be changed to correct this.

DISC NOT READY. The drive door is open or the disc is not prepared for use.

'DO' COMMAND NOT ALLOWED IN A 'DO' FILE. The DO file has a DO command in it. The DO command cannot be stacked.

DUPLICATE KEY ITEM IN MANUAL MASTER. You are attempting to add a key item value which already exists in the manual master data set.

DUPLICATE WORK FILE NAME ON DISC. QUERY is trying to create a workfile but the name of the workfile is already on the disc. QUERY uses the name QRwf1x, where x is the user number.

EXCEEDS ITEM LIMIT OF 10. Only 10 items can be totaled. Enter the command again limiting the number of items.

EXCEEDS ITEM LIMIT OF 60. The total number of data items in the FIND item list and search expression cannot exceed 60.

EXPECTED A COMMA. Check the syntax of the command and then re-enter it correctly.

EXPECTED A DETAIL SET. The THREAD command links detail sets to master sets. Two master sets cannot be directly linked together.

EXPECTED A LOGIC OPERATOR. A logic operator (AND,OR) must be used between expressions in the FIND search expression.

EXPECTED A MASTER SET. The THREAD command links detail sets to master sets. Two detail sets cannot be directly linked together.

EXPECTED A RELATIONAL OPERATOR. A relational operator (>,<,=,#) is required in each expression of the FIND search expression.

EXPECTED A SET OR ITEM NAME. The value entered for the name of the set or data item cannot be a set or item name.

EXPECTED 'BASE'. The word BASE was omitted from the DATA BASE command.

EXPECTED 'BY'. The word BY was omitted from the SORT BY command.

EXPECTED END OF LINE. The end of the command was read, but more characters followed. Check the syntax of the command.

EXPECTED 'FOR'. The word FOR was omitted from the FIND command.

EXPECTED 'LIST'. The word LIST was omitted from the LINEAR LIST command.

EXPECTED 'ON'. The word ON was omitted from the BREAK ON command.

EXPECTED 'TO'. The word TO was omitted from the OUTPUT TO command.

EXPECTED 'TOTAL'. Something other than the word TOTAL follows the break item in the BREAK ON command.

EXPRESSION MUST CONTAIN AN ITEM OR 'POS'. The search expression in the FIND command must contain a data item or a POS function.

FATAL COMMAND ERROR xxx. An error was found during the execution of the command. The number -xxx- following the message is the error code. Refer to the System Operators Guide for an explanation of the error code.

FILE NOT FOUND, WRONG TYPE, OR BUSY. The DO file, workfile, RUN program file or FORM file cannot be found or the type is wrong, or some one else is using it. Check the disc file directory with the CATalog command for file names and file types.

FIND COMMAND TOO LONG. There are too many characters in the command.

INCOMPATIBLE DATA BASE VERSION. The data base was created on another version of the HP 250 and cannot be used on this version.

INPUT EXCEEDS 160 CHARACTERS. A maximum of 160 characters can be in a command.

INSUFFICIENT NUMBER OF FIELDS IN FORM. There are not enough fields in the form to enter values for all the data items.

INTERMEDIATE RESULT OVERFLOW. While the search expression was being evaluated, an overflow occurred. The expression will have to be modified and the FIND command entered again.

INVALID CHARACTER. You entered a character which QUERY cannot use (e.g., lowercase or line drawing characters). Re-enter the command using only the standard character set (in upper-case).

INVALID COMMAND. You entered a command unknown to QUERY. Check that the command is spelled correctly.

INVALID DATA BASE NAME. The name you entered cannot be a data base name. Check that you have entered it correctly.

INVALID DATA IN 'DO' FILE. The entry in the file is not a valid QUERY command. This file may not be the DO file. Check the contents of the file.

INVALID DATE. The date must be entered in the format MM/DD/YY for the U.S. or DD/MM/YY for the U.K. The date may be from Jan 1, 1978 to Dec 31, 1999.

INVALID DEVICE SPECIFICATION. The device address in the OUTPUT TO command has been specified incorrectly, or is not PRINTER or DISPLAY.

INVALID EXPRESSION. The expression in the FIND search expression cannot be used by QUERY. Check that only the operations described on page 15 are used.

INVALID FILE NAME. The name you specified for a file cannot be a disc file name.

INVALID FILE PROTECT KEY. The file you specified is protected and you did not enter the correct protect code.

INVALID INTEGER PRECISION NUMBER. The data item is integer precision and the value you entered for the data item is not an integer precision number. Integer precision is described in Appendix C.

INVALID LENGTH SPECIFICATION. The page length specified in the OUTPUT TO command is not valid. Check that it is numeric and between 1 and 30000.

INVALID LONG PRECISION NUMBER. The data item is long precision and the value you entered for the data item is not a long precision number. Long precision is described in Appendix C.

INVALID PASSWORD. The password you specified is not recognized by QUERY.

INVALID REPORT SUBPROGRAM. The subprogram has a name other then REPORT, the parameters are incorrect, the subprogram is binary, or there is no subprogram in the file specified. Refer to the QUERY Programming Manual for a description of the report subprogram.

INVALID SHORT PRECISION NUMBER. The data item is short precision and the value entered for the data item is not a short precision number.

INVALID WIDTH SPECIFICATION. The page width specified in the OUTPUT TO command cannot be used. Check that the value is an integer and between 20 and 264.

ITEM NOT IN SPECIFIED SET. The data item specified is not in the specified data set.

KEY ITEM POINTS TO DETAIL ENTRY. You are attempting to delete an entry from a manual master which still points to an entry in a detail set.

LIST TITLE EXCEEDS 80 CHARACTERS. The optional heading cannot be more than 80 characters in length.

MORE THAN ONE PATH BETWEEN THESE SETS. You must specify the key data items to show which path to use.

MORE THAN ONE SET NOT ALLOWED HERE. You can only add, delete or replace items in one data set at a time.

NAME EXCEEDS 15 CHARACTERS. The data set or data item name exceeds 15 characters. Check the schema for the name and re-enter it correctly.

NO ENTRIES HAVE BEEN FOUND. There are no data entries in the workfile.

NO MATCHING KEY ITEM IN MANUAL MASTER. You cannot add a new key item value to a detail data set unless the value already exists in the manual master set which points to it.

NO WRITE ACCESS WITH CURRENT PASSWORD. You cannot add, replace or delete entries from this data set with your password.

NOT A VALID PATH. The only paths are those connecting a detail set and a master set together. The key item must be in both sets.

NOT ENOUGH DISC SPACE FOR WORKFILE. QUERY cannot create a workfile because of insufficient room on the QUERY disc.

NUMERIC ITEM OR CONSTANT REQUIRED. A numeric data item is being tested for a string value, or you are adding a string value to a numeric data item.

NUMERIC ITEM REQUIRED. Numeric data items only may be totaled.

OUTPUT DEVICE NOT AVAILABLE. The device specified is not currently ready for output.

POSSIBLE VOLUME LABEL CONFLICT. The disc was replaced after the last disc operation. Either replace the last used disc, or re-enter the command. This is only a warning.

QUERY DISC DIRECTORY OVERFLOW. The file directory is full. Include a different volume specifier with the WORKFILE command.

QUERY DISC IS WRITE PROTECTED. You cannot write data to the QUERY disc. This includes creating files on the disc.

REPORT BREAK PREVIOUSLY SET ON THIS ITEM. The data item in the current BREAK ON command was used in a previous BREAK ON command.

SET NAME ONLY NOT ALLOWED HERE. A set name cannot be used alone in the FIND search expression, the BREAK ON list, TOTAL list, or SORT BY list.

SET OR ITEM NOT FOUND. QUERY cannot find the data set or data item name in this data base.

SET OR ITEM NOT IN PREVIOUS FIND. The set or item specified in the command is not in the workfile.

STRING ITEM OR STRING REQUIRED. A numeric data item or constant is being used where a string is required.

STRING TOO LONG. The string entered is too long for the data item.

THIS SET NOT IN THE SPECIFIED THREAD. One or more of the sets in the FIND command were not in the previous THREAD command.

VOLUME NOT FOUND OR WRITE PROTECTED. The specified data set is on a disc which is not in a disc drive.

WORK FILE IS TOO SMALL. The workfile is not large enough to store all the data entries.

WORK RECORD EXCEEDS 256 BYTES. A maximum of 10 data items may be sorted. Further, the total length of the data items plus 2 bytes times the length of the thread must be less than or equal to 256 bytes. How to calculate the length of data items (variables) is described in Chapter 2, Memory Usage, of the BASIC Programming Manual.

WRITE TO AUTOMATIC MASTER NOT ALLOWED. You cannot use ADD, DELETE or REPLACE commands on data items in the automatic master.

WRITE TO THIS SET OR ITEM NOT ALLOWED. You cannot use the ADD, DELETE or REPLACE commands on the item or set specified because the control number is set to write inhibit (refer to the QUERY/250 Programming Manual).

APPENDIX C
Miscellanea

Volume Specifiers

Whenever you use a program, subprogram, or other file you must specify the name of the file and (in most cases) the volume on which the file is located.

file name[volume spec]

A volume spec can be either a volume label or a unit specifier.

A volume label is a one to eight character string assigned to the storage medium via the PRINT LABEL statement. The first character cannot be : or ; since these characters are used in commands to delimit a volume label or file spec from other parameters.

For example, the volume label FILES would be entered as

,FILES

A unit specifier is a string expression of the form:

:device type [select code[:device address [:unit code]]]

The various device types are:

F Flexible Disc
C HP 7906A Removable Disc Cartridge
D HP 7906A Fixed Disc

The select code can be an integer from 1 thru 15, but is not needed by the system. (This parameter was retained for compatibility with other HP computer systems.) The system automatically sets this parameter to 2.

The device address can be an integer expression from 0 thru 7. Device address 6 specifies built-in flexible discs.

The unit code can be an integer expression from 0 thru 7. Codes 0 thru 4 are used for flexible disc units.

For example, the unit specifier for the top, first, flexible disc would be entered as:

:F2,6,0

Math Operations

The mathematical operations are used in the FIND search expression.

+ addition	/ division
- subtraction	* multiplication
AND logical AND	POS position function
OR logical OR	= equal to
> greater than	# not equal to
< less than	

Examples:

NAME = "John"
If the value of NAME is equal to "John", the expression is true.

NAME = "John" AND ORDER_NO # "1"
If the value of NAME is equal to "John" and the value of ORDER_NO does not equal "1", the expression is true.

NAME = "John" OR ORDER_NO = "1"
If either the value of NAME is equal to "John" or the value of ORDER_NO is equal to "1" or both, the expression is true.

PRICE >= "1000"
If the value of PRICE is greater than or equal to "1000", the expression is true.

(PRICE - OPTION_PRICE) > 100
If the value of PRICE minus the value of OPTION_PRICE is greater than 100, the expression is true.

POS(NAME,"John") > 0
If the string "John" is located anywhere in the value of NAME, POS returns the first character position where the string begins. Thus if "John" is part of the value of NAME, the value will be greater than 0 and the expression is true.

Terms

alphanumeric - Any character on the keyboard.

array - A group of two or more elements using the same variable (data item) name.

integer - A number from -32768 thru 32767. No digits follow the decimal point.

long - A long, or real, precision number. There may be up to 12 significant digits and an exponent in the range of -99 thru 99.

numeric - an integer, long or short number.

short - A short precision number. There may be up to 6 significant digits and an exponent in the range of -64 thru +64.

string - Any combination of characters and digits specified within quotes.

Command Length

In all cases, whether you type the whole command yourself or you use a form, the command cannot exceed two CRT lines in length. If a data item has a length greater than 160 characters, you can only add values to it or modify values up to 160 characters.

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