



DMS-170

**QUERY UPDATE
VERSION 3
USER'S GUIDE**

**For Use With:
CYBER Record Manager**

CDC® OPERATING SYSTEMS:

NOS 1

NOS 2

NOS/BE 1

REVISION RECORD

<u>Revision</u>	<u>Description</u>
A (01/16/76)	Original release, reflecting Query Update Version 3.0 at PSR level 420.
B (07/31/81)	This revision reflects the Query Update Version 3.3 directives INVOKE, STORE, REMOVE, and MODIFY that replace the USE, INSERT, DELETE, and UPDATE directives, respectively. The manual has been retitled. Released at PSR level 538. This is a complete reprint.
C (07/19/82)	This revision reflects the Query Update Version 3.4 language at PSR level 564. A description of Query Update under the NOS 2 operating system has been added.

REVISION LETTERS I, O, Q, AND X ARE NOT USED

Address comments concerning this manual to:

© COPYRIGHT CONTROL DATA CORPORATION 1976, 1981, 1982
All Rights Reserved
Printed in the United States of America

CONTROL DATA CORPORATION
Publications and Graphics Division
215 MOFFETT PARK DRIVE
SUNNYVALE, CALIFORNIA 94086

or use Comment Sheet in the back of this manual

LIST OF EFFECTIVE PAGES

New features, as well as changes, deletions, and additions to information in this manual are indicated by bars in the margins or by a dot near the page number if the entire page is affected. A bar by the page number indicates pagination rather than content has changed.

<u>Page</u>	<u>Revision</u>
Front Cover	-
Title Page	-
ii	C
iii/iv	C
v/vi	C
vii/viii	C
ix	B
1-1	B
2-1 thru 2-4	B
3-1	B
3-2	C
3-3	C
4-1 thru 4-13	B
5-1 thru 5-16	B
6-1	B
6-2	B
A-1	B
A-2	B
B-1	B
B-2	B
C-1	B
D-1	C
D-2	C
E-1	C
E-2	C
Index-1	B
Index-2	B
Comment Sheet	C
Mailer	-
Back Cover	-



PREFACE

This document describes Query Update Version 3.4 operations under the following systems:

- NOS 1 for the CONTROL DATA® CYBER 170 Computer Systems; CDC® CYBER 70 Computer System models 71, 72, 73, 74; 6000 Computer Systems.
- NOS 2 for the CONTROL DATA CYBER 170 Computer Systems; CDC CYBER 70 Computer System models 71, 72, 73, 74; 6000 Computer Systems.
- NOS/BE 1 for the CONTROL DATA CYBER 170 Computer Systems; CDC CYBER 70 Computer System models 71, 72, 73, 74; 6000 Computer Systems.

The conversational Query Update language offers advantages to persons of varying levels of technical expertise. The novice as well as the professional programmer can use the basic elements of Query Update to access data base files and produce simple reports. Complex report generation is normally reserved for the expert, who can employ the more sophisticated techniques available within Query Update. The very techniques used to create

the complex reports can be packaged by the expert and subsequently passed along for use by the less experienced.

This user guide is designed for nontechnical personnel who are inexperienced in the field of data processing and unfamiliar with the concepts of computer programming. The guide is planned as a self-instructional document and is structured to enable the reader to step through a selected portion of the basic Query Update procedures. Procedures include data base access, data manipulation, and report generation. Data base access is through CYBER Record Manager.

All operations apply to a sample data base. NOS/BE and NOS program listings for the data base and its subschema are supplied in the appendix. It is assumed that an individual functioning as a data administrator is available to store the sample data base and offer guidance to the reader who is presumably working on a computer for the first time.

Related material is contained in the publications listed below.

<u>Publication</u>	<u>Publication Number</u>	<u>NOS 1</u>	<u>NOS 2</u>	<u>NOS/BE 1</u>
INTERCOM Version 5 Reference Manual	60455010			X
Network Products Interactive Facility Version 1 Reference Manual	60455250	X		
NOS Version 1 Reference Manual, Volume 1 of 2	60435400	X		
NOS Version 2 Reference Set, Volume 3, System Commands	60459680		X	
NOS/BE Version 1 Reference Manual	60493800			X
Query Update Version 3 Reference Manual	60498300	X	X	X

CDC manuals can be ordered from Control Data Corporation, Literature and Distribution Services, 308 North Dale Street, St. Paul, Minnesota 55103.

This manual describes a subset of the features and directives documented in the Query Update Version 3 Reference Manual. Control Data cannot be responsible for the proper functioning of any features or directives not documented in the Query Update reference manual.



CONTENTS

NOTATIONS	ix	6. QUESTIONS AND ANSWERS	6-1
1. WHAT IS QUERY UPDATE?	1-1	APPENDIXES	
Data Entry	1-1	A Glossary	A-1
Data Storage	1-1	B Summary of Query Update Directives	B-1
Data Retrieval	1-1	C Summary of Operating System Commands	C-1
2. HOW DATA IS ORGANIZED	2-1	D Summary of Terminal Operations	D-1
Data Structure	2-1	E Sample Subschema and Data Base Creation Program	E-1
Field	2-1		
Record	2-1		
File	2-1		
The Subschema	2-1	INDEX	
The Data Base	2-2		
3. GETTING STARTED	3-1	FIGURES	
The Equipment	3-1	2-1 File EMPLOYEES	2-1
Telephone/Acoustic Coupler	3-1	2-2 The Subschema	2-2
Terminal	3-1	2-3 The Data Base	2-3
Display Terminal Printer	3-2	4-1 INVOKE Directive	4-2
Getting On the System	3-2	4-2 HELP Directive	4-3
Logging In Under NOS/BE	3-2	4-3 EXHIBIT Directive	4-4
Logging In Under NOS	3-2	4-4 DISPLAY Directive	4-5
Getting Off the System	3-3	4-5 MODIFY Directive	4-6
Logging Out Under NOS/BE	3-3	4-6 STORE Directive	4-9
Logging Out Under NOS	3-3	4-7 REMOVE Directive	4-10
4. ACCESSING THE DATA BASE	4-1	4-8 IF Directive	4-11
Declaring the Data Base and the Subschema (INVOKE)	4-2	4-9 END Directive	4-13
Calling for Help (HELP)	4-2	5-1 Preparing Report1 Under NOS/BE	5-2
Exhibiting Query Update Information (EXHIBIT)	4-2	5-2 Preparing Report2 Under NOS/BE	5-4
Looking at the Data (DISPLAY)	4-2	5-3 Preparing Report3 Under NOS	5-5
Updating the Data Base (MODIFY)	4-4	5-4 Preparing Report4 Under NOS	5-8
Adding Records (STORE)	4-4	5-5 Cataloging Report1 and Report2 Under NOS/BE	5-10
Removing Records (REMOVE)	4-5	5-6 Cataloging Report3 and Report4 Under NOS	5-12
Selecting Data (IF)	4-10	5-7 Using Cataloged Report1 Under NOS/BE	5-14
Leaving Query Update (END)	4-11	5-8 Using Cataloged Report2 Under NOS/BE	5-15
5. GENERATING REPORTS	5-1	5-9 Using Cataloged Report3 Under NOS	5-15
Preparing Reports	5-1	5-10 Using Cataloged Report4 Under NOS	5-16
Cataloging Reports	5-1	TABLES	
Using Cataloged Reports	5-2	4-1 Operating System Variations	4-1



NOTATIONS

The conventions described in the following paragraphs are used throughout this manual in directive formats and examples.

UPPERCASE Uppercase words are special operating system or Query Update words and must be spelled exactly as shown.

lowercase Lowercase words are generic terms that represent words or symbols supplied by the user.

[] Brackets enclose optional portions of a Query Update directive format.

{ } Braces enclose items within a Query Update directive format when only one of the enclosed items must be used.

... Ellipses immediately follow a pair of brackets within a Query Update directive format to indicate that the enclosed material can be repeated at the user's option.

,

Commas are optional within Query Update directives and mandatory within operating system directives.

Shaded areas indicate user input.

All numbers are decimal.



Query Update is the name of a computer programming language that looks and sounds like English. The Query Update vocabulary consists of familiar verbs such as INVOKE, DISPLAY, and STORE; prepositions such as IF, TO, and FROM; and nouns such as COLUMN, TITLE, and KEY. These Query Update words can be grouped together in short sentences to form instructions. The instructions are called Query Update directives.

Query Update directives present tasks to be performed by the computer. The tasks deal with the stored information, or data, that concerns day-to-day business transactions. Typical transactions are those associated with sales, inventory, production, and personnel records. Query Update is principally oriented toward the generation of reports through an intercommunication system, which is a system that offers full use of the computer from a physically remote location. The language is easy to learn, and its diversified structure lends itself to both professional computer programmers and nontechnical staff members.

Query Update is also the name of the computer program that serves as an interpreter. Since the computer does not speak English, the Query Update program is responsible for translating the directives into a form the computer can understand. The computer then goes about performing the tasks that are indicated in the translated directives.

You and the Query Update program share responsibility for getting data into and out of the computer. You are responsible for data entry which includes establishing communications with the computer, calling for the Query Update program, and requesting tasks to be performed by entering Query Update directives. Your directives consist of the special words of the Query Update language together with actual data you are supplying or with references to actual data that is already stored in the computer. The Query Update program is responsible for accepting your directives and arranging for the computer to store and retrieve data according to your instructions.

DATA ENTRY

Data is entered by you from a remote terminal that is connected to the computer by communication lines. The terminal, which resembles an electric typewriter, can have a video display screen, a paper page printer, or both. Data that is being entered is called input. As data is being input, it can be viewed on the screen or terminal printer.

DATA STORAGE

Data is accepted by the Query Update program and passed to the computer for storage on a disk unit. The disk unit contains magnetic disks that resemble stacks of long-playing records revolving at high speed. Data is stored on disk in the computer's machine language.

DATA RETRIEVAL

Data is retrieved from disk storage by the computer, passed to the Query Update program, and delivered back to you. Data that is being retrieved from storage is called output. As data is being output, it can be viewed on the screen or terminal printer.

Output can also be directed to the computer's high-speed line printer that is usually located in the same room that houses the computer. Throughout this guide the computer's location is referred to as the central site. Output to the central site is the most efficient way to produce Query Update reports for several reasons: reports are output at an extremely high rate of speed, copy is generally clearer for reproduction purposes, and the width of the printer page accommodates larger reports. Check with your data administrator to learn the exact location of the printer and what procedures are required for pickup.



The usefulness of large amounts of collected information is measured by its organization. Information stored in a public library could be buried and lost forever if it were not organized into a carefully planned catalog system. Computer data could meet the same fate if it were indiscriminantly scattered across magnetic disk units. Data must be carefully arranged, and each discrete piece of information must be capable of being isolated and made available for retrieval. Organization is critical.

Once the organization has been established, the data itself must be readily identifiable. If the computer went looking for a piece of information on which to perform some complex mathematical operation, it would be disastrous if that piece of information turned out to be a group of alphabetic characters. Not even a computer can be expected to calculate the square root of a person's name.

DATA STRUCTURE

Data is organized into three components: fields, records, and files. The smallest component is the field, which is the storage area for a specific item of data. Fields that have a logical relationship are linked together to form a record. Records are ultimately grouped to form a collection of interrelated data called a file.

FIELD

A field is a storage area for one specific group of letters, numbers, or a combination of the two that make up an item of information. The item of information that is stored in the field is called the field value. The field has a name, occupies a specific location in relation to other fields, and has unique characteristics.

A typical field name might be EMP-NAME, implying a group of alphabetic characters to identify an employee. This is called an alphabetic field. An alphabetic field accepts only letters of the alphabet (A through Z) and the blank or space.

A second typical field might be ZIP-CODE, implying a group of digits to identify a postal zip code. This is called a numeric field. A numeric field accepts only numbers (0 through 9).

A third typical field name might be DEPT-NAME, implying a group of alphabetic, numeric, or special characters to identify a department code name. This is called an alphanumeric field. An alphanumeric field accepts letters of the alphabet, numbers, and some special characters like the hyphen and the period.

All fields fall into one of these three classifications. There are no exceptions.

RECORD

A record is a group of related fields. The record has a name and occupies a specific location in relation to other records. A typical record name might be EMP-RECORD, implying a series of fields related to one employee.

EMP-RECORD = EMP-NAME DEPT-NAME ZIP-CODE

FILE

A file is a collection of records, which is given a name for identification. A typical file name might be EMPLOYEES, implying a series of records dealing with many employees, as shown in figure 2-1.

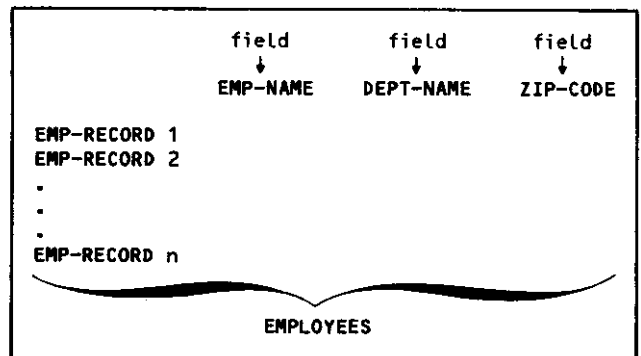


Figure 2-1. File EMPLOYEES

THE SUBSCHEMA

A member of the technical staff who functions as a data administrator is responsible for establishing the data structure and assigning names to the fields, records, and files. This information must be communicated to both the Query Update program and to you, the Query Update user. You and the system must understand what kind of data you are dealing with. Neither of you can make such mistakes as trying to store 15 characters in a 12-character field or trying to store numbers in an alphabetic field. The subschema is the means by which this information is communicated.

Think of the subschema as a large directory that sets forth all the ground rules. The directory must be stored by the data administrator before Query Update can be used. Every file is associated with a subschema. Whenever you plan to work with a file, you must become familiar with and understand the structure of its subschema before attempting to use the Query Update language.

The subschema performs two distinct functions:

1. It tells the Query Update program how data is organized within a particular file. Query Update uses the subschema information whenever it is storing, handling, or retrieving data.
2. It provides you with field, record, and file names; data type, which is always alphabetic, numeric, or alphanumeric; and field length, which is the total number of characters or digits that is acceptable to any one field of information.

Figure 2-2 is a sample subschema for an employee file. The left portion of the illustration shows selected subschema entries with which you need to be concerned. The right portion of the illustration explains the entries. Throughout this guide, data is discussed in terms of this sample subschema that is named QUEXAMPLE.

THE DATA BASE

When data is entered into the computer and stored according to the specifications of the subschema, the data is collectively referred to as a data base. The examples used throughout this guide assume the data administrator was responsible for the original creation and storage of the data base.

In the previous paragraphs, we discussed subschema QUEXAMPLE for an employee file. The subschema specified the format for employee records that were made up of such fields as EMP-NAME, DEPT-NAME, and ZIP-CODE. Let us assume that a data base for subschema QUEXAMPLE exists and looks like the one shown in figure 2-3.

John Adams is the first name in storage because his record carries the lowest employee ID (EMP-ID)

SUBSCHEMA NAME IS QUEXAMPLE		The subschema name is QUEXAMPLE.
AREA-NAME IS EMPLOYEES		The file name is EMPLOYEES. The subschema always refers to the file as an area.
KEY IS EMP-ID		The key field for each record is EMP-ID. Just as a social security number uniquely identifies an individual for the government, a key field uniquely identifies a record for the computer. If a record has a key field with the value of 1000 stored in it, for example, you can retrieve that entire record from storage by requesting the record whose key is equal to the number 1000. Records are usually sorted in ascending sequence on the key field. When records are retrieved from storage, the record with the lowest key field value is first and the record with the highest key field value is last.
RECORD-NAME IS EMP-RECORD		The record name is EMP-RECORD. The record has 11 fields: EMP-ID, EMP-NAME, NUMBERS, STREET, CITY, STATE, ZIP-CODE, PHONE, POSITION, FACILITY, and DEPT-NAME.
EMP-ID	X(4)	EMP-ID field (the key field) has 4 alphanumeric characters (X stands for alphanumeric).
EMP-NAME	A(20)	EMP-NAME field has 20 alphabetic characters (A stands for alphabetic).
ADDRESS		ADDRESS is a group name. Fields that make up ADDRESS can be collectively referenced by the group name or individually referenced by their assigned names.
NUMBERS	Z(5)	NUMBERS field has 5 digits (Z stands for numeric with no leading zeros).
STREET	X(20)	STREET field has 20 alphanumeric characters.
CITY	A(15)	CITY field has 15 alphabetic characters.
STATE	A(2)	STATE field has 2 alphabetic characters.
ZIP-CODE	9(5)	ZIP-CODE field has 5 digits (9 stands for numeric with leading zeros).
PHONE	X(12)	PHONE field has 12 alphanumeric characters.
POSITION	X(20)	POSITION field has 20 alphanumeric characters.
FACILITY	X(15)	FACILITY field has 15 alphanumeric characters.
DEPT-NAME	X(15)	DEPT-NAME field has 15 alphanumeric characters.

Figure 2-2. The Subschemata

EMP-ID	EMP-NAME	ADDRESS	PHONE	POSITION	FACILITY	DEPT-NAME
record 1	0135 John Adams	100 Pennsylvania Ave. Washington DC 20006	202-831-1234	General Manager	Eastern Sales	Marketing
record 2	0325 James Forrest	1003 W. Third St. Washington DC 20006	202-451-1515	Sales Rep	Eastern Sales	Marketing
record 3	0342 Caren Miller	492 Maple Ave. Minneapolis MN 55440	612-701-4639	Secretary	Corporate	Administration
record 4	0425 Walter Hill	153 Wilshire Blvd. Los Angeles CA 90049	213-734-9199	Systems Analyst	Western Sales	Marketing
record 5	0613 Jack Kaminski	434 First Ave. Washington DC 20036	202-451-1375	Sales Rep	Eastern Sales	Marketing
record 6	0734 Evelyn Andersen	3841 E. Main St. Minneapolis MN 55112	612-634-7915	Consultant	Corporate	Administration
record 7	0841 Janet Morrison	3425 Montana Ave. Los Angeles CA 90049	213-245-7830	Applications Analyst	Western Sales	Marketing
record 8	0910 Joseph Yamada	215 Berkshire Lane Santa Monica CA 90046	213-788-1113	Applications Analyst	Western Sales	Marketing
record 9	1000 John Grauman	14 Market St. St Paul MN 55104	612-646-1777	Security Officer	Corporate	Administration

Figure 2-3. The Data Base

entry. If you recall, EMP-ID was the key field on which records would be sorted in ascending sequence.

The five-digit field for NUMBERS specified no leading zeros; thus, John Adams' street number is displayed as 100 rather than 00100. The STREET field specified alphanumeric characters to provide for the period, which is a special character. The five-digit ZIP-CODE field specified leading zeros; zip codes can begin with zero, as is the case with New Jersey.

The 12-digit field for PHONE specified alphanumeric characters to provide for the hyphen. The hyphen is a special character.

Throughout this guide, data is discussed in terms of the sample data base. Appendix E contains a listing for this sample data base. Ask your data administrator to store the information and you can learn Query Update by reading and actually performing the operations discussed in this guide.

Query Update operations can begin as soon as the computer is made aware of your presence. This is accomplished by making a phone call to the computer. When the computer answers the phone, it identifies itself by printing the name of its operating system. Every computer has an operating system that supervises all of its activities.

The operating system is made up of a large collection of powerful programs that direct the flow of traffic, set up priorities and schedules, perform general accounting procedures for the installation, and call other programs to perform specific operations. When you are not speaking directly to the Query Update program you are speaking to the operating system.

Query Update runs under two operating systems: NOS/BE and NOS. Each system has its own set of commands and imposes its own restrictions. This manual covers both operating systems. When operations are virtually identical under either system, the systems are combined with differences noted. When operations vary, the systems are presented separately and the portions that do not apply to your installation can be ignored.

After the operating system identifies itself, it asks you to identify yourself. You will be expected to perform a login procedure in which you enter certain information for accounting purposes. Before establishing the telephone connection and learning how to log in with the operating system, it is important to understand and become familiar with the actual pieces of equipment you will be using.

THE EQUIPMENT

The equipment for remote terminal operations varies from installation to installation. The user terminal can be equipped with a video display screen or a paper line printer, or both. The communication lines that link the terminal with the computer can be set up for automatic or user dial-up connection. To avoid lengthy descriptions and explanations of every possible piece of equipment, the following is assumed:

- Connection between the terminal and the computer is established by the user through a telephone and an acoustic coupler.
- The terminal is a CDC 713 Display Terminal equipped with a terminal printer.

Any differences that exist between your equipment and the equipment that is discussed here can be easily resolved by consulting the data administrator.

TELEPHONE/ACOUSTIC COUPLER

A standard telephone used in conjunction with an acoustic coupler establishes communications with the computer. When the appropriate telephone number is dialed and the connection is made, the telephone handset is placed in the acoustic coupler. All information to and from the computer is transmitted over the telephone lines.

TERMINAL

The display terminal is equipped with a cathode ray tube (CRT) display screen. As characters are entered, they can be viewed on the screen. A little white line called a cursor marks your position on the line. Each time a character is entered, the cursor moves to the next open position and waits for input.

The terminal keyboard resembles a standard typewriter keyboard and operations are virtually the same. You only need to be concerned with four special keys.

- SPACE

The space bar is identical to the typewriter space bar. Depressing the space bar generates the space character, and a blank is stored and printed.

- SHIFT

The SHIFT key is depressed to access characters on the upper portion of a key. Ignore the SHIFT key for all letters of the alphabet; a letter is recognized and stored regardless of whether it is uppercase or lowercase.

- LEFT ARROW

The left arrow (←) is equivalent to the typewriter backspace key with one major advantage. Depressing the left arrow erases the previous characters. Although the previously entered characters remain on the screen, they disappear as the new characters are entered.

- RETURN

The RETURN key signals the end of a message and causes the line of input to be transmitted to the computer. A carriage return/line feed is performed; no character is stored or printed.

NOTE

The RETURN key must be depressed after every line of input to the Query Update program and the operating system. Nothing happens until this key is depressed.

DISPLAY TERMINAL PRINTER

The display terminal printer produces a hardcopy listing of all the information that appears on the terminal display screen. Printer copy is important for the recording of daily terminal transactions and convenient for the production of short reports.

GETTING ON THE SYSTEM

Getting on the system involves depressing all the necessary switches to activate the equipment and establishing the telephone connection between the terminal and the computer. Step-by-step instructions follow.

1. Depress the POWER and PRINTER ON LINE switches on the terminal. Both switches will be illuminated.
2. Depress the POWER switch on the display terminal printer. The switch will be illuminated.
3. Depress the acoustic coupler ON switch. The POWER light will be illuminated.
4. Dial the telephone number of the line to be used. The telephone will ring. (If a normal telephone busy signal is returned, the line is already in use.) Ask the data administrator for the correct telephone number.
5. If the central site is equipped with automatic answering, the phone is answered with a high-pitched tone. Place the telephone handset in the acoustic coupler cradle. The CARRIER light will be illuminated.
6. If the central site is not equipped with automatic answering, a central site operator will answer. Request the connection, wait for the high-pitched tone, and then place the telephone handset in the acoustic coupler cradle. The CARRIER light will be illuminated.

As soon as the terminal/computer connection is established, the system responds with applicable system messages. Messages are concluded with a request for your identification through a login procedure.

LOGGING IN UNDER NOS/BE

The NOS/BE operating system asks you to log in by printing the message PLEASE LOGIN. Respond by entering the word LOGIN followed by your appropriate identification as follows:

```
LOGIN,username,password
```

The actual information you enter for username and password must be given to you by the data administrator. When the login procedure is accepted, the system prints the word COMMAND. You are now on the system and ready to begin the operations that are presented in the next section.

LOGGING IN UNDER NOS

The NOS operating system asks you to log in by printing a series of messages. Messages and required responses are as follows:

FAMILY:

The system prints FAMILY. Respond by entering a family name given to you by your data administrator or by depressing RETURN.

USER NAME: A0126

The system prints USER NAME. Respond by entering the user name given to you by your data administrator. For purposes of illustration, user name A0126 is used in this guide.

PASSWORD

~~XXXXXXXX~~

The system prints PASSWORD, performs a carriage return, and overtypes a variety of characters to preserve the secrecy of your password. Respond by entering a password given to you by your data administrator or by depressing RETURN.

termnam - APPLICATION:

The system prints a terminal identifier followed by APPLICATION. Respond by entering IAF for the program that will control your dialog with the operating system and Query Update.

Under NOS 1, the log in sequence continues as follows:

```
TERMINAL: nnn,NAMIAF
```

The system prints a line that identifies your terminal number and the controlling program.

```
RECOVER/CHARGE: CHARGE,project-number,  
charge-number
```

The system prints RECOVER/CHARGE. Respond by entering the word CHARGE followed by the project and charge number given to you by your data administrator.

```
READY
```

The system prints READY, moves down two lines, and waits for your next entry.

```
BATCH
```

Enter the word BATCH.

```
$RFL,0.
```

```
/
```

The system prints \$RFL followed by a zero, indicating that the system is controlling field length.

Under NOS 2, the log in procedure continues as follows:

```
JSN: AAAA,NAMIAF
/
```

The system prints a job sequence number (in this example AAAA is used), which identifies the program while it is on the system, and the controlling program.

When the login procedure is accepted, the system prints a slash (/). You are now on the system and ready to begin the operations that are presented in the next section.

GETTING OFF THE SYSTEM

Getting off the system involves bringing your operations to an orderly conclusion through a logout procedure. When the logout procedure is complete, all necessary switches must be depressed to deactivate the terminal equipment.

LOGGING OUT UNDER NOS/BE

The NOS/BE operating system accepts your logout at any time in response to the system COMMAND request. When you are ready to terminate operation at the terminal, enter the following:

```
LOGOUT
```

When the logout procedure is accepted, the system prints applicable system messages. Depress the necessary switches to deactivate the terminal equipment and replace the telephone handset.

LOGGING OUT UNDER NOS

The NOS operating system accepts your logout at any time in response to the system slash (/) request. When you are ready to terminate operation at the terminal, enter the following:

```
BYE
```

When the logout procedure is accepted, the system prints applicable system messages. Depress the necessary switches to deactivate the terminal equipment and replace the telephone handset.

In this section you will look at the data base and learn how to issue directives for changing, adding, and removing data. It is recommended that you read the entire section first and then go back and perform all operations detailed in the illustrations. This type of exercise will give you an opportunity to become familiar with Query Update directives, terminal operations, and the information contained in the sample data base.

Before any of these operations can be performed, you must be logged into the system according to the directions in section 3. If for any reason you want to stop in the middle of this section, do the following:

1. Mark your place on the page so you can pick up where you left off.
2. Turn to the paragraph entitled LEAVING Query Update at the end of this section and terminate Query Update with the END directive.
3. Log out according to the directions in section 3.

Slight variations exist between NOS/BE and NOS operating systems. These variations are listed in table 4-1. All Query Update operations in this section illustrate operation under the NOS/BE operating system.

Before continuing, consider the following:

- Query Update directives under either operating system are identical with one or two exceptions. The differences are appropriately noted.
- The operating system and the Query Update program always issue requests for user input. Do not enter data until these requests appear.
- Commas (,) that appear within the sample directives are optional. If the comma is not used, at least one space must be substituted.
- The number of characters that can be accepted on one line of input is dependent upon the terminal in use. Learn the maximum number of characters your terminal can accept to avoid problems with line continuation.
- Most of the sample directives in this guide can be entered on one line of the terminal. Directives that do exceed one line must be entered according to the rules set forth in table 4-1. Sample directives in this guide frequently appear on two or more lines of type even when they are short and would not need to be continued in actual operation; this is simply for purposes of positioning text on the page and formatting the guide for readability.

TABLE 4-1. OPERATING SYSTEM VARIATIONS

Operating System	System Request for User Input	Query Update Request for User Input	Line Continuation Before Screen Fills	Line Continuation After Screen Fills
NOS/BE	COMMAND	--	Enter at least one space after the last character; enter a plus sign (+); strike the RETURN key or its equivalent; continue entering characters.	System performs an automatic carriage return. Continue entering characters.
NOS	/	?	Enter at least one space after the last character; enter a plus sign (+); strike the RETURN key or its equivalent; wait for the question mark (?) to print; continue entering characters.	System performs an automatic carriage return. Continue entering characters. If more than 145 characters are entered, an *OVL* system error message is displayed to indicate overflow. The transmission is lost.

DECLARING THE DATA BASE AND THE SUBSCHEMA (INVOKE)

Whenever you plan to look at or perform any operations on the data in the data base, you must tell Query Update which subschema to use. The information is included in the INVOKE directive, which supplies Query Update with the name of the subschema and any special IDs or permissions that are required by the operating system. IDs and permissions are supplied for the sample data base in this guide. Under normal operations, they would be obtained from the data administrator.

The INVOKE directive must always be entered as the first command when you are accessing the data base. Figure 4-1 illustrates the INVOKE directive.

CALLING FOR HELP (HELP)

If you make a mistake, Query Update prints a three-digit number followed by an error message. Error messages are usually self-explanatory; when more clarification is needed, enter the word HELP followed by the error message number. Whenever you make a mistake and receive an error message, check

your input carefully and reenter the data. Figure 4-2 illustrates the use of the HELP directive.

EXHIBITING QUERY UPDATE INFORMATION (EXHIBIT)

Query Update performs its operations based on the information contained in the subschema. The same information must be given to you in the form of a subschema printout similar to the one shown in section 2 or in the form of handwritten copy. If at any time this information is not readily available, you can have it displayed by the EXHIBIT directive. Figure 4-3 shows the various options of EXHIBIT.

LOOKING AT THE DATA (DISPLAY)

The DISPLAY directive allows you to look at the data in the data base. Several options are available. You can look at a single field, several fields, an entire record, or the entire data base. When a display of all records is requested, Query Update displays only 14 lines at one time. After each group of 14 lines, the program asks for permission to continue.

COMMAND-	The word COMMAND indicates the operating system is in control and waiting for an instruction. (NOS operating system would display a slash rather than the word COMMAND.)
COMMAND- QU	Ask for the Query Update program by entering the letters QU.
QUERY UPDATE 3.3 538-81089 81/03/31 12.55.49 --	The system prints the Query Update banner. The two hyphens (--) tell you that Query Update is loaded into memory and waiting for a directive. (NOS operating system would display a question mark on the line following the two hyphens.)
FOR NOS/BE: -- INVOKE QUEXAMPLE (ID=XYZ)	Enter the INVOKE directive exactly as shown. The directive consists of one statement that specifies the subschema name and the special IDs or permissions. The sample subschema name is QUEXAMPLE.
FOR NOS: -- ? INVOKE QUEXAMPLE (UN=AD126, M=W)	An ID is required for NOS/BE and should be obtained from your data administrator. This example assumes that ID XYZ was given by the data administrator.
--	A user name is required for NOS if your user name is different from the user name of the person who created the subschema. For purposes of illustration, this example assumes that user number AD126 is required. An access permission of M=W is also required for NOS; this means you intend to write information onto the data base file.
--	The two hyphens tell you that Query Update has located subschema QUEXAMPLE. The two hyphens (question mark for NOS) indicate the data base is now available, and the program is waiting for a directive.

Figure 4-1. INVOKE Directive

<pre>-- INVOKE QUEXAMPLE (ID=XYZ (062) LEFT/RIGHT PARENTHESIS NOT BALANCED -- HELP 062 THE NUMBER OF LEFT PARENTHESSES DOES NOT EQUAL THE NUMBER OF RIGHT PARENTHESSES. -- INVOKE QUEXAMPL (ID=XYZ) (260) P.F. -QUEXAMPL- NOT KNOWN BY THE SYSTEM. CHECK PARAMETERS -- HELP 260 THE PERMANENT FILE MANAGER COULD NOT FIND THE SPECIFIED FILE. POSSIBLE CAUSES ARE- A MISSING OR INCORRECT -ID- OR -SN- PARAMETER AN INCORRECT CYCLE NUMBER THE PERMANENT FILE NAME MAY BE MISSPELLED THE FILE MAY NOT EXIST -- INVOKE QUEXAMPLE (ID=XYZ) --</pre>	<p>Assume your INVOKE directive looked like this.</p> <p>Query Update tells you a mistake has been made. If you still don't realize the closing parenthesis is missing, call for help.</p> <p>Ask for a clearer definition by entering HELP followed by the error number.</p> <p>Query Update explains error message 062.</p> <p>Assume you tried again and your INVOKE directive looked like this.</p> <p>Query Update tells you another mistake has been made. If you don't realize what has happened, call for help.</p> <p>Ask for a clearer definition of error message 260.</p> <p>Query Update explains error message 260. The subschema name is QUEXAMPLE - not QUEXAMPL. The system cannot find the requested file. Query Update lists some things for you to check.</p> <p>Whenever you make a mistake, try again.</p> <p>The two hyphens tell you that Query Update has found the subschema QUEXAMPLE and is waiting for a directive.</p>
---	--

Figure 4-2. HELP Directive

<p>After the INVOKE directive has been accepted, any of the following EXHIBIT options can be entered exactly as shown.</p>	
<pre>-- EXHIBIT MAXIMUM TRANSMISSION LENGTH 1030 TL OF CATALOG FILE 1030 SEPARATOR \$ UNIVERSAL OFF MAX NUMBER OF LINES 060 MAX NUM. OF COLUMNS 136 MAX NO. OF SECTIONS 010 MAX IMAGES PER PAGE 004 AREA NAME(S): EMPLOYEES SUBSCHEMA NAME = QUEXAMPLE SUBSCHEMA LIBRARY NAME = QUEXAMPLE ID = XYZ -- EXHIBIT EMPLOYEES RECORD NAME IS EMP-RECORD KEY IS EMP-ID AREA PF NAME = EMPLOYEES</pre>	<p>EXHIBIT by itself displays information about the data base and the subschema. At this time you only need to be concerned with the separator that has been selected by the system. SEPARATOR \$ means that when data is entered into an alphabetic or alphanumeric field, it must begin and end with a \$ character. The \$ tells Query Update where data begins and ends. The separator does not apply to numeric fields.</p> <p>EXHIBIT followed by the file name displays the record name, the key field, and the permanent file (PF) name.</p>

Figure 4-3. EXHIBIT Directive (Sheet 1 of 2)

<pre> -- EXHIBIT EMP-RECORD 02 (KEY) EMP-ID 02 (ELM) EMP-NAME 02 (GRP) ADDRESS 03 (ELM) NUMBERS 03 (ELM) STREET 03 (ELM) CITY 03 (ELM) STATE 03 (ELM) ZIP-CODE 02 (ELM) PHONE 02 (ELM) POSITION 02 (ELM) FACILITY 02 (ELM) DEPT-NAME </pre>	<p>EXHIBIT followed by the record name displays all the fields in the record. KEY identifies the key field. ELM identifies a field that stores an elementary data item; elementary data items cannot be subdivided. GRP identifies a group field name by which all subordinate elementary data items can be referenced; group data items are always divided into one or more elementary data items. The numbers 02 and 03 are not significant to the user. Notice, however, that elementary items within a group carry the higher number and immediately follow the group field name.</p>
<pre> -- EXHIBIT ADDRESS ADDRESS OF EMP-RECORD CONTAINS NUMBERS CONTAINS STREET CONTAINS CITY CONTAINS STATE CONTAINS ZIP-CODE </pre>	<p>EXHIBIT followed by a group name displays the names of the elementary fields that comprise the group.</p>
<pre> -- EXHIBIT EMP-NAME EMP-NAME OF EMP-RECORD TYPE CHAR ITEM PIC SIZE 0020 </pre>	<p>EXHIBIT followed by an elementary name displays the field characteristics. The field type is character as opposed to numeric. The field accepts 20 characters.</p>

Figure 4-3. EXHIBIT Directive (Sheet 2 of 2)

Before displaying data, consider the following:

- Data is not always in display format. This means that data is sometimes displayed exactly the way it is stored in the computer. Although the data is recognizable, it is not always easy to read.
- When data is not in display format, Query Update prints a message to that effect before displaying the data.
- Group data items that are referenced by group name are never in display format. ADDRESS is a group item in the sample data base.

Figure 4-4 illustrates the various options of DISPLAY.

UPDATING THE DATA BASE (MODIFY)

A data base must be carefully maintained to ensure it contains up-to-the-minute information. If the data base is to be meaningful, it must reflect today - not yesterday or last week. The MODIFY directive allows you to update the data base by making changes to one or more fields in one or more records.

A MODIFY/USING combination is used to update records. The words MODIFY USING are followed by the name of the key field. Values are specified for the fields to be updated by entering the word MOVE followed by the field values and the field names. MODIFY then waits for the key field values to be entered. When a key field value is entered, the new field values are moved in and stored on top of the old data.

MODIFY USING and the key field name can also be followed by the word SETTING and the names of the fields that are being updated. MODIFY then waits for the new data to be entered. Field values must be entered in the same order as the field names.

Figure 4-5 illustrates the various options of MODIFY.

ADDING RECORDS (STORE)

A data base frequently requires the addition of new records. In the case of the sample data base, new employees are always being hired. The STORE directive allows you to add new records and include information for some or all of the fields.

When values are to be added for one new record, you use a STORE/MOVE combination. STORE declares a new record is to be added, MOVE moves the new data into storage. The words STORE MOVE are followed by the key field value and the key field name. Then any other field values and field names are entered in order.

When values are to be stored in like fields of several records, you use a STORE SETTING combination. The words STORE SETTING are followed by the name of the key field and the names of the other fields into which values are being STORED. STORE then waits for the new data to be entered. Field values must be entered in the same order as the field names.

Figure 4-6 illustrates the various options of STORE.

REMOVING RECORDS (REMOVE)

A data base frequently requires the removal of records. In the case of the sample data base, employees do leave the company and their records are no longer needed. The REMOVE directive allows

you to remove records from the data base. REMOVE never removes a portion of a record; it always removes the entire record. Once a record is removed, it is erased from computer memory and is no longer available to you, the Query Update program, or the computer.

-- DISPLAY EMP-NAME

JOHN ADAMS
JAMES FORREST
CAREN MILLER
WALTER HILL
JACK KAMINSKI
EVELYN ANDERSEN
JANET MORRISON
JOSEPH YAMADA
JOHN GRAUMAN

9 ACCESSES, 9 HITS, 9 IO-S

-- DISPLAY PHONE

202-831-1234
202-451-1515
612-701-4639
213-734-9199
202-451-1375
612-634-7915
213-245-7830
213-788-1113
612-646-1777

9 ACCESSES, 9 HITS, 9 IO-S

-- DISPLAY ADDRESS

(209) REQUESTED DATA MAY NOT BE IN DISPLAY FORMAT
00100PENNSYLVANIA AVE. WASHINGTON DC20006
01003W. THIRD ST. WASHINGTON DC20006
00492MAPLE AVE. MINNEAPOLIS MN55440
00153WILSHIRE BLVD. LOS ANGELES CA90049
00434FIRST AVE. WASHINGTON DC20036
03841E. MAIN ST. MINNEAPOLIS MN55112
03425MONTANA AVE. LOS ANGELES CA90049
00215BERKSHIRE LANE SANTA MONICA CA90046
00014MARKET ST. ST. PAUL MN55104

9 ACCESSES, 9 HITS, 9 IO-S

-- DISPLAY NUMBERS, STREET, CITY, STATE, ZIP-CODE

100 PENNSYLVANIA AVE. WASHINGTON DC 20006
1003 W. THIRD ST. WASHINGTON DC 20006
492 MAPLE AVE. MINNEAPOLIS MN 55440
153 WILSHIRE BLVD. LOS ANGELES CA 90049
434 FIRST AVE. WASHINGTON DC 20036
3841 E. MAIN ST. MINNEAPOLIS MN 55112
3425 MONTANA AVE. LOS ANGELES CA 90049
215 BERKSHIRE LANE SANTA MONICA CA 90046
14 MARKET ST. ST. PAUL MN 55104

9 ACCESSES, 9 HITS, 9 IO-S

Enter the DISPLAY directive exactly as shown to display the EMP-NAME field. Query Update has accessed the data base and found nine names. The message 9 ACCESSES, 9 HITS, 9 IO-S means Query Update looked at nine EMP-NAME fields and found information in each one.

This directive displays the PHONE field.

This directive displays the ADDRESS group. Query Update reminds you that the data might not be in display format. Notice the NUMBERS field. If you recall, the subschema specified no leading zeros. The zeros appear here because the data is not in display format.

The same items can be displayed by entering the individual field names within ADDRESS. This time they appear in display format and are easier to read. Notice the leading zeros in the NUMBERS field are gone and spaces appear between fields.

Figure 4-4. DISPLAY Directive (Sheet 1 of 2)

```

-- DISPLAY EMP-NAME, POSITION, FACILITY
          JOHN ADAMS      GENERAL MANAGER    EASTERN SALES
          JAMES FORREST  SALES REP        EASTERN SALES
          CAREN MILLER   SECRETARY        CORPORATE
          WALTER HILL    SYSTEMS ANALYST  WESTERN SALES
          JACK KAMINSKI  SALES REP        EASTERN SALES
          EVELYN ANDERSEN CONSULTANT        CORPORATE
          JANET MORRISON APPLICATIONS ANALYST WESTERN SALES
          JOSEPH YAMADA  APPLICATIONS ANALYST WESTERN SALES
          JOHN GRAUMAN   SECURITY OFFICER  CORPORATE

          9 ACCESSES, 9 HITS, 9 IO-S

-- DISPLAY KEY $1000$ EMP-NAME
          JOHN GRAUMAN

          1 ACCESSES, 1 HITS, 1 IO-S

-- DISPLAY KEY $0425$ EMP-NAME, POSITION
          WALTER HILL    SYSTEMS ANALYST

          1 ACCESSES, 1 HITS, 1 IO-S

-- DISPLAY EMP-RECORD
(209) REQUESTED DATA MAY NOT BE IN DISPLAY FORMAT
0135JOHN ADAMS      00100PENNSYLVANIA AVE.  WASHINGTON    DC2000
6202-831-1234GENERAL MANAGER    EASTERN SALES  MARKETING
0325JAMES FORREST  01003W. THIRD ST.      WASHINGTON    DC2000
6202-451-1515SALES REP    EASTERN SALES  MARKETING
0342CAREN MILLER    00492MAPLE AVE.      MINNEAPOLIS  MN5544
0612-701-4639SECRETARY    CORPORATE      ADMINISTRATION
0425WALTER HILL      00153WILSHIRE BLVD.  LOS ANGELES  CA9004
9213-734-9199SYSTEMS ANALYST  WESTERN SALES  MARKETING
0613JACK KAMINSKI   00434FIRST AVE.      WASHINGTON    DC2003
6202-451-1375SALES REP    EASTERN SALES  MARKETING
0734EVELYN ANDERSEN  03841E. MAIN ST.     MINNEAPOLIS  MN5511
2612-634-7915CONSULTANT    CORPORATE      ADMINISTRATION
0841JANET MORRISON   03425MONTANA AVE.    LOS ANGELES  CA9004
9213-245-7830APPLICATIONS ANALYSTWESTERN SALES  MARKETING

(MORE... ANSWER Y OR N) N

          8 ACCESSES, 7 HITS, 8 IO-S

```

This directive displays several fields.

Remember the key field EMP-ID? This directive displays the name of the employee carrying an employee ID of 1000. The word KEY tells Query Update to only retrieve the record with the specified key. Notice the \$ characters. Alphabetic and alphanumeric data must be enclosed in these characters.

This directive displays the name and position of the employee carrying an employee ID of 0425.

This directive displays all the records in the data base. When multiple lines of information are sent to a terminal, one full screen is transmitted automatically. Query Update then displays (MORE... ANSWER Y OR N). If you want more information, enter Y; if you want to terminate the directive, enter N.

Figure 4-4. DISPLAY Directive (Sheet 2 of 2)

```

-- MODIFY USING EMP-ID MOVE $DISTRICT MANAGERS TO POSITION
>> $0425$
>> *END

          1 ACCESSES, 1 HITS, 2 IO-S

```

Enter the MODIFY directive exactly as shown to request an update for the POSITION field. You must always enter the name of the key field (EMP-ID) when requesting a MODIFY operation. Query Update prints two > symbols and waits for you to enter the key field value. Enter *END to inform Query Update the modify operation is over.

Figure 4-5. MODIFY Directive (Sheet 1 of 3)

```

-- DISPLAY KEY $0425$ EMP-NAME,
  POSITION
WALTER HILL          DISTRICT MANAGER
      1 ACCESSES, 1 HITS, 1 IO-S
-- MODIFY USING EMP-ID MOVE $PRESIDENTS
  TO POSITION VETO
>> $0135$
0135JOHN ADAMS      00100PENNSYLVANI
VETO- YES
>> *END
      1 ACCESSES, 1 HITS, 2 IO-S
-- DISPLAY KEY $0135$ EMP-NAME,
  POSITION
JOHN ADAMS          PRESIDENT
      1 ACCESSES, 1 HITS, 1 IO-S
-- MODIFY USING EMP-ID SETTING POSITION
>> $0135$ $GENERAL MANAGERS$
>> $0425$ $SYSTEMS ANALYSTS$
>> *END
      2 ACCESSES, 2 HITS, 4 IO-S
-- DISPLAY EMP-ID,EMP-NAME,POSITION
0135 JOHN ADAMS      GENERAL MANAGER
0325 JAMES FORREST   SALES REP
0342 CAREN MILLER    SECRETARY
0425 WALTER HILL     SYSTEMS ANALYST
0613 JACK KAMINSKI   SALES REP
0734 EVELYN ANDERSEN CONSULTANT
0841 JANET MORRISON  APPLICATIONS ANALYST
0910 JOSEPH YAMADA   APPLICATIONS ANALYST
1000 JOHN GRAUMAN    SECURITY OFFICER
      9 ACCESSES, 9 HITS, 9 IO-S
-- MODIFY USING EMP-ID MOVE $DESIGN SPECIALISTS
  TO POSITION AND $INTERNATIONALS$ TO FACILITY
>> $0910$
>> *END
      1 ACCESSES, 1 HITS, 2 IO-S
-- DISPLAY KEY $0910$ EMP-NAME,POSITION,
  FACILITY
JOSEPH YAMADA      DESIGN SPECIALIST  INTERNATIONAL
      1 ACCESSES, 1 HITS, 1 IO-S

```

Query Update automatically performs the update. You can verify that employee 0425 has a new position now by entering a DISPLAY directive.

This directive is similar to the previous one, but the word VETO is included. This is a special option that gives you an opportunity to change your mind before the operation is actually performed by the computer.

Query Update prints the first 40 characters of the record and then the word VETO. If you still want to update the record, enter YES; if you do not want to update the record, enter NO. Had you inadvertently selected the wrong key field, VETO would save you from promoting the wrong employee.

Another DISPLAY verifies that employee 0135 has a new position.

This directive requests an update for the POSITION field with the SETTING option. The key field name is followed by SETTING and the name of the field to be updated (POSITION in this example).

Enter the actual data and when you are finished, enter *END.

A DISPLAY directive verifies that employees 0135 and 0425 have returned to their former positions.

This directive requests an update for the POSITION and FACILITY fields of the employee record whose key field contains the value 0910.

A DISPLAY directive verifies that employee 0910 has a new position in a new facility.

Figure 4-5. MODIFY Directive (Sheet 2 of 3)

-- MODIFY USING EMP-ID MOVE \$TECHNICAL SPECIALISTS
TO POSITION AND \$INTERNATIONALS TO FACILITY

This directive requests an update for the
POSITION and FACILITY fields of the employee
record whose key field contains the value 0841.

>> \$0841\$

>> *END

1 ACCESSES, 1 HITS, 2 IO-S

-- DISPLAY KEY \$0841\$ EMP-NAME, POSITION,
FACILITY

A DISPLAY directive verifies that employee 0841
has a new position in a new facility.

JANET MORRISON TECHNICAL SPECIALIST INTERNATIONAL

1 ACCESSES, 1 HITS, 1 IO-S

-- MODIFY USING EMP-ID SETTING POSITION,
FACILITY

This directive returns employees 0910 and 0841 to
their original positions and facilities.

>> \$0910\$ APPLICATIONS ANALYSTS \$WESTERN SALES\$

>> \$0841\$ APPLICATIONS ANALYSTS \$WESTERN SALES\$

>> *END

2 ACCESSES, 2 HITS, 4 IO-S

-- DISPLAY KEY \$0910\$ EMP-NAME,
POSITION, FACILITY

A DISPLAY directive verifies that employee 0910
has returned to his original position and
facility.

JOSEPH YAMADA APPLICATIONS ANALYST WESTERN SALES

1 ACCESSES, 1 HITS, 1 IO-S

-- DISPLAY KEY \$0841\$ EMP-NAME,
POSITION, FACILITY

A DISPLAY directive verifies that employee 0841
has returned to her original position and
facility.

JANET MORRISON APPLICATIONS ANALYST WESTERN SALES

1 ACCESSES, 1 HITS, 1 IO-S

-- MODIFY USING EMP-ID MOVE 700 TO NUMBERS

This directive requests an update for the NUMBERS
field of the employee record whose key field con-
tains the value 1000. Since NUMBERS is a numeric
field, the \$ separator characters are not used.

>> \$1000\$

>> *END

1 ACCESSES, 1 HITS, 2 IO-S

-- DISPLAY KEY \$1000\$ EMP-NAME,
NUMBERS, STREET

A DISPLAY directive verifies that employee 1000
has a new house number.

JOHN GRAUMAN 700 MARKET ST.

1 ACCESSES, 1 HITS, 1 IO-S

-- MODIFY USING EMP-ID SETTING NUMBERS

This directive restores John Grauman's house
number.

>> \$1000\$ 14

>> *END

1 ACCESSES, 1 HITS, 2 IO-S

-- DISPLAY KEY \$1000\$ EMP-NAME,
NUMBERS, STREET

A DISPLAY directive verifies the house number is
restored.

JOHN GRAUMAN 14 MARKET ST.

1 ACCESSES, 1 HITS, 1 IO-S

Figure 4-5. MODIFY Directive (Sheet 3 of 3)

```

-- STORE MOVE $2000$ TO EMP-ID
Enter the STORE directive exactly as shown to add a key field (EMP-ID) value of 2000. A record for an employee ID of 2000 is assigned. No other information exists for the record. Since the key field value is now assigned, the record can be updated at some future time.

-- STORE MOVE $2001$ TO EMP-ID AND $TOM JONES$ TO EMP-NAME
This directive adds a new record. An employee ID of 2001 is assigned to employee Tom Jones.

-- STORE MOVE $2002$ TO EMP-ID AND $GUY RICHARDSS$ TO EMP-NAME AND $EASTERN SALES$ TO FACILITY
This directive adds a new record. An employee ID of 2002 is assigned to Guy Richards and information is moved into the FACILITY field.

-- STORE SETTING EMP-ID,EMP-NAME, FACILITY
This directive adds information for two new records. One of the fields must always be the key field (EMP-ID). Two other fields are selected in this example - EMP-NAME and FACILITY.

>> $2003$ $JEAN SMITHS$ $WESTERN SALES$
Query Update prints two > symbols and waits for you to enter the data.

>> $2004$ $ROBERT DAVIS$ $CORPORATE$
Enter the actual data and when you are finished, enter *END. *END informs Query Update that the store operation is over.

>> *END

      2 ACCESSES, 2 HITS, 2 IO-S

-- DISPLAY EMP-RECORD
A DISPLAY directive verifies that five new records have been added. The system places zeros in the empty numeric fields and spaces in the empty alphabetic and alphanumeric fields.

.
.
.
2000          00000          0000
0
2001TOM JONES          00000          0000
0
2002GUY RICHARDS          00000          0000
0          EASTERN SALES
2003JEAN SMITH          00000          0000
0          WESTERN SALES
2004ROBERT DAVIS          00000          0000
0          CORPORATE

      14 ACCESSES, 14 HITS, 14 IO-S

-- DISPLAY EMP-ID,EMP-NAME, FACILITY,DEPT-NAME
Another DISPLAY directive (this time in display format) verifies that the store was successful.

0135 JOHN ADAMS          EASTERN SALES  MARKETING
0325 JAMES FORREST          EASTERN SALES  MARKETING
0342 CAREN MILLER          CORPORATE      ADMINISTRATION
0425 WALTER HILL          WESTERN SALES  MARKETING
0613 JACK KAMINSKI          EASTERN SALES  MARKETING
0734 EVELYN ANDERSEN          CORPORATE      ADMINISTRATION
0841 JANET MORRISON          WESTERN SALES  MARKETING
0910 JOSEPH YAMADA          WESTERN SALES  MARKETING
1000 JOHN GRAUMAN          CORPORATE      ADMINISTRATION
2000
2001 TOM JONES
2002 GUY RICHARDS          EASTERN SALES
2003 JEAN SMITH          WESTERN SALES
2004 ROBERT DAVIS          CORPORATE

      14 ACCESSES, 14 HITS, 14 IO-S

```

Figure 4-6. STORE Directive

A REMOVE/USING combination is used to remove records. The words REMOVE USING are followed by the name of the key field. REMOVE then waits for the key field values to be entered.

Figure 4-7 illustrates the use of REMOVE.

SELECTING DATA (IF)

A typical data base consists of hundreds - maybe even thousands - of records. In all probability you would never be interested in displaying and modifying all of the data all of the time. Query Update allows you to select data from the data base by singling out only those portions in which you are interested. This selection is made by presenting a true and false test to Query Update and requesting the program to perform an operation only if the test is true. This is called conditional testing and is performed through the IF directive.

The IF directive can test the value of a field and determine whether or not it is equal to (EQ), not equal to (NE), greater than (GT), less than (LT), greater than or equal to (GE), or less than or equal to (LE) a specified value. If the condition is true, Query Update performs the operation requested by the second directive; if the condition is false, Query Update bypasses the operation. Multiple conditional testing can be specified by including the words AND and OR.

IF can be used in combination with three directives that have been discussed:

- IF - DISPLAY
- IF - MODIFY
- IF - REMOVE

Figure 4-8 illustrates the various options of IF.

<pre>-- REMOVE USING EMP-ID >> \$2000\$ >> *END 1 ACCESSES, 1 HITS, 2 IO-S -- REMOVE USING EMP-ID VETO >> \$2001\$ 2001TOM JONES 00000 VETO- YES >> *END 1 ACCESSES, 1 HITS, 2 IO-S -- REMOVE USING EMP-ID >> \$2002\$ >> \$2003\$ >> *END 2 ACCESSES, 2 HITS, 4 IO-S -- DISPLAY EMP-ID,EMP-NAME,FACILITY 0135 JOHN ADAMS EASTERN SALES 0325 JAMES FORREST EASTERN SALES 0342 CAREN MILLER CORPORATE 0425 WALTER HILL WESTERN SALES 0613 JACK KAMINSKI EASTERN SALES 734 EVELYN ANDERSEN CORPORATE 0841 JANET MORRISON WESTERN SALES 0910 JOSEPH YAMADA WESTERN SALES 1000 JOHN GRAUMAN CORPORATE 2004 ROBERT DAVIS CORPORATE 10 ACCESSES, 10 HITS, 10 IO-S</pre>	<p>Enter the REMOVE directive as shown to remove a record with the key field name EMP-ID. Query Update prints two > symbols and waits for you to enter the key value. Enter 2000 and the employee record whose key field contains the value 2000 is removed. Enter *END to inform Query Update the remove operation is over.</p> <p>This directive is similar to the previous one, but the word VETO is included. This is the special option that gives you the opportunity to change your mind.</p> <p>Query Update prints the first 40 characters of the record and then the word VETO. If you still want to remove the record, enter YES; if you do not want to remove the record, enter NO. Had you inadvertently selected the wrong key field, VETO would save you from removing the wrong employee.</p> <p>This directive deletes two records. The key field is always specified for the remove operation.</p> <p>Query Update prints two > symbols and waits for you to enter the key values. When you are finished, enter *END.</p> <p>A DISPLAY directive verifies that employee records 2000 through 2003 have been removed.</p>
--	--

Figure 4-7. REMOVE Directive

LEAVING QUERY UPDATE (END)

When you have completed a session at the terminal, you must inform the Query Update program that operations have come to an end. This is done very simply with the END directive, which consists of the word END. The END directive tells Query Update to close its files and return control to the operating system so you can log out and close the terminal.

Before you go, you might want to take one last look at the sample data base to make sure the data is still in reasonable order. The operations presented in this section have been arranged so that the data base ends up exactly the way it started out. It does not matter if some of the data has been changed, but the original data in the EMPLOYEES data base will be used to produce the reports described in the next section.

Figure 4-9 illustrates the END directive.

<pre>-- IF CITY EQ \$WASHINGTONS DISPLAY EMP-NAME</pre>	<p>Enter an IF and DISPLAY directive exactly as shown to request a display of Washington residents. The message 10 ACCESSES, 3 HITS, 10 IO-S means Query Update looked at ten CITY fields and three fields qualified.</p>
<pre>JOHN ADAMS JAMES FORREST JACK KAMINSKI 10 ACCESSES, 3 HITS, 10 IO-S</pre>	
<pre>-- IF CITY EQ \$WASHINGTONS AND POSITION EQ \$SALES REPS DISPLAY EMP-NAME</pre>	<p>This directive requests a display of sales representatives living in Washington.</p>
<pre>JAMES FORREST JACK KAMINSKI 10 ACCESSES, 2 HITS, 10 IO-S</pre>	
<pre>-- IF CITY NE \$WASHINGTONS DISPLAY EMP-NAME</pre>	<p>This directive requests a display of employees not living in Washington.</p>
<pre>CAREN MILLER WALTER HILL EVELYN ANDERSEN JANET MORRISON JOSEPH YAMADA JOHN GRAUMAN ROBERT DAVIS 10 ACCESSES, 7 HITS, 10 IO-S</pre>	
<pre>-- IF EMP-ID EQ \$0135\$ MODIFY MOVE \$PRESIDENTS TO POSITION</pre>	<p>This directive requests a promotion for John Adams. A MODIFY/ MOVE combination moves the new position (PRESIDENT) into the record with a key field value of 0135.</p>
<pre> 1 ACCESSES, 1 HITS, 3 IO-S -- DISPLAY KEY \$0135\$ EMP-NAME, POSITION</pre>	<p>A DISPLAY directive verifies the promotion.</p>
<pre>JOHN ADAMS PRESIDENT 1 ACCESSES, 1 HITS, 1 IO-S</pre>	
<pre>-- IF EMP-ID EQ \$1000\$ MODIFY MOVE \$PRESIDENTS TO POSITION VETO</pre>	<p>This directive includes the VETO option. Query Update prints the first 40 characters of the record and then the word VETO. Enter a NO response and John Grauman is not promoted to president.</p>
<pre>1000JOHN GRAUMAN 00014MARKET ST. VETO- NO 1 ACCESSES, 1 HITS, 1 IO-S</pre>	
<pre>-- IF EMP-ID EQ \$0135\$ MODIFY MOVE \$GENERAL MANAGERS TO POSITION</pre>	<p>John Adams is demoted again.</p>
<pre> 1 ACCESSES, 1 HITS, 3 IO-S</pre>	

Figure 4-8. IF Directive (Sheet 1 of 3)

-- DISPLAY KEY 901359 EMP-NAME,
POSITION

JOHN ADAMS GENERAL MANAGER

1 ACCESSES, 1 HITS, 1 IO-S

-- IF POSITION EQ \$SECRETARYS
OR \$GENERAL MANAGERS
DISPLAY DEPT-NAME

This directive requests a display of department names for any secretaries or general managers in the data base.

MARKETING
ADMINISTRATION

10 ACCESSES, 2 HITS, 10 IO-S

-- IF STREET EQ \$WILSHIRE BLVD.\$
DISPLAY EMP-NAME

This directive requests a display of employees living on Wilshire Blvd.

WALTER HILL

10 ACCESSES, 1 HITS, 10 IO-S

-- IF CITY EQ \$MIAMI\$ DISPLAY
EMP-NAME

Miami is not represented in the sample data base.

10 ACCESSES, 0 HITS, 10 IO-S

-- IF ZIP-CODE EQ 20006 DISPLAY
EMP-NAME, POSITION

This directive specifies the ZIP-CODE numeric field. The \$ separator characters are not used for numeric fields.

JOHN ADAMS GENERAL MANAGER
JAMES FORREST SALES REP

10 ACCESSES, 2 HITS, 10 IO-S

-- IF FACILITY EQ \$CORPORATES\$ DISPLAY
EMP-ID, EMP-NAME, PHONE

This directive requests the employee ID, name, and telephone number of employees in the corporate facility.

0342 CAREN MILLER 612-701-4639
0734 EVELYN ANDERSEN 612-634-7915
1000 JOHN GRAUMAN 612-646-1777
2004 ROBERT DAVIS

A telephone number is not available for Robert Davis. When his record was inserted, no data was entered in the PHONE field. Empty alphanumeric fields are always filled with blanks.

10 ACCESSES, 4 HITS, 10 IO-S

-- IF EMP-ID GT 90900\$ DISPLAY
EMP-ID

Since the sample data base does not deal with mathematics, the use of greater than (GT), less than (LT), greater than or equal (GE), and less than or equal (LE) is not particularly appropriate. Examples are shown here for purposes of illustration.

0910
1000
2004

3 ACCESSES, 3 HITS, 3 IO-S

-- IF EMP-ID LT 90330\$ DISPLAY EMP-ID

0135
0325
0342

3 ACCESSES, 3 HITS, 4 IO-S

-- IF ZIP-CODE GE 55112 DISPLAY ZIP-CODE

55440
90049
55112
90049
90046

10 ACCESSES, 5 HITS, 10 IO-S

Figure 4-8. IF Directive (Sheet 2 of 3)


```

-- IF NUMBERS LE 100 DISPLAY NUMBERS
100
14
10 ACCESSES, 3 HITS, 10 IO-S

-- IF EMP-ID EQ $2004$ REMOVE VETO
2004ROBERT DAVIS      00000
VETO- YES
1 ACCESSES, 1 HITS, 2 IO-S

-- IF EMP-ID EQ $2004$ REMOVE
0 ACCESSES, 0 HITS, 0 IO-S

```

Notice that Query Update prints two numbers and declares three hits. The third hit is represented by the blank line and applies to the record stored for Robert Davis. The stored record did not include data for the NUMBERS field; empty numeric fields are always filled with zeros. When Query Update accessed this field and discovered it was less than 100, it prepared the field for display according to the rules of the subschema. Since the subschema specified it as Z(5), all zeros were suppressed and five blanks were output.

This directive requests a remove operation for employee 2004 and includes the VETO option. Query Update has located employee 2004 and displayed the first 40 characters before performing the remove. Enter a YES response and the record is removed.

This directive is the same as the previous one, but the VETO option has not been included.

The system response 0 ACCESSES, 0 HITS, 0 IO-S indicates EMP-ID 2004 was not found. The record had already been removed in the previous directive.

Figure 4-8. IF Directive (Sheet 3 of 3)

```

-- DISPLAY EMP-RECORD
(209) REQUESTED DATA MAY NOT BE IN DISPLAY FORMAT
0135JOHN ADAMS      00100PENNSYLVANIA AVE.  WASHINGTON  DC2000
6202-831-1234GENERAL MANAGER  EASTERN SALES  MARKETING
0325JAMES FORREST  01003W. THIRD ST.  WASHINGTON  DC2000
6202-451-1515SALES REP  EASTERN SALES  MARKETING
0342CAREN MILLER  00492MAPLE AVE.  MINNEAPOLIS  MN5544
0612-701-4639SECRETARY  CORPORATE  ADMINISTRATION
0425WALTER HILL  00153WILSHIRE BLVD.  LOS ANGELES  CA9004
9213-734-9199SYSTEMS ANALYST  WESTERN SALES  MARKETING
0613JACK KAMINSKI  00434FIRST AVE.  WASHINGTON  DC2003
6202-451-1375SALES REP  EASTERN SALES  MARKETING
0734EVELYN ANDERSEN  03841E. MAIN ST.  MINNEAPOLIS  MN5511
2612-634-7915CONSULTANT  CORPORATE  ADMINISTRATION
0841JANET MORRISON  03425MONTANA AVE.  LOS ANGELES  CA9004
9213-245-7830APPLICATIONS ANALYSTWESTERN SALES  MARKETING

(MORE... ANSWER Y OR N) Y

0910JOSEPH YAMADA  00215BERKSHIRE LANE  SANTA MONICA  CA9004
6213-788-1113APPLICATIONS ANALYSTWESTERN SALES  MARKETING
1000JOHN GRAUMAN  00014MARKET ST.  ST. PAUL  MN5510
4612-646-1777SECURITY OFFICER  CORPORATE  ADMINISTRATION

9 ACCESSES, 9 HITS, 9 IO-S

-- END
COMMAND-

```

Enter the DISPLAY directive exactly as shown to display the entire data base. A MODIFY operation can be used to make any necessary corrections.

Enter the END directive exactly as shown to terminate Query Update.

Query Update signs off and returns control to the operating system.

The word COMMAND (slash for NOS) indicates the operating system is in control and waiting for you to log out or go on to another operation.

Figure 4-9. END Directive



In this section you will learn how to generate reports from the sample data base. Reports can be viewed on the terminal display screen, printed on the terminal printer, and directed to the central site for output on the line printer. It is recommended that you perform all operations detailed in the illustrations that are applicable to your operating system. Illustrations that are not applicable can be performed providing the appropriate operating system commands are substituted.

PREPARING REPORTS

Query Update prepares reports according to your directives. The Query Update program must be told what particular data is to be selected from the data base and how the data is to be arranged on the printed page. The basic steps involved in report preparation are summarized as follows:

1. Specify the data base information that is to be selected and stored on a temporary file. (INVOKE, REWIND, EXTRACT)
2. Initiate the saving of a report format. (FORMAT)
3. Specify the report layout. (DETAIL, TITLE)
4. Request that the report be prepared from the temporary file. (PREPARE)
5. Terminate Query Update. (END)

Four sample reports follow. Personnel Reports 1 and 2 are prepared under the NOS/BE operating system. Personnel Reports 3 and 4 are prepared under the NOS operating system. The four reports are illustrated separately because operating system commands for producing the reports vary. With the exception of the INVOKE directive, Query Update directives are identical for either system.

- Personnel Report 1 is a sample report that takes information from three fields in the order in which it is stored, positions the information in three columns, and supplies a title. Figure 5-1 illustrates the steps required to produce Personnel Report 1 under the NOS/BE operating system.
- Personnel Report 2 is a sample report that takes information from three fields, sorts the information in alphabetic order on facility name, positions the information in three columns, and supplies a title. Figure 5-2 illustrates the steps required to produce Personnel Report 2 under the NOS/BE operating system.

- Personnel Report 3 is a sample report that takes information from five fields in the order in which it is stored, positions the information in five columns, and supplies a title. Figure 5-3 illustrates the steps required to produce Personnel Report 3 under the NOS operating system.
- Personnel Report 4 is a sample report that takes information from three fields, sorts the information in alphabetic order on city, positions the information in three columns, supplies a title, and supplies three column headings. Figure 5-4 illustrates the steps required to produce Personnel Report 4 under the NOS operating system.

CATALOGING REPORTS

Report formats are rarely designed for one-time use. They are generally used over and over again for the purpose of issuing weekly or monthly reports. Ideally, the report format directives could be entered one time only and remain available for use at any time. This situation is possible under Query Update, and it is called cataloging.

The basic steps involved in generating a report using the catalog file are summarized as follows:

1. Record a session. (RECORDING, INVOKE, REWIND, EXTRACT, PREPARE, END)
2. Terminate recording. (RECORDING OFF)
3. Supply the format for the report. (FORMAT, DETAIL, TITLE)
4. Terminate Query Update. (END)
5. Save the Query Update catalog according to the rules of the operating system.

Once the report format directives are cataloged, they do not have to be entered again.

The first two sample reports produced in this section, Personnel Report 1 and Personnel Report 2, can be permanently stored through the cataloging procedure. Figure 5-5 illustrates the steps required to catalog these reports under the NOS/BE operating system.

The last two sample reports produced in this section, Personnel Report 3 and Personnel Report 4, can be permanently stored through the cataloging procedure. Figure 5-6 illustrates the steps required to catalog these reports under the NOS operating system.

USING CATALOGED REPORTS

Cataloged reports represent the most efficient way to handle report generation under Query Update. Since the directives that make up the report format only need to be entered once, a considerable amount of time and effort is saved.

As a Query Update user, you will probably output all your reports in this convenient manner. Someone else will be responsible for recording the directives and supplying you with the name of the cataloged report format.

The basic steps involved in using cataloged report formats are summarized as follows:

1. Specify the name of the Query Update catalog. (VERSION)

2. Request Query Update to perform the operations specified under the session name. (PERFORM)

As you can see, any report - no matter how complicated it might be - can be produced with exactly two directives: VERSION and PERFORM.

Personnel Reports 1 and 2 were cataloged under recording session names PR1 and PR2, respectively. Figures 5-7 and 5-8 illustrate the steps required to produce the two cataloged reports under the NOS/BE operating system.

Personnel Reports 3 and 4 were cataloged under recording session names PR3 and PR4, respectively. Figures 5-9 and 5-10 illustrate the steps required to produce the two cataloged reports under the NOS operating system.

COMMAND- QU	Ask for the Query Update program by entering the letters QU.
QUERY UPDATE 3.3 538-81089 81/04/09 13.46.47	Query Update is ready for the first directive.
-- INVOKE QUEXAMPLE (ID=XYZ)	The INVOKE directive is always specified first so Query Update can bring the subschema (QUEXAMPLE) into memory.
-- REWIND FILE1	A temporary file you are calling FILE1 is to be rewound to make sure it is positioned at the beginning of information.
-- EXTRACT UPON FILE1 EMP-NAME, POSITION, FACILITY	Data from three fields (EMP-NAME, POSITION, and FACILITY) is to be extracted from EMPLOYEES and written onto FILE1.
9 ACCESSES, 9 HITS, 9 IO-S	Query Update acknowledges that the requested data was extracted from 9 records.
-- FORMAT REPORT1	This directive tells Query Update that the following directives are associated with a report you are calling REPORT1. Report names are limited to 7 characters and must begin with a letter.
-- DETAIL IS EMP-NAME IN COLUMN 1, POSITION IN COLUMN 21, FACILITY IN COLUMN 44	This directive specifies the horizontal and vertical positions for the data. Column positions are selected in accordance with the subschema. Since the subschema specifies the first field (EMP-NAME) can have 20 character positions, the second field must begin in column 21 or beyond. Since the subschema specifies the second field (POSITION) can have 20 character positions, the third field must begin in column 41 or beyond. Allow sufficient spacing to accommodate character positioning for each field and provide for spacing between columns.
-- TITLE AT LINE 1 IS \$PERSONNEL REPORT 1\$ IN COLUMN 21 AT LINE 2 IS \$ \$	A title designated PERSONNEL REPORT 1 is to be placed on line 1 starting in column 21. A blank line is to appear on line 2 (the space bar is pressed a few times between the \$ characters).
-- PREPARE REPORT1 FROM FILE1	This directive initiates the preparation of REPORT1. FROM FILE1 informs Query Update that the data needed for the report is found on the file named FILE1.

Figure 5-1. Preparing Report1 Under NOS/BE (Sheet 1 of 2)

-- END

This directive terminates Query Update.

CAUTION

DEFAULT CATALOG REMAINS AS LOCAL FILE ZZZZZQ2

Query Update signs off with a standard caution message. The message can be ignored for this report.

Personnel Report 1 is now ready. Instructions for displaying it on the screen and printing it on the terminal printer follow.

COMMAND- PAGE,REPORT1

PAGE is an operating system command that allows you to display the prepared report. Enter the word PAGE followed by a comma and the name of the report (REPORT1).

Ready..

The system prints the Ready message. This tells you the file to be displayed is positioned at the beginning of information and the system is waiting for a line number.

1

Enter the number of the first line you want displayed on the screen and listed on the terminal printer. Line 1 is requested in this example.

1	PERSONNEL REPORT 1	
JOHN ADAMS	GENERAL MANAGER	EASTERN SALES
JAMES FORREST	SALES REP	EASTERN SALES
CAREN MILLER	SECRETARY	CORPORATE
WALTER HILL	SYSTEMS ANALYST	WESTERN SALES
JACK KAMINSKI	SALES REP	EASTERN SALES
EVELYN ANDERSEN	CONSULTANT	CORPORATE
JANET MORRISON	APPLICATIONS ANALYST	WESTERN SALES
JOSEPH YAMADA	APPLICATIONS ANALYST	WESTERN SALES
JOHN GRAUMAN	SECURITY OFFICER	CORPORATE

Line 1

The first lines of REPORT1 are displayed. The system acknowledges that line 1 is the first line of the displayed page.

E

Since all of the sample data base records were displayed, enter the letter E for end to terminate PAGE.

Personnel Report 1 can be printed at the central site. Instructions for directing it to the central site for line printer output follow.

COMMAND- BATCH,REPORT1,PRINT

BATCH is an operating system command that allows you to output the prepared report on the line printer at the central site. Enter the word BATCH followed by the name of the report (REPORT1) and the name that directs output to the printer (PRINT). The commas shown in the example are required.

COMMAND-

Figure 5-1. Preparing Report1 Under NOS/BE (Sheet 2 of 2)

COMMAND- QU

Ask for the Query Update program by entering the letters QU.

QUERY UPDATE 3.3 538-81089 81/04/10 08.41.23

Query Update is ready for the first directive.

-- INVOKE QUEXAMPLE (ID=XYZ)

Enter the INVOKE directive.

-- REWIND FILE2

A temporary file you are calling FILE2 is to be rewound to make sure it is positioned at the beginning of information.

-- EXTRACT UPON FILE2 FACILITY,
EMP-NAME, POSITION

Data from three fields (FACILITY, EMP-NAME, and POSITION) is to be extracted and written onto FILE2.

9 ACCESSES, 9 HITS, 9 IO-S

Query Update acknowledges that the requested data was extracted from 9 records.

-- FORMAT REPORT2

The directives that follow belong to a report called REPORT2.

-- DETAIL IS FACILITY IN COLUMN 1,
EMP-NAME IN COLUMN 21,
POSITION IN COLUMN 44

Column positions are established for the three fields.

-- TITLE AT LINE 1 IS \$PERSONNEL
REPORT 2\$ IN COLUMN 21
AT LINE 2 IS \$ \$

A title designated PERSONNEL REPORT 2 is to be placed on line 1 starting in column 21. A blank line is to appear on line 2.

-- REWIND FILE2 SRTFILE

FILE2 is to be rewound so Query Update can read it from the beginning.

A temporary file you are calling SRTFILE is to be rewound to make sure it is positioned at the beginning of information.

-- SORT FILE2 UPON SRTFILE ON FACILITY

This directive specifies that the information on FILE2 is to be sorted onto SRTFILE. The sort operation is to arrange the records so that information in the FACILITY field is in alphabetic order.

***KEY EXTRACTION USED
** INSERTIONS DURING INPUT *****0
** DELETIONS DURING INPUT *****0
** TOTAL RECORDS SORTED *****9
** INSERTIONS DURING OUTPUT *****0
** DELETIONS DURING OUTPUT *****0
** TOTAL RECORDS OUTPUT *****9
** MERGE ORDER USED *****11
** END SORT RUN

Query Update displays information pertaining to the sort operation. The 9 records in the data base were successfully sorted and output to SRTFILE.

-- PREPARE REPORT2 FROM SRTFILE

This directive initiates the preparation of REPORT2. FROM SRTFILE informs Query Update that the data needed for the report is found on the file named SRTFILE.

-- END

Terminate Query Update.

CAUTION
DEFAULT CATALOG REMAINS AS LOCAL FILE ZZZZQ2

Query Update signs off with the standard caution message. The message can be ignored for this report.

Personnel Report 2 is now ready. Instructions for displaying it on the screen and printing it on the terminal printer follow.

COMMAND- PAGE,REPORT2

Enter the operating system PAGE command to display the prepared report.

Figure 5-2. Preparing Report2 Under NOS/BE (Sheet 1 of 2)

Ready..		The system prints the Ready message and waits for a line number.
1		Enter the number of the first line you want displayed.
1	PERSONNEL REPORT 2	
CORPORATE	CAREN MILLER	SECRETARY
CORPORATE	EVELYN ANDERSEN	CONSULTANT
CORPORATE	JOHN GRAUMAN	SECURITY OFFICER
EASTERN SALES	JOHN ADAMS	GENERAL MANAGER
EASTERN SALES	JAMES FORREST	SALES REP
EASTERN SALES	JACK KAMINSKI	SALES REP
WESTERN SALES	WALTER HILL	SYSTEMS ANALYST
WESTERN SALES	JANET MORRISON	APPLICATIONS ANALYST
WESTERN SALES	JOSEPH YAMADA	APPLICATIONS ANALYST
Line 1		The first lines of REPORT2 are displayed. The system acknowledges that line 1 is the first line of the displayed page.
E		Since all of the sample data base records were displayed, enter the letter E for end to terminate PAGE.
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>Personnel Report 2 can be printed at the central site. Instructions for directing it to the central site for line printer output follow.</p> </div>		
COMMAND- BATCH,REPORT2,PRINT		Enter the operating system BATCH command to output the prepared report on the line printer at the central site.
COMMAND-		

Figure 5-2. Preparing Report2 Under NOS/BE (Sheet 2 of 2)

/QU		Ask for the Query Update program by entering the letters QU.
QUERY UPDATE 3.3 538-81089 81/04/17 13.13.08		Query Update is ready for the first directive.
--		
? INVOKE QUEXAMPLE (LN=AD126)		The INVOKE directive is always specified first so Query Update can bring the subschema (QUEXAMPLE) into memory. Report operations in this section read the data base file rather than write information onto it; therefore, the M=W permission is not required.
--		
? REWIND FILE3		A temporary file you are calling FILE3 is to be re-wound to make sure it is positioned at the beginning of information.
--		

Figure 5-3. Preparing Report3 Under NOS (Sheet 1 of 3)

? EXTRACT UPON FILE3 EMP-NAME,
NUMBERS, STREET, CITY, STATE

Data from five fields (EMP-NAME, NUMBERS, STREET, CITY, and STATE) is to be extracted and written onto FILE3.

9 ACCESSES, 9 HITS, 9 IO-S

Query Update acknowledges that the requested data was extracted from 9 records.

? FORMAT REPORT3

This directive tells Query Update that the following directives are associated with a report you are calling REPORT3. Report names are limited to 7 characters and must begin with a letter.

? DETAIL IS EMP-NAME IN COLUMN 1,
NUMBERS IN COLUMN 22,
STREET IN COLUMN 28,
CITY IN COLUMN 50,
STATE IN COLUMN 67

This directive specifies the horizontal and vertical positions for the data. Column positions are selected in accordance with the subschema. Since the subschema specifies the first field (EMP-NAME) can have 20 character positions, the second field must begin in column 21 or beyond. Since the subschema specifies the second field (NUMBERS) can have 5 character positions, the third field must begin in column 26 or beyond. Allow sufficient spacing to accommodate character positioning for each field and provide for spacing between columns.

? TITLE AT LINE 1 IS \$PERSONNEL REPORT3\$
IN COLUMN 28 AT LINE 2 IS \$ \$

A title designated PERSONNEL REPORT 3 is to be placed on line 1 starting in column 28. A blank line is to appear on line 2 (the space bar is depressed a few times between the \$ characters).

? PREPARE REPORT3 FROM FILE3

This directive initiates the preparation of REPORT3. FROM FILE3 informs Query Update that the data needed for the report is found on the file named FILE3.

? END

This directive terminates Query Update.

CAUTION
DEFAULT CATALOG REMAINS AS LOCAL FILE ZZZZQ2
TT75, ASSIGNED TO ZZZZOU.

Query Update signs off with the standard caution message. The message can be ignored for this report.

Personnel Report 3 is now ready. Instructions for displaying it on the screen and printing it on the terminal printer follow.

Figure 5-3. Preparing Report3 Under NOS (Sheet 2 of 3)

/XEDIT,REPORT3

XEDIT is a text editor that allows you to display the prepared report. Enter the word XEDIT followed by a comma and the name of the report (REPORT3).

XEDIT 3.1.00

The text editor is ready for a command; the file to be displayed is positioned at the beginning of information.

?? PRINT*

The editing PRINT command allows you to look at the file. Enter the word PRINT followed by an asterisk; the file is displayed on the screen and printed on the terminal printer.

1

PERSONNEL REPORT 3

JOHN ADAMS	100 PENNSYLVANIA AVE.	WASHINGTON	DC
JAMES FORREST	1003 W. THIRD ST.	WASHINGTON	DC
CAREN MILLER	492 MAPLE AVE.	MINNEAPOLIS	MN
WALTER HILL	153 WILSHIRE BLVD.	LOS ANGELES	CA
JACK KAMINSKI	434 FIRST AVE.	WASHINGTON	DC
EVELYN ANDERSEN	3841 E. MAIN ST.	MINNEAPOLIS	MN
JANET MORRISON	3425 MONTANA AVE.	LOS ANGELES	CA
JOSEPH YAMADA	215 BERKSHIRE LANE	SANTA MONICA	CA
JOHN GRAUMAN	14 MARKET ST.	ST. PAUL	MN

** END OF REPORT REPORT3 **

1

END OF FILE

?? END

The lines of the report are displayed. Enter the word END to terminate editing.

REPORT3 IS A LOCAL FILE

The system acknowledges that text editing for REPORT3 has been completed.

Personnel Report 3 can be printed at the central site. Instructions for directing it to the central site for line printer output follow.

/ROUTE,REPORT3,DC=PR

ROUTE is an operating system command that allows you to output the prepared format on the line printer at the central site. Enter the word ROUTE followed by the name of the report (REPORT3) and the code (DC) that directs output to the printer (PR). The commas and equals sign shown in the example are required.

ROUTE COMPLETE.

The system acknowledges that the route operation for REPORT3 has been completed.

Figure 5-3. Preparing Report3 Under NOS (Sheet 3 of 3)

/QU

QUERY UPDATE 3.3 538-81089 81/04/17 13.18.30

? INVOKE QUEXAMPLE (UN=AD126)

? REWIND FILE4

? EXTRACT UPON FILE4 CITY
EMP-NAME,PHONE

9 ACCESSES, 9 HITS, 9 IO-S

? FORMAT REPORT4

? DETAIL IS CITY IN COLUMN 1,
EMP-NAME IN COLUMN 21,
PHONE IN COLUMN 41

? TITLE AT LINE 1 IS \$PERSONNEL
REPORT 4\$ IN COLUMN 21
AT LINE 2 IS \$1981\$ IN COLUMN 28 +

? AT LINE 3 IS \$CITY\$ IN COLUMN 1
IS \$NAME\$ IN COLUMN 21
IS \$PHONE\$ IN COLUMN 41
AT LINE 4 IS \$ \$

Ask for the Query Update program by entering the letters QU.

Query Update is ready for the first directive.

Enter the INVOKE directive.

A temporary file you are calling FILE4 is to be rewound to make sure it is positioned at the beginning of information.

Data from three fields (CITY, EMP-NAME, and PHONE) is to be extracted and written onto FILE4.

Query Update acknowledges that the requested data was extracted from 9 records.

The directives that follow belong to a report called REPORT4.

Column positions are established for the three fields.

A title designated PERSONNEL REPORT 4 is to be placed on line 1 starting in column 21; the title 1981 is to appear on line 2 starting in column 28; column headings CITY, NAME, and PHONE are to be placed on line 3 beginning in columns 1, 21, and 41, respectively; a blank line is to appear on line 4.

NOTE

This is a continued directive (notice the plus sign (+) has been entered and the directive continued after the system question mark response). This directive exceeds the maximum limit of 145 characters. If the line continuation convention had not been followed here, an *OVL* error message would have been printed to indicate an overflow condition. The transmission of the entire directive would have been lost.

Figure 5-4. Preparing Report4 Under NOS (Sheet 1 of 3)

? REWIND FILE4 SRTFILE

FILE4 is to be rewound so Query Update can read it from the beginning.

A temporary file you are calling SRTFILE is to be rewound to make sure it is positioned at the beginning of information.

? SORT FILE4 UPON SRTFILE ON CITY

This directive specifies that the information on FILE4 is to be sorted onto SRTFILE. The sort operation is to arrange the records so that information in the CITY field is in alphabetic order.

? PREPARE REPORT4 FROM SRTFILE

This directive initiates the preparation of REPORT4. FROM SRTFILE informs Query Update that the data needed for the report is found on the file named SRTFILE.

Terminate Query Update.

? END

CAUTION
DEFAULT CATALOG REMAINS AS LOCAL FILE ZZZZZQ2
**END SORT RUN

Query Update signs off with the standard caution message. The message can be ignored for this report. Query Update acknowledges that the sort operation is over.

Personnel Report 4 is now ready. Instructions for displaying it on the screen and printing it on the terminal printer follow.

/XEDIT,REPORT4

Enter the operating system XEDIT command to display the prepared report.

XEDIT 3.1.00

The text editor is ready for a command; the file to be displayed is positioned at the beginning of information.

?? PRINT*

Enter the PRINT command followed by an asterisk.

```

1          PERSONNEL REPORT 4
              1981
CITY          NAME          PHONE
LOS ANGELES   WALTER HILL    213-734-9199
LOS ANGELES   JANET MORRISON 213-245-7830
MINNEAPOLIS   CAREN MILLER    612-701-4639
MINNEAPOLIS   EVELYN ANDERSEN 612-634-7915
SANTA MONICA  JOSEPH YAMADA   213-788-1113
ST. PAUL      JOHN GRAUMAN    612-646-1777
WASHINGTON    JOHN ADAMS      202-831-1234
WASHINGTON    JAMES FORREST  202-451-1515
WASHINGTON    JACK KAMINSKI  202-451-1375
1          ** END OF REPORT REPORT4 **
END OF FILE

```

Figure 5-4. Preparing Report4 Under NOS (Sheet 2 of 3)

?? END	The lines of the report are displayed. Enter the word END to terminate editing.
REPORT4 IS A LOCAL FILE	The system acknowledges that text editing for REPORT4 has been completed.
Personnel Report 4 can be printed at the central site. Instructions for directing it to the central site for line printer output follow.	
/ROUTE,REPORT4,DC=PR	Enter the operating system ROUTE command to output the prepared report on the line printer at the central site.
ROUTE COMPLETE. /	The system acknowledges that the route operation for REPORT4 has been completed.

Figure 5-4. Preparing Report4 Under NOS (Sheet 3 of 3)

COMMAND- QU	Enter the letters QU.
QUERY UPDATE 3.3 538-81089 81/04/21 08.04.30	The system responds.
-- RECORDING PR1	Enter the RECORDING directive. The report format directives for Personnel Report 1 are to be recorded under a recording session you are designating PR1. The recording session name is limited to 6 characters.
001-- INVOKE QUEXAMPLE (ID=XYZ)	Query Update responds with a number to indicate it is ready to receive the first line of directives.
002-- REWIND FILE1	The directives are identical to those shown in figure 5-1.
003-- EXTRACT UPON FILE1 EMP-NAME, POSITION,FACILITY	
004-- PREPARE REPORT1 FROM FILE1	
005-- END	
006-- RECORDING OFF	Enter the RECORDING OFF directive to terminate the recording session.
END OF SESSION PR1	Query Update acknowledges the end of the recording session.
-- FORMAT REPORT1	Supply the format for the report. The directives are identical to those shown in figure 5-1.
-- DETAIL IS EMP-NAME IN COLUMN 1, POSITION IN COLUMN 21, FACILITY IN COLUMN 44	
-- TITLE AT LINE 1 IS \$PERSONNEL REPORT 1\$ IN COLUMN 21 AT LINE 2 IS \$ \$	

Figure 5-5. Cataloging Report1 and Report2 Under NOS/BE (Sheet 1 of 2)

<pre> -- RECORDING PR2 001-- INVOKE QUEXAMPLE (ID=XYZ) 002-- REWIND FILE2 003-- EXTRACT UPON FILE2 FACILITY, EMP-NAME,POSITION 004-- REWIND FILE2 SRTFILE 005-- SORT FILE2 UPON SRTFILE ON FACILITY 006-- PREPARE REPORT2 FROM SRTFILE 007-- END </pre>	<p>Enter another RECORDING directive. The report format directives for Personnel Report 2 are to be recorded under a recording session you are designating PR2.</p>
<pre> 008-- RECORDING OFF END OF SESSION PR2 </pre>	<p>Enter the RECORDING OFF directive to terminate the recording session.</p> <p>Query Update acknowledges the end of the recording session.</p>
<pre> -- FORMAT REPORT2 -- DETAIL IS FACILITY IN COLUMN 1, EMP-NAME IN COLUMN 21, POSITION IN COLUMN 44 -- TITLE AT LINE 1 IS \$PERSONNEL REPORT 2\$ IN COLUMN 21 AT LINE 2 IS \$ \$ -- END </pre>	<p>Supply the format for the report. The directives are identical to those shown in figure 5-2.</p> <p>Enter the END directive to terminate Query Update.</p>
<pre> **CAUTION** DEFAULT CATALOG REMAINS AS LOCAL FILE ZZZZZQ2 </pre>	<p>Query Update signs off with the standard caution message. The message is now appropriate. It means that all directives have been recorded in a temporary file called ZZZZZQ2. This is the name of the file that you must catalog.</p>
<pre> COMMAND- CATALOG,ZZZZZQ2,QUCAT, ID=XYZ INITIAL CATALOG RP = 005 DAYS CT ID= XYZ PFN=QUCAT CT CY= 001 SN=PFQSET 00000640 WORDS. </pre>	<p>The NOS/BE operating system CATALOG command is entered exactly as shown. A catalog name of QUCAT and an ID of XYZ have been selected for this example.</p> <p>The NOS/BE operating system acknowledges permanent file storage of QUCAT. The retention period (RP) for the permanent file in this example is five days. The ID and permanent file name (PFN) are indicated along with other operating system information.</p>
<pre> COMMAND- RETURN,QUCAT </pre>	<p>This directive returns the QUCAT catalog to the operating system and makes the file available to other users.</p>
<pre> COMMAND- </pre>	

Figure 5-5. Cataloging Report1 and Report2 Under NOS/BE (Sheet 2 of 2)

/QU	Enter the letters QU.
QUERY UPDATE 3.3 538-81089 81/04/21 08.04.30	The system responds.
—	
? RECORDING PR3	Enter the RECORDING directive. The report format directives for Personnel Report 3 are to be recorded under a recording session you are designating PR3. The recording session name is limited to 6 characters.
001—	Query Update responds with a number to indicate it is ready to receive the first line of directives.
? INVOKE QUEXAMPLE (UN=A0126)	The directives are identical to those shown in figure 5-3.
002—	
? REMIND FILES	
003—	
? EXTRACT UPON FILES EMP-NAME, NUMBERS, STREET, CITY, STATE	
004—	
? PREPARE REPORTS FROM FILES	
005—	
? END	
006—	
? RECORDING OFF	Enter the RECORDING OFF directive to terminate the recording session.
END OF SESSION PR3	Query Update acknowledges the end of the recording session.
—	
? FORMAT REPORTS	Supply the format for the report. The directives are identical to those shown in figure 5-3.
—	
? DETAIL IS EMP-NAME IN COLUMN 1, NUMBERS IN COLUMN 22, STREET IN COLUMN 28, CITY IN COLUMN 50, STATE IN COLUMN 67	
—	
? TITLE AT LINE 1 IS PERSONNEL REPORT 35 IN COLUMN 28 AT LINE 2 IS S S	
—	
? RECORDING PR4	Enter another RECORDING directive. The report format directives for Personnel Report 4 are to be recorded under a recording session you are designating PR4.

Figure 5-6. Cataloging Report3 and Report4 Under NOS (Sheet 1 of 3)

001--	Query update responds with a number to indicate it is ready to receive the first line of directives.
? INVOKE QUEXAMPLE (UN=A0126)	The directives are identical to those shown in figure 5-4.
002--	
? REWIND FILE4	
003--	
? EXTRACT UPON FILE4 CITY, EMP-NAME,PHONE	
004--	
? REWIND FILE4 SRTFILE	
005--	
? SORT FILE4 UPON SRTFILE ON CITY	
006--	
? PREPARE REPORT4 FROM SRTFILE	
007--	
? END	
008--	
? RECORDING OFF	Enter the RECORDING OFF directive to terminate the recording session.
END OF SESSION PR4	Query Update acknowledges the end of the recording session.
--	
? FORMAT REPORT4	Supply the format for the report. The directives are identical to those shown in figure 5-4.
--	
? DETAIL IS CITY IN COLUMN 1, EMP-NAME IN COLUMN 21, PHONE IN COLUMN 41	
--	
? TITLE AT LINE 1 IS \$PERSONNEL REPORT 4\$ IN COLUMN 21 AT LINE 2 IS \$1981\$ IN COLUMN 28 +	
? AT LINE 3 IS \$CITY\$ IN COLUMN 1 IS \$NAMES IN COLUMN 21 IS \$PHONES IN COLUMN 41 AT LINE 4 IS \$ \$	
--	
? END	Enter the END directive to terminate Query Update.

Figure 5-6. Cataloging Report3 and Report4 Under NOS (Sheet 2 of 3)

<pre> **CAUTION** DEFAULT CATALOG REMAINS AS LOCAL FILE ZZZZQ2 TT75, ASSIGNED TO ZZZZOU. /DEFINE, QUCAT /COPYEI, ZZZZQ2, QUCAT, V EOI ENCOUNTERED. /RETURN, QUCAT RETURN, QUCAT. / </pre>	<p>Query Update signs off with the standard caution message. The message is now appropriate. It means that all directives have been recorded in a temporary file called ZZZZQ2. This is the name of the file that you must catalog.</p> <p>The NOS operating system catalogs permanent files with the DEFINE and COPYEI commands. Both commands are entered exactly as shown. A catalog name of QUCAT has been selected for this example.</p> <p>The NOS operating system response acknowledges permanent file storage of QUCAT.</p> <p>This directive returns the QUCAT catalog to the operating system and makes the file available to other users. The system acknowledges the return.</p>
--	---

Figure 5-6. Cataloging Report3 and Report4 Under NOS (Sheet 3 of 3)

<pre> COMMAND- QU </pre>	<p>Enter the letters QU.</p>
<pre> QUERY UPDATE 3.3 538-81027 04/29/81 08.56.37 </pre>	<p>The system responds.</p>
<pre> -- VERSION QUCAT ID=XYZ </pre>	<p>Enter the VERSION directive exactly as shown. This directive informs Query Update that the Query Update catalog QUCAT is to be used. The ID under which it was stored is XYZ.</p>
<pre> -- PERFORM PR1 </pre>	<p>Enter the PERFORM directive. This directive tells Query Update to perform all of the directives recorded under recording session PR1.</p>
<pre> COMMAND- PAGE, REPORT1 </pre>	<p>When the operating system COMMAND appears, Personnel Report 1 is ready. The system PAGE command lets you display the report at the terminal and print it on the terminal printer. Be sure to include the correct name of the report. REPORT1 is the report name that was selected during recording session PR1. The report is identical to that shown in figure 5-1.</p>
<pre> COMMAND- BATCH, REPORT1, PRINT </pre>	<p>The system BATCH command lets you send the report to the line printer at the central site.</p>
<pre> COMMAND- </pre>	

Figure 5-7. Using Cataloged Report1 Under NOS/BE

COMMAND- QU	Enter the Letters QU.
QUERY UPDATE 3.3 538-81027 04/29/81 08.58.33	The system responds.
-- VERSION QUCAT ID=XYZ	Enter the VERSION directive.
-- PERFORM PR2	Enter the PERFORM directive.
***KEY EXTRACTIONS USED	Since PR2 specified a sort operation, Query Update displays the applicable information at this point.
** INSERTIONS DURING INPUT *****0	
** DELETIONS DURING INPUT *****0	
** TOTAL RECORDS SORTED *****9	
** INSERTIONS DURING OUTPUT *****0	
** DELETIONS DURING OUTPUT *****0	
** TOTAL RECORDS OUTPUT *****9	
** MERGE ORDER USED *****11	
** END SORT RUN	
COMMAND- PAGE,REPORT2	When the operating system COMMAND message appears, Personnel Report 2 is ready. The system PAGE command lets you display the report at the terminal and print it on the terminal printer. REPORT2 is the report name that was selected during recording session PR2. The report is identical to that shown in figure 5-2.
COMMAND- BATCH,REPORT2,PRINT	The system BATCH command lets you send the report to the line printer at the central site.
COMMAND- LOGOUT	Since this concludes operations under the NOS/BE operating system, enter the system LOGOUT command, press the necessary switches to deactivate the terminal equipment, and replace the telephone handset.

Figure 5-8. Using Cataloged Report2 Under NOS/BE

/QU	Enter the Letters QU.
QUERY UPDATE 3.3 538-81089 81/04/21 09.28.23	The system responds.
--	
? VERSION QUCAT UN=A0126	Enter the VERSION directive exactly as shown. This directive informs Query Update that the Query Update catalog QUCAT is to be used. The user number under which it was stored is A0126.
--	
? PERFORM PR3	Enter the PERFORM directive. This directive tells Query Update to perform all of the directives recorded under recording session PR3.
TT75, ASSIGNED TO ZZZZOU.	When the operating system / appears, Personnel Report 3 is ready. The message about file assignment can be ignored for this report.
/XEDIT,REPORT3	The system XEDIT command lets you display the report at the terminal and print it on the terminal printer. Be sure to include the correct name of the report. REPORT3 is the report name that was selected during recording session PR3. The report is identical to that shown in figure 5-3.
/ROUTE,REPORT3,DC=PR ROUTE COMPLETE.	The system ROUTE command lets you send the report to the line printer at the central site.
/	

Figure 5-9. Using Cataloged Report3 Under NOS

/QU	Enter the letters QU.
QUERY UPDATE 3.3 538-81089 81/04/21 09.31.04	The system responds.
? VERSION QUCAT UN=AD126	Enter the VERSION directive.
? PERFORM PR4	Enter the PERFORM directive.
**END SORT RUN	Query Update acknowledges that the sort operation was successfully performed. When the operating system / appears, Personnel Report 4 is ready. The system XEDIT command lets you display the report at the terminal and print it on the terminal printer. REPORT4 is the report name that was selected during recording session PR4. The report is identical to that shown in figure 5-4.
/XEDIT,REPORT4	
/ROUTE,REPORT4,DC=PR ROUTE COMPLETE.	The system ROUTE command lets you send the report to the line printer at the central site.
/BYE	Since this concludes operations under the NOS operating system, enter the system BYE command, press the necessary switches to deactivate the terminal equipment, and replace the telephone handset.

Figure 5-10. Using Cataloged Report4 Under NOS

It is impossible to forecast all of the questions that might arise when students are operating new equipment and using a computer for the first time. Some questions are predictable, however, and the following list represents such a selection. It is recommended that you review the list at this time. Sooner or later at least one question will be appropriate.

- [Q] I have made too many mistakes and cannot reconstruct the sample data base. Can I have another chance?
- [A] Yes. Ask the data administrator to restore the data base.
- [Q] If I were using a real data base, could I destroy or damage it?
- [A] Destruction or serious damage to a data base is prevented by the concerted efforts of the operating system, the Query Update subschema, the Query Update program, and the business practices of the installation itself. You can make mistakes, but they are always correctable. It is good practice to keep a record of your work for back-up purposes. Save your listings.
- [Q] I have entered a long list of data for a store or modify, but have not depressed RETURN. Can I change my mind and cancel this operation?
- [A] Yes. You can backspace with the left arrow to erase the data.
- [Q] I have entered a long list of data for a modify and have already depressed RETURN. Can I change my mind and cancel this operation?
- [A] No. If the data you entered was incorrect, simply repeat the modify operation using the correct information. If the data you entered should not have been entered in the first place, you can reconstruct the record or records with another modify by reentering the data as it appears in your backup listing.
- [Q] I have entered a long list of data for a store and have already pressed RETURN. Can I change my mind and cancel this operation?
- [A] No. The operation has been executed. You must remove the record.
- [Q] I received a Query Update error message and don't understand it. How can I find out what I've done wrong?
- [A] Have you asked for HELP? If you have and you still don't understand, you have made a subtle error that requires some study. Perhaps you entered a zero instead of a letter O - or the digit 1 instead of the letter l. If you give up, ask the data administrator for help.
- [Q] I received an operating system error message and don't understand it. How can I find out what I've done wrong?
- [A] Operating system error messages are beyond the scope of all Query Update manuals. Check with your data administrator.
- [Q] My back-up listing was damaged. How can I find out the names of fields or records?
- [A] Use the EXHIBIT directive.
- [Q] I have inadvertently removed a record. What should I do?
- [A] Put it back with a STORE directive, reconstructing from your back-up listing. When records are being removed, the VETO option should be used.
- [Q] I received an error message regarding an invalid parameter. What's a parameter?
- [A] The term parameter has been avoided in this guide because it is a technical programming term. The computer refers to individual groups of descriptive characters as parameters; for example, the ID required for NOS/BE is a parameter.
- [Q] How long should I wait for the system to respond?
- [A] You are working on a time-sharing system, which means you are sharing computer time with others. Sometimes you must wait if the system is very busy. If you have to wait longer than approximately one minute, something is wrong. Check with your central site.

[Q] Arithmetic operations were mentioned briefly. Are such operations available with Query Update?

[A] Yes. They were avoided in this guide to minimize detail for the nontechnical user.

[Q] I hung up on the operating system and completely forgot to log out. Is this a serious problem?

[A] No. You should always log out and terminate operations in an orderly fashion. The system automatically logs you out when you forget.

[Q] I have been very successful in performing these Query Update operations. Are other directives available for me to use?

[A] The directives presented in this guide represent only a small portion of the Query Update language and its capabilities. Complete information is contained in the Query Update reference manual; however, the reference manual is written for professional computer programmers and is not as easy to understand. Check with your supervisor.

GLOSSARY

This glossary defines terms used in this guide that relate to Query Update operations.

Acoustic Coupler -

A device that establishes the telephone connection between the terminal and the computer.

Alphabetic Data -

Data that consists of letters of the alphabet (A through Z) and the space or blank.

Alphanumeric Data -

Data that consists of letters of the alphabet (A through Z), digits (0 through 9) and special characters.

Area -

The name used by the subschema to designate a file.

Catalog -

A collection of Query Update directives that are permanently stored in the computer; also a term applied to the permanent storage operation under the operating system.

Character Data -

Data that is alphabetic or alphanumeric as opposed to strictly numeric.

Conditional Testing -

The presentation of one or more values with which data is to be compared.

Cursor -

A flashing line on the terminal that marks character position during input.

Data -

Basic elements of information that can be processed or produced by a computer.

Data Administrator -

A person who defines the format and organization of the data base.

Data Base -

An organized collection of data that is described in the computer according to the specifications of a subschema.

Directive -

A group of Query Update and user-supplied words that describe an operation to be performed.

Field -

A storage area for one specific group of letters, numbers, or a combination of the two that make up an item of information.

File -

A collection of records.

Input -

Data entered into the computer system by the user.

Key Field -

A field whose contents uniquely identify a record for the computer.

Line Printer -

A high-speed device that produces hardcopy listings of Query Update reports.

Local File -

A temporary file that exists only for the duration of a terminal session; also a term applied to a permanent file after it is retrieved from storage for terminal use.

Numeric Data -

Data that consists of digits (0 through 9).

Operating System -

A large collection of programs that direct and coordinate all the activities within the computer.

Output -

Data returned from the computer to the user.

Permanent File -

A file that is stored in the computer for an indefinite period of time.

Program -

A complete sequence of machine instructions and routines necessary to solve a problem.

Query Update Session -

The series of directives that occur between RECORDING and RECORDING OFF.

Read Operation -

An operation in which the computer looks at stored data but makes no changes to the data itself.

Record -

A group of related fields.

Report Format -

The precise arrangement of data on the printed page.

Separator -

A character (usually a \$) that is used to enclose alphabetic or alphanumeric data being input by the user.

Sort -

An operation that arranges data stored under one specific field name in alphabetic order.

Subschema -

The plan or outline that describes the actual organization of data in a file.

Terminal -

A device capable of sending and receiving information over a communication line.

Terminal Printer -

A device that produces a hardcopy listing of all Query Update input and output data.

Transmission -

A complete line of information sent to the computer over communication lines.

Write Operation -

An operation in which the computer physically places data into storage.

SUMMARY OF QUERY UPDATE DIRECTIVES

B

The Query Update formats listed alphabetically in this appendix do not represent the complete Query Update vocabulary, nor do they include all options available within the Query Update programming language. The list includes only those directive formats that are described in this guide. Each specific arrangement is shown, together with a brief description.

The following notations apply to the directive formats:

- UPPERCASE Uppercase words are special Query Update words and must be spelled exactly as shown.
- lowercase Lowercase words are generic terms that represent the words or symbols supplied by you.
- [] Brackets enclose optional portions of the format.
- { } Braces enclose items when only one of the enclosed items must be used.
- ... Ellipses immediately follow a pair of brackets to indicate that the enclosed material can be repeated at your option.

DETAIL IS field-name IN COLUMN n [field-name IN COLUMN n]...	Specify report column positioning.
DISPLAY field-name [field-name]...	Display all data base information stored in one or more specified fields.
DISPLAY KEY key-field-value field-name [field-name]...	Display one or more fields of a record selected by the contents of its key field.
DISPLAY record-name	Display in their entirety all records stored in the data base.
END	Terminate Query Update.
*END	Terminate a MODIFY/USING, STORE/SETTING, or REMOVE/USING series of directives.
EXHIBIT	Exhibit data base and subschema information.
EXHIBIT field-name	Exhibit characteristics of a field.
EXHIBIT file-name	Exhibit record name and key field.
EXHIBIT group-name	Exhibit elementary field names in the group.
EXHIBIT record-name	Exhibit all field names in the record.
EXTRACT UPON file-name field-name [field-name]...	Write data contained in specified fields onto a named file.
FORMAT report-name	Associate DETAIL and TITLE directives with a report name.
HELP nnn	Ask for an explanation of error message nnn.
If field-name $\left\{ \begin{array}{l} \text{EQ} \\ \text{NE} \\ \text{GT} \\ \text{LT} \\ \text{GE} \\ \text{LE} \end{array} \right\}$ value	Perform conditional testing; can be used in conjunction with a DISPLAY, MODIFY/MOVE, or REMOVE operation.

$\left[\left\{ \begin{array}{l} \text{AND} \\ \text{OR} \end{array} \right\} \text{field-name} \left\{ \begin{array}{l} \text{EQ} \\ \text{NE} \\ \text{GT} \\ \text{LT} \\ \text{GE} \\ \text{LE} \end{array} \right\} \text{value} \right] \dots$

INVOKE subschema-name (ID=id)	Specify the subschema for Query Update read/write operations under the NOS/BE operating system.
INVOKE subschema-name (UN=un)	Specify the subschema for Query Update read only operations under the NOS operating system.
INVOKE subschema-name (UN=un,M=W)	Specify the subschema for Query Update read and write operations under the NOS operating system.
MODIFY USING key-field-name MOVE field-value TO field-name [AND field-value TO field-name]... [VETO] >> key-field-value	Change one or more records with an option to veto the operation.
MODIFY USING key-field-name SETTING field-name [field-name]... [VETO] >> key-field-value field-value [field-value]...	Change one or more records with an option to veto the operation.
PERFORM recording-session-name	Initiate the performance of recorded directives.
PREPARE report-name FROM file-name	Initiate the preparation of a report.
RECORDING session-name	Initiate the recording of a session.
REMOVE USING key-field-name [VETO] >> key-field-value	Remove one or more records with an option to veto the operation.
RECORDING OFF	Terminate a recording session.
REWIND file-name	Rewind a file to the beginning of information.
SORT file-name UPON sort-file-name ON field-name	Sort information within a file so that data within field-name is arranged in alphabetic order.
STORE MOVE key-field-value TO key-field-name [AND field-value TO field-name]... [VETO]	Add one new record with an option to veto the operation.
STORE SETTING field-name [field-name]... [VETO] >> field-value [field-value]...	Add one or more new records with an option to veto the operation.
TITLE [AT LINE m] IS title [IN COLUMN n]	Supply a title with an option to specify the line number and column position.
VERSION catalog-name ID=id	Specify the catalog file for subsequent Query Update use under the NOS/BE operating system.
VERSION catalog-name UN=un	Specify the catalog file for subsequent Query Update use under the NOS operating system.

The operating system commands listed alphabetically in this appendix represent only those commands that are described in this guide. The following notations apply to the command formats:

- UPPERCASE Uppercase words are special operating system words and must be spelled exactly as shown.
- lowercase Lowercase words are generic terms that represent the words or symbols supplied by you.

NOS/BE OPERATING SYSTEM

BATCH,report-name,PRINT	Output a prepared report on the line printer at the central site.
CATALOG,ZZZZZQ2,catalog-name,ID=id	Store a recorded terminal session as a permanent file.
LOGIN,user-name,password	Begin operation at the terminal.
LOGOUT	Terminate operation at the terminal.
PAGE,report-name	Prepare to display pages of a prepared report on the terminal and terminal printer.
n	Request the number (n) of the first line to be displayed.
E	Terminate paging operations.
QU	Call the Query Update program.
RETURN,catalog-name	Return a cataloged file to the operating system.

NOS OPERATING SYSTEM

BYE	Terminate operation at the terminal.
COPYEI,ZZZZZQ2,catalog-name,V	Copy a recorded terminal session from the local file to a permanent file; must immediately follow a DEFINE command.
DEFINE,catalog-name	Define a recorded terminal session as a permanent file; must immediately precede a COPY command.
QU	Call the Query Update program.
RETURN,catalog-name	Return a cataloged file to the operating system.
ROUTE,report-name,DC=PR	Output a prepared report on the line printer at the central site.
XEDIT,report-name	Prepare to display lines of a prepared report on the terminal and terminal printer.

SUMMARY OF TERMINAL OPERATIONS

D

The entries listed in figure D-1 summarize the dialog exchange between you and the operating system. Enter the numbers, names, and passwords in the appropriate spaces and use the page as a quick reference for Query Update remote terminal operations.

NOS/BE OPERATING SYSTEM	
Activate equipment.	Equipment switches illuminate.
Dial computer _____ (telephone number)	High-pitched tone sounds.
Place telephone handset in acoustic coupler.	System signs on and prints: PLEASE LOGIN
Type LOGIN, _____ / _____ (user name) (password)	System outputs messages and prints: COMMAND-
Type QU	System outputs Query Update banner and prints: --
Enter Query Update directives . . .	
Type END	If recording was used or a report prepared, system prints: **CAUTION** DEFAULT CATALOG REMAINS AS LOCAL FILE ZZZZZQ2
Type LOGOUT	System prints: COMMAND-
Deactivate equipment and replace telephone handset.	System signs off.
NOS OPERATING SYSTEM[†]	
Activate equipment.	Equipment switches illuminate.
Dial computer _____ (telephone number)	High-pitched tone sounds.
Place telephone handset in acoustic coupler.	System signs on and prints: FAMILY:
Type family name _____ (family name)	System prints: USER NAME:
Type user name _____ (user name)	System prints: PASSWORD *****
Type password _____ (password)	System prints: termnam - APPLICATION:

Figure D-1. Operating Systems Dialog (Sheet 1 of 2)

SAMPLE SUBSCHEMA AND DATA BASE CREATION PROGRAM

E

The listings in this appendix illustrate for the data administrator the creation of the subschema and data base used throughout this guide. Job structures for both the NOS/BE and NOS operating systems are included.

NOS/BE OPERATING SYSTEM

Job statement

ACCOUNT statement

REQUEST(EXAMPLE,PF)

DDL3(QD,SB=EXAMPLE)

CATALOG(EXAMPLE,QUEXAMPLE, ID=XYZ)

RETURN(EXAMPLE)

QU.

CATALOG(EMPLOYEES, ID=XYZ)

EOB

IDENTIFICATION DIVISION.

SUB-SCHEMA NAME IS QUEXAMPLE

DATA DIVISION.

AREA-NAME IS EMPLOYEES ID IS XYZ

ORGANIZATION IS INDEXED NEW KEY IS EMP-ID

RECORD-NAME IS EMP-RECORD

02 EMP-ID PICTURE X(4)

02 EMP-NAME PICTURE A(20)

02 ADDRESS

03 NUMBERS PICTURE Z(5)

03 STREET PICTURE X(20)

03 CITY PICTURE A(15)

03 STATE PICTURE A(2)

03 ZIP-CODE PICTURE 9(5)

02 PHONE PICTURE X(12)

02 POSITION PICTURE X(20)

02 FACILITY PICTURE X(15)

02 DEPT-NAME PICTURE X(15)

EOB

CREATE EMPLOYEES OF QUEXAMPLE (ID=XYZ)

STORE SETTING EMP-ID,EMP-NAME,NUMBERS,STREET,CITY,STATE,ZIP-CODE, +
PHONE,POSITION,FACILITY,DEPT-NAME

\$0135\$ \$JOHN ADAMS\$ 100 \$PENNSYLVANIA AVE.\$ \$WASHINGTON\$ \$DC\$ 20006 +

\$202-831-1234\$ \$GENERAL MANAGERS\$ \$EASTERN SALES\$ \$MARKETING\$

\$0325\$ \$JAMES FORREST\$ 1003 \$W. THIRD ST.\$ \$WASHINGTON\$ \$DC\$ 20006 +

\$202-451-1515\$ \$SALES REP\$ \$EASTERN SALES\$ \$MARKETING\$

\$0342\$ \$CAREN MILLER\$ 492 \$MAPLE AVE.\$ \$MINNEAPOLIS\$ \$MN\$ 55440 +

\$612-701-4639\$ \$SECRETARY\$ \$CORPORATE\$ \$ADMINISTRATIONS\$

\$0425\$ \$WALTER HILL\$ 153 \$WILSHIRE BLVD.\$ \$LOS ANGELES\$ \$CA\$ 90049 +

\$213-734-9199\$ \$SYSTEMS ANALYST\$ \$WESTERN SALES\$ \$MARKETING\$

\$0613\$ \$JACK KAMINSKI\$ 434 \$FIRST AVE.\$ \$WASHINGTON\$ \$DC\$ 20036 +

\$202-451-1375\$ \$SALES REP\$ \$EASTERN SALES\$ \$MARKETING\$

\$0734\$ \$EVELYN ANDERSEN\$ 3841 \$E. MAIN ST.\$ \$MINNEAPOLIS\$ \$MN\$ 55112 +

\$612-634-7915\$ \$CONSULTANT\$ \$CORPORATE\$ \$ADMINISTRATIONS\$

\$0841\$ \$JANET MORRISON\$ 3425 \$MONTANA AVE.\$ \$LOS ANGELES\$ \$CA\$ 90049 +

\$213-245-7830\$ \$APPLICATIONS ANALYST\$ \$WESTERN SALES\$ \$MARKETING\$

\$0910\$ \$JOESPH YAMADA\$ 215 \$BERKSHIRE LANES\$ \$SANTA MONICA\$ \$CA\$ 90046 +

\$213-788-1113\$ \$APPLICATIONS ANALYST\$ \$WESTERN SALES\$ \$MARKETING\$

\$1000\$ \$JOHN GRAUMAN\$ 14 \$MARKET ST.\$ \$ST. PAUL\$ \$MN\$ 55104 +

\$612-646-1777\$ \$SECURITY OFFICER\$ \$CORPORATE\$ \$ADMINISTRATIONS\$

*END

END

EOI

NOS OPERATING SYSTEM

Job statement

USER statement

CHARGE statement

DEFINE(QUEXAMP/CT=PU,M=R)

DDL3(QD,SB=QUEXAMP)

RETURN(QUEXAMP)

DEFINE(EMPLOYE/CT=PU,M=W)

QU.

RETURN(EMPLOYE)

EOB

IDENTIFICATION DIVISION.

SUB-SCHEMA NAME IS QUEXAMPLE

DATA DIVISION.

AREA-NAME IS EMPLOYEES M IS W

ORGANIZATION IS INDEXED NEW KEY IS EMP-ID

RECORD-NAME IS EMP-RECORD

02 EMP-ID PICTURE X(4)

02 EMP-NAME PICTURE A(20)

02 ADDRESS

03 NUMBERS PICTURE Z(5)

03 STREET PICTURE X(20)

03 CITY PICTURE A(15)

03 STATE PICTURE A(2)

03 ZIP-CODE PICTURE 9(5)

02 PHONE PICTURE X(12)

02 POSITION PICTURE X(20)

02 FACILITY PICTURE X(15)

02 DEPT-NAME PICTURE X(15)

EOB

CREATE EMPLOYEES OF QUEXAMPLE (UN=A0126)

STORE SETTING EMP-ID,EMP-NAME,NUMBERS,STREET,CITY,STATE,ZIP-CODE, +

PHONE,POSITION,FACILITY,DEPT-NAME

\$0135\$ \$JOHN ADAMS\$ 100 \$PENNSYLVANIA AVE.\$ \$WASHINGTON\$ \$DC\$ 20006 +

\$202-831-1234\$ \$GENERAL MANAGER\$ \$EASTERN SALES\$ \$MARKETING\$

\$0325\$ \$JAMES FORREST\$ 1003 \$W. THIRD ST.\$ \$WASHINGTON\$ \$DC\$ 20006 +

\$202-451-1515\$ \$SALES REP\$ \$EASTERN SALES\$ \$MARKETING\$

\$0342\$ \$SCARNE MILLER\$ 492 \$MAPLE AVE.\$ \$MINNEAPOLIS\$ \$MN\$ 55440 +

\$612-701-4639\$ \$SECRETARY\$ \$CORPORATE\$ \$ADMINISTRATION\$

\$0425\$ \$WALTER HILL\$ 153 \$WILSHIRE BLVD.\$ \$LOS ANGELES\$ \$CA\$ 90049 +

\$213-734-9199\$ \$SYSTEMS ANALYST\$ \$WESTERN SALES\$ \$MARKETING\$

\$0613\$ \$JACK KAMINSKI\$ 434 \$FIRST AVE.\$ \$WASHINGTON\$ \$DC\$ 20036 +

\$202-451-1375\$ \$SALES REP\$ \$EASTERN SALES\$ \$MARKETING\$

\$0734\$ \$EVELYN ANDERSEN\$ 3841 \$E. MAIN ST.\$ \$MINNEAPOLIS\$ \$MN\$ 55112 +

\$612-634-7915\$ \$CONSULTANT\$ \$CORPORATE\$ \$ADMINISTRATION\$

\$0841\$ \$JANET MORRISON\$ 3425 \$MONTANT AVE.\$ \$LOS ANGELES\$ \$CA\$ 90049 +

\$213-245-7830\$ \$APPLICATIONS ANALYST\$ \$WESTERN SALES\$ \$MARKETING\$

\$0910\$ \$JOSEPH YAMADA\$ 215 \$BERKSHIRE LANE\$ \$SANTA MONICE\$ \$CA\$ 90046 +

\$213-788-1113\$ \$APPLICATIONS ANALYST\$ \$WESTERN SALES\$ \$MARKETING\$

\$1000\$ \$JOHN GRAUMAN\$ 14 \$MARKET ST.\$ \$ST. PAUL\$ \$MN\$ 55104 +

\$612-646-1777\$ \$SECURITY OFFICER\$ \$CORPORATE\$ \$ADMINISTRATION\$

*END

END

EOI

INDEX

- ACCESS HIT IO-S message 4-5
- Acoustic coupler 3-1
- Activating equipment 3-2
- Alphabetic field 2-1
- Alphanumeric field 2-1
- AND 4-10

- Backspacing 3-1
- BATCH command 5-3
- BYE command 3-3, 5-16

- CATALOG command 5-11
- Catalog operations 5-1
- Caution message 5-11, 5-14
- Character data 4-4
- Conditional testing 4-10
- Continuation, line (see Line continuation)
- COPYEI command 5-14
- Cursor 3-1

- Data base 2-2
- Data components
 - Field 2-1
 - File 2-1
 - Record 2-1
- Data entry 1-1
- Data items
 - Elementary 4-4
 - Group 4-4
- Data storage area 2-1
- Data types
 - Alphabetic 2-1, 4-4, 4-9
 - Alphanumeric 2-1, 4-4, 4-9
 - Numeric 2-1, 4-8
- DEFINE command 5-14
- DETAIL directive 5-1
- Directives
 - Definition 1-1
 - DETAIL 5-1
 - DISPLAY 4-2
 - END 4-11
 - EXHIBIT 4-2
 - EXTRACT 5-1
 - FORMAT 5-1
 - HELP 4-2
 - IF 4-10
 - INVOKE 4-2
 - MODIFY 4-3
 - PERFORM 5-14
 - PREPARE 5-1
 - RECORDING 5-10
 - RECORDING OFF 5-10
 - REMOVE 4-4
 - REWIND 5-1, 5-5
 - SORT 5-4, 5-9
 - STORE 4-3
 - TITLE 5-1
 - VERSION 5-2, 5-14, 5-15
 - *END 4-6, 4-7, 4-9, 4-10
- Disk unit 1-1
- DISPLAY directive 4-2
- Display format 4-3
- Display terminal printer 3-2

- Elementary data items 4-4
- END directive 4-11
- Equipment
 - Switches 3-2
 - Types 3-1
- Error messages 4-2
- EXHIBIT directive 4-2
- EXTRACT directive 5-1

- Field
 - Characteristics 4-4
 - Definition 2-1
 - Empty 4-9
 - Length 2-2
 - Value 2-1
- File 2-1
- FORMAT directive 5-1

- Group data items 4-4
- Group name 2-2, 4-4

- HELP directive 4-2

- IF directive 4-10
- Input 1-1
- INVOKE directive 4-2

- Key field 2-2

- Leading zeros 2-2, 4-5
- LEFT ARROW key 3-1
- Line continuation 4-1
- Line printer 1-1
- LOGIN command 3-2
- Login procedure
 - NOS 3-2
 - NOS/BE 3-2
- LOGOUT command 3-3, 5-15
- Logout procedure
 - NOS 3-3, 5-16
 - NOS/BE 3-3, 5-15

- MODIFY directive 4-3

- Numeric field 2-1

- Operating system
 - Definition 3-1
 - Hyphens 4-2
 - Question mark 4-2
 - Request for input 4-1
 - Variations 4-1
- Operating system commands
 - NOS
 - COPYEI 5-14
 - DEFINE 5-14
 - QU 4-2

Operating system commands (Contd)

NOS (Contd)
RETURN 5-14
ROUTE 5-15
XEDIT 5-15
NOS/BE
BATCH 5-3
CATALOG 5-11
PAGE 5-3
QU 4-2
RETURN 5-11
OR 4-10
Output 1-1

PAGE command 5-3
PERFORM directive 5-14
PREPARE directive 5-1
Printer output
NOS 5-7
NOS/BE 5-3

QU command 4-2

Record 2-1
RECORDING directive 5-10
RECORDING OFF directive 5-10
Remote terminal 1-1, 3-1
REMOVE directive 4-4
Report
Blank lines 5-2, 5-6
Cataloging 5-1
Names 5-2, 5-6
Positioning 5-2, 5-6
Preparation 5-1

Retention period 5-11
RETURN command 5-11, 5-14
RETURN key 3-1
REWIND directive 5-1, 5-5

Separator character 4-4, 4-12
SHIFT key 3-1
SORT directive 5-4, 5-9
Space bar 3-1
STORE directive 4-3
Subschema 2-1, 4-4
Switches, equipment 3-2

Telephone connection 3-2
Terminating edit operations 5-7
Terminating PAGE operations 5-3
Terminating Query Update 4-11
TITLE directive 5-1
Transmission
Overflow 4-1
Sending to the computer 3-2

VERSION directive 5-2, 5-14, 5-15
VETO 4-7, 4-10, 4-11

XEDIT command 5-7, 5-15

ZZZZQ2 file 5-11, 5-14

*END directive 4-6, 4-7, 4-9, 4-10
OVL error message 4-1, 5-8

COMMENT SHEET

MANUAL TITLE: Query Update Version 3 User's Guide For Use With: CYBER Record Manager

PUBLICATION NO.: 60387700

REVISION: C

NAME:

COMPANY:

STREET ADDRESS:

CITY:

STATE:

ZIP CODE:

This form is not intended to be used as an order blank. Control Data Corporation welcomes your evaluation of this manual. Please indicate any errors, suggested additions or deletions, or general comments below (please include page number references).

Please reply

No reply necessary

NO POSTAGE STAMP NECESSARY IF MAILED IN U.S.A.

FOLD ON DOTTED LINES AND TAPE

TAPE

TAPE

FOLD

FOLD



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

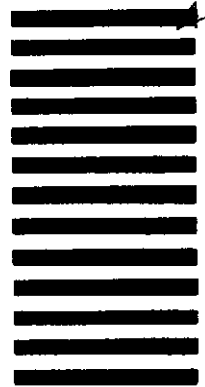
BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 8241 MINNEAPOLIS, MINN.

POSTAGE WILL BE PAID BY

CONTROL DATA CORPORATION

Publications and Graphics Division

215 Moffett Park Drive
Sunnyvale, California 94086



CUT ALONG LINE

FOLD

FOLD