



System i
Query Manager Use

Version 6 Release 1

SC41-5212-07





System i
Query Manager Use

Version 6 Release 1

SC41-5212-07

Note

Before using this information and the product it supports, be sure to read the information in Appendix E, "Notices," on page 267.

This edition applies to version 6, release 1, modification 0 of IBM i5/OS (product number 5761-SS1) and to all subsequent releases and modifications until otherwise indicated in new editions. This version does not run on all reduced instruction set computer (RISC) models nor does it run on CISC models.

© **Copyright International Business Machines Corporation 1998, 2008. All rights reserved.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

About Query Manager Use (SC41–5212) vii

Who should use the Query Manager Use book . . .	vii
Conventions used in the Query Manager Use book . . .	vii
How to use the Query Manager Use book	vii
Prerequisite and related information	viii
How to send your comments	ix

Chapter 1. Introducing Query Manager . 1

What is Query Manager?	1
General concepts in Query Manager	2
Databases, tables, columns, and rows in Query Manager	2
Libraries and collections in Query Manager	3
Double-byte character set (DBCS) values in Query Manager	4
Sort sequence capabilities in Query Manager	4
Queries and the SQL language in Query Manager	4
Prompted queries in Query Manager	5
Report forms in Query Manager	5
Active query in Query Manager	7
Active form in Query Manager	8
Active data in Query Manager	8
Sample queries and sample reports in Query Manager	9
Procedures in Query Manager	10
Query Manager and relationships to other System i products	10

Chapter 2. Getting Started with Query Manager 13

Starting DB2 Query Manager	13
Exiting from Query Manager	14
Using the main menu in Query Manager	14
The work with Query Manager queries display	14
The work with Query Manager report forms display	15
The work with Query Manager tables display	16
The work with Query Manager profiles display	17
Using Query Manager displays	17
Entering information through a display in Query Manager	18
Using “Work with” display lists in Query Manager	18
Rules for system name generation in Query Manager	19
Specifying multiple options in Query Manager	20
Using F4 (Prompt) lists in Query Manager	21
Using help and online information in Query Manager	22
Help for displays in Query Manager	22
Help for messages in Query Manager	22
Using Query Manager function keys	23
Commonly used function keys in Query Manager	23
Messages and errors in Query Manager	26
Using the command window in Query Manager	28

Naming conventions in Query Manager	29
Form and query name conventions in Query Manager	29
Table and file name conventions in Query Manager	29
Column name, field name, and expression name conventions in Query Manager	30
Understanding the overflow character (>) in Query Manager	30

Chapter 3. Working with Query Manager profiles 31

What is a Query Manager profile?	31
Security administrator user access level in Query Manager	31
ALL user access level in Query Manager	32
BASIC user access level in Query Manager	33
The default query manager profile in Query Manager	33
Viewing the additional details display in Query Manager	42
Changing your Query Manager Profile	43
Changing a BASIC access profile in Query Manager	43
Changing an ALL access profile in Query Manager	44
Security administrator tasks in Query Manager	45
Using the work with Query Manager profiles display	45
Creating a Query Manager profile	46
Displaying a Query Manager profile	47
Changing a Query Manager profile	47
Copying a Query Manager profile	50

Chapter 4. Working with Query Manager queries 51

What is a query in Query Manager?	51
Creating a Query Manager query	51
Committing and rolling back changes to the database	51
Using the work with Query Manager queries display	52
Copying a query in Query Manager	53
Deleting a query in Query Manager	54
Displaying a query in Query Manager	55
Printing a query in Query Manager	58
Renaming a query in Query Manager	59
Running a query in Query Manager	60

Chapter 5. Creating and changing queries in Query Manager 63

Creating and changing a query in Query Manager	63
The difference between prompted and SQL queries in Query Manager	63

Changing the query creation mode in Query Manager	64
Testing a query in Query Manager.	64
Running an alternative query in Query Manager	65
Including constants in queries in Query Manager.	65
Including variables in SQL queries in Query Manager	66
Creating customized runtime prompts for variables in Query Manager	66
Creating an SQL query through the edit query display in Query Manager	68
Using the edit query display in Query Manager	71
Prompting for SQL statements in Query Manager	74
Using the edit form function key in Query Manager	77
Using statements in Query Manager	77
Creating a prompted query through the define prompted query display in Query Manager	78
Choosing the tables to include in the query in Query Manager	80
Defining expressions in Query Manager.	85
Selecting and sequencing columns from the tables in Query Manager	87
Specifying row selection tests in Query Manager	89
Specifying sort conditions for columns in Query Manager	94
Defining summary functions in Query Manager	95
Choosing to include duplicate rows in Query Manager	97
Specifying a sort sequence in Query Manager	98
Defining a report form in Query Manager	99
Saving a query: Using the exit display in Query Manager	100
Date and time format considerations while saving a query in Query Manager	102
Changing a query in Query Manager	102
Converting a prompted query to SQL in Query Manager	103

Chapter 6. Working with Query Manager report forms. 105

What is a Query Manager report form?.	105
Using the work with Query Manager report forms display	106
Creating or changing a Query Manager report form	107
Testing a report form	109
Editing or displaying the active query	110
Loading default values from the active query in Query Manager.	110
Formatting the columns in the report form in Query Manager.	111
Specifying page headings and footings in Query Manager	117
Specifying text for the end of the report in Query Manager	120
Specifying text for each report break in Query Manager	122
Specifying formatting options for the report in Query Manager	126
Copying a report form in Query Manager	127

Deleting a report form in Query Manager	128
Displaying a report form in Query Manager	129
Printing a report form in Query Manager	131
Renaming a report form in Query Manager	132
Running a report in Query Manager.	133

Chapter 7. Running queries and reports in Query Manager 135

Running a query or report in Query Manager	135
Running a query in batch mode in Query Manager	135
Specifying run options in Query Manager	136
Using the run query display in Query Manager	136
Displaying query output in Query Manager	140
Leaving the display report display in Query Manager	141
Date and time format considerations in Query Manager	141
Running a query against databases from non-i5/OS databases in Query Manager	142

Chapter 8. Working with Query Manager tables 145

What are Query Manager tables?.	145
Using the work with Query Manager tables display	146
Specifying a collection for Query Manager tables	148
Creating a table in Query Manager	149
Defining table columns in Query Manager	151
Supported data types in Query Manager	152
The difference between DECIMAL and NUMERIC in Query Manager	154
The difference between CHARACTER and VARCHAR in Query Manager.	154
Default values for data types in Query Manager	154
NULL values in Query Manager	154
Adding data to a table in Query Manager.	155
Adding DBCS data to a table in Query Manager	156
Viewing display type/length information in Query Manager	157
Changing data in a table in Query Manager	157
Searching for rows in Query Manager	158
Changing the data in Query Manager	160
Displaying data in a table in Query Manager.	162
Copying a table in Query Manager	163
Deleting a table in Query Manager	166
Displaying a table in Query Manager	167
Printing a table in Query Manager	168
Renaming a table in Query Manager	169
Displaying a table definition in Query Manager	170

Chapter 9. Distributed Relational Database Architecture in Query Manager 173

Remote unit of work (RUW) in Query Manager DRDA.	173
Distributed unit of work (DUW) in Query Manager DRDA.	173

Connection management statements in Query Manager DRDA	173
Connection management in Query Manager DRDA	173
Default activation group and Query Manager DRDA	174
Connecting to a relational database in Query Manager DRDA	174
Displaying a connection list and connection status in Query Manager DRDA	174
Understanding conversation type, read-only, and status fields in Query Manager DRDA	177
Conversation type in Query Manager DRDA	177
Read-only in Query Manager DRDA	178
Status in Query Manager DRDA	178
Connection management considerations in Query Manager DRDA	178
Profile in Query Manager DRDA	178
Work with tables connections in Query Manager DRDA	179
Prompted query in Query Manager DRDA	179
Outfile processing in Query Manager DRDA	179
SET transaction considerations in Query Manager DRDA	179

Appendix A. Practice exercises for Query Manager 181

Exercise: Working with tables in Query Manager	181
Exercise: Before you begin tables in Query Manager	181
Exercise: Creating a table named with 18 characters or less in Query Manager.	182
Exercise: Creating a table named with 19 characters or more in Query Manager	186
Exercise: Adding data to a table in Query Manager	188
Exercise: Displaying a table in Query Manager	190
Exercise: Creating a new table from a copy in Query Manager	192
Exercise: Changing the definition of a copied table in Query Manager	194
Exercise: Changing data in a table	196
Exercise: Viewing table definitions in Query Manager	202
Exercise: Deleting a table in Query Manager	203
Exercise: Working with queries and report forms in Query Manager	203
Exercise: Before you begin queries and reports in Query Manager.	204
Exercise: Creating a prompted query in Query Manager	204
Exercise: Creating an SQL query in Query Manager	210
Exercise: Using the exit display to save a query in Query Manager.	213
Exercise: Running a query to creating active data in Query Manager	214
Exercise: Creating a report form in Query Manager	216
Exercise: Displaying a report in Query Manager	225
Exercise: Changing a prompted query in Query Manager	226

Exercise: Changing an SQL query in Query Manager	229
Exercise: Running the changed query in Query Manager	230
Exercise: Exiting without saving the query or report form in Query Manager	231
Exercise: Deleting a query in Query Manager	232

Appendix B. Query Manager statements 235

COMMIT in Query Manager	235
Authorization	236
Syntax of COMMIT in Query Manager	236
Examples of COMMIT statement in Query Manager	236
CONNECT in Query Manager.	236
Authorization	237
Syntax of CONNECT in Query Manager	237
Examples of the CONNECT Statement under RUW connection management in Query Manager	237
Examples of the CONNECT statement under DUW connection management in Query Manager	238
DISCONNECT in Query Manager	238
Authorization	238
Syntax of DISCONNECT in Query Manager	238
Examples of the DISCONNECT statement in Query Manager	239
DISPLAY in Query Manager	239
Authorization	239
Syntax of DISPLAY in Query Manager	239
Examples of DISPLAY statement in Query Manager	240
DRAW in Query Manager	240
Authorization	240
Syntax of DRAW in Query Manager.	241
Examples of DRAW Statement in Query Manager	241
ERASE in Query Manager	241
Authorization	241
Syntax of ERASE in Query Manager.	242
Examples of ERASE statement in Query Manager	242
EXPORT in Query Manager	242
Authorization	242
Syntax of EXPORT in Query Manager	243
Examples of EXPORT statement in Query Manager	244
IMPORT in Query Manager	244
Authorization	244
Syntax of IMPORT in Query Manager	246
Examples of IMPORT statement in Query Manager	248
PRINT in Query Manager	248
Authorization	248
Syntax of PRINT in Query Manager.	249
Examples of PRINT statement in Query Manager	250
RELEASE in Query Manager	250
Authorization	250

Syntax of RELEASE in Query Manager	251
Examples of the RELEASE statement in Query Manager	251
RUN in Query Manager	251
Authorization	251
Syntax of RUN in Query Manager	252
Examples of RUN statement in Query Manager	253
SAVE DATA AS in Query Manager	253
Authorization	253
Syntax of SAVE DATA AS in Query Manager	254
Examples of SAVE DATA AS statement in Query Manager	254
SAVE FORM AS in Query Manager	254
Authorization	255
Syntax of SAVE FORM AS in Query Manager	255
Examples of SAVE FORM statement in Query Manager	256
SAVE QUERY AS in Query Manager	256
Authorization	256
Syntax of SAVE QUERY AS in Query Manager	256
Examples of SAVE QUERY AS statement in Query Manager	257
SET CONNECTION in Query Manager	257
Authorization	257

Syntax of SET CONNECTION in Query Manager	257
Examples of the SET CONNECTION statement in Query Manager	258

Appendix C. Implications of allowed SQL statements in Query Manager . . . 259

Appendix D. Example: Sort sequence in Query Manager 261

Example: Sort sequence usages in Query Manager	261
Example: Sorting in Query Manager	261
Example: Record selection in Query Manager	262
Example: Report breaks in Query Manager	263
Example: Grouping in Query Manager	265

Appendix E. Notices 267

Programming interface information	268
Trademarks	269

Index 271

About Query Manager Use (SC41–5212)

DB2[®] Query Manager is a database access and manipulation system suitable for use with all IBM[®] System i[™] models. This guide tells you how to use Query Manager to:

- Create, maintain, and run queries
- Create, maintain, and use report forms that format query output
- Create, maintain, and use database tables

To make full use of the tools that Query Manager provides, use this guide together with the online help that is available through all Query Manager displays.

Who should use the Query Manager Use book

This book is written for any i5/OS[®] user who wants to create and run queries, produce reports, or manipulate data in a database.

To use this guide effectively, you should be familiar with the features of your display station and with the basic tasks of entering information and making selections from lists. It is also helpful (but not essential) to be familiar with the DB2 for i5/OS SQL language, and to have an understanding of the basic concepts behind databases and report formatting.

Conventions used in the Query Manager Use book

This guide presents examples of Query Manager displays as they appear to users who have an *ALL* user access level and are using SQL naming conventions.

For many of the Query Manager displays, the options and function keys that are shown differ depending on the user access level. For example, users with an *ALL* access can create, change, display, print, and run queries, while users with *BASIC* access can only display, print, and run queries. (The create and change options are not shown on the query displays for *BASIC* access users.) The default user access level is *ALL*. Displays included in this guide show the options and function keys that an *ALL* user sees.

Through your Query Manager profile, you can specify whether you want to use SQL or SYS (system) naming conventions. This guide uses SQL conventions in both the displays and the text, so that *collection*, *table*, *column*, and *row* are used rather than *library*, *file*, *field*, and *record*.

How to use the Query Manager Use book

The following table should help you to quickly find the information you need to perform a specific task. If you want to perform a task that is not listed in this table, turn to the Contents (at the beginning of this guide) or the Index (at the end of this guide) for a more complete listing of topics.

Table 1. Using This Book

When you want to:	Turn to:
Read about Query Manager	Page 1
Start using Query Manager	Page 13
Perform practice exercises	Page 181
Create SQL queries	Page 68
Create prompted queries	Page 78
Convert a prompted query to SQL	Page 103

Table 1. Using This Book (continued)

When you want to:	Turn to:
Run queries	Page 135
Maintain queries	Page 52
Specify a sort sequence	Page 98
Format query results (using report forms)	Page 107
Maintain report forms	Page 106
Run procedures	Page 251
View a list of allowed SQL statements	Page 48
Read about the implications of allowed statements	Page 259
Create Query Manager tables	Page 149
Add data to tables	Page 155
Print or view table data	Page 167, 168
Maintain tables	Page 146
Read about your Query Manager profile	Page 33
Adjust the settings in your profile	Page 43
View profile settings you cannot change	Page 42
Read about Query Manager (QM) statements	Page 235
Enter QM statements or system commands	Page 28
Connect to remote databases	Page 174
Find other specific information in this guide	Contents, Index

Prerequisite and related information

Use the IBM i5/OS Information Center as your starting point for IBM System i technical information.

You can access the information center two ways:

- From the following Web site:
<http://www.ibm.com/systems/i/infocenter/>
- From the *i5/OS Information Center CD*, SK3T-4091. This CD-ROM is included with your new System i hardware or i5/OS software upgrade order. You can also order the CD-ROM from the IBM Publications Center:
<http://www.ibm.com/shop/publications/order>

The i5/OS Information Center contains new and updated system information, such as software and hardware installation, Linux[®], WebSphere[®], Java[™], high availability, database, logical partitions, CL commands, and system application programming interfaces (APIs). In addition, it provides advisors and finders to assist in planning, troubleshooting, and configuring your system hardware and software.

With every new hardware order, you receive the *System i Access for Windows DVD*, SK3T-4098. This DVD provides for the installation of the IBM System i Access for Windows[®] licensed program. System i Access Family offers client and server capabilities for connecting PCs to System i models.

How to send your comments

Your feedback is important in helping to provide the most accurate and high-quality information. If you have any comments about this book or any other System i documentation, fill out the readers' comment form at the back of this book.

- If you prefer to send comments by mail, use the readers' comment form with the address that is printed on the back. If you are mailing a readers' comment form from a country or region other than the United States, you can give the form to the local IBM branch office or IBM representative for postage-paid mailing.
- If you prefer to send comments by FAX, use either of the following numbers:
 - United States, Canada, and Puerto Rico: 1-800-937-3430
 - Other countries or regions: 1-507-253-5192
- If you prefer to send comments electronically, use one of these e-mail addresses:
 - Comments on books:
RCHCLERK@us.ibm.com
 - Comments on the i5/OS Information Center:
RCHINFOC@us.ibm.com

Be sure to include the following:

- The name of the book or i5/OS Information Center topic.
- The publication number of a book.
- The page number or topic of a book to which your comment applies.

Chapter 1. Introducing Query Manager

This chapter begins with a description of Query Manager, explaining what it is, and how to use it to perform different tasks and functions. Following the description are definitions of some of the terms and concepts used with Query Manager that you might not be familiar with. The chapter ends with an explanation of how Query Manager relates to other System i products.

What is Query Manager?

DB2 Query Manager, part of the IBM DB2 Query Manager and SQL Development Kit for i5/OS licensed program, is a collection of tools you can use to obtain information from DB2 for i5/OS databases.

You use Query Manager to select, arrange, and analyze information stored in one or more database tables, to produce reports or new tables. You can create and run your own query definitions, or you can run existing queries that you did not create. You can format the way that retrieved query information is presented by creating a report form, and applying it when you run a query, or you can let Query Manager format the query information for you, using a simple default report form.

Query Manager queries are created using the DB2 for i5/OS SQL language. If you have little or no experience using the DB2 for i5/OS SQL language, you can still create and change queries using Query Manager's prompted query creation mode. A series of displays prompt you to enter all of the information that DB2 for i5/OS needs to create a query.

Query Manager queries can obtain information from a single table or from as many as 32 tables. You can select all the table columns, or only a few of the columns, and organize them for the type of output chosen. You can have all table rows in the output, or you can select only a few to be included, using row selection tests. You can also use report breaks and arithmetic summary functions to include additional information in your report, and make it easier to read.

You determine what data the query is to retrieve, the format of the report, and whether the output should be displayed, printed, or sent to another database table.

When you send query output to a database table, you can create a new table. You can also create and maintain database tables using Query Manager's prompt-guided tables option.

Another way of creating tables is through Query Manager's command window. Using the command window, you can enter Query Manager statements and system commands to perform tasks such as:

- Creating and saving queries
- Running queries
- Connecting to other databases
- Importing and exporting objects
- Running procedures that were created outside Query Manager

All of these features are described in detail in this book.

DB2 Query Manager can gather information from any database table in the network if the database is known to the system. Database tables must be defined on the system using i5/OS data description specifications (DDS), the i5/OS interactive data definition utility (IDDU), or DB2 for i5/OS. Query Manager uses DB2 for i5/OS query management to manage query objects (*QMQRy) and report form objects (*QMFORM).

General concepts in Query Manager

The following concepts and terms are used throughout Query Manager, and are referred to in this guide. Read through these definitions to gain a better understanding of the way Query Manager works.

“Databases, tables, columns, and rows in Query Manager”

“Libraries and collections in Query Manager” on page 3

“Double-byte character set (DBCS) values in Query Manager” on page 4

“Sort sequence capabilities in Query Manager” on page 4

“Queries and the SQL language in Query Manager” on page 4

“Prompted queries in Query Manager” on page 5

“Report forms in Query Manager” on page 5

“Active query in Query Manager” on page 7

“Active form in Query Manager” on page 8

“Active data in Query Manager” on page 8

“Sample queries and sample reports in Query Manager” on page 9

“Procedures in Query Manager” on page 10

Databases, tables, columns, and rows in Query Manager

The DB2 for i5/OS database is a relational database that stores information at the most basic level in the table format. A *database* can be compared to a filing cabinet:

- The cabinet can have any number of drawers (libraries or collections).
- Each drawer contains folders (tables).
- Each folder contains pieces of paper (rows).
- All pieces of paper in a given folder are identical “fill-in-the-blanks” forms.

When you start Query Manager, you are connected to the database specified in your Query Manager profile (see “Relational database connection in Query Manager” on page 37). You might also be able to connect to other databases using the Query Manager `CONNECT` statement (see page 236) or `SET CONNECTION` statement (see page 257). For DRDA[®] considerations, see Figure 101 on page 175.

The data in a *table* is arranged in columns and rows:

- *Columns* of a table identify particular types of information. Each column of a row is related in some way to all the other columns for that row. A column must be of a particular data type, such as `CHARACTER`, `DECIMAL`, `DATE`, or `TIME`. For example, the values in a column of employee salaries would all be `DECIMAL`. Each column is identified by a column name.
- *Rows* contain the actual data of a table. Each row is a sequence of values, one for each column of the table; it is a group of related data treated as a unit. The data in a row must conform to the column data types defined for the table. There is no inherent order of the rows within a table.

Table 2 shows a simple database table.

Table 2. Simple Employee Table

ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
10	Sanders	20	Mgr	7	18357.50	0
20	Pernal	20	Sales	8	18171.25	612.45
30	Marenghi	38	Mgr	5	17506.75	0
40	O'Brien	38	Sales	6	18006.00	846.55
50	Hanes	15	Mgr	10	20659.80	0
60	Quigley	38	Sales	0	16808.30	650.25
70	Rothman	15	Sales	7	16502.83	1152.00
80	James	20	Clerk	0	13504.60	128.20
90	Koonitz	42	Sales	6	18001.75	1386.70
100	Plotz	42	Mgr	7	18352.80	0

Libraries and collections in Query Manager

Libraries and collections are places to store objects and tables, such as the query and report form definitions, and the tables that you use in Query Manager. When you use Query Manager, you are often prompted to specify the name of the library or collection in which an object or table is stored. (This library or collection name is also known as a qualifier.)

Queries, report forms, and database tables are organized into sets called *libraries*. When you create one of these objects, it is assigned to one library. A library groups related objects and allows you to find the objects by name.

Collections are special types of libraries used to store database tables. A collection consists of a library, journal, journal receiver, data dictionary, and SQL catalog. Note that tables can be stored in either libraries or collections.

You need to give different names to objects of the same type that are stored in the same library or collection. For example, you cannot have two queries, both named STAFF, in the same library. You can have a query, a report form, and a table all named STAFF in one library, and another table named STAFF in a second library or collection. See "Naming conventions in Query Manager" on page 29 for more information.

Query Manager supports the following special libraries. You can enter these names to search the associated libraries or collections for objects or tables. (In the following descriptions, the word "library" is used to represent both libraries and collections.)

*CURLIB

Specifies the current library being used for your job. It is the only library searched. If no current library is found, QGPL (the default library) is searched.

When you specify *CURLIB for a *Library* prompt, Query Manager changes it to the name of the library currently being used in your job. That library name is displayed in place of *CURLIB.

*LIBL Specifies all the libraries in the library list for your current job. The libraries are searched in the same order as they are listed for your job.

Double-byte character set (DBCS) values in Query Manager

Some countries use pictograms or symbolic characters in their language. DBCS data types must be used for these values. Usually, if your national language uses alphabetic letters instead of DBCS characters, your tables do not contain DBCS data. You can ignore any online help that refers to DBCS data.

You can include DBCS characters in query definitions, and in the headings and footings for report forms. You can also enter DBCS characters in Query Manager tables for columns that are defined with the GRAPHIC or VARGRAPHIC data types. If your system is DBCS-capable, you can also enter DBCS characters for columns that are defined with the CHARACTER and VARCHAR data types. See “Adding DBCS data to a table in Query Manager” on page 156 for more information.

Note: To properly display DBCS data, you need a DBCS-capable display station.

Sort sequence capabilities in Query Manager

Sorting and comparing character data are complex operations in query and report functions. Query Manager gives you four sort sequence tables to choose from when you create a query:

- You can choose to use the hexadecimal codes of the characters in the character set you are using. When you use the hexadecimal codes, all the lowercase characters sort before (have lower values than) the uppercase characters. For example, the characters *AbBa* sort as *abAB*. The code for the hexadecimal sort sequence is *HEX.
- You can choose a sort sequence table that you previously created. You can create a sort sequence table with the Create Table (CRTTBL) CL command.
- You can select either of two sort sequences associated with the language that is appropriate for query. The two system-supplied sort sequences are:

*LANGIDSHR

Certain characters in this sort sequence table have the same collating weight. The uppercase and lowercase versions of a letter share the same value.

*LANGIDUNQ

All characters in this sort sequence table have unique collating weights. This table differs from the hexadecimal code in that uppercase and lowercase letters have collating weights adjacent to each other. When using this table, the lowercase characters precede the comparative uppercase characters.

Appendix D, “Example: Sort sequence in Query Manager,” on page 261 shows several examples of uses for the *HEX, *LANGIDSHR, and *LANGIDUNQ sort sequences.

Queries and the SQL language in Query Manager

In general terms, a query is a question asked of the database. For example, you use a query to get information from database tables to produce a report. All queries created in Query Manager are written in the DB2 for i5/OS SQL language. Most of the queries you write or run are SQL SELECT statements that generate reports on existing database information. Query Manager queries can contain all interactive SQL statements except for the CONNECT, DISCONNECT, RELEASE, and SET CONNECTION statements.

The following example shows a simple query that extracts information from the sample table shown on page 3.

```
SELECT DEPT, NAME, JOB, SALARY, COMM
FROM MYCOLL.STAFF
WHERE DEPT = 20 OR DEPT = 38
ORDER BY DEPT, JOB
```

This means:

- SELECT the values from the columns named DEPT, NAME, JOB, SALARY, and COMM
- FROM the table named STAFF in the MYCOLL collection
- For each row WHERE the value in the row's DEPT column is either 20 OR 38
- Sort the results in ORDER BY the values in the DEPT column, and within each DEPT sort in order by the values in the JOB column.

The results of running this query are shown in Figure 1.

Prompted queries in Query Manager

Users with little or no experience in using the SQL language can create and change SELECT statement queries using Query Manager's prompted query creation mode. See "Queries and the SQL language in Query Manager" on page 4 for an example of a SELECT statement query.

A series of displays are shown, with prompts that ask you to enter all of the information that Query Manager needs to create the query. Answer the prompts shown on these displays to create a prompted query.

The values that you can enter in response to the prompts are shown on the displays. Additional information about the prompts and values is available by pressing F1 (Help) or F4 (Prompt).

Prompted query is started from the Work with Query Manager Queries display, by selecting one of the following options:

- 1=Create**
(if your current query creation mode is prompted)
- 2=Change**
(if the query was last saved as a prompted query)
- 5=Display**
(if the query was last saved as a prompted query)

See "Creating a prompted query through the define prompted query display in Query Manager" on page 78 for more information.

Report forms in Query Manager

While a query is a question asked of the database, a report form specifies the format of the answer. The report itself is the result of applying a report form to the data generated by running a query.

If you run the example query shown on page 4 without specifying a report form, Query Manager generates a default report form and produces a simple report, as shown in Figure 1. This default report form is referred to as *SYSDFT, the system default form.

DEPT	NAME	JOB	SALARY	COMM
20	James	Clerk	13504.60	128.20
20	Sanders	Mgr	18357.50	0
20	Pernal	Sales	18171.25	612.45
38	Abrahams	Clerk	12009.75	236.50
38	Naughton	Clerk	12954.75	180.00
38	Marengi	Mgr	17506.75	0
38	O'Brien	Sales	18006.00	846.55
38	Quigley	Sales	16808.30	650.25

Figure 1. Report Using Default Report Form

Making reports easier to read in Query Manager

You can improve the presentation of the report by creating a report form and applying it to the query data. The report form could specify a page heading and footing, and column headings that are more descriptive, as shown in Figure 2.

Employee Earnings ← Page heading				
Department	Employee Name	Job	Salary	Comission ← Column heading
20	James	Clerk	13504.60	128.20 ← Heading
20	Sanders	Mgr	18357.50	0 ← separators
20	Pernal	Sales	18171.25	612.45
38	Abrahams	Clerk	12009.75	236.50 ← Detail line
38	Naughton	Clerk	12954.75	180.00
38	Marenghi	Mgr	17506.75	0 ← Detail line
38	O'Brien	Sales	18006.00	846.55 ← spacing
38	Quigley	Sales	16808.30	650.25

CONFIDENTIAL

Page 1 ← Page footing

RBAL3515-1

Figure 2. Report Using Simple Report Form

Using break levels in the report in Query Manager

You can further improve the presentation of the report by including break levels in the report form. You use break levels (also known as *report breaks* and *control breaks*) to separate the report information into meaningful groups. For each break group, you can specify descriptive text and calculate totals, averages, and other summary values.

For example, you can improve on the report shown in Figure 2 on page 6 using the following formatting options:

- Cause a break to occur when the department number changes
- Print a break heading and footing for each department
- Total the salaries and commissions for each department
- Cause a second break to occur when the job value changes
- Print a break footing for each job
- Total the salaries and commissions for each job
- Print final text and grand totals at the end of the report

In Figure 3 on page 7, a high-level break, BREAK1, is specified for the DEPT column. The break is defined so that whenever the department number changes, the summary details are displayed (in this case, the total salaries and commissions for the department).

A second-level break, BREAK2, is specified for the JOB column. The second break is defined so that whenever the job type changes, the summary details are displayed (the total salaries and commissions for employees of that job type within that department).

Notes:

1. When using break levels, sort the row data into an order that is logical for the breaks. For example, if you want the report to break when the value in the DEPT column changes, you should sort the row data by DEPT. That means all departments will be grouped together (as you specify in either ascending or descending order of the sorting sequence). If you are creating or changing an SQL query,

you sort row data using the ORDER BY clause of the SELECT statement. If you are creating or changing a prompted query, you sort row data using the Select Sort Columns display.

- Columns for which you specify break levels are not automatically shown on the left of the report, and the columns for which you specify summaries are not automatically shown on the right. To make your report more readable, you can specify a column sequence in the report form definition so that break columns appear on the left of the report, and columns with summary data appear on the right.

Figure 3 shows two break levels, and the features described on page 6.

Employee				
Department	Name	Job	Salary	Comission
Beginning of department 20			← BREAK1 heading	
20	James	Clerk	13504.60	128.20
Total for job Clerk			← BREAK2 separators	← BREAK2 summary
			13504.60	128.20
			← BREAK2 footing	
	Sanders	Mgr	18357.50	0
Total for job Mgr			18357.50	0
	Pernal	Sales	18171.25	612.45
Total for job Sales			18171.25	612.45
Total for department 20			← BREAK1 separators	← BREAK1 summary
			50033.35	740.65
			← BREAK1 footing	
Beginning of department 38				
38	Abrahams	Clerk	12009.75	236.50
	Naughton	Clerk	12954.75	180.00
Total for job Clerk			24964.50	416.50
	Marenghi	Mgr	17506.75	0
Total for job Mgr			17506.75	0
	O'Brien	Sales	18006.00	846.55
	Quigley	Sales	16808.30	650.25
Total for job Sales			34808.30	1496.80
Total for department 38			77285.55	1913.30
===== ← Final separators				
Grand Total --			127318.90	2653.95
Employee Salaries			← Final summary	
			← Final text	

RBAL3514-1

Figure 3. Report Using Report Form with Two Break Levels

Report formatting is described in detail in “Creating or changing a Query Manager report form” on page 107.

Active query in Query Manager

The active query is the last query that was created, changed, or run in the current Query Manager session. Query Manager uses the active query as the default when you choose to run a query or report.

When you create or change a query, you are always prompted to save it before any action is processed that would otherwise cancel or replace the query. Note that a query run as the result of running a procedure does not change the active query.

Active form in Query Manager

The active form is the last report form that was created, changed, or used to produce a report in the current Query Manager session. Query Manager uses the active form as the default when you choose to run a query or report.

When you create or change a report form, you are always prompted to save it before any action is processed that would otherwise cancel or replace the report form. Note that a report form used to produce a report as the result of running a procedure does not change the active form.

Active data in Query Manager

The active data is the data most recently retrieved from a database as the result of interactively running an SQL SELECT statement query or prompted query. Active data is useful when you create or change a report form, and when you display or run a report.

When you create or change a report form, active data can provide default values for the column formatting, such as column headings and widths. You can also use the active data to display the report. You do not need to run a query each time you want to see how the report formatting values are affecting the appearance of the report. Run the query once to create active data; then when you display the report, Query Manager formats the active data using the report form, as long as the active data matches the report form. For the active data to match the report form, they need to contain the same number of columns, and the columns need to have compatible data types.

You can also use active data to run a report. When you select option 9 (Run report) from the Work with Query Manager Report Forms display, a prompt display asks you either to enter the name of the query you want to run, or to specify that you want to produce the report using the active data. You do not need to re-run a query if active data already exists.

The active data is not necessarily related to the active query. For example, you might first run query A. Query A becomes the active query and active data is produced. If you then choose to change query B, query B becomes the active query, but the active data remains unaffected because no new query has yet been run.

Active data is not affected when:

- You run an SQL query that does not contain a SELECT statement
- You run an SQL SELECT statement query or prompted query in batch mode
- An SQL SELECT statement query or prompted query is run as the result of running a procedure

Sample active data in Query Manager

Active data is created when an SQL SELECT statement query or prompted query is run interactively. Some queries take a long time to run: for example, those that are complex or retrieve a large number of rows from the database. If you do not require full active data, you can save time by running these queries using the sample restriction, and create sample active data.

When you run an SQL SELECT statement query or prompted query, you can specify that you want it to retrieve a sample number of rows only. You specify the number of rows to include in the sample (between 1 and 100) through your Query Manager profile (see “Number of rows to use for sample in Query Manager” on page 36). Sample queries are always run in interactive mode. The sample active data that results from a query run in this way is always output to display; it cannot be printed or written to another table. See “Sample queries and sample reports in Query Manager” on page 9 for more information.

Note: If “Allow interactive sample run” is set to NO in your Query Manager profile, you cannot run queries using the sample restriction. See page 36 for more information.

Incomplete active data in Query Manager

There may be times when you expect to run a full SQL SELECT statement query or prompted query, but you end up with incomplete data. This is not the same as sample data. When you run queries interactively, a limit can be placed on the maximum number of rows that can be retrieved from the database. This limit is determined by your Query Manager profile. See “Maximum number of rows allowed on interactive run in Query Manager” on page 36.

If Query Manager retrieves the maximum number of rows before it completes the query, a message appears at the bottom of the display informing you that:

Maximum number of records reached. Data is incomplete.

When this happens, final summary functions such as SUM, AVERAGE, and COUNT are omitted from your report.

Sample queries and sample reports in Query Manager

When you run an SQL SELECT statement query or prompted query, you can choose to retrieve from the database either all of the rows specified by the query, or a limited number of rows (a sample). You set the sample number of rows you want to retrieve (between 1 and 100) through your Query Manager profile. See “Number of rows to use for sample in Query Manager” on page 36.

When you do not require full active data, you can save time by running queries using the sample restriction, and creating sample active data. Sample queries are always run in interactive mode. The output from a sample query or report is always shown on your display; it cannot be printed or written to another table.

Note: If “Allow interactive sample run” is set to NO in your Query Manager profile, you cannot run queries or reports using the sample restriction. See page 36 for more information.

Sample reports are produced when you apply a report form to data retrieved by a sample query. Sample reports are useful when the main purpose for producing the report is one of the following:

- To confirm that the data selected by a particular query is the correct data for your purpose
- To see how a particular report form arranges the report data

Sample queries and reports can be run and displayed in several ways:

- Run a query by choosing option 9 (Run) from either the Work with Query Manager Queries or (Run report) Work with Query Manager Report Forms display, and set “Run sample only” to YES (see page 138).
- Press F6 (Run sample) from any of the following displays:
 - Edit Query or Display Query display
 - Any Define Prompted Query or Display Prompted Query display(See pages 55 and 64.)
- Press F5 from any of the Select Report Format or Display Report Format displays where that key is labeled (Display sample) rather than (Display report) or (Run report). This happens when the active data is the result of a sample query (see pages 109 and 129).
- Press F5 from any of the Select Report Format or Display Report Format displays where that key is labeled (Run report) rather than (Display report) or (Display sample). This happens when there is no active data. Set “Run sample only” to YES (see pages 109, 129, and 138).
- If “Display run options” is set to YES in your Query Manager profile, press F5 (Run report) from any of the following displays; then set “Run sample only” to YES:
 - Edit Query or Display Query display
 - Any Define Prompted Query or Display Prompted Query display

(See pages 55, 64, and 138.)

- Issue the DISPLAY SAMPLE statement on the Query Manager statement line (see page 239).

Note: When you run a query or report using the sample restriction, final summary functions such as SUM, AVERAGE, and COUNT are omitted from your report.

Procedures in Query Manager

You use procedures to run a set of Query Manager statements with a single RUN statement. You might find yourself running queries and producing reports over and over again that use the same Query Manager statements. If you do, consider running these steps together by creating a procedure.

The following example illustrates a procedure called PAYROLL.

```
'RUN QUERY PAYROLL'  
'PRINT REPORT (FORM=PAYFORM'  
'SAVE DATA AS MYCOLL.PAYSUM'
```

This procedure runs the PAYROLL query, prints a report using the PAYFORM report form, and saves the data to a table called PAYSUM in the MYCOLL collection.

Procedures are created and changed outside Query Manager, using a Source Edit Utility (SEU) editor. When you create a procedure to run from Query Manager, the following guidelines apply:

- Each Query Manager statement must be typed in uppercase.
- Procedures can contain only Query Manager statements, blank lines, and comment lines that are delimited by /* and */. Blank lines and comment lines have no effect on statement processing.
- Procedures can contain a RUN statement that runs another procedure or a query.
- The query statements within a procedure must be delimited by single or double quotation marks.

Use the RUN PROC statement to run the procedures (see page 251). Users with an ALL access level can enter the RUN PROC statement on any Query Manager statement line. The statement line is available from most displays by pressing F22 (QM statement).

Notes:

1. Running a procedure does not affect the active query, active form, or active data.
2. When you run a procedure in batch mode, Query Manager uses the default job description specified in your Query Manager profile to set the environment.

Query Manager and relationships to other System i products

There are several data manipulation tools that have, to some extent, overlapping functions. For querying data, you can use DB2 for i5/OS SQL, Query Manager, Query for i5/OS, DB2 for i5/OS query management, and the Open Query File (OPNQRYF) command.

The following information describes the differences between these tools and indicates their likely uses.

DB2 for i5/OS SQL

Programmers use the DB2 for i5/OS SQL language to query and manipulate data in a database. Most SQL functions can be performed either interactively or in application programs written in a high-level programming language. The query component can be used in programs to read data for further processing by other high-level language statements. Interactive SQL can also be used by programmers to test SQL statements that are to be embedded in a program.

Query Manager

This tool allows easy reporting on database information. It is the interface for using the DB2 for i5/OS SQL language and i5/OS query management. Query Manager provides three integrated interfaces for the creation and maintenance of queries, report forms, and database tables.

Query for i5/OS

This tool allows easy reporting on database information. It is not built on the DB2 for i5/OS SQL language.

DB2 for i5/OS query management

This is an application programming interface to the query management Common Programming Interface (CPI). CPI functions are provided by query management. The CPI allows a user to access information in a relational database and control how this data appears when formatted into a report. The CPI provides services that fall into two major categories: querying and report writing.

Open Query File (OPNQRYF) Command

This is a programming command that can be used with a high-level language program. It acts as a filter between the program and the database, so that the program receives only those records that meet the criteria specified in the OPNQRYF command. It is not built on the DB2 for i5/OS SQL language.

Chapter 2. Getting Started with Query Manager

This chapter tells you how to get Query Manager up and running. It begins with instructions on how to start up and exit from Query Manager, and describes the main menu and its options. Following this is a description of Query Manager displays in general, including instructions on how to select options from displays and objects from lists, and how to enter information. Next, the online help available is described, which includes help for messages, and the job log. The commonly used function keys are also described.

You can then read about the prompt and error messages shown on Query Manager displays: when and why these messages appear, and what you should do when you see them. This is followed by a description of the Query Manager command window, through which you can enter Query Manager statements and system commands.

This chapter finishes with a description of the naming conventions to use when saving your Query Manager queries, report forms, and tables.

Starting DB2 Query Manager

You need to have authority to use the Start Query Manager (STRQM) command before you can use Query Manager. Start Query Manager by typing STRQM on any command line, or by selecting the Query Manager option from one of the following menus:

- Query Utilities menu
- SQL Commands menu
- Query Commands menu
- Start Commands menu

If the “Relational database connection” setting in your Query Manager profile is other than *NONE or *CURRENT, you are connected to the specified database before Query Manager starts. If the specified database connection is on a remote system, a display prompts you to enter the user ID and password for the connection. See “CONNECT in Query Manager” on page 236 for a description of the values you can enter.

Note: If the remote connection fails, you cannot use Query Manager. Ask the security administrator to change the “Relational database connection” setting in your Query Manager profile. If you have *SECADM authority and the remote connection fails, you can start Query Manager using your local database connection, so you are always able to change users’ profile settings.

When you successfully start Query Manager, the main menu is displayed. (An example of the main menu is shown in Figure 4 on page 14.) This menu and its options are described over the next few pages. From the main menu, you can select the following:

- **Work with Query Manager queries** to create, change, copy, delete, display, print, and rename query definitions, to run queries, and to convert prompted query definitions to SQL query definitions.
- **Work with Query Manager report forms** to create, change, copy, delete, display, print, and rename report forms, and run (produce) reports.
- **Work with Query Manager tables** to create, copy, delete, display, rename, display the definition of, add data to, change data in, display data in, and print data from tables.
- **Work with Query Manager profiles** to view, change, and copy your Query Manager profile.

See “Using the main menu in Query Manager” on page 14 for a description of the main menu, and instructions telling you how to select menu items.

Exiting from Query Manager

When you finish working with Query Manager, you exit from the main menu by pressing F3 (Exit) or F12 (Cancel). Either one of these keys takes you out of Query Manager, and returns you to the display you were using before you started Query Manager.

Using the main menu in Query Manager

The first display you see when you start Query Manager is the main menu. An example of the Query Manager main menu is shown in Figure 4.

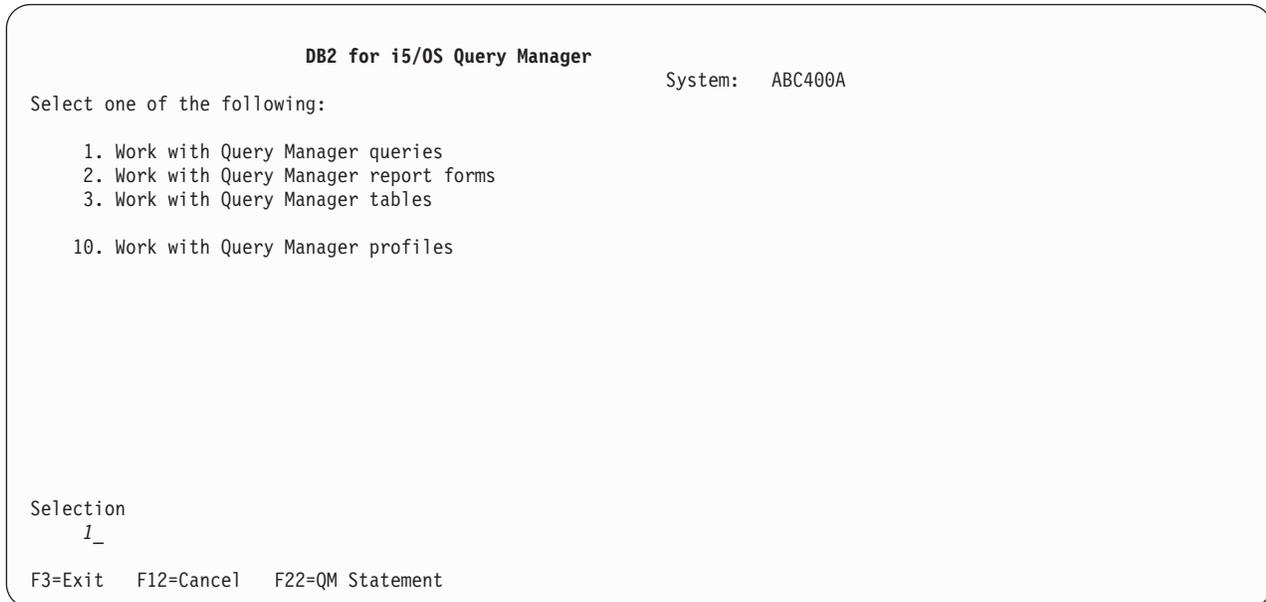


Figure 4. Main Menu Display

Each menu option takes you to a “Work with” display, from which you can perform a number of options. To go to a “Work with” display, type the number that corresponds to the display you want to use in the *Selection* prompt at the bottom of the display; then press the Enter key.

When you go to a “Work with” display, you have the authority to use all of the options and function keys that are shown on the display. The options and function keys shown differ depending on whether you are a security administrator, and whether you have a *BASIC* or an *ALL* access level. Access levels are set through the Query Manager profile, and are described on pages 31 and 35. Security administrator authority is assigned outside Query Manager, and is described in *Security reference*.

Note: The main menu shows only those options that you have the authority to use. Your access to the Work with Query Manager tables option can be restricted through your Query Manager profile. If “Allow access to QM tables option” is set to NO, option 3 (Work with Query Manager tables) is not shown in the main menu, and you cannot access the Work with Query Manager Tables display. See “Allow access to tables option in Query Manager” on page 41 for more information.

The work with Query Manager queries display

In general terms, a query is a question asked of the database. For example, you use a query to get information from database tables to produce a report.

Choose option 1 from the main menu to go to the Work with Query Manager Queries display. If you have an *ALL* access level, you can perform the following options through this display:

- **Create a query.** Shows the Edit Query display if your current query creation mode is SQL. SQL queries can contain any SQL statement that you have been granted authority to use through your Query Manager profile.
Shows the Define Prompted Query display if your current query creation mode is prompted. A series of displays prompt you to enter all of the information that Query Manager needs to create the query.
- **Change a query.** Shows the specified query in either the Edit Query display, or the Define Prompted Query display, depending on the mode in which the query was last saved. You can change the query definition through this display.
- **Copy a query.** Copies a query. You can replace an existing query or create a new one.
- **Delete a query.** Deletes queries you no longer require. You need to respond to a confirm display before the delete occurs.
- **Display a query definition.** Shows the definition of the specified query in display-only format. The query definition is shown in the format in which it was last saved, either SQL or prompted. You cannot change any values through this option.
- **Print a query definition.** Sends a copy of the SQL statement that defines the query to the printer specified in your Query Manager profile.
- **Rename a query.** Prompts you to specify new names for existing queries.
- **Run a query.** Runs the selected query. You can run prompted queries, and any SQL queries that contain one of the SQL statements that you have been granted authority to use through your Query Manager profile. If the query is:
 - An SQL SELECT statement or prompted query, Query Manager shows a run options display, prompting you to specify options such as the mode in which you want to run the query (batch or interactive), and the destination to which you want the query output directed (printer, display, or table). Run options are described in detail on page 136.
 - Not an SQL SELECT statement, Query Manager shows a Run Query display, prompting you for the mode (batch or interactive) in which you want to run the query.
- **Convert to SQL.** Converts a prompted query to an SQL query. You can replace the existing prompted query definition with the converted SQL query, or you can create a new SQL query, and leave the prompted query definition unchanged. You need authority to use the SQL query creation mode and the SELECT statement.

Users with a *BASIC* access level can display a query definition, print a query definition, and run a query through the Work with Query Manager Queries display.

Queries are described in detail in Chapter 4, “Working with Query Manager queries” and Chapter 5, “Creating and changing queries in Query Manager.”

The work with Query Manager report forms display

While a query is a question asked of the database, a report form specifies the format of the answer. The report itself is the result of applying a report form to the data generated by running a query.

Choose option 2 from the main menu to go to the Work with Query Manager Report Forms display. If you have an *ALL* access level, you can perform the following options through this display:

- **Create a report form.** Shows the Select Report Format displays, through which you can create a report form. Specify the headings, footings, formatting, breaks, summary functions, and spacing.
- **Change a report form.** Shows the specified report form in the Select Report Format displays. You can change the definition of an existing report form through these displays.
- **Copy a report form.** Copies a report form. You can replace an existing report form or create a new one.
- **Delete a report form.** Deletes report forms you no longer require. You need to respond to a confirm display before the delete occurs.

- **Display a report form definition.** Shows the definition of a report form in display-only format. You cannot change any values through this option.
- **Print a report form definition.** Sends a copy of the report form definition to the printer specified in your Query Manager profile.
- **Rename a report form.** Prompts you to specify new names for existing report forms.
- **Run a report.** Produces a report by applying the selected report form to the active query data. Query Manager shows a run options display, prompting you to specify options such as the query you want to run to generate the report data, and the mode in which you want to run the query (batch or interactive). Run options are described in detail on page 136.

Users with a *BASIC* access level can display a report form definition, print a report form definition, and run a report through the Work with Query Manager Report Forms display.

Report forms are described in detail in Chapter 6, “Working with Query Manager report forms.”

The work with Query Manager tables display

You use Query Manager tables to add to and maintain information in the database. Users with *BASIC* and *ALL* access levels can create tables and add information to them. Table information can later be manipulated, printed, and viewed through the Tables, Queries, and Report Forms options.

Choose option 3 from the main menu to go to the Work with Query Manager Tables display. All Query Manager users have access to all of the options shown on this display, and can perform the following options:

- **Create a table.** Shows the Create Query Manager Table display, through which you can create a table. Type a description for the table; then specify the name, data type, length, and number of decimal places for each of the columns you want to include in the table.
- **Copy a table.** Copies a table. You can replace an existing table or create a new one. You can copy the table definition only, or copy the definition and the data rows. If required, you can change the definition of the table during the copy.
- **Delete a table.** Deletes tables you no longer require. You need to respond to a confirm display before the delete occurs.
- **Display a table.** Prompts you to specify search conditions to find the rows you want to display; then shows the selected rows in a display report. Information is shown in display-only format. You cannot change any values through this option. This option is not shown if you are running Query Manager in batch mode (see “Run query mode in Query Manager” on page 35).
- **Print a table.** Prompts you to specify search conditions to find the rows you want to print; then prints the selected rows in a report. The table information is printed using the default printer and run query mode from your Query Manager profile.
- **Rename a table.** Prompts you to specify new names for existing tables.
- **Display table definition.** Shows the definition of a table in display-only format. You cannot change any values through this option.
- **Add data to table.** Shows a data entry display, through which you can add data rows to a selected table.
- **Change data in table.** Prompts you to specify search conditions to find the rows you want to change; then shows the selected rows one at a time in a data entry display. Using this option you can change row data, and delete entire rows.
- **Display table data.** Prompts you to specify search conditions to find the rows you want to display; then shows the selected rows one at a time in display-only format. You cannot change any values through this option.

Note: Not all users can access the Work with Query Manager Tables display. If “Allow access to QM tables option” is set to NO in your Query Manager profile, the Work with Query Manager tables option is not shown on the main menu. See page 41 for more information.

Query Manager tables are described in detail in Chapter 8, “Working with Query Manager tables.”

The work with Query Manager profiles display

Your Query Manager profile is the portion of your i5/OS user profile that contains the settings and default values used when you run Query Manager. Query Manager creates a default Query Manager profile the first time you use the system. Your security administrator can change the settings contained in your profile, and as you become familiar with Query Manager, you might also want to change some of the values.

The values you can change in your Query Manager profile differ depending on whether you have a *BASIC* or an *ALL* access level. Query Manager user access levels are described on page 31.

Choose option 10 from the main menu to go to the Change Query Manager Profile display. You can change all of the information shown on this display except for your user profile name and description.

Press F10 (Display additional details) to view the rest of the settings and values that make up your Query Manager profile. This information is shown in display-only format. You cannot change any of the values shown on the Additional Details display. Only the security administrator has the authority to change these settings and values.

Security administrator options in Query Manager

If you have security administrator (*SECADM) authority, you can work with the profiles of other Query Manager users. When you choose option 10, you go to a Work with Query Manager Profiles display, through which you can perform the following options:

- **Change a profile.** Shows the Change Query Manager Profile display, through which you can change the settings and default values in a Query Manager profile for which you have *OBJMGMGT rights.
- **Copy a profile.** Copies a Query Manager profile. You can create a new profile or replace an existing one with the settings and values from another selected profile. You need to have *OBJMGMGT rights for both the profile you want to copy from and the profile you want to copy to. If you are creating a profile, the person you are creating the profile for must have a user profile on the system (created using the CRTUSRPRF CL Command).
- **Display a profile.** Shows a Query Manager profile in display-only format. You cannot change any values through these displays. You need to have *READ rights for the profile you want to display, but you do not need *OBJMGMGT rights to display a Query Manager profile.

Query Manager profiles are described in detail in Chapter 3, “Working with Query Manager profiles.”

*SECADM authority, *OBJMGMGT rights, and *READ rights are assigned outside Query Manager, and are described in *Security reference*.

Using Query Manager displays

All Query Manager displays show instructions telling you how to use them. Simply follow the instructions shown on the display. For example:

Type choices, press Enter.

Type SQL statement.

To rename table, type New Name, press Enter.

If you are ever unsure how you should use a display, press F1 (Help). Help information is available throughout Query Manager, and provides you with additional information for an entire display, or for any value, prompt, or message that you may not understand completely.

Query Manager knows what your profile access level is, and displays only those options and function keys that you have the authority to use. To choose an option from an Query Manager display, type its number in the *Selection* or *Opt* prompt shown on the display; then press the Enter key.

When you see More... in the bottom right-hand corner of a display, it means that there is more information to display. Use your display station's roll keys to view the rest of the display information. When you reach the end of the information, you see Bottom displayed instead of More...

Many Query Manager displays show lists of items that you can use to complete prompts. These items might include:

- Queries, report forms, and tables you are authorized to use
- SELECT statement options
- Report formatting options
- Valid data types for tables
- Available printers

These lists eliminate the need to memorize names, and reduce the number of potential typing errors. Many lists are displayed only when you press F4 (Prompt).

Most lists have *Opt* prompts that you use to make selections directly from the list. Simply move the cursor to the *Opt* prompt next to the item you want to select; then type the number that corresponds to the option you want to perform. The available options you can perform are shown on the display, usually at the top of the list.

Making selections from different types of lists is described on pages 18 and 21.

Entering information through a display in Query Manager

Prompts (shown as underlines) are Query Manager's way of asking you what it needs to know in order to fulfill your request. You need only "fill in the blank". Often the prompt even lists the possible correct choices, so you need only type the choice that fits what you are doing. If you are not sure what information you are supposed to supply at a prompt, you can move the cursor to the prompt and press F1 (Help). In some cases you can also press F4 (Prompt) for a list of valid selections.

When some entry displays are shown, some of the prompts are already filled in. These filled-in values are called *default* values: they are the values assumed by the system if you do not specify anything yourself. You can leave a default value the way it is, or if you want, you can change it to another value. Simply move the cursor to the prompt, and type a new value over the default value.

Prompts are Query Manager's way of identifying an input field. You can change any values you see that are underlined.

Using "Work with" display lists in Query Manager

When you choose to work with queries, report forms, or tables from the main menu, Query Manager shows a "Work with" display. This display lists the options you can perform, followed by a list of the queries, report forms, or tables you can choose.

```

Work with Query Manager Tables

Library . . . . . MYCOLL____ Name, F4 for list

Type options, press Enter.
1=Create table 3=Copy table 4>Delete table 5=Display table
6=Print table 7=Rename table 8=Display definition 9=Add data
10=Change data 11=Display data

Opt Table Description
1_ STAFF_____
APPLICANT Table of job applicants
CARS Sample CARS Table
EMPLOYEE Personnel in each in each department
ORG Corp.'s organization information
PRODUCT Description of corp. products
SCREENS Output file for STRCPYSCN
VENDINFO Vendor Information

Bottom
F3=Exit F4=Prompt F5=Refresh F11=Display table only F12=Cancel
F16=Repeat position to F17=Position to F24=More keys

```

Figure 5. A “Work with” Display

To make a selection from a “Work with” display list, move the cursor to the *Opt* prompt next to the name of the query, report form, or table you want to choose; then type the option number that corresponds to the option you want to perform. You can also type the option number in the *Opt* prompt at the top of the list, next to the blank object name; then type the name of the query, report form, or table you want to choose.

To create a new object, type 1 (Create) in the *Opt* prompt at the top of the list, next to the blank name; then type the name of the query, report form, or table you want to create.

Rules for system name generation in Query Manager

There are specific instances when the system generates a system table or column name. These instances and the name generation rules are described in the following sections.

Rules for column name generation in Query Manager

A system-column-name is generated if the system-column-name is not specified when a table or view is created and the column-name is not a valid system-column-name.

If the column-name does not contain special characters and is longer than 10 characters, a 10-character system-column-name will be generated as:

- The first 5 characters of the name
- A 5 digit unique number

For example:

The system-column-name for LONGCOLUMNNAME would be LONGC00001

If the column name is delimited:

- The first 5 characters from within the delimiters will be used as the first 5 characters of the system-column-name. If there are fewer than 5 characters within the delimiters, the name will be padded on the right with underscore (_) characters. Lower case characters are folded to upper case characters. The only valid characters in a system-column-name are: A-Z, 0-9, @, #, \$, and _ . Any other characters will be changed to the underscore (_) character. If the first character ends up as an underscore, it will be changed to the letter Q.
- A 5 digit unique number is appended to the 5 characters.

For example:

The system-column-name for "abc" would be ABC_00001
The system-column-name for "COL2.NAME" would be COL2_00001
The system-column-name for "C 3" would be C_3_00001
The system-column-name for "??" would be Q_00001
The system-column-name for "*column1" would be QCOLU00001

Rules for table name generation in Query Manager

A system name will be generated if a table, view, or index is created with either:

- A name longer than 10 characters
- A name that contains characters not valid in a system name

Either the SQL name or its corresponding system name can be used in SQL statements to access the file after it is created. However, the SQL name is only recognized by DB2 for i5/OS and the system name must be used in other environments.

If the name does not contain special characters and is longer than 10 characters, a 10-character system name will be generated as:

- The first 5 characters of the name
- A 5 digit unique number

For example:

The system name for LONGTABLENAME would be LONGT00001

If the SQL name contains special characters, the system name is generated as:

- The first 4 characters of the name
- A 4 digit unique number
- All special characters are replaced by the underscore (_)
- Any trailing blanks are removed from the name
- The name is delimited by double quotes (") if the delimiters are required for the name to be a valid system name.

For example:

The system name for "??" would be "_0001"
The system name for "longtablename" would be "long0001"
The system name for "LONGTableName" would be LONG0001
The system name for "A b " would be "A_b0001"

SQL ensures the system name is unique by searching the cross reference file. If the name already exists in the cross reference file, the number is incremented until the name is no longer a duplicate.

Specifying multiple options in Query Manager

You can choose more than one object at a time, by specifying either the same option for multiple objects, or multiple options for multiple objects. For example, from a single "Work with" display, you can choose to delete multiple objects, or you can choose to copy three objects, delete one object, and display two more. The only exception is that you can specify only one option 1 (Create). When you choose to work with multiple objects, Query Manager deals with them in the following order:

- If you specified a Create, the Create is performed first.
- Following that, the options are performed in the same order as the object names appear in the "Work with" display list.

Using help and online information in Query Manager

The following online information is available on the i5/OS operating system. After pressing F1 (Help) on any display, you can press F1 a second time to see an explanation of how the online information works. Read through this online help information using your display station's roll keys to access the additional displays of information. To print a copy of the How to Use Help information, press F9 (Print).

Help for displays in Query Manager

You can press F1 (Help) at any time to see information about the current display. There are two types of help available:

- Context-sensitive
- Extended

Context-sensitive help explains the value on which the cursor is positioned when you press F1 (Help). For example, it can describe the choices available for a prompt or explain a specific value. If a message appears at the bottom of the display, you can position the cursor on the message and press F1 (Help) to display an explanation of the message and the appropriate action to take.

Extended help explains the purpose of the current display. Extended help appears if you press F1 (Help) when the cursor is outside the areas for which context-sensitive help is available, or if you press F2 (Extended help) when a context-sensitive help window is shown.

Display Query Manager Table Definition

Table : STAFF
Description : The STAFF Table

Column	Type	Length	Decimal Places
ID	INTEGER		
NAME	CHARACTER	9	
DEPT			
JOB			
YEARS			
SALARY			
COMM			

: :
: **Type - Help** :
: :
: The data type used in the specified column. :
: This value is display-only. :
: : **Bottom** :
: F2=Extended help F10=Move to top :
: F11=InfoSeeker F12=Cancel F24=More keys :
: :

Bottom

Press Enter to continue.

F3=Exit F12=Cancel F22=QM statement

Figure 7. Example of Context-Sensitive Help

Help for messages in Query Manager

Whenever you see a message at the bottom of the display that you do not fully understand, you can display help information by positioning the cursor on the message and pressing F1 (Help).

Message help describes the reason the message was displayed, and if applicable, lists the steps you need to perform to correct any problems. If the message was displayed due to problems of a technical nature, a technical description is also shown.

Some messages suggest that you check the *job log* for more information. The job log lists the operations performed by the i5/OS operating system leading up to the message that is displayed, including all messages that were displayed by Query Manager. To view job log information, press F10 (Display messages in job log).

When you finish viewing message help information, press F3 (Exit) to return to the display from which you started message help.

For more information, see “Messages and errors in Query Manager” on page 26.

Using Query Manager function keys

Function keys such as F1 (Help) can be used at any time from any Query Manager display; however, not all function keys apply to all displays. At the bottom of each display is a list of the function keys that are *commonly* used with that display (all of the available keys might not be shown). If you want to know how all of the available keys for a particular display work, move the cursor to the function key section of the display; then press F1 (Help).

Commonly used function keys in Query Manager

The following function keys are used fairly consistently throughout Query Manager. Their use is described here and not repeated for every display in which they apply. Where one of these keys is used in a different way, its use is described at the relevant point in this guide.

- F1 Help.** Displays help information. If the cursor is positioned on a prompt or message, the help information is context-sensitive. Otherwise, the help describes the current display.
- F2 Base keys/Alternate keys.** Displays alternate titles for function keys. The F2 key is active when a function key has more than one definition. For example, on the Edit Query display the F5 key performs two functions, (Run report) and (Refresh). The function key title that is currently shown on the display is the function that is active.
- F3 Exit.** Exits from the current display or option, and returns to the calling display. In most cases, any information you have added or changed on the current display is discarded. However, if you were creating or changing a query or report form, F3 takes you to an Exit display.
- F4 Prompt.** Displays a prompt window containing additional information about the current input prompt, usually in the form of a list. You can choose any value from this list by typing 1 in the *Opt* prompt next to the value you want to use. Prompt is context-sensitive. You need to position the cursor on the input prompt to which the information applies before you press F4. When you press F4 from the Edit Query display or the command window, Query Manager shows the syntax of supported Query Manager statements or system commands.
- F5 Refresh.** Refreshes the current display, showing all of the values it contained the last time it was saved. (Information is usually saved by pressing the Enter key.) Use this key to discard the changes made to the display since the last time you pressed the Enter key.
- F5 Run report.** Produces a report using the active query and the active form. If there is no active form, Query Manager applies a default report form to the query data. If “Display run options” is set to YES in your Query Manager profile, or if the active form does not match the active query, a run options display is shown. This display prompts you to specify options such as, the report form you want to use to format the query data, and the mode in which you want to run the query (batch or interactive). Run query options are described in detail on page 136.
- F6 Run sample.** Produces a sample report using the active query and active form. The query retrieves the sample number of rows specified in your Query Manager profile (see page 36). If “Display run options” is set to YES in your Query Manager profile, or if the active form does not match the active query, a run options display is shown. This display prompts you to specify the report form you want to use to format the query data. (See page 136 for a full description of the available run options.) Sample reports are always run in interactive mode and the output is sent to display. You cannot use this function key if “Allow interactive sample run” is set to NO in your Query Manager profile (see page 36).
- F6 Insert line.** Inserts a line in the current definition or display immediately below the line on which

the cursor is positioned. To insert a line at the beginning of the definition or display, position the cursor immediately above the first line before you press F6.

- F9 Retrieve.** Retrieves and displays the last command or statement that was entered in the current entry mode (either Query Manager statement or system command). Press F9 once to retrieve the last command entered, press F9 twice to retrieve the second-to-last command entered, and so on.
- F10 Copy line.** Copies a line in the current definition or display. Place the cursor on the line you want to copy and press F10. Then, move the cursor to the position after which you want the line copied and press F10 a second time to perform the copy. As with F6, if you want to copy a line to the beginning of the definition or display, position the cursor immediately above the first line before you press F10 the second time.
- F11 Display description/Display name only.** (where *name* can be query, form, table, or profile). Press F11 to hide or display the descriptions of the objects listed on a "Work with" display. When you choose to display name only, multiple columns of object names are shown across the "Work with" display. The title for this key changes depending on what information is currently displayed.
Display connection status Press F11 to obtain the detailed connection status for a DISCONNECT, SET CONNECTION, or RELEASE statement.
- F12 Cancel.** Exits from the current display or option, and returns to the previous display. Any information you have added or changed on the current display is discarded.
- F13 Edit query/Edit form.** If you are creating or changing an SQL query, F13 (Edit form) takes you to the Select Report Format display for the active form. If you are creating or changing a report form, F13 (Edit query) takes you to the query editor display for the active query. If there is no active form or active query, you are prompted to specify the name of the report form or query that you want to edit. You can enter the name of an existing report form or query to edit, or you can enter a new name to create a new report form or query. Queries are edited in the mode in which they were last saved. Queries are created in your default query creation mode (either prompted or SQL).
- F13 Display query/Display form.** If you are displaying an SQL query, F13 (Display form) prompts you to enter the name of the report form you want to view. If you are displaying a report form, F13 (Display query) prompts you to enter the name of the query you want to view. Type the name of an existing report form or query; then press the Enter key to show the report form or query definition in display-only format.
- F14 Delete line.** Deletes the line where the cursor is currently positioned from the current definition or display.
- F15 Split line.** Breaks a column/file/table name into two lines to allow for insertion of new characters. The line will be split at the point where the cursor is located. All characters, from the cursor location through the end of the line, will be moved to the new line.
- F16 Repeat position to.** Shows the list of object names (on a "Work with" display) beginning at the name specified the last time you used F17 (Position to). If you have not used F17 yet, you go to the "Position to" window, and Query Manager prompts you to specify the object name at which you want the list to begin.
- F17 Position to.** Shows you a different portion of the list of object names (on a "Work with" display). For more information, see The "Position to" window in Query Manager.
- F18 Display SQL.** Displays the SQL statement that you are building in prompted query. For more information, see step 6 on page 80.
- F19 Display column/system column names.** Allows you to toggle back and forth between displaying either the system column names or the column names while working with a prompted query. For more information, see steps 7 on page 80 through 8 on page 80.

- F20 Display entire name.** Shows the entire name of a column, file, or table when that name is too long to fit on the field. If only part of the name is visible, a > character appears at the end of the truncated name on the window.
- F21 Select all.** Selects all items from the currently displayed list. Usually places a 1 in the *Opt* prompt for all items.
- F21 QM statement/System command.** Users with an *ALL* access level can use this key to alternate between the two entry modes available through the Query Manager command window. For more information, see “Using the command window in Query Manager” on page 28.
- F22 QM statement.** Displays the Query Manager command window for users with an *ALL* access level. You can type Query Manager statements and system commands directly through this window. Move the cursor to the window, and press F4 (Prompt) for information about the statements and commands you can enter through Query Manager. For more information, see “Using the command window in Query Manager” on page 28.
- F24 More keys.** Displays additional function key definitions that apply to the current display.

The “Position to” window in Query Manager

When the list of object names for a “Work with” display is more than one display in length, you can view additional object names by:

- Using your display station’s roll keys
- Pressing F11 (Display name only) to hide object descriptions and display multiple columns of object names
- Using the “Position to” window to begin the list of object names from a new starting point

You display the “Position to” window by pressing F17 (Position to). An example of the “Position to” window is shown in Figure 8.

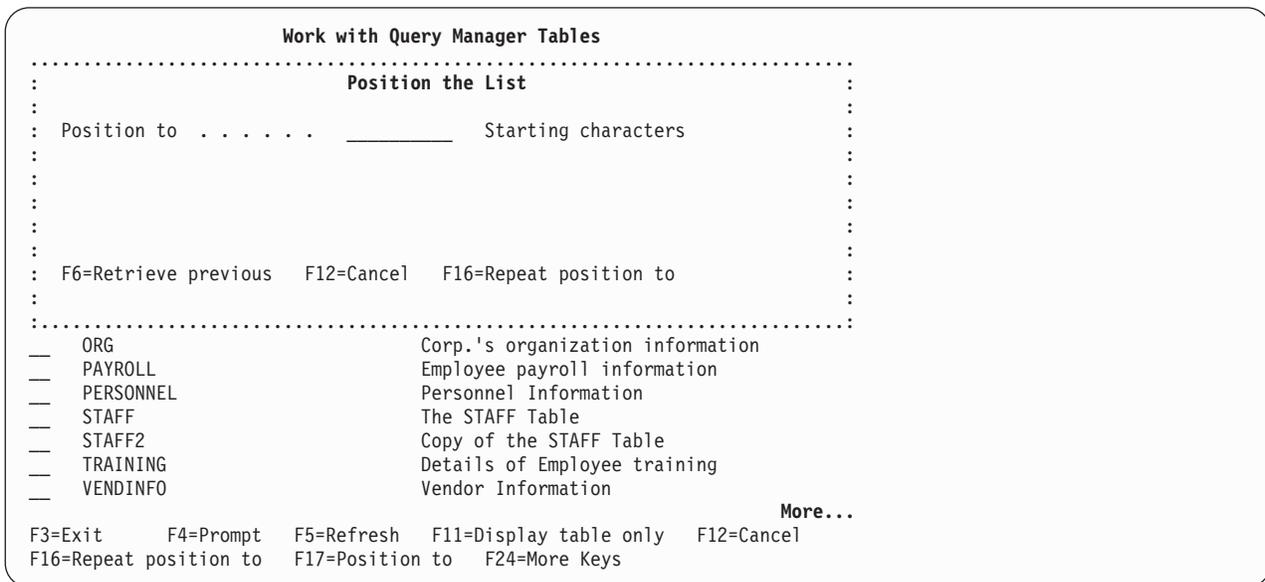


Figure 8. The “Position to” Window

When you press F17 (Position to), Query Manager displays a window that prompts you to specify the characters (name) at which you want the “Work with” list to begin. Type the characters and press the Enter key.

The list of object names is displayed starting with the first name found that begins with the characters you specified. If no object names are found, Query Manager begins the list with the last object name that

comes before the characters you specified. For example, if you specify "G" and no object names begin with the letter G, Query Manager begins the list with the last object name that begins with the letter F (so you can see that no objects begin with G).

Query Manager provides special function keys that help you use the "Position to" window:

- F6 Retrieve previous.** Displays the last characters that you specified through the "Position to" window. Use F6 to view or edit your previous "Position to" characters.
- F16 Repeat position to.** Displays the list of object names using the same "Position to" characters you specified the last time you used F17 (Position to). If you have not used F17 yet, Query Manager displays the error message, "No previous position specified."

The "Display entire name" window in Query Manager

When the name of a file, column, or table is longer than space allows on a particular display, you can view its full name by pressing F20 (Display entire name). (Long names are indicated by a ">" character at the end of the name.) F20 brings up a window which allows you to view or change the entire table/file/column name. The name can be up to 128 characters long not including quotes. The maximum length of the name including quotes is 258.

The name can always be displayed, but can only be changed on some panels. To change a name,

1. Do one of the following.
 - a. Place the cursor on the name
 - b. Place the cursor on the line containing the name if there is only one name.
2. Press F20.
3. Enter the new name.

F20 will also function in the same way in situations where you are *entering* a file, column, or table name. In these situations, Query Manager displays the "Display entire name" window with a field large enough to contain the entire name.

Messages and errors in Query Manager

While using Query Manager, you often see messages at the bottom of the display. Many of these are information messages, in which Query Manager tells you what it is doing or has just done. For example:

```
STRQM in progress. Starting DB2 Query Manager...  
Report form successfully sent for printing.  
Row added.
```

You do not need to take any action when you see these messages. They are simply letting you know what the system is doing.

Other messages tell you what you can or should enter on the current display, and how to complete options you are performing. For example:

```
You can update only your own profile.  
Reposition cursor and press F10 again to complete copy.  
Press Enter to save the copied table and copy the data.
```

These messages tell you how to use the current display. Make sure you read them before using the display. An example of one of these messages is shown in Figure 9 on page 27.

```

Change Query Manager Profile

User profile . . . . . : FREDNURK
Description . . . . . : User Profile for Fred Nurk.

Type choices, press Enter.
Default library for QM objects . . . . *CURLIB      Name, *CURLIB
Default object creation authority . . *LIBCRTAUT  *CHANGE, *ALL, *USE
                                           *EXCLUDE, *LIBCRTAUT
                                           Authorization list
Run query mode . . . . . 1                      1=Interactive
                                           2=Batch
Number of rows to use for sample . . . 50          1-100
Display run options . . . . . Y                Y=Yes, N=No
Confirmation messages in QM . . . . . Y          Y=Yes, N=No
Naming convention . . . . . *SYS               *SYS, *SAA
RDB Connection method . . . . . *RUW          *RUW, *DUW
Default library for QM tables . . . . *CURLIB___ Name, *NONE, *CURLIB
                                           3=Table
                                           More...

F3=Exit      F4=Prompt  F5=Refresh  F10=Display additional details
F12=Cancel   F22=QM statement
You can update only your own profile.

```

Figure 9. Example of a Message on a Display

Some messages are warning messages. They warn you that what you are about to do might not work, or might cause damage to programs, devices, systems, or data. For example:

- Active query will be lost if you run this new query.
- Warning. CCSID conversion resulted in substitutions.
- Date/Time formats of job and query are different.

Read these messages, and make sure you understand them before continuing with your option.

The last type of Query Manager messages are error messages. These messages are displayed when you make an entry error of some kind. Query Manager shows you where the error is whenever possible, by moving the cursor to the value in error and highlighting it in reverse video. You also see a message at the bottom of the display telling you what the error is and how to correct it. For example:

- Library must be blank if Table for Output is *NONE.
- Cannot create a blank table definition.
- Active data is sample only. Cannot display a full report.

These are important messages. In most cases, reading the message tells you how to correct the error you made. You need to make the correction before you can continue with your current option.

If you need additional information about any of the messages you see displayed, move the cursor to the line that contains the message; then press F1 (Help). The message help display and job log are described in "Help for messages in Query Manager" on page 22.

Only one message can be shown at the bottom of the display at one time. If Query Manager has issued more than one message, you see a "+" sign at the end of the displayed message. You can use your display station's roll keys to see the additional messages.

Using the command window in Query Manager

Query Manager provides a command window through which users with an *ALL* access level can enter Query Manager statements and system commands. The command window is available by pressing F22 (QM statement) from most displays. Figure 10 shows an example of the command window.

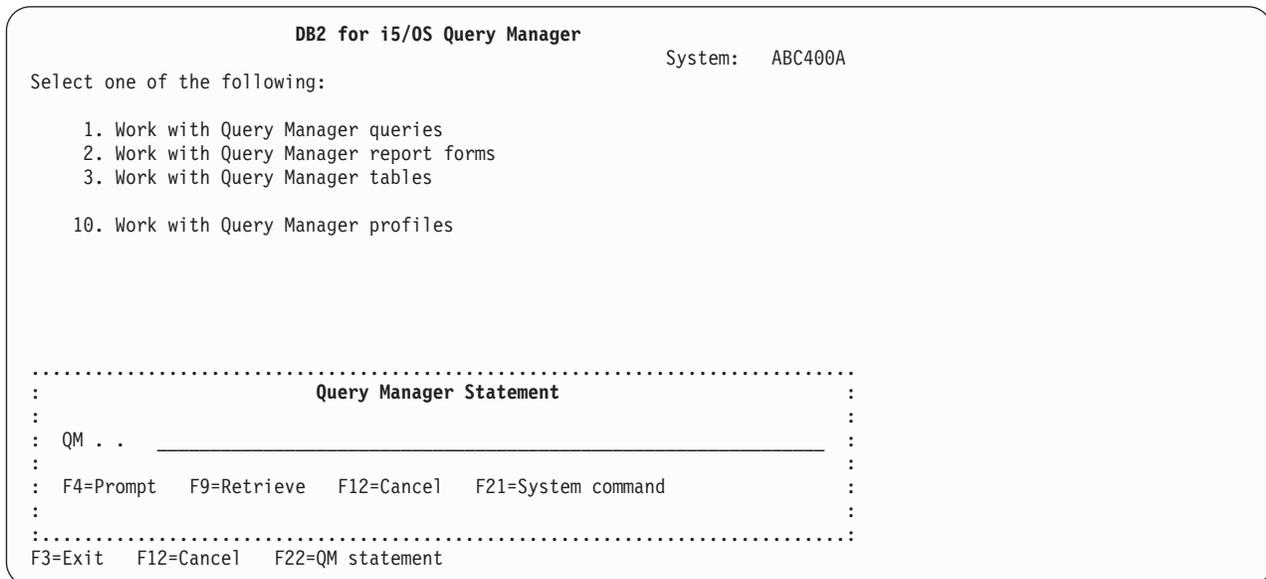


Figure 10. The Command Window

Use this window to enter commands and statements quickly, without leaving the current display. For example, if you choose to create a report form, but there is no active data (which means that Query Manager has no default values for report formatting), you can enter a RUN QUERY statement through the command window to run a query and create active data for the report form.

Query Manager provides special function keys that help you use the command window:

- F4 Prompt.** Displays a list of all of the Query Manager statements or system commands that you can enter through the command window. If you are unsure of the syntax of a statement or command, follow the instructions on these prompt-guided displays, and let Query Manager enter the statement or command for you.
- F9 Retrieve.** Retrieves and displays the last command or statement that was entered through the current mode (either Query Manager statement or system command). Press F9 once to retrieve the last command entered, press F9 twice to retrieve the second-to-last command entered, and so on.
- F21 System command/QM statement.** Alternates between the two entry modes, system command and Query Manager statement. When you are in Query Manager statement mode, the window prompts you to enter a Query Manager statement, and the command prompt is shown as QM. . . When you are in system command mode, the window prompts you to enter a system command, and the command prompt is shown as ===>.

Note: The Query Manager statement line is always present at the top of the Edit Query or Display Query displays, so there is no F22 (QM statement) function key available from these displays. You can press F21 (System command) to display a command window through which you can enter only system commands.

When you finish using the command window, press F12 (Cancel) to leave the window and return to the display you were using when you pressed F22 (QM statement).

Naming conventions in Query Manager

For any undelimited name, DB2 Query Manager always converts lowercase characters to uppercase characters. Objects of the same type stored in the same library must have unique names. However, because report forms and queries are two different object types, you can have a query by the name of TEST and a report form by the name of TEST in the same library. Because procedures, tables, and views are all i5/OS files, you cannot have a procedure and a table with the same name. The rest of this section describes the different naming conventions for tables, columns, queries and report forms.

Note: It is recommended that the name **not** start with the letter **q**.

Form and query name conventions in Query Manager

Form and query names can be specified as undelimited names or delimited names.

Undelimited names, names that do not contain quotation marks, are specified as follows:

- Names need to begin with an alphabetic character. Alphabetic characters are A-Z, \$, # and @.
- The alphabetic character may be followed by other alphabetic characters, the numbers 0-9, and underscores.
- No imbedded blanks are allowed in the name.
- Names can be up to 10 characters in length.

Delimited names, names that do contain quotation marks, are specified as follows:

- The name begins and ends with a double quotation mark (").
- The only characters not allowed inside the beginning and ending quotes are:
 - A blank
 - An asterisk (*)
 - A question mark (?)
 - An apostrophe (')
 - Quotation marks (")
 - Numbers with a hexadecimal value less than '40'X or equal to 'FF'X.
- Names can be up to 10 characters in length including the beginning and ending double quotes.

Note: A quoted name can be qualified, but the object name and library name need to be surrounded by quotation marks separately from each other. For example, "MYLIB" "Name-1"

Table and file name conventions in Query Manager

Table or File names can be specified as undelimited names or delimited names.

Undelimited names, names that do not contain quotation marks, are specified as follows:

- Names need to begin with an alphabetic character. Alphabetic characters are A-Z, \$, # and @.
- The alphabetic character may be followed by other alphabetic characters, the numbers 0-9, and underscores.
- No imbedded blanks are allowed in the name.
- Names can be up to 128 characters in length.

Delimited names, names that do contain quotation marks, are specified as follows:

- The name begins and ends with a double quotation mark (").
- The only characters not allowed inside the beginning and ending quotes are characters with a hexadecimal value less than '40'X or equal to 'FF'X.

- Double quotation marks that are included within the name must be accompanied by a matching double quotation mark.
- Names can be up to 128 characters in length not including the beginning and ending double quotes and any matching double quotes within the name.

Column name, field name, and expression name conventions in Query Manager

Undelimited names, names that do not contain quotation marks, are specified as follows:

- Names need to begin with an alphabetic character. Alphabetic characters are A-Z, \$, # and @.
- The alphabetic character may be followed by other alphabetic characters, the numbers 0-9, and underscores.
- No imbedded blanks are allowed in the name.
- Names can be up to 30 characters in length.

Delimited names, names that do contain quotation marks, are specified as follows:

- The name begins and ends with a double quotation mark ("").
- The only characters not allowed inside the beginning and ending quotes are characters with a hexadecimal value less than '40'X or equal to 'FF'X.
- Double quotation marks that are included within the name must be accompanied by a matching double quotation mark.
- Names can be up to 30 characters in length including the beginning and ending double quotes and any matching double quotes within the name.
- If column names in existing tables are longer than 30 characters, only the system column name is shown on most DB2 Query Manager displays.

Understanding the overflow character (>) in Query Manager

When a file, table, column, or field name exceeds the number of characters that can be shown on a particular display, DB2 Query Manager shows the overflow character (>), following the name. When the cursor is positioned on a name followed by an overflow character, and F20 (Display entire name) is pressed, DB2 Query Manager displays a window that shows the name in its entirety.

If you replace the last character of the name with a blank, the remaining unseen characters following that blank will be replaced with blanks.

Suppose the table name in the Create Query Manager Table display shows the table name as follows:

```
Table . . . . . THIS_IS_A_LONG_TAB >
```

If you pressed F20, the name in the display would look like:

```
Table . . . . . THIS_IS_A_LONG_TABLE_NAME_____
```

If you then blanked out the last 4 characters ('_TAB') in the shortened name shown in the Create Query Manager Table display and then pressed F20, the name would display as follows:

```
Table . . . . . THIS_IS_A_LONG_____
```

Chapter 3. Working with Query Manager profiles

This chapter tells you about the Query Manager profile. Much of the information you can access and process within Query Manager is determined by the values of the settings in your profile.

This chapter describes the Query Manager profile in detail, and explains the settings within your profile that you can change. It also includes instructions for security administrators, describing the different user access levels available within Query Manager, and explaining how to maintain profiles for different types of users.

What is a Query Manager profile?

A profile is a description of a user. A Query Manager profile is the section of your i5/OS user profile that controls the options you can select, and the default values used when you run Query Manager. Your Query Manager profile is created the first time you start to use Query Manager. Profiles can also be created by security administrators for users who should run Query Manager using settings other than those contained in the default profile. You can change and maintain your own Query Manager profile by selecting option 10 (Work with Query Manager Profiles) from the main menu.

Your Query Manager profile contains information and settings such as:

- The mode in which you want to run queries
- The number of data rows you want sample queries to retrieve
- The output destination to which you want to send reports
- The default library in which you want to store queries and report forms

Security administrator user access level in Query Manager

Query Manager is intended to be used by a wide range of users for a wide range of applications, therefore there needs to be a way of controlling who has access to which options. Each Query Manager installation should have at least one user called the security administrator. This administrator is responsible for maintaining Query Manager profiles by specifying, for each user, the access level and default settings Query Manager should use when it is running. Many of these settings can later be changed by users when they are running Query Manager.

Security administrator authority (*SECADM) is assigned outside of, and is not controlled by, Query Manager. There are two user access levels available within Query Manager: *ALL* and *BASIC*.

Security administrators are responsible for maintaining the Query Manager profiles for Query Manager users. They can display the profiles of users for whom they have *READ rights, and can change the access levels and default values in the profiles of users for whom they have *OBJMGMGT rights. Security administrators need to have an *ALL* access level in their own Query Manager profiles. For information on *SECADM authority and *OBJMGMGT rights, see *Security reference*.

When the security administrator selects option 10 to see the Work with Query Manager Profiles display. The following screen is displayed:

Work with Query Manager Profiles

Type options, press Enter.
 2=Change 3=Copy 5=Display

Opt	User Profile	Description
	FREDNURK	User profile for Fred Nurk.
	JOESMITH	User profile for Joe Smith.
	JONESD	David Jones - Accounts.
	LIZARD	Night-shift Operator.
	QSECOFR	System Administrator.

More...

F3=Exit F5=Refresh F11=Display profile only F12=Cancel
 F16=Repeat position to F17=Position to F22=QM Statement

Figure 11. Security Administrator User Access Level

ALL user access level in Query Manager

ALL access grants full access to the Queries, Report Forms, and Tables options. Users can change most of the values in their own Query Manager profiles, but they cannot access any other user's profile. The ALL access level is the default, and is suitable for users who want to create, change, and run queries and report forms. Knowledge of the DB2 for i5/OS SQL language and report generation is beneficial.

When someone with a user access level of ALL selects option 10 to see the Work with Query Manager Profiles display. The following screen is displayed:

Change Query Manager Profile

User profile : FREDNURK
 Description : User Profile for Fred Nurk.

Type choices, press Enter.

Default library for QM objects	*CURLIB	Name, *CURLIB
Default object creation authority . .	*LIBCRTAUT	*CHANGE, *ALL, *USE *EXCLUDE, *LIBCRTAUT
Run query mode	1	Authorization list 1=Interactive 2=Batch
Number of rows to use for sample . . .	50_	1-100
Display run options	Y	Y=Yes, N=No
Confirmation messages in QM	Y	Y=Yes, N=No
Naming convention	*SYS	*SYS, *SAA
RDB Connection method	*RUW	*RUW, *DUW
Default library for QM tables	*CURLIB__	Name, *NONE, *CURLIB 3=Table

More...

F3=Exit F4=Prompt F5=Refresh F10=Display additional details
 F12=Cancel F22=QM statement

You can update only your own profile.

Figure 12. ALL User Access Level

BASIC user access level in Query Manager

BASIC access grants full access to the Tables option and restricted access to the Queries and Report Forms options. Users can display, print, and run queries and report forms, but cannot create or change them. Most of the values users can change in their Query Manager profiles control the way in which queries and reports are run. They cannot access any other user's profile. The *BASIC* access level is suitable for users who want to run queries and reports, and create and use tables. Knowledge of the DB2 for i5/OS SQL language, databases, and report generation is helpful but not necessary.

When someone with a user access level of Basic selects option 10 to see the Work with Query Manager Profiles display, the following screen is displayed:

```

Change Query Manager Profile

User profile . . . . . : FREDNURK
Description . . . . . : User Profile for Fred Nurk.

Type choices, press Enter.
Run query mode . . . . . 1          1=Interactive
                                   2=Batch
Number of rows to use for sample . . . 50_ 1-100
Display run options . . . . . Y_     Y=Yes, N=No
Query data output . . . . . 1       1=Display, 2=Printer
                                   3=File
Printer to use for output . . . . . *JOB_____ Name, *JOB
                                   F4 for list
File to use for output . . . . . *NONE_____ Name, *NONE
                                   F4 for list
Default query creation mode . . . . . 2       1=SQL, 2=Prompted
                                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Display additional details
F12=Cancel
You can update only your own profile.

```

Figure 13. Change Query Manager Profile Display for BASIC user

The default query manager profile in Query Manager

A default Query Manager profile is created automatically the first time you start to use Query Manager. Table 3 shows the initial access levels and settings for the default profile. These levels and settings are described in detail over the following pages. In the “Who Can Change?” column, SA is used to indicate the security administrator.

Table 3. Default Query Manager Profile Values

Profile Attribute	Default Value	Possible Values	Who Can Change?
Default library for QM objects	*CURLIB	Name, *CURLIB	All, SA
Default object creation authority	*LIBCRTAUT	*CHANGE, *ALL, *USE, *EXCLUDE, *LIBCRTAUT, Authorization list	All, SA
Run query mode ¹	Interactive	1=Interactive, 2=Batch	Basic, All, SA
Allow change run query mode	Yes	Y=Yes, N=No	SA ³
User access level	All	1=All, 2=Basic	SA
Number of rows to use for sample	50	1 to 100	Basic, All, SA
Allow interactive sample run	Yes	Y=Yes, N=No	SA
Maximum number of rows allowed on interactive run	*NOMAX	1 to *NOMAX	SA
Display run options	Yes	Y=Yes, N=No	Basic, All, SA
Confirmation messages in QM	Yes	Y=Yes, N=No	All, SA

Table 3. Default Query Manager Profile Values (continued)

Profile Attribute	Default Value	Possible Values	Who Can Change?
Naming convention	*SYS	*SYS, *SAA	All, SA
Relational database connection	*NONE	Name, *NONE, *CURRENT	SA
RDB connection method	*RUW	*RUW, *DUW	All, SA
Default collection for QM tables	*NONE	Name, *NONE, *CURLIB	All, SA
Query data output	Display	1=Display, 2=Printer, 3=Table	Basic, All, SA
Printer to use for output	*JOB	Name, *JOB	Basic, All, SA
Table to use for output	*NONE	Name, *NONE	Basic, All, SA
Collection (for output table)		Name, *LIBL, *CURLIB	Basic, All, SA
Job description for batch run	*USRPRF	Name, *USRPRF	All, SA
Library (for job description)		Name, *LIBL, *CURLIB	All, SA
Commitment control level	None	1=None, 2=Change, 3=Cursor stability, 4=All, 5=Repeatable read	All, SA
Default query creation mode ¹	Prompted ²	1=SQL, 2=Prompted	BASIC, All, SA
Allow change query creation mode	Yes	Y=Yes, N=No	SA ³
Show query sort sequence options	No	Y=Yes, N=No	All, SA
Allow access to QM tables	Yes	Y=Yes, N=No	SA
Default column names displayed	Column names	1=Column names, 2=System column names	All, SA
Select allowed SQL statements	N/A	Y=Yes, N=No	SA ³
Notes:			
¹ You cannot change your "Run query mode" if "Allow change run query mode" is set to NO. You cannot change your "Default query creation mode" if "Allow change query creation mode" is set to NO.			
² The "Default query creation mode" is prompted for new Query Manager users, and SQL for users who are upgrading from V2R1.1.			
³ These attributes can only be seen by the security administrator. Users with BASIC and ALL do not see these attributes.			

Security administrator tasks are described in detail beginning on page 45.

Default library for Query Manager objects

Allows you to specify the library in which you want Query Manager to store the query and report form objects you create.

Name Specify a library name to be used as the default whenever Query Manager prompts you to enter a library name.

If you type the name of a library that does not exist, Query Manager shows a prompt window asking if you want to create the library in either batch or interactive mode.

***CURLIB** Specify the library in your current i5/OS job as the library to be used as the default whenever Query Manager prompts you to enter a library name.

The default is *CURLIB. This setting can be changed by users with an *ALL* access level.

Default object creation authority in Query Manager

This value sets the default security level for all query and report form objects you create.

- *CHANGE** Allows other users to read and work with your objects, but does not allow other users to delete, replace, or transfer ownership of your objects. When other users change an object, they must specify a new name for the object.
- *ALL** Allows other users to perform all operations on your objects except transferring ownership.
- *USE** Allows other users to read, run, export, and print your objects, but does not allow others to change, replace, or import your objects.
- *EXCLUDE** Prevents other users from doing anything to your objects unless you specifically grant them authority (for example, through an authorization list).
- *LIBCRTAUT** Takes the authority for your objects from the library in which they are created. If the library authority changes, the new authority does not affect the authority of existing objects.

Authorization list

This is a list through which you can assign security authorities for your objects to individual users. Full instructions on how to use an authorization list can be found in *Security reference*.

The default is *LIBCRTAUT. This setting can be changed by users with an *ALL* access level.

Run query mode in Query Manager

This allows you to specify the mode in which you want to run queries and reports: either interactive or batch.

- Interactive** This mode causes queries and reports to run as soon as you issue a RUN statement. Use this mode when you want to create active data, and view the results of RUN statements on your display screen. Be aware, though, that interactive mode might tie your display station up for extended periods while you wait for large jobs to finish running.
- Batch** This mode causes queries and reports to be submitted to a batch queue when you issue a RUN statement. The order in which the jobs in the batch queue are run depends on what each job's priority levels are, and how many other jobs there are in the queue. Your job might be run immediately, or you might have to wait for jobs with higher priority levels to finish running before your job begins. This mode frees your display station immediately after you issue a RUN statement, but it does not create active data, and you cannot send query output to *display*.

The default mode is interactive. This setting can be changed by users with *BASIC* and *ALL* access levels, although not all users see this prompt in their profiles. The security administrator can set "Allow change run query mode" to YES or NO. If you are not able to change your run query mode, this prompt is not shown in your Change Query Manager Profile display, and you cannot change the mode when you run queries and reports. Press F10 (Display additional details) to view your run query mode.

Allow change run query mode in Query Manager

This value determines whether you can work in run query mode.

- Yes** Allows you to change the "Run query mode" setting in your Query Manager profile, and to change the mode setting when you run queries and reports.
- No** Forces you to run all jobs in the mode specified in your profile (either batch or interactive) and removes the "Run query mode" prompt from your Change Query Manager Profile display.

The default authority is Yes. This setting can be changed only by a security administrator.

User access level in Query Manager

This value assigns a user access level of either *ALL* or *BASIC*. All security administrators need to have an *ALL* access level in their Query Manager profiles.

ALL This level grants full access to the Queries, Report Forms, and Tables options. Users can change most of the information in their own Query Manager profiles.

BASIC

This level grants full access to the Tables option, and restricted access to the Queries and Report Forms options. Users can display and print query and report form definitions, and run queries and reports, but they cannot create or change queries or report forms. Most of the information users can change in their Query Manager profiles determines the way in which queries and reports are run.

The default access level is *ALL*. This setting can be changed only by a security administrator.

Number of rows to use for sample in Query Manager

This allows you to specify the maximum number of rows you want retrieved by a query when it is run using the sample restriction. (Sample queries are described on page 9.) Type any number from 1 to 100. The default is 50. This setting can be changed by users with *BASIC* and *ALL* access levels.

Allow interactive sample run in Query Manager

This setting is used by the security administrator to specify whether you can run queries and reports using the sample restriction.

Yes Allows you to run queries and reports using the sample restriction.

No Keeps you from being able to run sample queries and reports.

If your “Run query mode” is batch and you cannot change it, a value of *NO* stops you from being able to run queries interactively to create active data. (Sample queries and reports are always run in interactive mode.)

The default authority is *YES*. This setting can be changed only by a security administrator.

Maximum number of rows allowed on interactive run in Query Manager

Specifies the maximum number of rows retrieved when you run queries in interactive mode. Type a value between 1 and **NOMAX*, where **NOMAX* indicates that there is no limit to the number of rows retrieved. This value is ignored when you run queries in batch mode.

If Query Manager retrieves the maximum number of rows before it completes a query, you see a message at the bottom of the display informing you that “Maximum number of records reached. Data is incomplete.” When this happens, final summary functions such as *SUM*, *AVERAGE*, and *COUNT* are omitted from reports.

The default maximum is **NOMAX*. This setting can be changed only by a security administrator.

Display run options in Query Manager

Specifies whether you want the program to prompt you for run options whenever you press a function key to run an SQL query, a prompted query, or a report. Run options are always displayed when you run queries and reports using Work with displays.

Yes Displays the Run Query display, which prompts you to enter the following information:

- The mode in which to run the query: either batch or interactive. (This prompt is not displayed if your “Allow change run query mode” is set to *NO*.)

Note: If you are running a non-*SELECT* SQL query, you are only prompted for the mode.

- Whether to run the query using the sample restriction. (This prompt is not displayed if your “Allow interactive sample run” is set to *NO*.)
- The report form to use to format the query data and the library in which it resides (if you are running a query).

- The query to run and the library in which it resides (if you are running a report). If active data exists, you can specify to use the active data instead of running a query.
- The output destination: either *display*, *printer*, or *table*.
- The name of the printer or i5/OS output queue (if output destination is *printer*).
- The names of the table and collection (if output destination is *table*).

No Suppresses the Run Options display and uses the default settings from your Query Manager profile.

The default value is YES. This setting can be changed by users with *BASIC* and *ALL* access levels.

Confirmation messages in Query Manager

Allows you to specify whether or not to display confirmation messages. You can override this value by specifying “CONFIRM=Y” or “CONFIRM=N” when you enter a Query Manager statement.

Yes Display confirmation messages when you delete or replace objects by entering Query Manager statements through the command window. Confirmation messages are always displayed when you delete or replace objects through Query Manager displays.

No Suppresses the confirmation messages.

The default value is YES. This setting can be changed by users with an *ALL* access level.

Naming convention in Query Manager

Allows you to specify whether you want to use *SYS or *SAA naming conventions.

***SYS** Causes most displays to prompt for files and libraries rather than tables and collections. Query Manager expects you to use SYSTEM conventions when you create and name queries and report forms, and when you enter commands and statements through the command window. For example:

```
SELECT FLD1, FLD2 FROM TESTDATA/PHONE
RUN QUERY TESTDATA/QUERY
```

If no library name is specified in a command or statement, Query Manager searches the library named as the “Default library for QM objects” in your Query Manager profile to find the object. If no library name is specified in a query, Query Manager searches the library list (*LIBL) to find the object named in the SQL statement.

***SAA** Causes most displays to prompt for tables and collections rather than files and libraries. Query Manager expects you to use SQL conventions when you create and name queries and report forms, and when you enter commands and statements through the command window. For example:

```
SELECT FLD1, FLD2 FROM TESTDATA.PHONE
RUN QUERY TESTDATA.QUERY
```

If no library name is specified in a command or statement, Query Manager searches the library named as the “Default library for QM objects” in your Query Manager profile to find the object. If no library name is specified in a query, Query Manager searches the library or collection with the same name as your user ID to find the object named in the SQL statement.

Note: If you specify *SYS naming conventions, the only relational databases you can connect to are those on a local machine or those on another i5/OS operating system.

The default naming convention is *SYS. This setting can be changed by users with an *ALL* access level.

Relational database connection in Query Manager

This allows you to specify the name of the relational database to use when the user starts Query Manager

- Name** Specify a name for a relational database to connect to each time the user starts Query Manager
- If the user has specified *SYS naming conventions, the only relational databases you can enter here are those on a local machine, or those on another i5/OS operating system.
- *CURRENT** Specifies that the database connection which exists when the user starts Query Manager should continue to be used.
- *NONE** Specifies that no remote connection is made, and if necessary, you are connected to your local database when Query Manager is started.

The default database connection is *NONE. This setting can be changed only by a security administrator.

After the setting is changed, the new relational database connection does not come into effect until the next time the user starts Query Manager. Users who want to connect to the new relational database immediately should enter the CONNECT statement on the Query Manager statement line (see page 236 for instructions).

RDB connection method in Query Manager

This specifies the connection method to use.

- *DUW** Specifies that multiple database connections can be entered.
- *RUW** Allows you to select a connection to a single database.

For more information on when to use *RUW and *DUW, see Figure 101 on page 175.

The default in Query Manager is *RUW. This setting can be changed by users with an ALL access level.

Default collection for tables in Query Manager

This specifies the name of the collection or library in which to store your Query Manager tables. You need to have *CHANGE authority for the collection or library if you want to use all options available through the Work with Query Manager Tables display.

- Name** Specify the collection or library in which you want to store your Query Manager tables.
- If you specify a name, Query Manager selects that collection when you choose to Work with Query Manager Tables. If the name you enter does not exist, Query Manager shows a prompt window asking if you want to create a new collection in either batch or interactive mode. If you choose to create the collection and you answer YES to the prompt asking if you want an "SQL catalog as part of the library", Query Manager creates a collection; otherwise it creates a library.
- *NONE** Specify this if you want Query Manager to prompt you to specify a collection name each time you choose to Work with Query Manager Tables.
- *CURLIB** Specify the collection or library in your current i5/OS job as the one in which to store your Query Manager tables.

The default is *NONE. This setting can be changed by users with an ALL access level, although not all users see this prompt in their profiles. The security administrator can set "Allow access to QM tables option" to YES or NO. If you are not able to use the QM tables option, you do not need to specify a default collection, so the "Default collection for QM tables" prompt is not shown on the Change Query Manager Profile display.

Note: Security administrators need to specify a collection name for users who have a BASIC access level. BASIC access users cannot have a default collection of *NONE.

Query data output in Query Manager

Specifies the default output destination to use when you run queries and reports.

Display Specify to send output data to the display.

Note: You cannot send the output to *display* if your “Run query mode” is set to batch.

Printer Specify to send output data to the printer.

Printer Specify to write output data to a table.

The default is display. This setting can be changed by users with *BASIC* and *ALL* access levels.

Printer to use for output in Query Manager

This specifies the default printer you want to use for query and report output.

Name Specify a printer on which to print queries and reports. You can press F4 (Prompt) for a list of all available printers from which you can make a selection.

***JOB** Specifies to use the printer specified in your current i5/OS job.

The default is *JOB. This setting can be changed by users with *BASIC* and *ALL* access levels.

Table to use for output in Query Manager

This specifies the default table you want to use for query and report output.

Name Specify a table to use for query and report output. You can press F4 (Prompt) for a list of all tables in the specified collection from which you can make a selection.

***NONE**

Specifies that you want to be prompted for a table name each time you run a query or report.

Notes:

1. You cannot specify a table name of **NONE* if “Display run options” is set to NO and “Query data output” is set to *table*.
2. If you are connected to a remote database, the table and collection you specify are saved on the local system.

The default is *NONE. This setting can be changed by users with *BASIC* and *ALL* access levels.

Collection (for Output Table)

This is the name of the collection or library in which the default output table resides, or to which you want the default output table written. Leave the name blank if you specified an output table of **NONE* or you entered a valid object name for your output table. If you specified a name Query Manager inserts the library you specified as the “Default library for QM objects”.

Name Specify an existing collection or library name in which the table exists.

***LIBL** Specify the library list is to be searched for the collection or library in which the table exists.

***CURLIB** Specify that Query Manager is to use the library in your current i5/OS job.

The default is *NONE. This setting can be changed by users with *BASIC* or *ALL* access levels.

Job description for batch run in Query Manager

This specifies the job description you want to use when running queries and reports in batch mode. A job description contains information such as:

- Which batch queue to use
- What your job’s priority levels are

- Which output queue to use
- Which printer to use

Name Specify the name of the job description you want to use when running queries and reports in batch mode.

Press F4 (Prompt) for a list of all job descriptions in the specified library from which you can make a selection.

***USRPRF** Specify your regular job description.

The default is *USRPRF. This setting can be changed by users with an *ALL* access level.

Library (for Job Description)

This is the name of the library in which your job description resides. Leave the library name blank if you specified a job description of *USRPRF or you entered a valid name for your job description. If you specified a name Query Manager inserts the library you specified as the "Default library for QM objects".

Name Specify an existing library name.

***LIBL** Specify that the library list is to be searched for the library that contains the job description.

***CURLIB** Specify for Query Manager to select the library in your current i5/OS job.

There is no default. This setting can be changed by users with an *ALL* access level.

Commitment control level in Query Manager

This specifies the commitment control lock level under which you want to run Query Manager.

None No rows are locked.

Change All rows you change are locked until you issue a COMMIT or ROLLBACK statement.

Cursor stability
All rows you change and the row in which the cursor is currently positioned are locked until you issue a COMMIT or ROLLBACK statement.

All All rows you change or view are locked until you issue a COMMIT or ROLLBACK statement.

Repeatable read

All rows you change or view are locked until your unit of work (UOW) is completed. Any row that is read or changed during a unit of work cannot be changed by any process until the unit of work is completed. During the unit of work, multiple reads always give the same results.

Note: You must use care when choosing a commitment control level of repeatable read because it can result in concurrency problems. The table is locked and is not available for change by another user until the COMMIT or ROLLBACK is done.

The default level is *none*. This setting can be changed by users with an *ALL* access level. When you change this setting, the new commitment control level does not come into effect until the next time you start Query Manager, or the next time you enter the CONNECT statement on the Query Manager statement line (see page 236).

Note: You can override the commitment control level by running a SET TRANSACTION statement in a DB2 for i5/OS query. This will not change the commitment control level you have set. For more information, see "SET transaction considerations in Query Manager DRDA" on page 179.

Default query creation mode in Query Manager

This specifies the default mode in which you want to create queries.

- SQL** This mode shows the Edit Query display when you choose to create a query. You can create queries containing any one of the SQL statements that you were granted authority to use (through your profile). If you need help entering an SQL statement, press F4 (Prompt) for a list of all supported statements and their syntax.
- Prompted** This mode shows the Define Prompted Query displays when you choose to create a query. You can create SELECT statement queries through these displays. The displays prompt you to enter all of the information that Query Manager requires to create the query.

The default is SQL for users who are upgrading from Query Manager V2R1.1 and prompted for other Query Manager users.

This setting can be changed by users with an *ALL* access level, although not all users see this prompt on their Change Query Manager Profile display. The security administrator can set “Allow change query creation mode” to YES or NO. If you are not able to change your query creation mode, this prompt is not shown in your Change Query Manager Profile display, and you cannot change the mode when you create queries. Press F10 (Display additional details) to view your default query creation mode.

Allow change query creation mode in Query Manager

This specifies whether you can change your default query creation mode and whether you can change the mode setting when you create queries.

- YES** Allows you to change the “Default query creation mode” setting in your Query Manager profile, and to change the mode setting when you create queries.
- NO** Forces you to create and change all queries in the mode specified in your profile (either SQL or prompted), and stops you from being able to change the “Default query creation mode” shown at the top of the Change Query Manager Profile display.

The default is YES. This setting can be changed only by a security administrator.

Show query sort sequence options in Query Manager

This determines whether you can specify the sort sequence and language when you create or change a query.

- YES** Allows you to specify the sort sequence and language when creating or changing a query.
- When you display a query that was created with a specified sort sequence, the sort sequence information is shown regardless of the setting of this profile option.
- If you choose this option, the Specify sort sequence option is available on the Define Prompted Query display and F18 (Sort Sequence) is available on the Edit Query display.
- NO** Keeps you from specifying the sort sequence and language when creating a query. It also keeps you from changing the sort sequence and language if the query was created with the default sequence and language.

The default is NO. This setting can be changed by users with an *ALL* access level,

Allow access to tables option in Query Manager

This specifies whether you can use the Work with Query Manager Tables display and its options.

- YES** Allows you to use the Work with Query Manager Tables display and its options.
- NO** Denies access to the Work with Query Manager Tables display, and removes the Work with Query Manager tables option from the main menu.

You can still run queries and produce reports using the data contained in Query Manager tables, but you cannot use any of the options listed on the Work with Query Manager Tables display. See “Using the work with Query Manager tables display” on page 146 for more information.

The security administrator can limit the options that users can choose through the Work with Query Manager Tables display by changing their authority to use different collections and libraries. See page 148 for more information.

The default authority is YES. This setting can be changed only by a security administrator.

System column names displayed in Query Manager

This specifies whether the column names are shown by default on the Query Manager displays.

- 1 Causes the column names to be shown on the Query Manager displays.
- 2 Causes the system column names to be shown on the Query Manager displays.

The default is 1. The value can only be changed by a non-basic user.

Select allowed SQL statements in Query Manager

Note that this is a directional aid, not a profile setting. This specifies whether the Select Allowed SQL Statements display is shown.

Through the Select Allowed SQL Statements display, the security administrator specifies the SQL statements that you can and cannot use when you create, change, and run Query Manager SQL queries.

YES Shows the Select Allowed SQL Statements display. Figure 20 on page 49 shows an example of this display.

NO Does not show the Select Allowed SQL Statements display.

The default is for users who are upgrading from Query Manager V2R1.1 to have authority to use all SQL statements, and for new users to have authority to use only the SELECT statement. This setting can be changed only by a security administrator.

Viewing the additional details display in Query Manager

Most users can press F10 (Display additional details) to view a list of the SQL statements they have authority to use. If the “Allowed SQL statements” setting on the Additional Details display is YES, you can press the Enter key to view a list of the SQL statements you have authority to use. If the “Allowed SQL statements” setting is NO, you do not have authority to use any SQL statements, so pressing the Enter key returns you to the Change Query Manager Profile display.

Granting authority for SQL statements is described in detail in “Selecting allowed SQL statements for profiles in Query Manager” on page 48.

Notes:

1. These authorities affect only those queries created in the SQL creation mode. You do not need authority to use the SELECT statement to create, change, or run a prompted query.
2. If authority is restricted for all SQL statements, you cannot create, change, or run SQL queries. Your “Default query creation mode” needs to be set to prompted, and “Allow change query creation mode” needs to be set to NO.
3. If authority to use the COMMIT and ROLLBACK statements is not granted, you cannot have a “Commitment control level” of *change*, *cursor stability*, *repeatable read*, or *all*.
4. These authorities and restrictions apply only when you create, change, and run SQL queries. You can still copy, rename, and display SQL queries containing all SQL statements.

Changing your Query Manager Profile

You view and change the settings and values from your Query Manager profile using the Work with Query Manager Profiles option.

1. Type 10 in the Selection prompt from the Query Manager main menu.
2. Press the Enter key to show the Change Query Manager Profile display.

Changing a BASIC access profile in Query Manager

If you have a *BASIC* access level, you have full access to the Tables option (unless it has been restricted through your Query Manager profile), and limited access to the Queries and Report Forms options. You can run queries and reports, and display and print their definitions, but you cannot create or change query or report form definitions. Most of the information you can change in your Query Manager profile controls the way in which queries and reports are run.

1. Type 10 in the Selection prompt from the Query Manager main menu.
2. Press the Enter key. You see a display similar to the one shown in Figure 14.

Change Query Manager Profile

User profile : FREDNURK
Description : User Profile for Fred Nurk.

Type choices, press Enter.

Run query mode	1	1=Interactive 2=Batch
Number of rows to use for sample . . .	50_	1-100
Display run options	Y_	Y=Yes, N=No
Query data output	1	1=Display, 2=Printer 3=File
Printer to use for output	*JOB_____	Name, *JOB F4 for list
File to use for output	*NONE_____	Name, *NONE F4 for list
Default query creation mode	2	1=SQL, 2=Prompted

Bottom

F3=Exit F4=Prompt F5=Refresh F10=Display additional details
F12=Cancel

You can update only your own profile.

Figure 14. Change Query Manager Profile Display for a BASIC Access User

3. Move the cursor to the prompts for the values you want to change, and type the new values over the existing values. Beside each prompt is a list of the supported values that you can enter. Some of these lists tell you that you can press F4 (Prompt) if you want to view a more complete list of supported values for the current prompt. All of the values you can change are described in The default query manager profile in Query Manager, beginning on page 33.
4. Press the Enter key to save your changes and exit from the Change Query Manager Profile display. If you want to exit without saving your changes, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

You can change all of the values shown on the display except the profile name and description. These values are taken from your i5/OS user profile and cannot be changed through Query Manager.

Press F10 (Display additional details) to view the remaining access levels and settings that make up your Query Manager profile. The additional details are shown in display-only format. You cannot change any values through the Additional Details display.

Pressing the Enter key takes you to a display that lists all of the SQL statements that you have authority to use when you run SQL queries.

Changing an ALL access profile in Query Manager

If you have an *ALL* access level, you have full access to the Queries and Report Forms options, and you can change most of the values and settings in your Query Manager profile. You also have full access to the Tables option, unless it has been restricted through your Query Manager profile.

1. Type 10 in the Selection prompt from the Query Manager main menu.
2. Press the Enter key. An example of the Change Query Manager Profile display for an *ALL* access user is shown in Figure 15.

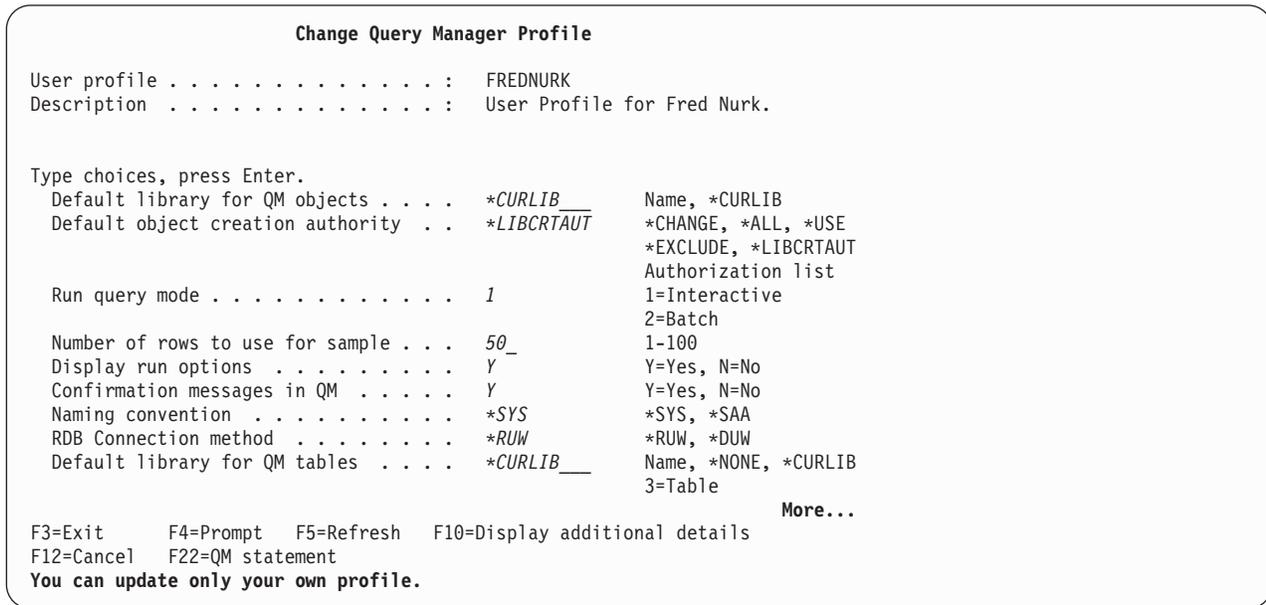


Figure 15. Change Query Manager Profile Display for an ALL Access User

3. Move the cursor to the prompts for the values you want to change.
4. Type the new values over the existing values. Beside each prompt is a list of the supported values that you can enter. Some of these lists tell you that you can press F4 (Prompt) if you want to view a more complete list of supported values for the current prompt. All of the values you can change are described in The default query manager profile in Query Manager, beginning on page 33.

The More... in the lower right-hand corner indicates that your profile is more than one display in length. Use your display station's roll keys to view and change the remaining settings that make up your Query Manager profile.

The Bottom in the lower right-hand corner tells you that you have reached the end of the profile settings.

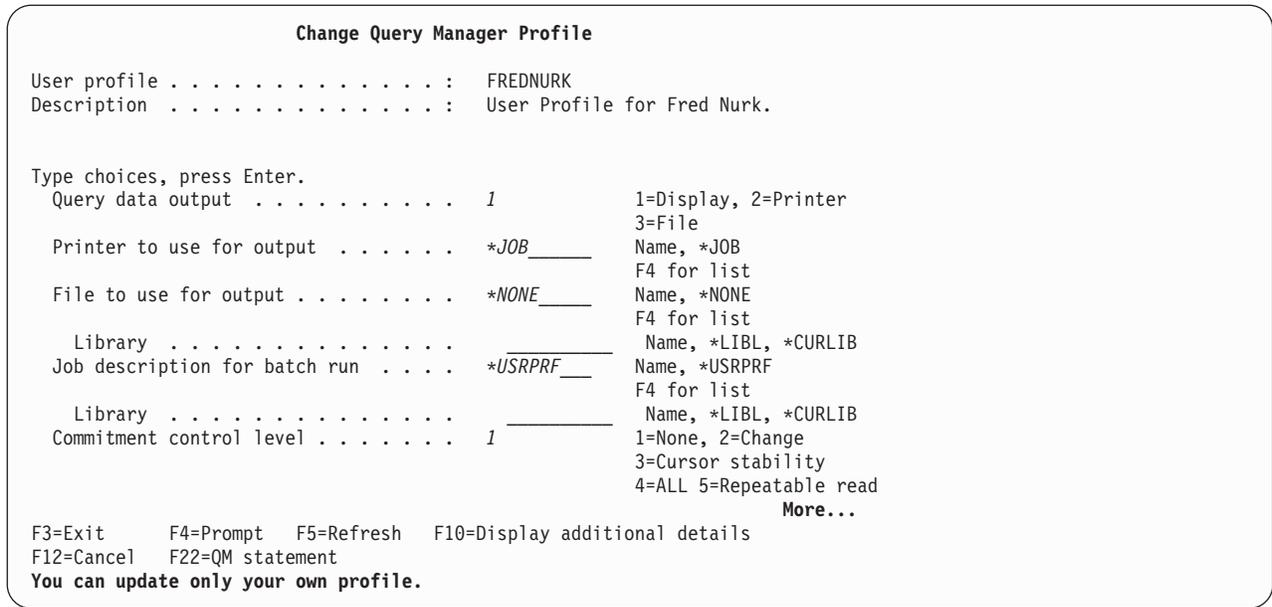


Figure 16. Change Query Manager Profile Display for an ALL Access User

5. Press the Enter key to save your changes and exit from the Change Query Manager Profile display. If you want to exit without saving your changes, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

You can change all of the values shown on the displays except for the profile name and description. These values are taken from your i5/OS user profile and cannot be changed through Query Manager.

Press F10 (Display additional details) to view the remaining access levels and settings that make up your Query Manager profile. The Additional Details are shown in display-only format. You cannot change any values through the Additional Details display.

Pressing the Enter key takes you to a display that lists all of the SQL statements that you have authority to use when you create, change, or run SQL queries.

Security administrator tasks in Query Manager

Security administrators (users with *SECADM authority) can maintain the Query Manager profiles for Query Manager users. As a security administrator, you can display the Query Manager profiles of all users for whom you have *READ rights, and can change or copy the profiles of all users for whom you have object management (*OBJMGMT) rights. For more information on *SECADM authority, *OBJMGMT rights, and *READ rights, refer to *Security reference*.

Note: *SECADM authority is assigned outside Query Manager. All security administrators need to have ALL access levels in their Query Manager profiles.

Using the work with Query Manager profiles display

If you have security administrator authority, when you select option 10 (Work with Query Manager profiles) from the Query Manager main menu, you see a display similar to the one shown in Figure 17 on page 46.

Work with Query Manager Profiles

Type options, press Enter.

2=Change 3=Copy 5=Display

Opt	User Profile	Description
-	FREDNURK	User profile for Fred Nurk.
-	JOESMITH	User profile for Joe Smith.
-	JONESD	David Jones - Accounts.
-	LIZARD	Night-shift Operator.
-	QSECOFR	System Administrator.

Bottom

F3=Exit F5=Refresh F11=Display profile only F12=Cancel
F16=Repeat position to F17=Position to F22=QM statement

Figure 17. Work with Query Manager Profiles Display

This display lists the user IDs for all i5/OS users. Not all of the users listed on this display are Query Manager users. i5/OS users becomes Query Manager users when you grant them the authority to use the Start Query Manager (STRQM) command.

Using the Work with Query Manager Profiles display, you can change, copy, and display Query Manager profiles, but you cannot delete a Query Manager profile. If you want to deny complete access to Query Manager for some users, remove their authority to use the STRQM command.

You can choose any of the following options to work with a profile. You need to have *OBJMGMT rights to change or copy a profile, and *READ rights to display a profile.

- 2=Change** Shows the Change Query Manager Profile display, through which you can change all of the access levels and settings that make up a user's Query Manager profile. See page 47.
- 3=Copy** Copies an existing profile. Replaces the default values and settings for specified users. This is a quick and easy way to set up profiles for new Query Manager users. See page 50.
- 5=Display** Shows Query Manager profiles in display-only format. You cannot change any profile values through this option. See page 47.

If you need help selecting profiles from the "Work with" display, see page 18. If you need help using the "Work with" display function keys, see page 23.

Creating a Query Manager profile

The Query Manager portion of a user's i5/OS profile is created the first time the user starts Query Manager, or the first time a security administrator accesses the profile through this Work with display. If you select to work with an i5/OS user profile for which a Query Manager profile does not yet exist, Query Manager creates the Query Manager profile before performing the change, copy, or display operation.

The Query Manager portion of an i5/OS profile is created with all of the default values specified in the table on page 33.

When you create profiles for new Query Manager users, the only SQL statement they have the authority to use when creating, changing, or running SQL queries is the SELECT statement.

Note: You cannot delete a Query Manager profile. If you want to deny complete access to Query Manager for some users, remove their authority to use the STRQM command.

Displaying a Query Manager profile

You can display the Query Manager profiles of all users for whom you have *READ rights. You do not need to have *OBJMGMGT rights to display a profile. The Query Manager profiles are shown in display-only format. You cannot change any information through this option.

1. Type 10 in the Selection prompt from the Query Manager main menu.
2. Press the Enter key to show the Work with Query Manager Profiles display.
3. Type 5 in the Opt prompt next to the names of the users whose profiles you want to display.
4. Press the Enter key to show the first profile you selected in a Display Query Manager Profile display. Display Query Manager Profile displays for the remaining users are shown in the same order as the profile names appear in the "Work with" display list. An example of the Display Query Manager Profile display is shown in Figure 18.

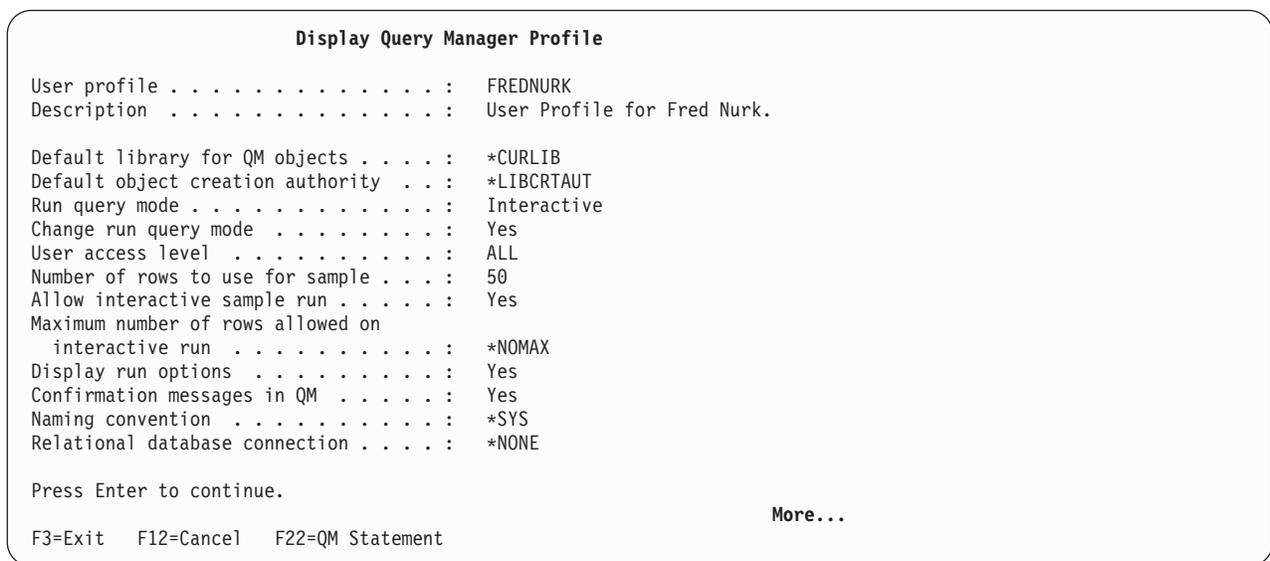


Figure 18. Display Query Manager Profile Display

The More... in the lower right-hand corner of the display tells you that the profile information is more than one display in length. Use your display station's roll keys to view the entire profile. The final display lists the SQL statements that the user can enter when creating or changing queries.

5. Press the Enter key, F3 (Exit), or F12 (Cancel) when you finish viewing Query Manager profiles, to return to the Work with Query Manager Profiles display.

Changing a Query Manager profile

You can change the Query Manager profile settings, values, and access levels of all Query Manager users for whom you have *OBJMGMGT rights.

1. Type 10 in the Selection prompt from the Query Manager main menu.
2. Press the Enter key to show the Work with Query Manager Profiles display.
3. Type 2 in the Opt prompt next to the names of the users whose profiles you want to change.
4. Press the Enter key to show the Change Query Manager Profile display for the first profile you specified. Change Query Manager Profile displays for the remaining profiles are shown in the same order as the profile names appear in the "Work with" display list. An example of the Change Profile display is shown in Figure 19 on page 48.

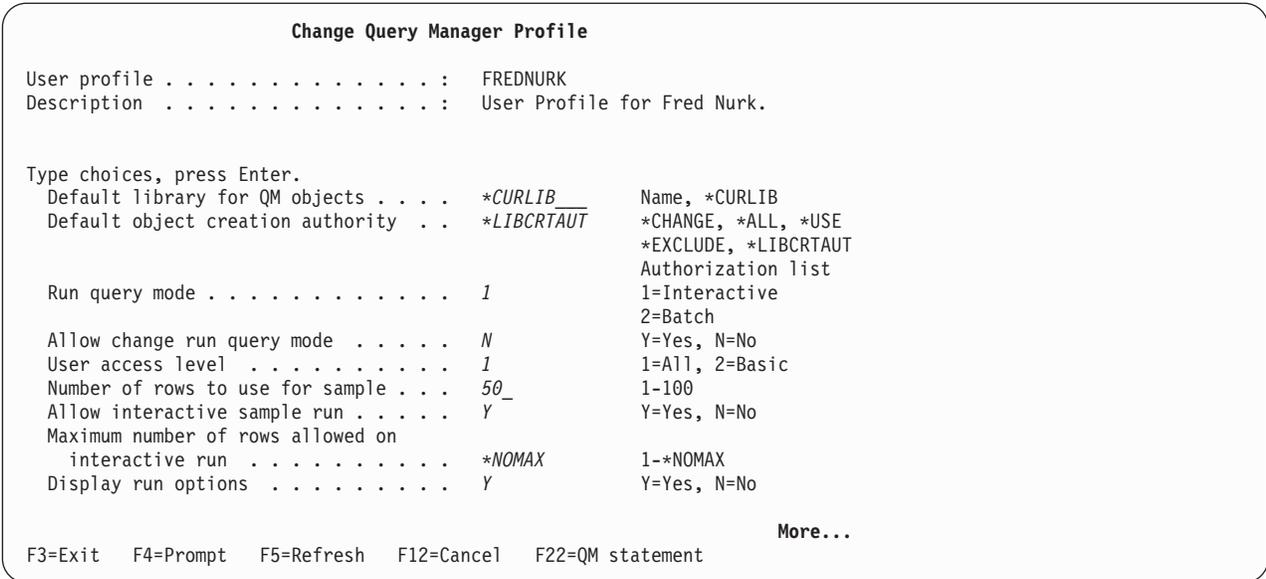


Figure 19. Change Query Manager Profile Display for a Security Administrator

5. Move the cursor to the prompts for the values you want to change.
6. Type the new values over the existing values. Beside each prompt is a list of the supported values you can enter. Some of these lists tell you that you can press F4 (Prompt) if you want to view a more complete list of supported values. All of the values you can change are described in The default query manager profile in Query Manager, beginning on page 33.

You can change all of the values shown on the display except for the profile name and description. These values are taken from the user’s i5/OS profile and cannot be changed through Query Manager.

Use your display station’s roll keys to view all of the values that define the user’s Query Manager profile. All profiles are shown on multiple displays.

7. Press the Enter key to save the changes you have made and return to the Work with Query Manager Profiles display. If you want to exit from the Change display without saving your changes, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

Selecting allowed SQL statements for profiles in Query Manager

When you create profiles for new Query Manager users, the only SQL statement they have the authority to use when creating, changing, or running SQL queries is the SELECT statement. Users who are upgrading from Query Manager V2R1.1 have authority to use all SQL statements.

To grant or restrict authority for SQL statements, answer YES to “Select allowed SQL statements” (see page 42). Query Manager shows the Select Allowed SQL Statements display. An example of this display is shown in Figure 20 on page 49.

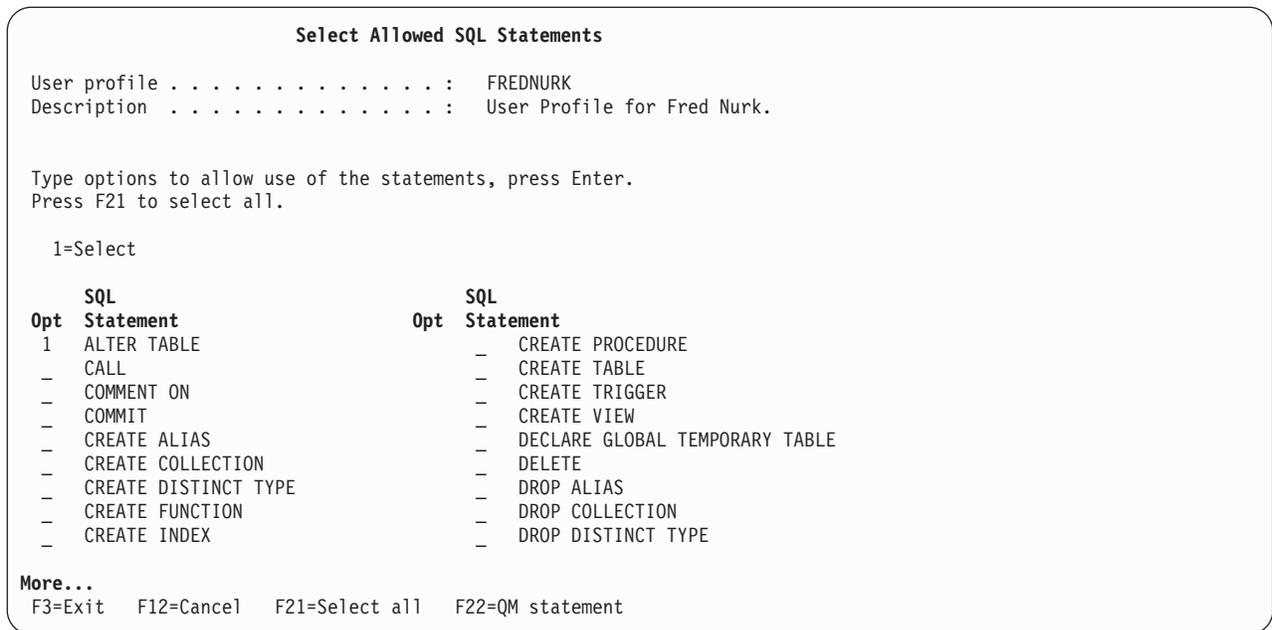


Figure 20. Select Allowed SQL Statements Display

Type 1 beside all of the SQL statements that you want the user to be able to use when creating, changing, or running SQL queries. Press F21 (Select all) if you want to grant authority for all of the SQL statements.

To restrict authority to a statement, blank out the 1 typed beside the statement name. If you restrict authority to all SQL statements, you stop the user from being able to create, change, or run SQL queries through Query Manager.

When you finish granting authority for SQL statements, press the Enter key to return to the Change Query Manager Profile display.

Notes:

1. These authorities and restrictions apply only to SQL queries. Users do not need authority for the SELECT statement to create, change, or run prompted queries.
2. These authorities and restrictions apply only when the user is creating, changing, or running SQL queries. The user can still display, print, and copy SQL queries that contain all SQL statements.
3. If you do not grant authority to use the COMMIT and ROLLBACK statements, the user cannot have a “Commitment control level” of *change*, *cursor stability*, *repeatable read*, or *all*.
4. For a complete description of all implications when allowing SQL statements, see Appendix C, “Implications of allowed SQL statements in Query Manager.”

Special considerations for profiles in Query Manager

Keep the following in mind when changing Query Manager profiles:

- When you grant and restrict authority for SQL statements, you limit the user’s access for those statements when creating, changing, or running SQL queries through Query Manager. This limitation does not exist outside Query Manager.
- When you name a specific collection or library for “Default collection for QM tables”, you limit the objects and tables that a user with *BASIC* access can use through Query Manager. This limitation does not exist outside Query Manager.
- When you specify a “Relational database connection” of **NONE*, users are not automatically connected to a remote relational database when they start Query Manager. Users with an *ALL* access level can enter the CONNECT statement from the Query Manager statement line if they want to connect to a remote relational database. See page 236. For DRDA considerations, see Chapter 9, “Distributed Relational Database Architecture in Query Manager,” on page 173.

- When users are connected to a remote relational database, their commitment control levels might be escalated by the connection. To deal with this, Query Manager simulates the commitment control level specified in each user's Query Manager profile, and if necessary, issues COMMIT and ROLLBACK statements for the user during the connection to the remote relational database. For more information about commitment control, refer to the SQL Programming Concepts.

Copying a Query Manager profile

When you copy a Query Manager profile, you replace the access levels and settings in one profile with the access levels and settings from another. This is a quick and easy way to prepare default values and settings for new Query Manager users.

Note: You need to have object management rights (*OBJMGMT) for both the profile you want to copy from and the profile you want to copy to.

1. Type 10 in the Selection prompt from the Query Manager main menu.
2. Press the Enter key to show the Work with Query Manager Profiles display.
3. Type 3 in the Opt prompt next to the names of the users whose profiles you want to copy values and settings from.
4. Press the Enter key to show the Copy Query Manager Profile display. An example of this display is shown in Figure 21.

Copy Query Manager Profile

Type choices, press Enter:
 Replace profile N Y=Yes, N=No

Type name of existing user, press Enter.

From Profile	To Profile
FREDNURK	JOESMITH__

Bottom

F3=Exit F5=Refresh F12=Cancel F22=QM statement

Figure 21. Copy Query Manager Profile Display

5. Answer Y or N to specify whether you want the copy to replace a Query Manager profile that already exists. If you selected to copy more than one profile, all profiles are copied using this setting.
6. Type the names of the profiles you want to copy to.
7. Press the Enter key to perform the copy operation. You need to type existing i5/OS user profile names.
 If you want to exit without performing the copy, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

Chapter 4. Working with Query Manager queries

A Query Manager query is an SQL statement that you run to manipulate and view database information. You can create and maintain queries using Query Manager's Edit Query display, which provides the syntax for all of the SQL statements you have been granted authority to use (through your Query Manager profile). You can also create and maintain SELECT statement queries using the prompted query option, where a series of displays prompt you to enter all of the information that Query Manager requires to create the query. You do not need to be a DB2 for i5/OS SQL language expert to work with Query Manager queries.

This chapter begins with a description of queries, telling you what they are, and where and when you might find them useful. Following the description are instructions on how to use most of the options that are available through the Work with Query Manager Queries display. You can learn how to copy, delete, rename, display, and print query definitions, and how to run Query Manager queries.

Creating and changing query definitions, changing the query creation mode, and converting prompted query definitions to SQL query definitions are described in Chapter 5, "Creating and changing queries in Query Manager."

If you have *BASIC* access to Query Manager, you can display and print query definitions, and run queries.

What is a query in Query Manager?

Generally, a query is a question asked of the database. For example, you can use a query to get information from database tables to produce a report. All queries created in Query Manager are written in the DB2 for i5/OS SQL language. Most of the queries you write or run will probably be SQL SELECT statement queries that generate reports on existing database information (for example, to print a monthly sales report, a client list, or a supply inventory).

Creating a Query Manager query

There are two ways in which you can create Query Manager queries:

- The SQL query editor is suitable for users who have experience using, or who want to learn, the DB2 for i5/OS SQL language. You can create queries containing any of the SQL statements you have been granted authority to use through your Query Manager profile (see "Selecting allowed SQL statements for profiles in Query Manager" on page 48 for more information). Press F4 (Prompt) while you are using this editor when you want to view a list of the SQL statements that you can use, together with their syntax. Creating queries using the SQL query editor is described in "Creating an SQL query through the edit query display in Query Manager" on page 68.
- The prompted query editor is suitable for users who have little or no experience using the DB2 for i5/OS SQL language. A series of displays prompt you to enter all of the information that Query Manager requires to create a SELECT statement query. Creating queries using the prompted query displays is described in "Creating a prompted query through the define prompted query display in Query Manager" on page 78.

Committing and rolling back changes to the database

Using Query Manager, you can run queries that contain all SQL statements you have authority to use (granted through your Query Manager profile) except for the CONNECT, SET CONNECTION, RELEASE, and DISCONNECT statements. When you run a query that contains one of the following SQL statements, you might be responsible for committing or rolling back changes to the database:

ALTER TABLE
CALL
COMMENT ON
CREATE
DELETE

DROP
GRANT
INSERT

LABEL ON
REVOKE
SELECT
SET TRANSACTION
UPDATE

If your Query Manager profile specifies that your commitment lock level is *change*, *cursor stability*, *all*, or *repeatable read*, you are responsible for committing or rolling back any changes to the database. You are also responsible for committing or rolling back any changes to the database if a SET TRANSACTION is active. These commitment lock levels are described on page 40.

You might want to create two queries to perform the commit and roll back operations: one containing the SQL COMMIT statement, and the other containing the SQL ROLLBACK statement. This way you have the required statements ready to run whenever you want to commit or roll back changes. (Creating queries is described in Chapter 5, "Creating and changing queries in Query Manager.")

For more information on writing queries, commitment control, and the SELECT, COMMIT, ROLLBACK, and other SQL statements, refer to SQL reference .

Using the work with Query Manager queries display

When you want to create, change, run, or use a query in any way, the Work with Query Manager Queries display is the place to begin.

You select the Work with Query Manager Queries display from the Query Manager main menu. Type 1 in the Selection prompt; then press the Enter key to go to the Work with Query Manager Queries display. An example of this display for a user with an *ALL* access level is shown in Figure 22.

If you have a *BASIC* access level, the only options shown are 5=Display, 6=Print, and 9=Run.

Work with Query Manager Queries

Library MYLIB _____ Name, F4 for list
Query creation mode SQL

Type options, press Enter.
1=Create 2=Change 3=Copy 4>Delete 5=Display 6=Print
7=Rename 9=Run 10=Convert to SQL

Opt	Query	Type	Description
-	FINAL	PROMPT	
-	MYQUERY	SQL	Example query for DB2 Query Manager
-	TABLE	PROMPT	

Bottom

F3=Exit F4=Prompt F5=Refresh F11=Display query only F12=Cancel
F16=Repeat position to F17=Position to F24=More keys

F19=Change query creation mode F22=QM statement F24=More keys

Figure 22. Work with Query Manager Queries Display

The queries listed on this display are those stored in the library shown at the top of the display.

If you have an *ALL* access level, the library name is underlined, indicating that it is a prompt value. You can type a new library name over the existing name if you want to access queries from a different library. Position the cursor on the Library prompt, and press F4 (Prompt) to display a list of libraries from which you can make a selection.

If you have an *ALL* access level, you also see the “Query creation mode” shown under the library name. This is the default or current mode that you use to create queries. Most users can change this value by pressing F19 (Change query creation mode). Creating queries and changing the query creation mode is described in Chapter 5, “Creating and changing queries in Query Manager.”

You can choose any of the following options to work with a query:

- 1=Create** Shows either the Edit Query display or the Define Prompted Query display, depending on your current query creation mode. The query you create becomes the active query. Creating SQL queries is described on page 68. Creating prompted queries is described on page 78.
- 2=Change** Shows the selected query in either the Edit Query display or the Define Prompted Query display, depending on the mode in which the query was last saved. The changed query becomes the active query. See page 102.
- 3=Copy** Copies a query. You can replace an existing query or create a new one. See page 53.
- 4=Delete** Deletes queries you no longer require. You need to respond to a confirm display before the delete occurs. See page 54.
- 5=Display** Shows the definition of the selected query in display-only format. You cannot change any values through this option. Note that the query is displayed in the mode in which it was last saved, either SQL or prompted. See page 55.
- 6=Print** Sends a copy of the SQL statement that defines the selected query to the printer specified in your Query Manager profile. See page 58.
- 7=Rename** Prompts you to specify new names for existing queries. See page 59.
- 9=Run** Runs the selected query. You can run any prompted query, and only those SQL queries that contain SQL statements you have been granted authority to use (through your Query Manager profile). Before an SQL SELECT statement query or prompted query is run, you can specify run options such as the mode in which you want to run the query (batch or interactive), and the destination to which you want the query output directed (display, printer, or table). Before a SQL query runs (except for SELECT queries), you can specify the mode (batch or interactive) in which you want to run the query. This query becomes the active query and the data retrieved becomes the active data. If you specify a report form to format the query data, that report form becomes the active form. See page 60.
- 10=Convert to SQL**
Converts a prompted query to an SQL query. You can replace the existing prompted query definition with the converted SQL query, or you can create a new SQL query, and leave the promptedquery definition unchanged. See page 103.

Note: This option is shown only if you have authority to create and change queries using the SQL query creation mode. You cannot convert a query if you do not have authority to use the SELECT statement.

If you need help selecting queries from the “Work with” display, see page 18. If you need help using the “Work with” display function keys, see page 23.

Copying a query in Query Manager

When you copy a query, you can create a new query or replace an existing one.

1. Type 1 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Queries display.
2. Type 3 in the Opt prompt next to the names of the queries you want to copy; then press the Enter key to go to the Copy Query display. This display lists the names of all of the queries you specified. An example of this display is shown in Figure 23.

Copy Query

From library : MYLIB

Type information, press Enter:

To library	MYLIB	Name
Replace query	N	Y=Yes, N=No

To rename copied query, change To Query name.

From Query	To Query
VENDINFO	VENDINFO__

Bottom

F3=Exit F5=Refresh F12=Cancel F22=QM statement

Figure 23. Copy Query Display

3. Before you can copy a query, you need to specify the following information. If you are copying more than one query, all queries are copied using the same settings.
 - **To library.** Type the name of the library to which you want the query copied.
 - **Replace query.** Type Y if you want to replace an existing query, or N if you want to create a new query. The default is N.
4. Type the name of the query you want to create or replace in response to the “To Query” prompt. If you answered N to “Replace query”, the name you type cannot already exist in the specified library. Query naming conventions are described on page 29.
5. Press the Enter key to perform the copy and return to the Work with Query Manager Queries display. If you want to leave the Copy Query display without copying any queries, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

Deleting a query in Query Manager

When you choose to delete a query, Query Manager shows a confirm display. No queries are deleted until you respond to this display.

1. Type 1 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Queries display.
2. Type 4 in the Opt prompt next to the names of the queries you want to delete; then press the Enter key to go to the Confirm Delete of Query display. This display lists the names of all of the queries you selected to delete. An example of the Confirm Delete of Query display is shown in Figure 24 on page 55.

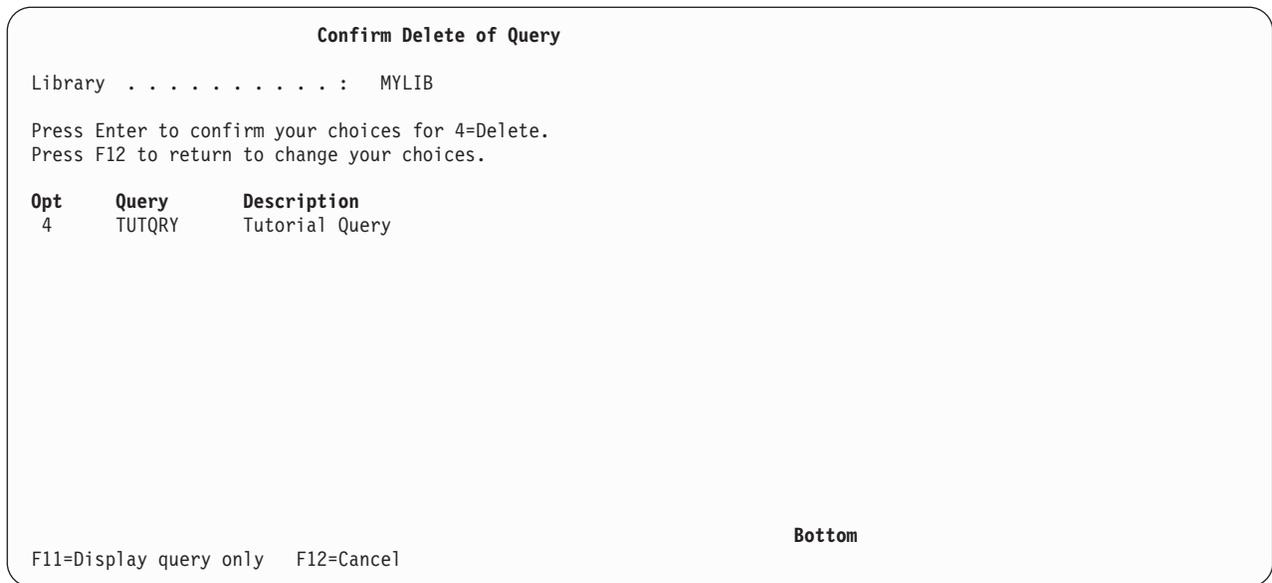


Figure 24. Confirm Delete of Query Display

When you choose to delete more than one query, you may want to press F11 (Display query only) to hide the query descriptions, and show multiple columns of query names on the display.

3. Press the Enter key to confirm the delete and return to the Work with Query Manager Queries display. Note that when you press the Enter key, you delete all of the queries shown on the display. If you want to leave the display without deleting any queries, press F12 (Cancel) instead of the Enter key.

Displaying a query in Query Manager

You can view the definition of a query in display-only format. The definition is displayed in the mode in which the query was last saved. SQL queries are shown in a display similar to the Edit Query display, and prompted queries are shown in displays similar to the Define Prompted Query displays. You cannot change any values through these displays.

Note: Displaying a query definition does not make the query active.

1. Type 1 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Queries display.
2. Type 5 in the Opt prompt next to the names of the queries whose definitions you want to display; then press the Enter key to go to the Display Query option. The definition of the first query you specified is shown. The definitions of the remaining queries are shown in the same order as the query names appear in the “Work with” display list.

An example of an SQL query definition is shown in Figure 25 on page 56.

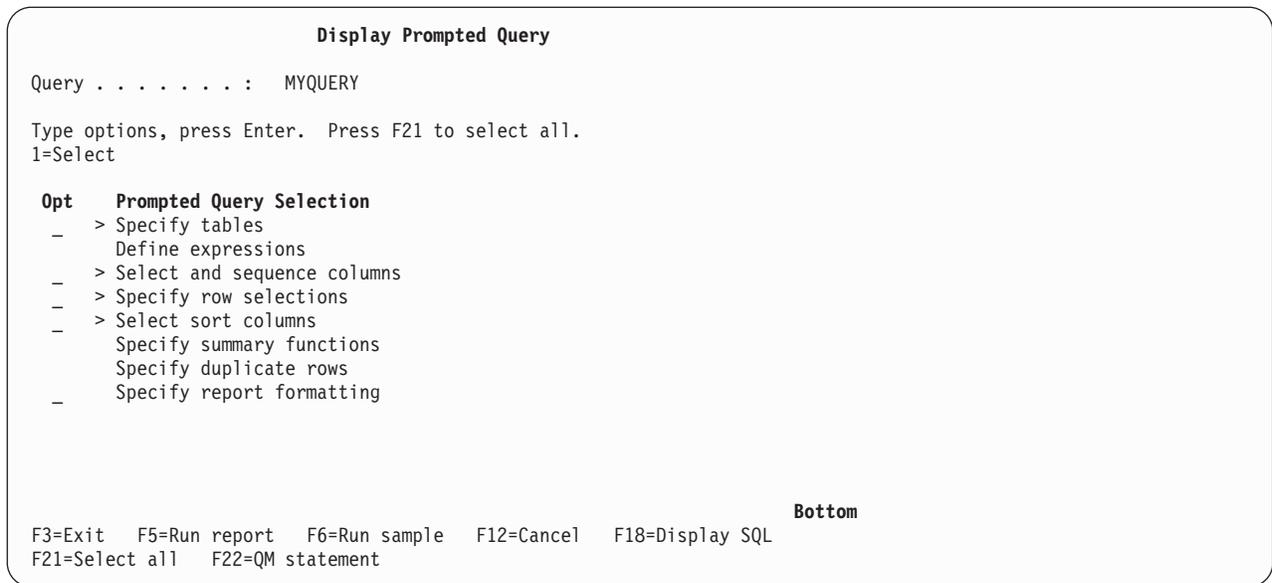


Figure 26. Display Prompted Query Display

4. When you are viewing the definition of a prompted query, type 1 in the Opt prompt next to the parts of the query definition that you want to display; then press the Enter key. A “>” sign is shown beside all parts of the query that have been defined. You can choose to display all parts by pressing F21 (Select all). Displays for the parts you choose are shown in the same order as the part descriptions appear on the Display Prompted Query display. When you finish viewing one display, press the Enter key to go to the next display. When you finish viewing all of the parts you selected, press the Enter key to return to the Display Prompted Query display.

You can find descriptions of the query definition parts on the following pages:

Specify tables	80
Define expressions	
Select and sequence columns	
Specify row selections	89
Select sort columns	94
Specify summary functions	
Specify duplicate rows	97
Specify report formatting	99

5. You can perform the following tasks through these displays:
 - Run a query.

Press F5 (Run report) to run a full query, or F6 (Run sample) to run a sample query. When you run queries in this way, you are prompted to enter run options if the query meets either of the following criteria:

 - a. The query is an SQL SELECT statement or prompted query, and the *Display run options* prompt is set to YES in your Query Manager profile (see page 36).
 - b. The active form does not match the displayed query.

If the query is not a SELECT statement, you are prompted to enter only the mode (batch or interactive). For the report form and query to match, they need to have the same number of columns, and the columns need to have compatible data types and lengths. Running queries is described on page 60.
 - View the definition of the report form used to format the query data.

If you are viewing the definition of a prompted query, type 1 in the Opt prompt beside “Specify report formatting” and press the Enter key. The Specify Report Formatting display is shown, asking you to enter the name of the report form you want to display. Type a name, or press F4 (Prompt) to display a list of the report forms in the current library from which you can make a selection. (See “Defining a report form in Query Manager” on page 99 for more information.)

If you are viewing the definition of an SQL query, press F13 (Display form) to view the definition of a report form. A prompt display is shown, asking you to type the name of the report form you want to display. Type a name, or press F4 (Prompt) to display a list of the report forms in the current library from which you can make a selection.

The report form you specify is shown in displays similar to the Select Report Format displays. You cannot change any values through these displays. Press F13 (Display query) when you want to leave the Display Report Format displays and return to the Display Query or Display Prompted Query display.

- View the SQL SELECT statement defined by the prompted query.
Press F18 (Display SQL) to show the SELECT statement that results from the information entered on the Display Prompted Query displays. The SELECT statement is shown with descriptive comments, in the same format as prompted query definitions are printed. See Figure 27 on page 59 for an example of format in which the SQL statement is presented.

6. When you finish viewing the query, press F3 (Exit) to return to the Work with Query Manager Queries display. If you are viewing the definition of an SQL query, and the Query Manager statement line is blank, you can also press the Enter key to leave the Display Query display.

Printing a query in Query Manager

You can print the SQL statement that defines a query on the default printer specified in your Query Manager profile.

1. Type 1 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Queries display.
2. Type 6 in the Opt prompt next to the names of the queries whose definitions you want to print; then press the Enter key to send the query definitions to your default printer. If you choose to print more than one query, the queries are printed in the same order as their names appear in the “Work with” display list.

A message at the bottom of the display tells you when the query definitions have been successfully sent to print. Examples of printed SQL and prompted queries are shown in Figure 27 on page 59.

The query definition is sent to the default printer specified in your Query Manager profile. To print the definition at a different printer, you need to change the default printer setting in your profile before you choose to print the query (see page 39).

Query definitions are always printed in interactive mode. The “Run query mode” setting in your Query Manager profile has no effect on the way definitions are printed.

```

DB2 for i5/OS Query Management
57xxST1 VxRxMx yymdd                      Page 1
                                           RCHASLOG
Query . . . . . : SQLQRY
Library . . . . . : MYLIB
Sort sequence . . . . . : *JOB RUN
Language identifier . . . . . : *JOB RUN
Text . . . . . : Sample SQL Query for DB2 Query Manager
SEQNBR *...+...1...+...2...+...3...+...4...+...5...+...6...+...7...+...8...+...9
000001 SELECT DEPT, NAME, JOB, SALARY, COMM
000002     FROM MYCOLL.STAFF
000003     WHERE DEPT = 20 OR DEPT = 38
000004     ORDER BY DEPT, NAME
                                           * * * * * END OF SOURCE * * * * *

```

```

DB2 for i5/OS Query Management
57xxST1 VxRxMx yymdd                      Page 1
                                           RCHASLOG
Query . . . . . : PROMPTQRY
Library . . . . . : MYLIB
Sort sequence . . . . . : *JOB RUN
Language identifier . . . . . : *JOB RUN
Text . . . . . : Sample Prompted Query for DB2 Query Manager
SEQNBR *...+...1...+...2...+...3...+...4...+...5...+...6...+...7...+...8...+...9
000001 SELECT
000002 -- Columns
000003     A.DEPT, A.NAME, A.JOB, A.SALARY, A.COMM
000004 -- Tables
000005     FROM "MYCOLL"/"STAFF" A
000006 -- Row Selection
000007     WHERE ((DEPT = 20)
000008             OR (DEPT = 38))
000009 -- Sort Columns
000010     ORDER BY A.DEPT, A.NAME
                                           * * * * * END OF SOURCE * * * * *

```

Figure 27. Examples of Printed SQL and Prompted Queries

Renaming a query in Query Manager

You can specify new names for more than one query in a single operation.

1. Type 1 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Queries display.
2. Type 7 in the Opt prompt next to the names of the queries you want to rename; then press the Enter key to go to the Rename Query display. This display lists the names of all of the queries you specified. An example of this display is shown in Figure 28 on page 60.

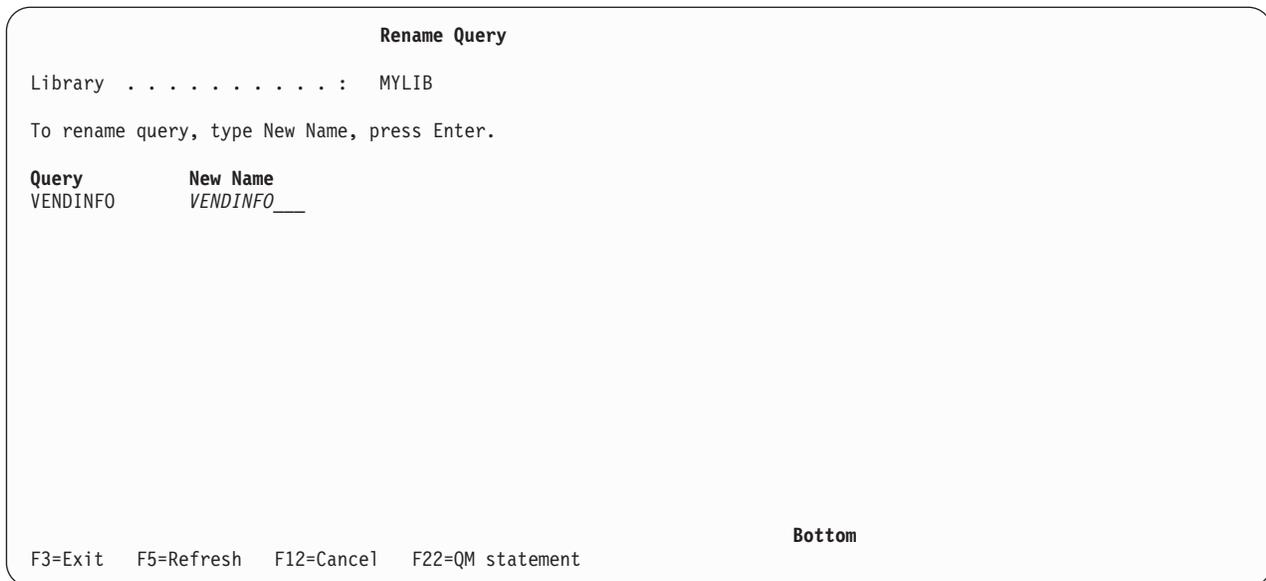


Figure 28. Rename Query Display

3. Type the new name for the query. Query naming conventions are described on page 29. You need to enter a query name that does not already exist in the current library. You cannot use the rename option to replace existing queries.
If you choose to rename more than one query, you need to type new names for all of the queries before pressing the Enter key.
4. Press the Enter key to perform the rename and return to the Work with Query Manager Queries display. If you want to leave this display without renaming any queries, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

Running a query in Query Manager

You can run prompted queries and any SQL query that contains one of the SQL statements you have authority to use (see page 42).

When you run SQL SELECT statement queries or prompted queries from a “Work with” display, you are always prompted to enter run options. You can specify in your Query Manager profile whether you want run options to be displayed. This setting applies only when you run a query as the result of pressing a function key.

1. Type 1 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Queries display.
2. Type 9 in the Opt prompt next to the names of the queries you want to run; then press the Enter key to go to the Run Query display. The Run Query display is shown for the first query you specified. Run Query displays for the remaining queries are shown in the same order as the query names appear in the “Work with” display list. See “Using the run query display in Query Manager” on page 136 for a description of the Run Query display.

Note: When you run an SQL query that is not a SELECT statement, the Run Query display is not shown. Queries are run using the default “Run query mode” specified in your Query Manager profile.

3. Specify the run options you want Query Manager to use when the query is run. Turn to “Specifying run options in Query Manager” on page 136 for a description of the available run options.
4. Press the Enter key to run the query. If there are any *variables* (strings starting with an ampersand (&)) in the query, Query Manager prompts you to enter a value for each variable before the query is run. The values you enter are substituted into the query when it is run.

The query is run using the options you specify on the run options display:

- If the query was submitted to batch, the Work with Query Manager Queries display is shown ready for you to perform the next task.
- If the query was run interactively and the output sent to a printer or table, you need to wait for the query to complete running before the Work with Query Manager Queries display is shown.
- If the query was run interactively and the output sent to display, you see the results of the query (and report form) shown on your display. Press F3 (Exit) or F12 (Cancel) when you want to leave the display and return to the Work with Query Manager Queries display.

Note: When a query is run in interactive mode, the number of rows retrieved might be limited by your Query Manager profile (see “Maximum number of rows allowed on interactive run in Query Manager” on page 36). If the maximum number of rows has been reached but there are more rows to be retrieved, all final summary data is omitted from the report, and a message is shown telling you that the data is incomplete.

For a more complete description of running queries, see Chapter 7, “Running queries and reports in Query Manager.”

Chapter 5. Creating and changing queries in Query Manager

This chapter describes the ways in which users with an *ALL* access level can create and change Query Manager queries. A Query Manager query is an SQL statement that you run to manipulate and view database information.

The chapter begins with a general overview of the ways in which you create and change queries, and describes the two query creation modes available through Query Manager: prompted and SQL. The overview also includes instructions on how to run queries from the editors, and include constants and variables in queries. This is followed by instructions for creating and changing queries, saving query definitions, and converting prompted queries to SQL.

Creating and changing a query in Query Manager

You create and change queries through the Work with Query Manager Queries display. To create a query, type 1 in the Opt prompt next to the blank query name (at the top of the list). To change a query, type 2 in the Opt prompt next to the name of the query you want to change.

Queries are created in the “Query creation mode” shown at the top of the display, either SQL or PROMPT. Many users can change this mode by pressing F19 (Change query creation mode). Queries are changed in the “Query creation mode” in which they were last saved. The change mode for each query is shown in the “Type” column on the Work with Query Manager Queries display.

The Work with Query Manager Queries display is described in detail in “Using the work with Query Manager queries display” on page 52.

You can create and change Query Manager queries only if you have an *ALL* user access level.

The difference between prompted and SQL queries in Query Manager

Using Query Manager, you can create two different kinds of queries: SQL and prompted. These queries are created, changed, and displayed in different modes, and the query definitions are stored in different formats.

SQL These queries are created through the Edit Query display. They can contain any SQL statement that you were granted authority to use through your Query Manager profile (see “Selecting allowed SQL statements for profiles in Query Manager” on page 48 for more information). If you need help entering an SQL statement to define a query, press F4 (Prompt) for a list of the statements you have authority to use, and their syntax.

The SQL query creation mode is suitable for users who have experience using, or want to learn, the DB2 for i5/OS SQL language. See “Creating an SQL query through the edit query display in Query Manager” on page 68 for more information.

Note: SQL queries cannot contain the CONNECT, DISCONNECT, SET CONNECTION, or RELEASE statements.

Prompted These queries are created through the Define Prompted Query displays. A series of displays prompt you to enter all of the information that Query Manager requires to create an SQL SELECT statement query. Prompted queries cannot contain subqueries or variables.

The prompted query creation mode is suitable for users with little or no experience using the DB2 for i5/OS SQL language. See “Creating a prompted query through the define prompted query display in Query Manager” on page 78 for more information.

Note: You need to be connected to a DB2 for i5/OS database before you can use the prompted query creation mode.

Changing the query creation mode in Query Manager

The default mode in which you create queries is set in your Query Manager profile. Many users can change this mode, either through their Query Manager profiles, or by pressing F19 (Change query creation mode) from the Work with Query Manager Queries display.

The query creation mode currently selected is shown at the top of the Work with Query Manager Queries display. All queries are created using this mode. Changing the query creation mode has no effect on queries that have already been created and saved. Queries are changed and displayed in the mode in which they were last saved, which is not necessarily the query creation mode shown on the “Work with” display. (The creation mode for each query is shown in the “Type” column on the Work with Query Manager Queries display, see Figure 22 on page 52.)

If “Allow change query creation mode” is set to NO in your Query Manager profile, you cannot change the mode through your profile, and F19 (Change query creation mode) is not available through the Work with Query Manager Queries display. All queries you create through Query Manager are created using the mode specified in your Query Manager profile. Also, you can change only those queries that were saved using the mode specified in your profile. See “Allow change query creation mode in Query Manager” on page 41 for more information.

Testing a query in Query Manager

It is often helpful to run a query while you are defining it, to make sure that it is retrieving the correct data and achieving the results you require.

You can run the query that you are currently creating or changing from the Edit Query display and from most of the Define Prompted Query displays. Press F5 (Run report) if you want to run a full query, or F6 (Run sample) to run the query using the sample restriction. Sample queries and reports are described on page 9.

You cannot run a query in batch mode if it has not yet been named and saved. Query Manager shows the Exit display, and will not submit the query to batch until it has been named and saved. See “Saving a query: Using the exit display in Query Manager” on page 100 for instructions.

Any changes made to the query since it was last saved are included if you run the query in interactive mode, and ignored if you run it in batch. If you run the query in batch, a message tells you that the most recently saved version of the query is being run. When you return to the query editor, your changes are still there. Running the previously saved version of the query in batch mode has no effect on the version of the query you are editing.

Before the query is run, Query Manager checks the syntax. If the query is an SQL query that contains variables, you are prompted to enter values for the variables before the syntax can be checked. If the query contains any errors, the run is stopped, the cursor is positioned on the first error (if possible), and an error message is displayed. If there are no errors, Query Manager runs the query. Running queries is described in detail in Chapter 7, “Running queries and reports in Query Manager.”

Note that when you run a query by pressing a function key, the program displays options if the query is an SQL SELECT statement or a prompted query, and if *Display run options* is set to YES in your Query Manager profile. If the query is not a SELECT statement, only the mode (batch or interactive) option appears. See page 36 for more information.

Running an alternative query in Query Manager

You can also run a query by entering the RUN QUERY statement on the Query Manager statement line. When you enter the RUN QUERY statement, or when you press F5 (Run report) or F6 (Run sample) and run options are displayed, you can choose to run a query other than the one you are currently creating or changing. (See “RUN in Query Manager” on page 251 or “Using the run query display in Query Manager” on page 136 for instructions.)

The Exit display is shown before the query is run, allowing you to save any changes you have made to the query that you are currently editing. (See “Saving a query: Using the exit display in Query Manager” on page 100 for instructions.)

When a query is run interactively, it becomes the active query. If you return to the query editor after running a query interactively, the new active query is shown in the editor in place of the query you were previously editing, if possible. The active query is shown in the editor that matches the mode in which it was last saved, either SQL or prompted.

If you cannot change your query creation mode, you cannot edit a query that was saved in the mode that you do not have authority to use. For example, if your default query creation mode is prompted and you cannot change your query creation mode, you cannot edit the active query if it was last saved as an SQL query.

If you run a query interactively that was last saved in the mode that you do not have authority to use, and then return to the query editor, the query you were previously creating or changing is shown in the editor. The query that you run becomes the active query only if you exit from the editor before running the query.

Including constants in queries in Query Manager

A constant is a value that is unchanging and predefined, and is used in processing. In the example:

```
SELECT DEPT, NAME, JOB, SALARY, COMM
FROM MYCOLL.STAFF
WHERE DEPT = 28 OR JOB = 'Sales'
```

28 and 'Sales' are constants. You can include constants in SQL queries, and in the expressions and row selection tests that you define for prompted queries.

When you use a character constant, the following rules apply:

- Enclose the character constant in single quotation marks (for example, 'ABCD').
- If you want to include a single quotation mark in the character string, you need to type it twice (for example, 'October's Profits').

When you use a graphic constant, the following rule applies:

- The delimited DBCS characters in the constant need to begin with a G or g, be enclosed in single quotation marks, and be delimited by shift-out and shift-in characters. The following examples use “<” to indicate the shift-out character, and “>” to indicate the shift-in character: G'<A B C >' or g'<D E F >'.

When you use a numeric constant, the following rules apply:

- The maximum length allowed for most numeric values is 31 digits. Single-precision floating-point values can be a maximum of 9 digits, and double-precision floating-point values can be a maximum of 17 digits.
- Place negative signs directly in front of the left-most digit, with no space between the sign and the digit. For example, type -5000 instead of - 5000.
- Do not use a currency symbol (for example, \$5000) or a thousand separator (for example, 5,000).

Including variables in SQL queries in Query Manager

A variable is a value that can be changed. By including variables in an SQL query, you can run a single query to generate a number of different results. For example, when you define a query, you can enter the name of the table being queried as a variable. Then, each time the query is run, users can specify the name of a different table to be queried.

You identify variables in SQL queries by typing an ampersand (&) before the variable name. For example:

```
SELECT DEPT, NAME, JOB, SALARY, COMM
FROM   &TABLE
WHERE  DEPT >   &COND1
ORDER BY DEPT, NAME
```

Query Manager needs you to supply values for all variables before it can check the syntax of the query, or run the query. You are prompted to enter a value for each variable. The query validation or run will fail if you do not specify a valid value for each variable.

Note that when you create or change an SQL query, you cannot enter variables through the Specify “SQL” Statement displays that are shown when you press F4 (Prompt). If the query already contains variables, F4 (Prompt) is not supported. (See “Prompting for SQL statements in Query Manager” on page 74 for more information.)

Note: Prompted queries cannot contain variables.

Creating customized runtime prompts for variables in Query Manager

If your SQL query contains variables, Query Manager prompts you to enter values for each variable before the query can be validated or run. Using the method described over the following pages, you can create a display containing customized prompts that ask users to enter specific values for each variable when the query is run.

You need to create a control language (CL) program to define the display on which the runtime prompts are shown, and a command that fills in the appropriate information for the prompts on the display. (You can also accomplish the same thing by creating a CL program and a DDS source file to define the display.)

The following examples are based on the STAFF table (shown on page 3) and the SALARYQ2 query and SALARYR2 report form, shown in Figure 29.

SALARYQ2 Query

```
SELECT DEPT, NAME, ID, JOB, YEARS, SALARY, COMM
FROM MYCOLL.STAFF
WHERE DEPT = &COND1 AND SALARY < &COND2
ORDER BY DEPT, SALARY
```

SALARYR2 Report Form

```
Column 1 (DEPT)      Usage = BREAK1
Column 5 (YEARS)     Usage = AVERAGE
Column 6 (SALARY)    Usage = AVERAGE
```

```
Break 1 Footing Text:   Line Align Text
                        1  RIGHT  Dept Avg:
```

Figure 29. Example Query and Report Form for Customized Prompts

You could create two additional report forms, called BYDEPT and BYDIVISION, with different formatting and calculations.

The example CL program and command shown in Figure 31 create the display shown in Figure 30. This display shows customized prompts, asking the user to enter specific values for &COND1, &COND2, output destination, and report form to use.

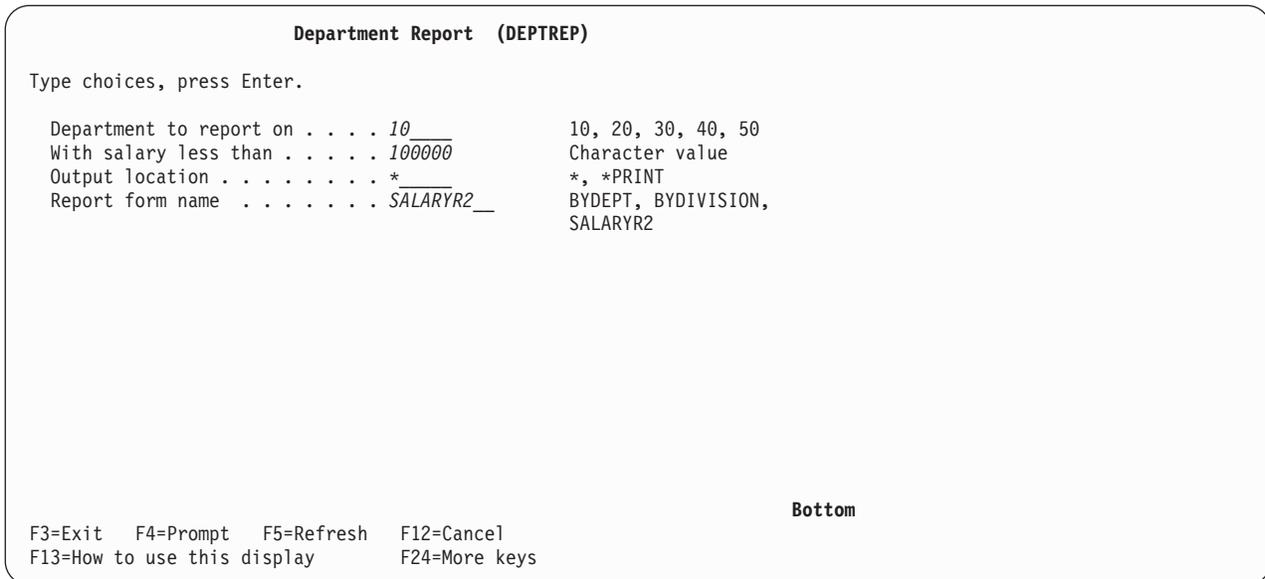


Figure 30. Customized Runtime Prompts Display

Example CL Program

```

SEU Source Listing
SOURCE FILE . . . . . EXAMPLE.SOURCE
MEMBER . . . . . CLPGM
SEQNBR*...+... 1 ...+... 2 ...+... 3 ...+... 4 ...+... 5 ...+...6 ...
100 PGM PARM(&VAR1 &VAR2 &VAR3 &VAR4)
200 DCL &VAR1 *CHAR LEN(6)
300 DCL &VAR2 *CHAR LEN(6)
400 DCL &VAR3 *CHAR LEN(6)
500 DCL &VAR4 *CHAR LEN(10)
600 STRQMQR Y QMQR Y (EXAMPLE.SALARYQ2) QMFORM(EXAMPLE.&VAR4) +
700          OUTPUT(&VAR3) +
800          SETVAR((COND1 &VAR1) (COND2 &VAR2))
900 ENDPGM
* * * * END OF SOURCE * * * *

```

Example Command

```

SEU Source Listing
SOURCE FILE . . . . . EXAMPLE.SOURCE
MEMBER . . . . . CLPGM
SEQNBR*...+... 1 ...+... 2 ...+... 3 ...+... 4 ...+... 5 ...+...6 ...
100 CMD  PROMPT('Department Report')
200      PARM  KWD(VAR1) TYPE(*CHAR) LEN(6) RSTD(*YES) +
300      DFT(10) VALUES(10, 20, 30, 40, 50) +
400      PROMPT('Department to report on')
500      PARM  KWD(VAR2) TYPE(*CHAR) LEN(6) DFT(100000) +
600      PROMPT('With salary less than')
700      PARM  KWD(VAR3) TYPE(*CHAR) LEN(6) RSTD(*YES) +
800      DFT(*) VALUES(*, *PRINT) +
900      PROMPT('Output location')
1000     PARM  KWD(VAR4) TYPE(*CHAR) LEN(10) RSTD(*YES) +
1100     DFT(SALARYR2) VALUES(BYDEPT, BYDIVISION, +
1200     SALARYR2) PROMPT('Report form name')
* * * * END OF SOURCE * * * *

```

Figure 31. Example CL Program and Command to Create Customized Prompts

When you enter the EXAMPLE.DEPTREP command through the command window and press F4 (Prompt), you see the display shown in Figure 30 on page 67. This display shows customized prompts, asking the user to enter specific information before the SALARYQ2 query is run.

You can enter any of the values shown on this display, or press the Enter key to accept the default values. The following report shows an example of what you might see if you accept the default values from the customized prompt display:

DEPT	NAME	ID	JOB	YEARS	SALARY	COMM
10	Daniels	240	Mgr	5	19,260.25	.00
	Lu	210	Mgr	10	20,010.00	.00
	Jones	260	Mgr	12	21,234.00	.00
	Molinare	160	Mgr	7	22,959.20	.00
		Dept Avg:		9	20,865.86	

Creating an SQL query through the edit query display in Query Manager

If your current query creation mode is SQL, Query Manager shows the Edit Query display when you choose to create a query. Using this display, you can create queries containing any one of the SQL statements that you have been granted authority to use through your Query Manager profile (see “Selecting allowed SQL statements for profiles in Query Manager” on page 48). You can view a list of the allowed statements and their syntax by pressing F4 (Prompt).

1. Type 1 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Queries display. Make sure that your “Query creation mode” (shown at the top of the “Work with” display) is SQL. If your creation mode is prompted, press F19 (Change query creation mode) to change the mode to SQL.

Note: Your Query Manager profile might restrict you from changing the query creation mode. See page 41 for more information.

2. Type 1 in the Opt prompt next to the blank query name (at the top of the list). You can specify a name for the query now, or you can leave it unnamed and specify a name when you save the query through the Exit display. Query naming conventions are described on page 29, and saving queries is described on page 100.

Press the Enter key to show the Edit Query display. The editing area contains a set of blank lines with the cursor positioned at the start of the first blank line. An example of this display is shown in Figure 32 on page 69.


```

                                Edit Query
Columns . . . : 1 70                Query . . . : MYQUERY
QM . .
-----
Type SQL Statement
***** Beginning of Data *****
0001.00 -- query for standard employee report
0002.00 SELECT ID, NAME, DEPT, JOB      -- columns to select
0003.00   FROM MYCOLL.STAFF            -- table to select from
0004.00   WHERE DEPT > 10              -- select rows only when
0005.00                                 -- dept number is > 10
0006.00   ORDER BY NAME                -- sort by employee name
***** End of Data *****

F2=Alternate keys  F3=Exit  F4=Prompt  F5=Run report  F6=Run sample
F9=Retrieve        F15=Check syntax  F18=Sort sequence  F24=More keys

```

```

                                Exit
Type choices, press Enter.

Option . . . . . 2                1=Save and exit
                                       2=Exit without save
                                       3=Resume without save
                                       4=Save and resume

Query . . . . . MYQUERY          Name
Library . . . . MYCOLL          Name, *CURLIB
Description . . Select from staff where dept > 10

F5=Refresh  F12=Cancel

```

Figure 33. Example Query Showing Comments

4. You can insert *comments* to describe your query. Identify comments by beginning them with a double hyphen (--). Everything from the double hyphen to the end of that line is treated as a comment and is stripped from the SQL statement during processing. A comment can start at any point in the line, as shown in Figure 33.

When you use F4 (Prompt) to edit a query, Query Manager removes any formatting (such as extra spaces and new lines) from the query statement. The edited statement is inserted in the Edit Query display as one continuous line. Any comments that were on the same line as query text are moved to the lines following the query statement. Query Manager keeps the comments as close as possible to the information that they describe.

5. To specify the sort sequence and language for the query, press F18 (Sort sequence). The Query Manager program shows the Specify Sort Sequence display (see page 98). F19 (Sort sequence) is available when:

- The Show query sort sequence option in your Query Manager profile is set to YES.
- The Show query sort sequence option is set to NO but you are changing a query with a sort sequence other than the default.

6. To run the query, press F5 (Run report) or F6 (Run sample). See page 64 for instructions.
7. When you finish creating the query, press F3 (Exit) to leave the Edit Query display and show the Exit display. Enter a name and description for the query through this display. Query naming conventions are described on page 29, and the description can be a maximum of 50 characters in length. If the query is already named, you can change the name if you desire.

Select option 1 to save the query; then press the Enter key to return to the Work with Query Manager Queries display. The Exit display is described on page 100.

If you have not made any changes to the query definition, you can press F12 (Cancel) to leave the Edit Query display and return to the Work with Query Manager Queries display. The F12 key is available only if you have not made any changes to the query definition.

If you want to work through practice exercises in which you create and work with an SQL query, turn to Appendix A, “Practice exercises for Query Manager.”

Using the edit query display in Query Manager

The Edit Query display provides you with a range of editing features to help you create and change SQL queries. You can use:

- **Edit commands.** These commands are entered on the Query Manager statement line (at the top of the display). Use these commands to search for or replace a string of characters in the statement, and to move to the top, bottom, right, or left of the editing area. See “Entering edit commands on the statement line in Query Manager.”
- **Line commands.** These commands are entered on the line sequence numbers in the edit area. Use these commands to insert, delete, repeat, and copy lines, and to go to a specified line number. (Line sequence numbers are shown the first time you press the Enter key while you are creating a query.) See “Entering line commands in the SQL editor in Query Manager” on page 72.
- **Function keys.** Use function keys to perform tasks such as repeating find and change commands, and checking the syntax of your query. See “Using function keys to edit an SQL query in Query Manager” on page 73.

Entering edit commands on the statement line in Query Manager

When you want to search for or change a string of characters, or view the entire query, type the following editing commands on the Query Manager statement line, shown at the top of the Edit Query display. All edit commands can be entered in either uppercase or lowercase letters.

Find `FIND string`

Searches for a string of characters, starting from the line on which the cursor is positioned. If the cursor is positioned on the Query Manager statement line, the search starts from the first line shown in the edit area. The search is in a forward direction only. If the string is found, the search stops and the cursor is positioned at the beginning of the string. To find the next occurrence of the same string, press F16 (Repeat find).

You can abbreviate FIND to F. If the search string includes any blanks or lowercase letters, you need to enclose the string in either single or double quotation marks.

Change

`CHANGE findstring replacestring`

Searches for a string of characters, starting from the line on which the cursor is positioned. If the cursor is positioned on the Query Manager statement line, the search starts from the first line shown in the edit area. The search is in a forward direction only. If the *findstring* is found, it is replaced by the *replacestring*, and the cursor is positioned at the line in which the change was made. To find the next occurrence of the find string, press F16 (Repeat find). To change the next occurrence, press F17 (Repeat change).

You can abbreviate CHANGE to C. If the find or replace strings include any blanks or lowercase letters, you need to enclose the strings in either single or double quotation marks. If the replace string is longer than the search string, the change is not performed, and an error message tells you that the text was too long.

Top Positions the first line of the SQL statement at the top of the edit area. You can abbreviate TOP to T.

Bottom

Positions the last line of the SQL statement at the bottom of the edit area. Shows the final lines of the query. You can abbreviate BOTTOM to B.

Left Positions column 1 of the query in the leftmost column of the displayed edit area. The range of columns currently shown is indicated in the *Columns* field at the top of the display. You can abbreviate LEFT to L.

Right Positions column 79 of the query in the rightmost column of the displayed edit area. The range of columns currently shown is indicated in the *Columns* field at the top of the display. You can abbreviate RIGHT to R.

Entering line commands in the SQL editor in Query Manager

You can type the following line commands over any line sequence number to insert, delete, repeat, or copy lines, or to go to a specified line number. When you press the Enter key, the command is performed and the line numbers are automatically renumbered so that a continuous sequence is kept, beginning with 0001.00.

Line sequence numbers are shown the first time you press the Enter key while you are creating a query.

The line commands available through the Edit Query display are:

nnn Go to. Repositions the display with the line numbered *nnn* at the top of the edit area. If you specify a number that is greater than the number of the last line, the last line is positioned at the top of the edit area.

I Inserts one blank line following the current line. If you make any changes to the inserted line (typing a space is regarded as a change), pressing the Enter key causes a second blank line to be inserted immediately following the first.

Innn Inserts *nnn* blank lines following the current line. When you press the Enter key, the changed lines are kept and another blank line is inserted immediately after the inserted lines.

D Deletes the current line.

DD Deletes the block of lines delimited by two DD commands.

RP Repeats the current line, inserting the copy after the current line.

RP*nnn* Repeats the current line *nnn* times, inserting the copies after the current line.

C Copies the current line to the position specified by the A (After) or B (Before) command.

CC Copies the block of lines delimited by two CC commands to the position specified by the A (After) or B (Before) command.

A After. Specifies that one or more lines being copied by the C or CC command are to be inserted after this line.

B Before. Specifies that one or more lines being copied by the C or CC command are to be inserted before this line.

When you insert, repeat, and copy lines, keep in mind that the maximum size permitted for a query is 9999 lines or 32K, whichever limit you reach first.

Line commands are subject to the following rules:

- Line commands can be typed using either uppercase or lowercase letters.
- No commands can be nested within the bounds of two CC or two DD commands.
- Only one command can be specified per line.
- Only one target command can be specified at a time, and therefore only one copy command.
- The only commands you can type on the line immediately above the first numbered line (the “Beginning of Data” line) are *nnn*, I, and A.
- The only commands you can type on the line immediately below the last numbered line (the “End of Data” line) are *nnn* and B.
- You might need to type a space following I and RP commands. If the number of lines (*nnn*) you want to insert or repeat in the query definition is the same as the sequence number on which you are typing the line command, you need to type a space following the number of lines. For example, if you are entering the command on line sequence number 0012.00, typing RP12.00 repeats the line once, while typing RP12 00 repeats the line 12 times.
- You might need to use your display station’s roll keys to show lines you insert to the query. Inserted lines are not always shown on the current display.

Example: Line commands in Query Manager: The following illustration shows one line being deleted and two blank lines being inserted. *d* is typed on sequence number 0003.00 to delete that line, and *i2* is typed on sequence number 0004.00 to insert two blank lines immediately following line 0004.00. Note that the commands can be typed anywhere on the sequence number; they do not have to be left-aligned.

```

***** Beginning of data *****
0001.00 SELECT DEPT, NAME, JOB, SALARY, COMM
0002.00   FROM MYCOLL.STAFF
000d.00   WHERE DEPT = 20 OR DEPT = 38
0004i20   ORDER BY DEPT, NAME
***** End of data *****

```

Press the Enter key to perform the line commands. Note that the lines are renumbered so that a continuous sequence is kept.

```

***** Beginning of data *****
0001.00 SELECT DEPT, NAME, JOB, SALARY, COMM
0002.00   FROM MYCOLL.STAFF
0003.00   ORDER BY DEPT, NAME
.....
.....
***** End of data *****

```

Using function keys to edit an SQL query in Query Manager

The following function keys are provided to help you create and change queries:

- F4 Prompt.** When the cursor is in the editing area and no statement is entered, F4 lists the SQL statements you have been granted authority to use (through your Query Manager profile). When the cursor is in the editing area and an allowed statement or partial statement is entered, F4 shows you the syntax of the statement, with any parameters you have already entered filled in. The prompting option does not support variables. See “Prompting for SQL statements in Query Manager” on page 74. When the cursor is on the blank Query Manager statement line, F4 lists the supported Query Manager statements.
- F10 Cursor.** Moves the cursor from the editing area to the Query Manager statement line, or from the Query Manager statement line to the editing area, depending on the present position of the cursor.
- F15 Check syntax.** Checks the syntax of the entire SQL statement. If the query contains variables, Query Manager prompts you to enter values for the variables before it checks the syntax. If any error is found, the cursor is positioned on the part of the statement that contains the error (if possible), and an error message is displayed.

Note: F15 (Check syntax) is not supported when you are connected to a relational database that is not DB2 for i5/OS.

- F16 Repeat find.** Looks for the search string you specified in the last FIND or CHANGE command that you entered on the Query Manager statement line. If the search string is found, the cursor is positioned on it. A message is displayed indicating the result of the search.
- F17 Repeat change.** Repeats the last CHANGE command that you entered on the Query Manager statement line. If the search string is found, the change is performed and the cursor is positioned on the changed string. A message is displayed indicating the result of the change.
- F18 Sort sequence.** Shows the Specify Sort Sequence display. This key is not available when the Show query sort sequence options prompt in the Query Manager profile is set to NO. The only exception to showing the options is when you change a query that was created with a sort sequence other than the default.
- F19 Left.** Shows the query with column 1 of the query beginning in the first column of the display. The columns of the query that you are currently viewing are shown in the upper left-hand corner of the display. Use this key, together with F20 (Right) to view the entire query if it is more than one display in width. (A query can be a maximum of 79 characters wide.)
- F20 Right.** Shows the query with column 79 of the query ending in the final column of the display. The columns of the query that you are currently viewing are shown in the upper left-hand corner of the display. Use this key, together with F19 (Left) to view the entire query if it is more than one display in width. (A query can be a maximum of 79 characters wide.)

Prompting for SQL statements in Query Manager

Press F4 (Prompt) from the Edit Query display when you want to see a list of the supported SQL statements and their syntax. Make selections through these prompt displays, and let Query Manager enter SQL statements for you.

1. Position the cursor in the editing area of the Edit Query display; then press F4 (Prompt) to view SQL statement prompting.
 - If the editing area is blank, you see a list of the SQL statements that you have authority to use. See Figure 34 on page 75.
 - If the editing area contains an authorized SQL statement, you see the syntax of that statement. Any valid parameters already entered for the statement are shown in the prompt display. (Note that the statement cannot contain any variables.) See Figure 35 on page 76.

To choose a statement from the Select SQL Statement display, type its option number in the Selection prompt at the bottom of the display and press the Enter key. Query Manager then shows you the Specify "SQL" Statement display for the statement you choose.

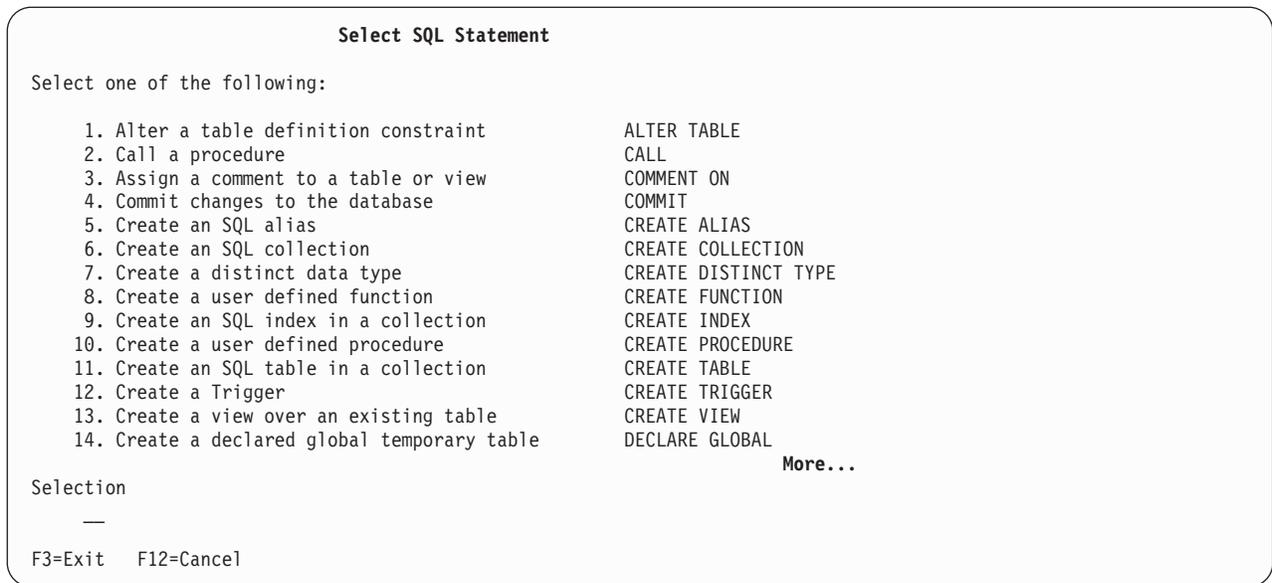


Figure 34. Select SQL Statement Display

The Specify “SQL” Statement display prompts you to enter all parameters for the specified statement. Any valid parameters you have already entered are shown in the display.

Figure 35 on page 76 shows an example of the Specify “SQL” Statement display for the SELECT statement. It shows the result of pressing F4 (Prompt) when the editing area contains the following statement:

```
SELECT * FROM MYCOLL.STAFF WHERE DEPT = 20
```

2. Use the Specify “SQL” Statement display to complete the SQL statement. Note that you cannot enter variables through these displays.

Further prompting is available to help you enter parameters. For example, you can move the cursor to the ORDER BY prompt and press F4 (Prompt) to display a list of columns for the table named in the FROM prompt.

Note: If you are connected to a remote relational database, prompting for lists of tables and collections is not supported. If the remote relational database is an SQL/DS™ database, prompting for columns is also not supported.

Specify SELECT Statement

Type information for SELECT statement. Press F4 for a list.

```
FROM tables . . . . . MYCOLL.STAFF _____
SELECT columns . . . . . * _____
WHERE conditions . . . . . DEPT = 20 _____
GROUP BY columns . . . . . _____
HAVING conditions . . . . . _____
ORDER BY columns . . . . . _____
FOR UPDATE OF columns . . . . . _____
```

Bottom

Type choices, press Enter.

```
DISTINCT rows in result table . . . . . N Y=Yes, N=No
UNION with another SELECT . . . . . N Y=Yes, N=No
Specify additional options . . . . . N Y=Yes, N=No
```

```
F3=Exit      F4=Prompt  F5=Refresh  F6=Insert line  F9=Specify subquery
F10=Copy line  F12=Cancel  F14=Delete line  F15=Split line  F24=More keys
```

```
F21=Display statement  F24=More keys
```

Figure 35. Specify SELECT Statement Display

Subqueries are available for any statement that supports a WHERE or HAVING clause. To create a subquery, position the cursor on the WHERE or HAVING prompt; then press F9 (Specify subquery) to go to the edit subquery display. When you finish defining the subquery, press the Enter key to return to the Specify “SQL” Statement display. The subquery is shown as part of the WHERE or HAVING clause, enclosed in parentheses.

3. Press the Enter key when you complete entering the parameters. The SQL statement that results from the Specify “SQL” Statement display is inserted in the Edit Query display, provided the syntax of the statement is correct. If there are any syntax errors, the Specify “SQL” Statement display is again shown, and the cursor is positioned on the error, if possible.

Note: When you use F4 (Prompt) to edit a query, any formatting you may have entered for the query (such as extra spaces and new lines) is discarded when you press the Enter key. Query Manager inserts the edited statement in the Edit Query display as one continuous line. Any comments you had entered for the query are shown on the lines immediately following the query statement. The comments are kept as close as possible to the part of the query that they describe.

For a description of all SQL statements, refer to SQL reference . For information on DBCS considerations when prompting for SQL statements, refer to SQL programming.

Allowed and restricted SQL statements in Query Manager

The statements that you can enter to define your query may be restricted by the security administrator through your Query Manager profile. See “Selecting allowed SQL statements for profiles in Query Manager” on page 48 for more information.

Query Manager knows which SQL statements you can and cannot use, and provides F4 (Prompt) information for only those statements that you have the authority to use. You cannot save a query that contains one of the statements you have not been granted authority to use through your Query Manager profile.

If the security administrator restricts your access to all SQL statements, you cannot create, change, or run SQL queries through Query Manager.

The DRDA commands can be executed from the command line. A list of relational databases and their connection information can be obtained by prompting on the DRDA statements. For more information on DRDA considerations, see Chapter 9, "Distributed Relational Database Architecture in Query Manager," on page 173.

Use your display station's arrow keys or press F10 (Cursor) to move the cursor to the Query Manager statement line. When the cursor is positioned on the Query Manager statement line, you can press F4 (Prompt) to display a list of the supported statements that you can enter (similar to Figure 34 on page 75).

You will probably enter the DRAW, SAVE QUERY AS, and CONNECT statements most often on this statement line. These statements are described in detail in Appendix B, "Query Manager statements."

DRAW *table*

Adds the SQL statement:

```
SELECT column1, column2, column3, . . . FROM table
```

to any text that is currently in the edit area. This statement is particularly helpful when building SQL statements that contain subselects.

SAVE QUERY AS

Saves the current query using the name you specify.

CONNECT

Makes a connection to a different relational database. For example, to connect to a System i platform named CHICAGO, you would type:

```
CONNECT TO CHICAGO
```

Note that when you create a query in the Edit Query display, the query cannot contain the CONNECT, DISCONNECT, SET CONNECTION, or RELEASE statements.

Notes:

1. If you connect to a database (other than DB2 for i5/OS) by using the CONNECT statement, F15 (Check syntax) is not supported.
2. If you specified system naming conventions in your Query Manager profile, the only relational databases you can connect to are those on a local machine or those on another i5/OS operating system.

Creating a prompted query through the define prompted query display in Query Manager

If your current query creation mode is prompted, Query Manager shows the Define Prompted Query display when you choose to create a query. Using this display, you can create a SELECT statement query. Choose the parts of the query that you want to define; then press the Enter key.

Query Manager presents a series of "prompted" displays. Answer the prompts on these displays to provide Query Manager with all of the information it needs to create the SELECT statement query.

Note: You cannot create or change a prompted query while you are connected to a database other than DB2 for i5/OS. You can change your current database connection using the Query Manager CONNECT or SET CONNECTION statements. See page 236 for instructions. Refer to Chapter 9, "Distributed Relational Database Architecture in Query Manager," on page 173 for DRDA considerations.

1. Type 1 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Queries display. Make sure that your "Query creation mode"

(shown at the top of the “Work with” display) is prompted. If your creation mode is SQL, press F19 (Change query creation mode) to change the mode to prompted.

Note: Your Query Manager profile might restrict you from changing the query creation mode. See page 41 for more information.

2. Type 1 in the Opt prompt next to the blank query name in the Work with Query Manager Queries display (at the top of the list). You can specify a name for the query now, or you can leave it unnamed, and specify a name when you save the query through the Exit display. Query naming conventions are described on page 29, and saving queries is described on page 100.

Press the Enter key to show the Define Prompted Query display. This display lists the eight possible definition steps you can use to define a query or change part of an existing query definition. An example of the Define Prompted Query display is shown in Figure 37.

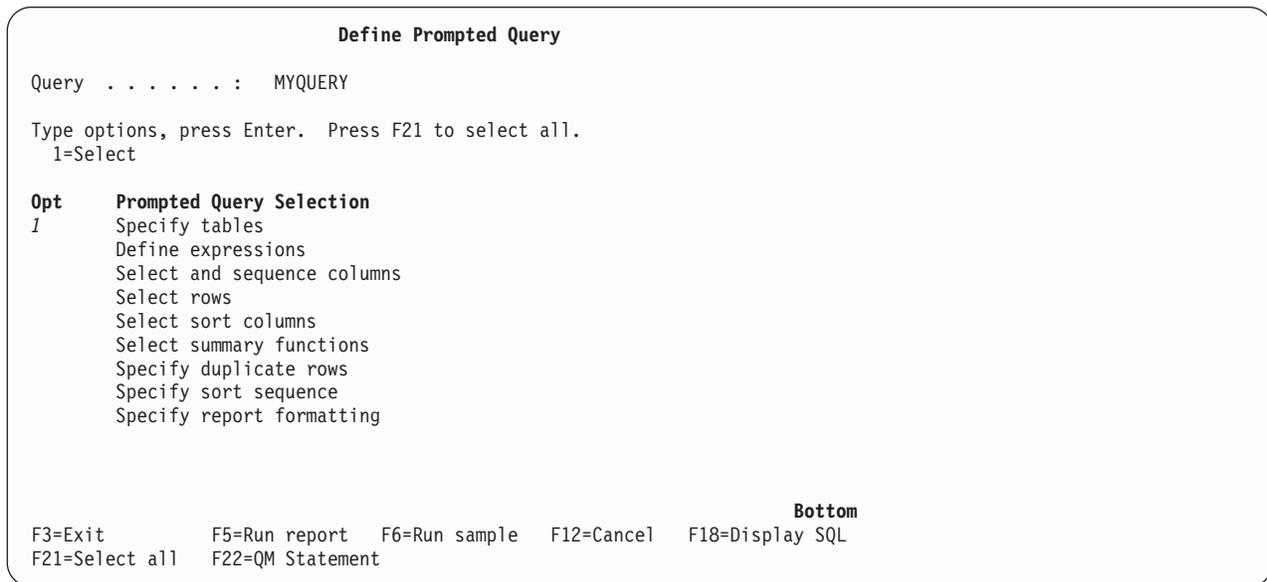


Figure 37. Define Prompted Query Display

3. Type 1 in the Opt prompt next to the definition steps of the query you want to create; then press the Enter key. You can choose all definition steps by pressing F21 (Select all).

The only definition step that you need to choose when you are creating a query is “Specify tables”. You do not need to choose all of the definition steps shown on the display: use only those that you need. Most of these steps do not need to be performed in a specific order (although the order shown is recommended if you need to use most of them). Each step you select is a separate process that shows you one or more displays, as you need them.

4. Create the query by completing the definition steps that you selected through the Define Prompted Query display.

Specify tables	see page 80
Define expressions	see page 85
Select and sequence columns	see page 87
Select rows	see page 89
Select sort columns	see page 94
Select summary functions	see page 95
Specify duplicate rows	see page 97
Specify sort sequence	see page 98

Specify report formatting see page 99

5. When you finish entering the information for one display, press the Enter key to go to the next display. All displays are shown in the same order as the definition steps are listed on the Define Prompted Query display. When you finish entering information for all of the definition steps that you selected, press the Enter key to return to the Define Prompted Query display. From this display, you can once again select definition steps of the query to create or change (as described in step 3) if you require. The parts of the query that you have defined are indicated by a ">" sign, shown to the left of the definition steps.

If you want to leave one of the displays and return directly to the Define Prompted Query display, press F12 (Cancel) instead of the Enter key.

6. To display the SQL SELECT statement that you are building through these prompted displays, press F18 (Display SQL). The SQL statement is shown with descriptive comments that tell you what function each part of the statement performs. You can find a description of the different parts of the SQL SELECT statement on page 4.
7. If you wanted to change the long column names to system names, you would:
 - a. Press F19 to display the system names.
 - b. Press Enter to update your query and change the names in the query to the displayed names.
8. If you wanted to change the system names to long column names, you would:
 - a. Press F19 to display the long column names.
 - b. Press Enter to update your query and change the names in the query to the displayed names.

To run the query, press F5 (Run report) or F6 (Run sample). See page 64 for instructions.

9. When you finish creating the query, press F3 (Exit) from the Define Prompted Query display to go to the Exit display. Enter a name and description for the query through this display. (Query naming conventions are described on page 29.) The description can be a maximum of 50 characters in length. If the query is already named, you can change the name if you desire.

Select option 1 to save the query; then press the Enter key to return to the Work with Query Manager Queries display. The Exit display is described on page 100.

If you want to work through practice exercises in which you create and work with a prompted query, turn to Appendix A, "Practice exercises for Query Manager."

Choosing the tables to include in the query in Query Manager

If you choose to specify tables from the Define Prompted Query display (see page 79), Query Manager shows the Specify Tables display. An example of this display is shown in Figure 38 on page 81. Use this display to enter the names of the tables that you want to query.

Note: When you create a prompted query, you need to specify tables before you can define any of the other parts of the query.

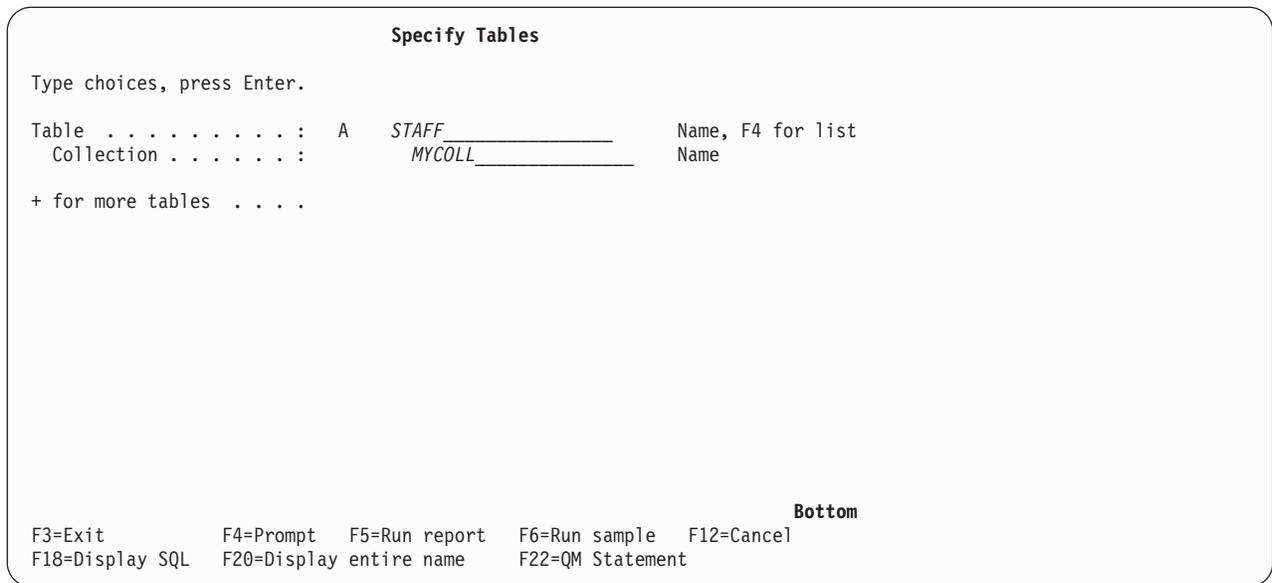


Figure 38. Specify Tables Display

Enter the following information to specify the tables for the query:

- **Table.** Type the name of the existing table that you want to query. You can press F4 (Prompt) to display a list of all tables in the current collection from which you can make a selection. For information on long table names, see “Exercise: Creating a table named with 19 characters or more in Query Manager” on page 186.
Query Manager assigns an identifier for each table selected by the query. In Figure 38, the identifier is “A”. Use the identifiers each time you refer to a table or column within the query definition. You cannot change this value.
- **Collection.** Type the name of the collection (or library) in which the table resides. The default library is *LIBL.
- **+ for more tables.** Type “+” if you want the query to select more than one table. When you type “+” and press the Enter key, Query Manager displays additional prompts that ask you to enter the name of the table and the collection in which it resides, as shown in Figure 39.

To remove a table from the query definition, type blank spaces over the table and collection names. You can also replace a table selection by typing new names over existing table and collection names. When you remove or replace a specified table, Query Manager automatically removes most references to that table from the query definition. The only references that you need to remove manually are those that occur in expressions. See “Defining expressions in Query Manager” on page 85 for more information.

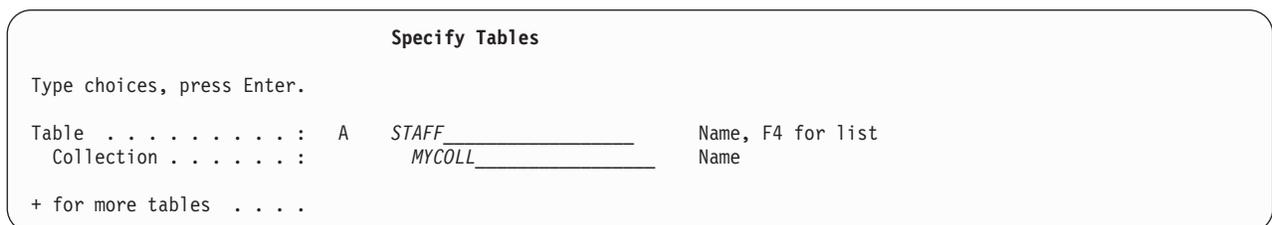


Figure 39. Specify Tables Display

You can select from 1 to 32 tables through the Specify Tables display. “A” and “B” are identifiers that you use to refer to each table within the query definition. These identifiers also reflect the order in which the tables are selected by the query. The identifier order goes: A, B, C, ... Z, AA, BB, CC, and so on to FF.

Specifying join conditions in Query Manager

If you specify more than one table, when you press the Enter key, Query Manager shows the Specify Join Conditions display. Use this display to define the rules by which the tables should be joined. An example of the Specify Join Conditions display is shown in Figure 40.

Specify Join Conditions

Type comparisons to show how table selections are related, press Enter.
 Tests: =, <>, <=, >=, <, >, EQ, NE, LE, GE, LT, GT

Column	Test	Column
A.DEPT _____	=	B.DEPTNO _____
_____	—	_____
_____	—	_____
_____	—	_____
_____	—	_____

More...

Table	Column	Data Type	Width
STAFF	A.ID	INTEGER	
	A.NAME	CHARACTER	9
	A.DEPT	INTEGER	
	A.JOB	CHARACTER	5
	A.YEARS	INTEGER	

More...

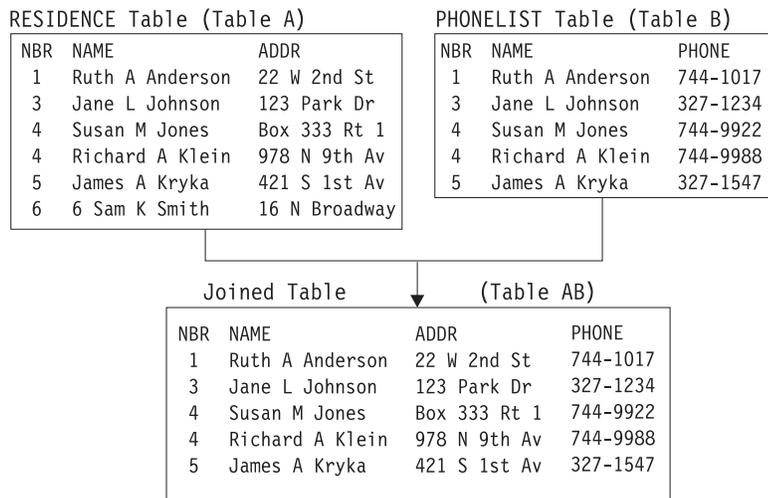
F3=Exit F4=Prompt F5=Run report F6=Run sample F11=Display description
 F12=Cancel F18=Display SQL F22=QM statement F24=More keys

F19=Display column names F20=Display entire name

Figure 40. Specify Join Conditions Display

All tables must have a connecting column, so that Query Manager can link from one table to the corresponding rows in another table. This is done by linking the rows with matching values in the linking columns.

Figure 41 shows the results of joining the A.RESIDENCE table to the B.PHONELIST table, for all rows where A.NBR = B.NBR.



RBAL3513-1

Figure 41. Example of Joined Tables

Use the top part of the Specify Join Conditions display to specify the conditions that you want Query Manager to use when it joins the tables. The bottom part of this display lists all of the columns in the selected tables. Enter the following information to specify join conditions:

- **Column.** Enter the name of the column (including the table identifier prefix) from the first table for which you want to specify the condition (for example, A.DEPT in Figure 40 on page 82). The names of all of the columns you can choose are listed at the bottom of the display.
- **Test.** Enter the test condition you want to use to compare the two column values. Choose from the following conditions:

Table 4. Prompted Query Test Conditions for Joining Tables

Test	Description
EQ, =	Equal to. The columns must match exactly.
NE, <>	Not equal to. The columns must not match.
LE, <=	Less than or equal to. Column 1 must have a value less than or equal to Column 2.
GE, >=	Greater than or equal to. Column 1 must have a value greater than or equal to Column 2.
LT, <	Less than. Column 1 must have a value less than Column 2.
GT, >	Greater than. Column 1 must have a value greater than Column 2.

- **Column.** Enter the name of the column (including the table identifier prefix) from the second table against which you want to make the comparison (for example, B.DEPTNO in Figure 40 on page 82). The names of all of the columns you can choose are listed at the bottom of the display.

Query Manager joins the tables after performing column-by-column comparisons. If you specify more than one condition, the conditions are joined by an AND connector. That means that only those rows where both conditions are true are selected by the query.

Rules for joining tables in Query Manager

When you specify join conditions, the following rules and guidelines apply:

- All of the tables that you chose through the Specify Table Selections display need to be involved in at least one join.
- For two tables to be joined, they need to have at least one column in common. (Note that having a column in common does not mean that the column names are the same.)
- The two columns you specify for the join need to have different table identifier prefixes, and the columns need to contain similar data, with compatible data types and lengths. The data types and lengths for all columns are listed at the bottom of the display.

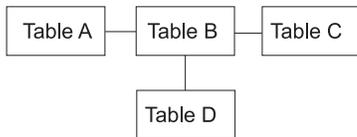
You can use F11 (Display description/Display column only/Display Type) to change the information shown at the bottom of the display.

- Joins need to be linear rather than circular in nature. The following examples assume that you have selected four tables: A, B, C, and D. Figure 42 on page 84 shows valid join conditions for these tables.

Join Conditions: A.DEPT = B.DEPTNO
 B.STAFF = C.EMPS
 C.MGR = D.MANAGER



Join Conditions: A.DEPT = B.DEPTNO
 B.STAFF = C.EMPS
 B.BOSS = D.MANAGER

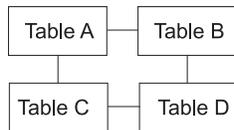


RBAL3510-1

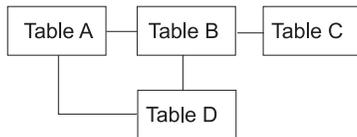
Figure 42. Examples of Linear (Valid) Table Joins

Figure 43 shows *incorrect* join conditions for the tables. Notice how these joins are circular in nature.

Join Conditions: A.DEPT = B.DEPTNO
 A.JOB = C.JOB
 C.MGR = D.MANAGER
 B.STAFF = D.STAFF



Join Conditions: A.DEPT = B.DEPTNO
 B.STAFF = C.EMPS
 B.BOSS = D.MANAGER
 A.JOB = D.JOBCODE



RBAL3511-1

Figure 43. Examples of Circular (Not Valid) Table Joins

When you are joining more than three tables, you might find it helpful to draw an example of the way in which you want the tables to be joined. By doing this, you can make sure that you are not joining the tables in a circular manner.

- All of the tables need to be joined in a single join sequence. In Figure 44 on page 85, all of the tables are involved in at least one join, but the joins are not connected in a single sequence.

Join Conditions: A.DEPT = B.DEPTNO
 C.MGR = D.MANAGER

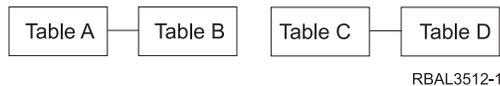


Figure 44. Example of an Incomplete Table Join

Figure 42 on page 84 shows ways in which the four tables can be joined to make a single join sequence. As a rule, the number of join conditions you specify should be one less than the number of tables selected, so when you select four tables, you should specify three join conditions.

Defining expressions in Query Manager

If you choose to define expressions from the Define Prompted Query display (see page 79), Query Manager shows the Define Expressions display. An example of this display is shown in Figure 45.

Define Expressions

Type expression using column names, constants, and operators, press Enter.
 For full name and expression, press F4.
 Valid operators are: +, -, *, /, CONCAT ...

Name	Expression
TOTAL_PAY _____	SALARY+COMM _____
_____	_____
_____	More...

Column	Column	Column
A.ID	A.COMM	
A.NAME	B.DEPTNUMB	
A.DEPT	B.DEPTNAME	
A.JOB	B.MANAGER	
A.YEARS	B.DIVISION	
A.SALARY	B.LOCATION	

Bottom

F3=Exit	F5=Run report	F6=Run sample	F11=Display type	F12=Cancel
F18=Display SQL		F19=Display column names		F24=More keys

F20=Display entire name	F22=QM Statement	F24=More keys
-------------------------	------------------	---------------

Figure 45. Define Expressions Display

Using this display, you can create new columns and row values to use with the query and include in query output. You can also give names to the expressions you define. Each expression you define creates a new column of query data. The column values are the result of the expression. The column name used in the prompted query definition will either be the expression name if it is named or the expression itself. For example, (A.SALARY+A.COMM) / 12 in Figure 45. If the expression you want to enter is longer than the length of the prompt line, press the F4 (Prompt) key. This will bring up a different Define Expressions panel that will allow you to enter the entire name. F4 allows you to enter the full name as well as the full expression. F20 (Display entire name) can also be used to enter the longer name. If the expression is more than 54 characters in length, it is truncated when it is shown on the Select and Sequence Columns display and a "..." suffix is added: for example, (A.SALARY+A.COMM)...

To name the expressions you define, place the cursor on the Name input area and enter the name you want. When naming expressions, observe the following rules:

- Do not use column names from the list on the lower half of the display or the names of other expressions.

- If you need to enter a name longer than the length of the prompt line, press the F4 (Prompt) key. You will see another Define Expressions panel that will allow you to enter the full name and the full expression. F20 (Display entire name) can also be used to enter the long name.
- Start the name with an alphabetic character (A through Z, \$, #, or @). Up to 29 alphanumeric characters (A through Z, 0 through 9, \$, #, @ or _) may be used for the remainder of the name. Do not use blanks within the name, unless the entire name is blank.

The column heading is the expression name if it is named. Expression names can also be quoted, in which case any character greater than X'3F' and less than X'FF' is allowed within the quotes. If the actual expression is more than 20 characters in length, the phrase describing the expression will be used. If you would like to define different column headings, you can create a report form from the define Prompted Query menu and personalize your column headings.

The column heading used for report form definitions and printed reports will either be the expression itself with blanks added to improve readability or it will be a phrase describing the expression. If the edited expression is more than 20 characters in length, the phrase describing the expression will be used. The column name used will be the characters "SEL" followed by a unique number, SEL1 for the first expression, SEL2 for the second expression and so on. The number used depends on how the expression is sequenced with respect to other expressions, summary functions and duplicate columns on the 'Select and sequence columns' display. When you define expressions, it is a good idea to keep a note of which expression each one of the "SEL" column names refers to.

Note that the only way that you can change column headings for printed and displayed reports is by creating a report form, or by defining a named expression. If you create a report form, the column name remains unchanged. If you define a named expression, the column name is renamed. See "Defining a report form in Query Manager" on page 99 for instructions on how to create a report form.

The expressions that you define through this display do not need to appear in your query output. You can define expressions to use as intermediate steps for obtaining final results. For example, you can define an expression to use when you select the rows to include in the query output, or to create a value for which you want to calculate summary data. Expressions are included in query output if you select them through the Select and Sequence Columns display. See "Selecting and sequencing columns from the tables in Query Manager" on page 87 for more information.

Enter the expression in free format. The expression can include column names (prefixed by the table identifier), constants, parentheses (to show operation priority), and any of the following arithmetic operators:

Table 5. Arithmetic Operators

Op	Description
+	Addition
-	Subtraction
*	Multiplication
/	Division

Use these operators with number values only. If the data types for all columns are not currently shown at the bottom of the display, press F11 (Display description). The result of any expression containing a null value is null.

Including functions, durations, and special registers in expressions in Query Manager

You can include functions, durations, and special registers in the expressions you create through the Define Expressions display. The supported functions, durations, and special registers include, but are not limited to, the following:

- **Functions:** AVG, CHAR, COALESCE, CONCAT, COUNT, DECIMAL, DIGITS, FLOAT, HEX, INTEGER, LENGTH, MAX, MIN, STRIP, SUBSTR, SUM, TIME, TIMESTAMP, VALUE, VARCHAR, VARGRAPHIC
- **Durations:** DATE, DAY, DAYS, HOUR, MICROSECOND, MINUTE, MONTH, SECOND, YEAR
- **Special Registers:** CURRENT DATE, CURRENT_DATE, CURRENT TIME, CURRENT_TIME, CURRENT_TIMESTAMP, CURRENT_TIMESTAMP, USER, CURRENT PATH, CURRENT SCHEMA

You can find detailed descriptions of all of the functions, durations, and registers in SQL reference.

CONCAT function considerations in Query Manager: Use the CONCAT (concatenation) function to join two values together. This function can be used only with alphanumeric values, and can join two columns, or a column and a constant. The result appears as one column in the report.

If you want to include a column with a number data type in a concatenation string, you need to convert the numbers to alphanumeric values using the DIGITS function. The result of the concatenation is an alphanumeric string with no decimal place. For example, the expression ('\$' CONCAT DIGITS(A.SALARY)) creates a column containing the SALARY values from table A prefixed with a dollar sign. The ('\$' CONCAT DIGITS(A.SALARY)) values are alphanumeric values, and cannot be used in arithmetic operations.

Note that an alphanumeric constant needs to be enclosed in single quotation marks. For more information, see “Including constants in queries in Query Manager” on page 65.

Each expression you define is limited to the length of one input line shown on the Define Expressions display. This is due to one of Query Manager’s internal size limitations. You can use the CONCAT function to join two input lines and create a longer expression.

VARCHAR and VARGRAPHIC functions and UCS2-graphic data in Query Manager: The VARCHAR function returns a character string in the default or a specified CCSID. You can use VARCHAR to convert UCS2-graphic data to a form that can be displayed or printed in a report. You can also use it to compare or concatenate UCS2-graphic data with SBCS or DBCS data. VARCHAR converts UCS2-graphic data to SBCS, DBCS-open, DBCS-only, or DBCS-either. The function does not convert UCS2-graphic data to bit data, CCSID 65535.

The VARGRAPHIC function returns a graphic string representation of a string expression. You can use VARGRAPHIC to convert SBCS, DBCS-open, DBCS-only, or DBCS-either so it can be compared with or concatenated to UCS2-graphic data. VARGRAPHIC does not convert bit data (CCSID 65535).

For complete details on the VARCHAR and VARGRAPHIC functions, see SQL reference. For more information, see “Including constants in queries in Query Manager” on page 65.

Selecting and sequencing columns from the tables in Query Manager

If you choose to select and sequence columns from the Define Prompted Query display (see page 79), Query Manager shows the Select and Sequence Columns display. An example of this display is shown in Figure 46 on page 88.

Select And Sequence Columns

Type a sequence number (0-9999) for the name of each column to appear in the report, press Enter.

Seq	Column	Seq	Column
___	TOTAL_PAY	___	B.MANAGER
___	DIVISION_INFORMATION	___	B.DIVISION
___	MYCOLL.STAFF-- ALL	___	B.LOCATION
___	A.ID		
___	A.NAME		
___	A.DEPT		
___	A.JOB		
___	A.YEARS		
___	A.SALARY		
___	A.COMM		
___	MYCOLL.ORG-- ALL		
___	B.DEPTNUMB		
___	B.DEPTNAME		

Bottom

F3=Exit F5=Run report F6=Run sample F10=Duplicate column
F11=Display type F12=Cancel F18=Display SQL F24=More keys

F19=Display column names F20=Display entire name F21=Select all
F22=QM Statement F24=More keys

Figure 46. Select and Sequence Columns Display

Use this display to choose the columns that you want the query to select, and to specify the sequence in which you want the columns to be selected. The sequence affects the order in which the columns are retrieved by the query, and the order in which the columns are shown in the resulting report.

Note: If there is any unreadable text shown in the Description column on the display, it is probably due to a CCSID conversion error. A message at the bottom of the display will explain any errors that occurred.

The Select and Sequence Columns display shows the following information:

- All of the tables, and all columns from all of the tables you selected using the Specify Tables display (see page 80)
- All expressions you defined using the Define Expressions display (see page 85)
- All summary functions you selected through the Select Summary Functions display (see page 95)

Note: If any expression or summary function is more than 20 characters in length, Query Manager truncates it, and adds “...” to the end of the displayed expression or summary function to indicate that it has been truncated: for example, (A.SALARY+A.COMM)...

Enter a number from 0 to 9999 in the Seq prompt next to the columns, expressions, and summary functions you want to select, to specify the sequence in which you want them to be selected by the query. 0 is the lowest (first) sequence number, and 9999 is the highest (last). The default is for all items to be selected, and to be sequenced in the order in which they appear on the Select and Sequence Columns display.

Every column for which you specify a sequence number is selected by the query. The following rules apply when specifying sequence numbers:

- Sequence numbers do not need to be consecutive.
- If you specify the same sequence number for more than one item, the items are selected in the same order as they appear on the Select and Sequence Columns display. For example:

```
3 A.ID
1 A.NAME
4 A.DEPT
2 A.JOB
3 A.YEARS
```

would result in the following SELECT sequence:

```
SELECT A.NAME, A.JOB, A.ID, A.YEARS, A.DEPT
```

- Any items for which you do not specify a sequence number are not selected by the query.

If you want to select all columns from a table, and have them sequenced in the same order as they appear in the table, type a sequence number in the Seq prompt next to the table name (for example, STAFF and ORG in Figure 46 on page 88). The "-- ALL" that follows the table name tells Query Manager to select all columns from the table.

When you press the Enter key, the columns are reordered on the display so that they are shown in the sequence you specified. Unselected columns appear at the end of the list. The columns may also be renumbered, so that the first selected column has a sequence number of 10, the second of 20, the third of 30, and so on. Continuing the previous example, when you press the Enter key, the columns would be shown in the following order:

```
10 A.NAME
20 A.JOB
30 A.ID
40 A.YEARS
50 A.DEPT
```

Press the Enter key a second time to leave the Select and Sequence Columns display, and go to the next display you specified through the Define Prompted Query display.

Note: If you do not choose to "Select and Sequence Columns", the query selects all columns from all of the tables you specified. The columns are sequenced in the same order as they appear in the database tables.

Including duplicate columns in Query Manager

You can add a duplicate column, expression, or summary function to the Select and Sequence Columns display, and get the query to select it (and the report to display it) more than once. Simply position the cursor on the item that you want to copy; then press F10 (Duplicate column). The duplicate column, expression, or summary function is inserted immediately below the item the cursor was positioned on when you pressed F10. If a named expression is duplicated, the duplicated expression will be unnamed.

Specifying row selection tests in Query Manager

If you choose to select rows from the Define Prompted Query display (see page 79), Query Manager shows the Select Rows display. An example of this display is shown in Figure 47 on page 90.

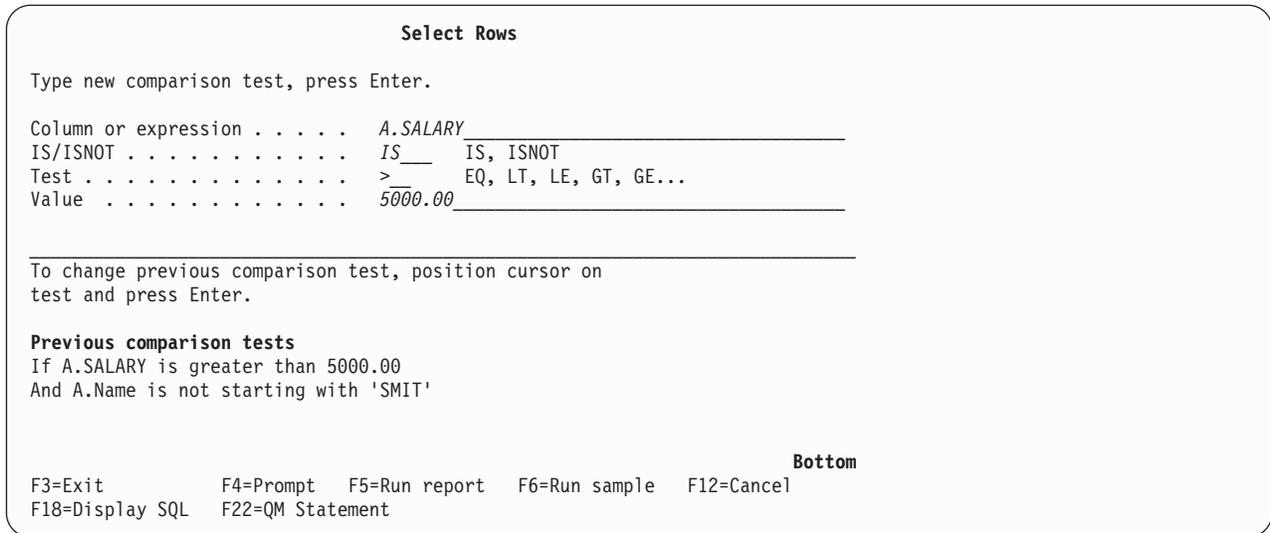


Figure 47. Select Rows Display

Use this display to specify the rows that you want to be retrieved by the query. You do this by defining comparison tests for the column values. Only those rows that match the tests you define are retrieved by the query. For example, if you want to select only those rows where the salary is greater than \$5,000, you would define the first test condition shown in the bottom half of Figure 47:

If A.SALARY is greater than 5000.00

You define a comparison test by answering all of the prompts shown on the display. Any comparison tests that you have already defined are shown in the bottom half of the Select Rows display. Each time you finish defining a new comparison test, it is added to the tests in the bottom half of the display.

You can edit or delete a comparison test that already exists. Simply position the cursor on the test that you want to change or delete; then press the Enter key. The comparison test is marked by a ">" sign in the bottom half of the display, and the details of the test are shown as prompt values in the top half of the display. (Any values that had already been entered for the prompts in the top half of the display are replaced by the details of the selected comparison test.) Make the changes to the values that define the comparison test; then press the Enter key to save your changes. To delete the comparison test, blank out all of the values shown in the prompts before you press the Enter key.

When changing a comparison test, it may be necessary to change the "Values" before you change the "Test". The BT (Between) test must have two values specified, the NL (Null) test must have zero values. If you are changing a comparison test so that it has a "Test" of either BT or NL, you may first need to erase "Values" by typing blanks over the existing values. Query Manager displays an error message if you specify BT or NL when an incorrect number of "Values" exist.

Enter the following information to define comparison tests:

- **AND/OR.** You need to enter either AND or OR when you define more than one comparison test, to join the tests. Type AND if *both* the previous test and the current test need to be true for the row to be selected. Type OR if *either* the previous test or the current test need to be true for the row to be selected. The AND/OR connector is described in greater detail in "Choosing columns for row selection test" on page 91.
- **Column/Expression.** Type the name of the column or expression on which you want the comparison test performed. Press F4 (Prompt) if you want Query Manager to display a list of all of the columns and expressions selected by the query. Choosing a column or expression from the F4 (Prompt) list is described in "Choosing columns for row selection test" on page 91.

- **IS/ISNOT.** Type IS if you want only those rows for which the test condition is true to be selected. Type ISNOT if you want only those rows for which the test condition is false to be selected. The IS/ISNOT prompt is described in greater detail in “Choosing test conditions for row selection test” on page 92.
- **Test.** Specify the test condition (for example, equal to, less than, starting with) that you want to use to perform the comparison. Press F4 (Prompt) if you want Query Manager to display a list of all of the test conditions you can choose. The supported test conditions are described in “Choosing test conditions for row selection test” on page 92.
- **Value.** Type the appropriate value or values needed to complete the test. If you want to enter more than one value, press F4 (Prompt) to display a window through which you can enter multiple values. This is described in “Specifying test values for row selection test” on page 93. (When you choose a test condition of BT (Between), the entry window is always displayed.)

Note that you need to enter two values for a test condition of BT (Between), and zero values for a test condition of NL (Null). You can enter up to six values for all other test conditions.

The test values you enter can be column names, expressions, or constants.

Note: If you press F4 (Prompt) while you are creating a comparison test, a prompt window is displayed for the first prompt (shown on the Select Rows display) that you have not yet completed. For example, if you have not entered any values for the comparison test, pressing F4 (Prompt) will show the Select Columns for Row Conditions window (shown in Figure 48) regardless of where the cursor is positioned. If you are changing a comparison test, pressing F4 (Prompt) will show the window that relates to the prompt where the cursor is currently positioned.

The row selection tests that you specify through this display create the WHERE clause of the SELECT statement. For a detailed explanation of the SELECT statement and the WHERE clause, refer to SQL reference.

Choosing columns for row selection test

One of the first things you need to enter when you define comparison tests is the name of the column or expression against which you want the test performed. To display a list of all columns selected by and expressions defined for the query, press F4 (Prompt). An example of the list of columns and expressions is shown in Figure 48.

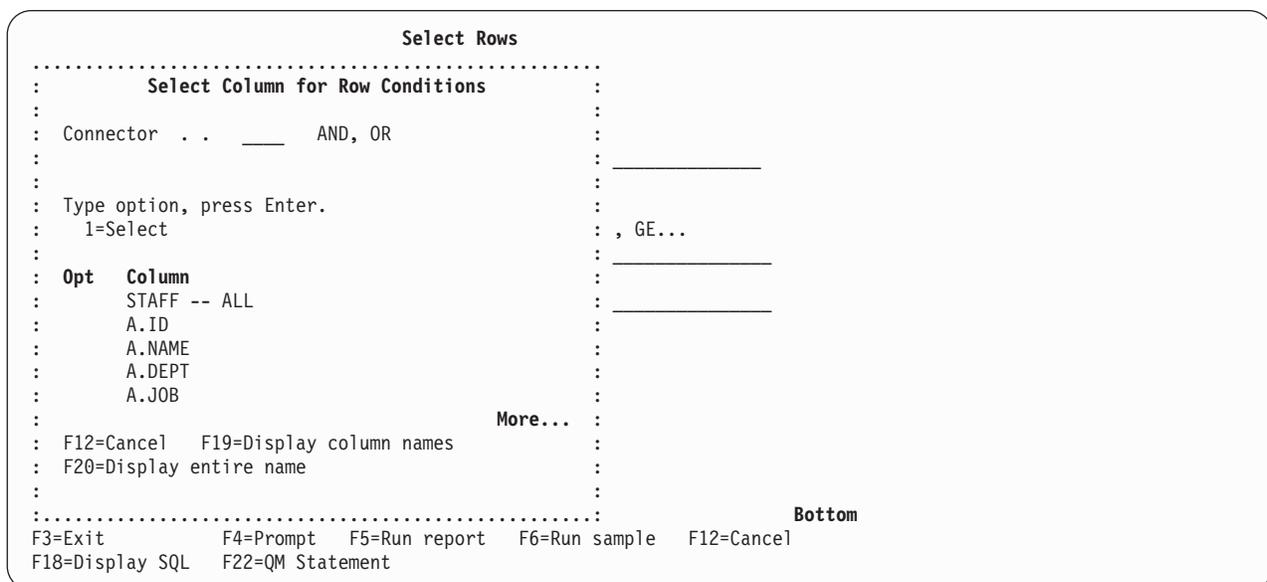


Figure 48. Select Columns for Row Conditions Window

Enter the following information through this window:

- **Connector.** Select either AND or OR when more than one comparison test has been defined, to join the tests. The default connector is AND.

Type AND if two or more of the comparison tests need to be true for a row to be selected. For example, to select the rows for all clerks who have been employed for more than 7 years, you join the tests using AND.

```
If A.JOB is equal to 'Clerk'
And A.YEARS is greater than 7
```

Type OR if only one of the comparison tests need to be true for a row to be selected. For example, to select the rows for all managers, and for all staff who earn more than \$10,000, you join the tests using OR.

```
If A.JOB is equal to 'Mgr'
Or A.SALARY is greater than 10000
```

Note: You are prompted to enter an AND/OR connector only when at least one other comparison test already exists. The prompt for the connector is not shown when you define the first comparison test.

- **Column/Expression.** Choose one of the columns or expressions from the list by typing 1 in the Opt prompt next to the name of the column or expression on which you want the selection test performed. When you see More... displayed in the lower right-hand corner of the window, you can use your display station's roll keys to view the rest of the columns and expressions selected by the query. When you come to the end of the list, Bottom is displayed instead of More...

Choosing test conditions for row selection test

After you select the column or expression on which you want the comparison test performed, you need to specify the type of test that you want performed on the row data. To display a list of all the supported test operators, press F4 (Prompt). An example of the list of test operators is shown in Figure 49.

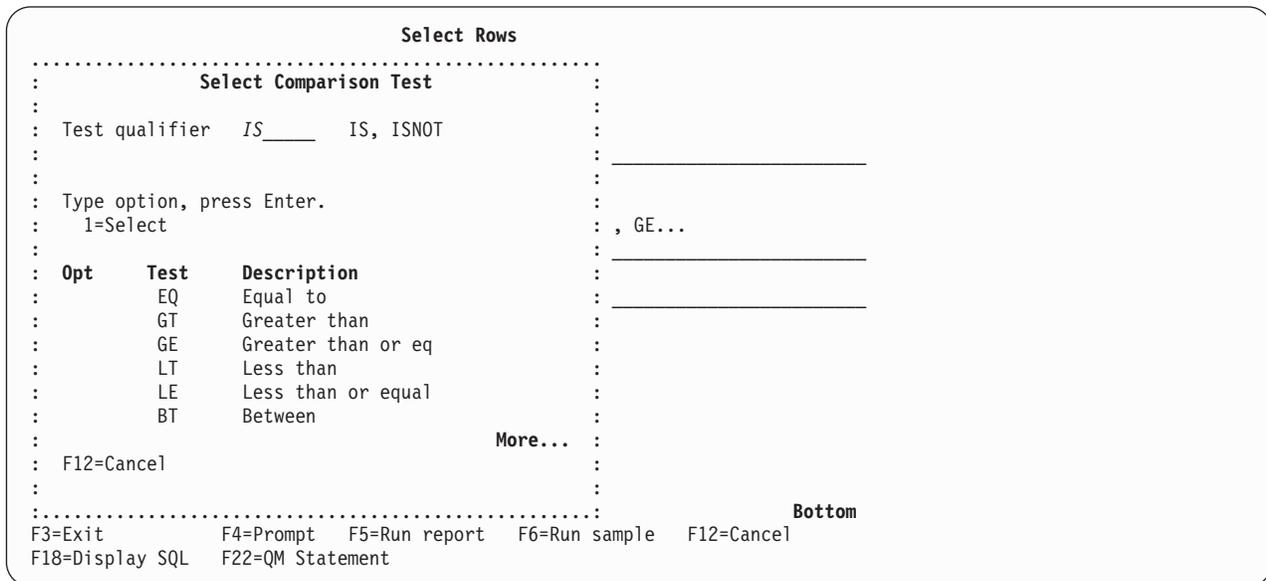


Figure 49. Select Comparison Test Window

Enter the following information through this window:

- **Test qualifier.** Choose IS if you want the query to select only those rows for which the comparison test is true. Choose ISNOT if you want the query to select only those rows for which the comparison test is false. The default qualifier is IS.
- **Test operator.** Choose one of the test operators from the list by typing a 1 in the Opt prompt next to the description of the test operator you want to use in the selection test. The available test operators are described in Table 6 on page 93.

- If you chose a test operator other than BT (Between) or NL (Null), Query Manager shows a window similar to the one shown in Figure 50 on page 93. You can enter up to six test values through this window. All values are joined with the OR connector.
- If you chose a test operator of BT (Between), the Specify Comparison Test Value window prompts you to enter two values only. These two values are joined with the AND connector.
- If you chose a test operator of NL (Null), no Specify Comparison Test Value window is shown. It is not valid to specify test values for the NL test operator.

The test values you enter can be constants, expressions, or other column names.

Constants for character, date, and time data types need to be enclosed in single quotation marks, and you need to double any quotation marks that you want to include in the value: for example, 'O'Brien' or '10/10/92'. Query Manager recognizes uppercase and lowercase letters, and searches for the value exactly as you type it.

Constants for graphic data types need to begin with G or g, be enclosed in single quotation marks, and be delimited by shift-out and shift-in characters. The following examples use "<" to indicate the shift-out character, and ">" to indicate the shift-in character: G'<A B C >' or g'<D E F >'.

Query Manager validates each comparison test before saving it. If the value you enter does not match the column's data type, or if you enter a value when the test operator is NL (Null), an error message is shown and the comparison test is not saved.

Specifying sort conditions for columns in Query Manager

If you choose to select sort columns from the Define Prompted Query display (see page 79), Query Manager shows the Select Sort Columns display. An example of this display is shown in Figure 51.

Select Sort Columns

Type a sort priority (0-9999) and A (Ascending) or D (Descending) for the names of up to 32 columns, press Enter.

Sort Prty	A/D	Column	Sort Prty	A/D	Column
___		TOTAL_PAY	___		B.DIVISION
___		DIVISION_INFORMATION	___		B.LOCATION
___		(A.SALARY + A.COMM)			
___		A.ID			
___		A.NAME			
___		A.DEPT			
___		A.JOB			
___		A.YEARS			
___		A.SALARY			
___		A.COMM			
___		B.DEPTNUMB			
___		B.DEPTNAME			
___		B.MANAGER			

Bottom

F3=Exit F5=Run report F6=Run sample F11=Display type F12=Cancel
F18=Display SQL F19=Display column names F24=More keys

F20=Display entire name F22=QM Statement F24=More keys

Figure 51. Select Sort Columns Display

Use this display to determine the order in which the data retrieved by the query should be sorted. Choose the columns to be sorted, and specify whether the sort should be in an ascending or descending order. If you choose to sort more than one column, you also need to specify the priorities of the different columns being sorted.

The Select Sort Columns display shows the following information for you to sort:

- All columns you selected using the Select and Sequence Columns display (see page 87)
- All expressions you defined using the Define Expressions display (see page 85)
- All summary functions you selected through the Select Summary Functions display (see page 95)

Enter the following information to select the sort conditions for the query:

- **Sort Prty.** Enter a number from 0 to 999 to specify the priority of the columns, expressions, and summary functions being sorted, where 0 has the highest priority and 999 has the lowest. For example, in Figure 51 on page 94, A.DEPT has a sort priority of 1, and A.JOB has a sort priority of 2. This means that the query data is sorted by DEPT number, and within each DEPT, the data is sorted by JOB. If you specify the same sort priority for more than one item, the items are sorted in the same order as they appear on the Select Sort Columns display.

Note: The total width of all of the columns that you select to sort cannot exceed 10,000 characters. You can view the widths of the individual columns by pressing F11 (Display description).

- **A/D.** Type A if you want the values sorted in ascending order (lowest to highest), or type D if you want the values sorted in descending order (highest to lowest). When you sort alphanumeric values in ascending order, Query Manager uses the following sort sequence:
 1. Special characters, including blanks, come first
 2. Lowercase letters in alphabetic order
 3. Uppercase letters in alphabetic order
 4. Numbers in ascending order
 5. NULL values come last.

Date and time data types are sorted in chronological order.

The sort sequence that you specify through this display determines the ORDER BY clause of the SELECT statement. For a detailed explanation of the SELECT statement and ORDER BY clause, refer to SQL reference.

Defining summary functions in Query Manager

If you choose to select summary functions from the Define Prompted Query display (see page 79), the program shows the Select Summary Functions display. An example of this display is shown in Figure 52 on page 96.

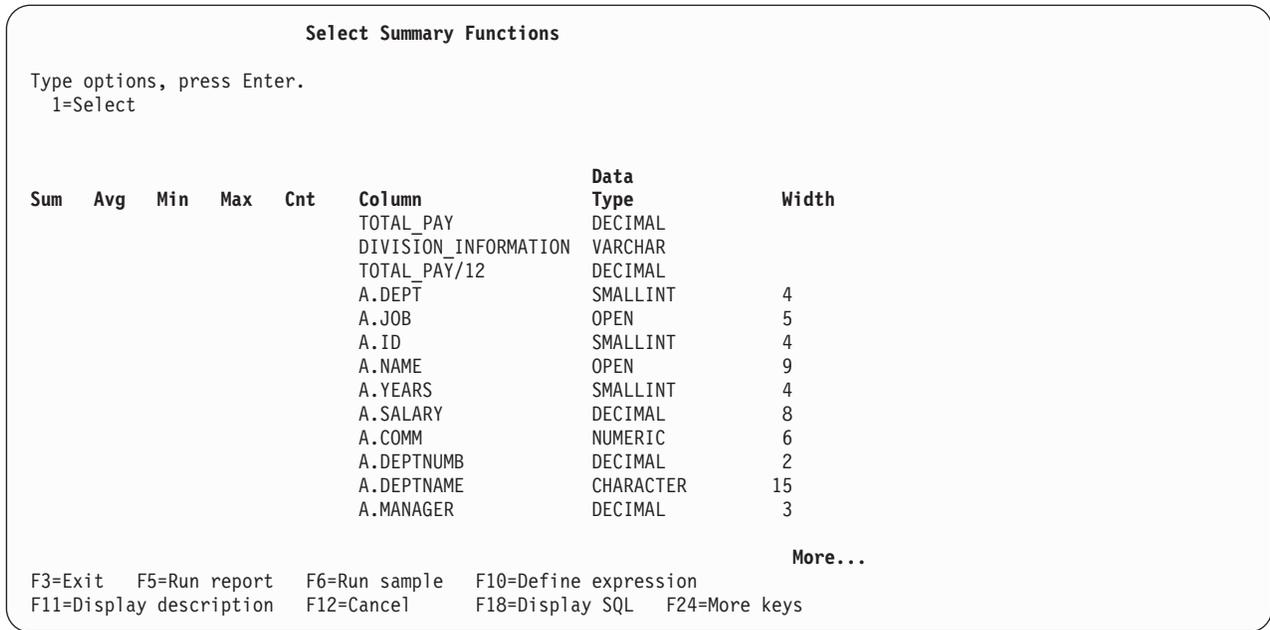


Figure 52. Select Summary Functions Display

Use this display to specify the summary functions that you want to perform on the query data. Each summary function you specify creates a new column of query data. The column values are the result of the summary function. The column name is the summary function itself: for example, SUM(A.SALARY).

All of the columns selected by, and expressions defined for, the query are shown on the Select Summary Functions display. Type 1 in the prompts beside the column and expression names to specify the summary functions you want to perform. You can specify more than one summary function to be performed for a single column or expression.

Table 7 describes the available summary functions. In this table, "A.COLUMN" is used to indicate the column or expression for which you specify the summary function.

Table 7. Select Summary Functions for Prompted Query

Function	Description
SUM	The sum (total) of the values in the column. Generates SELECT SUM(A.COLUMN) ...
AVG (AVERAGE)	The average of the values in the column. Generates SELECT AVG(A.COLUMN) ...
MIN (MINIMUM)	The minimum value in the column. Generates SELECT MIN(A.COLUMN) ...
MAX (MAXIMUM)	The maximum value in the column. Generates SELECT MAX(A.COLUMN) ...
CNT (COUNT)	The number of values in the column, including repeated values and null values. Generates SELECT COUNT(*) ...

Note: The COUNT summary function for prompted queries is not the same as the COUNT column usage for report formatting. Null values are included in the total when the COUNT summary function is specified through a prompted query. Null values are not included in the total when the COUNT column usage is specified through report formatting.

If you want to create a new expression to include in the list of columns retrieved by the query, press F10 (Define expression) to go to the Define Expressions display (as shown in Figure 45 on page 85). Use

this display to create expressions for which you can select summary functions. When you finish creating expressions, press the Enter key to return to the Select Summary Functions display. See “Defining expressions in Query Manager” on page 85 for instructions.

The summary functions that you specify through this display do not necessarily appear in your query output. To ensure that the summary function does appear in the query output, you should select the functions through the Select and Sequence Columns display. See “Selecting and sequencing columns from the tables in Query Manager” on page 87 for more information.

Note that, like expressions, you can define summary functions to use as intermediate steps for obtaining final results.

Note: When you select summary functions, Query Manager adds a GROUP BY clause to the SELECT statement. The GROUP BY clause contains all of the column names in the select list, and all of the column names used in expressions in the select list. The columns are listed in the sequence that you specify through the Select and Sequence Columns display (see page 87 for more information). For a detailed explanation of the SELECT statement and the GROUP BY clause, refer to SQL reference.

Choosing to include duplicate rows in Query Manager

If you choose to specify duplicate rows from the Define Prompted Query display (see page 79), Query Manager shows the Specify Duplicate Rows display. An example of this display is shown in Figure 53.

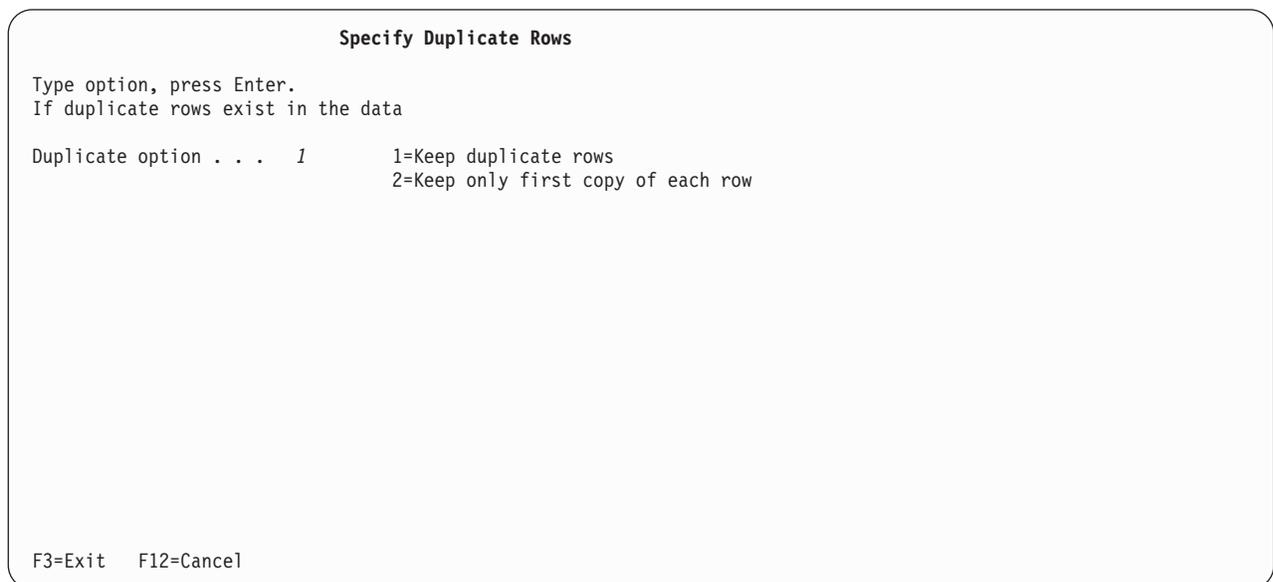


Figure 53. Specify Duplicate Rows Display

Use this display to specify whether you want to include duplicate rows in the data retrieved by the query. The default is to keep the duplicate rows.

Note: If you press the Enter key after taking the default, the ">" will not appear on the Define Prompted Query display.

If you do not want to include duplicate rows in the data retrieved by the query, select option 2 (Keep only first copy of each row). Query Manager checks all rows retrieved by the query. When two rows match exactly (that is, when every value in the first row matches every value in the second row), only one of the rows is included in the report.

Specifying a sort sequence in Query Manager

The Show query sort sequence options option in your Query Manager profile must be set to YES before you can specify a sort sequence. The Specify sort sequence option does not appear in the Define Prompted Query display if the profile option is set to NO.

If you choose to specify a sort sequence from the Define Prompted Query display (see page 79), or press F18 (Sort sequence) on the Edit Query display (see page 69), Query Manager shows the Specify Sort Sequence display. An example of this display is shown in Figure 54.

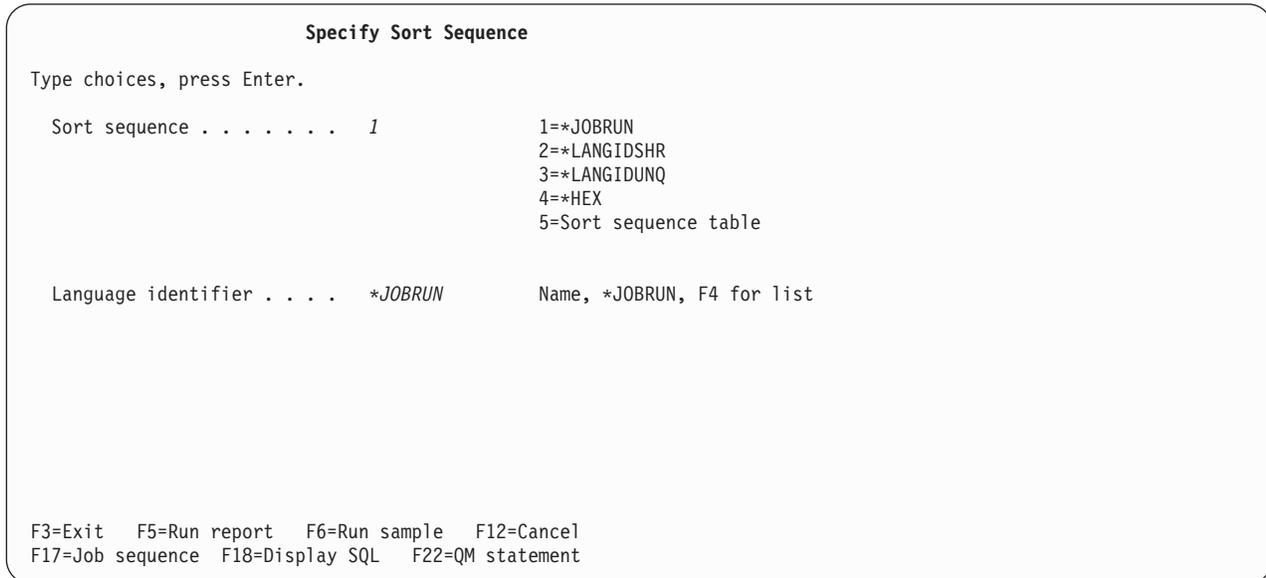


Figure 54. Specify Sort Sequence Display

If you have never specified sort sequence information for the query, this display shows the sort sequence and language identifier, both set to *JOBRUN (the defaults).

You can press F17 (Job sequence) to refresh the display with the values from the SRTSEQ and LANGID keywords from your job. If the SRTSEQ value is a sort sequence table, the table input display is shown. Press the Enter key to put the refreshed values into effect.

The options for sort sequence and their meanings are:

***JOBRUN** The program uses the value from the SRTSEQ keyword in the job when the query runs.

***LANGIDSHR** The program uses the sort sequence that has shared collating weights. With this sort sequence, uppercase and lowercase characters have equal collating weight.

***LANGIDUNQ** The program uses the sort sequence that has unique collating weights for each character. With this sort sequence, uppercase and lowercase characters have different collating weights.

***HEX** The program uses the hexadecimal value of each character for sorting.

Sort sequence table

The program uses a specific sort sequence table. When you select this option, the Specify Sort Sequence display is refreshed with prompts for sort sequence table information, as shown in Figure 55 on page 99.

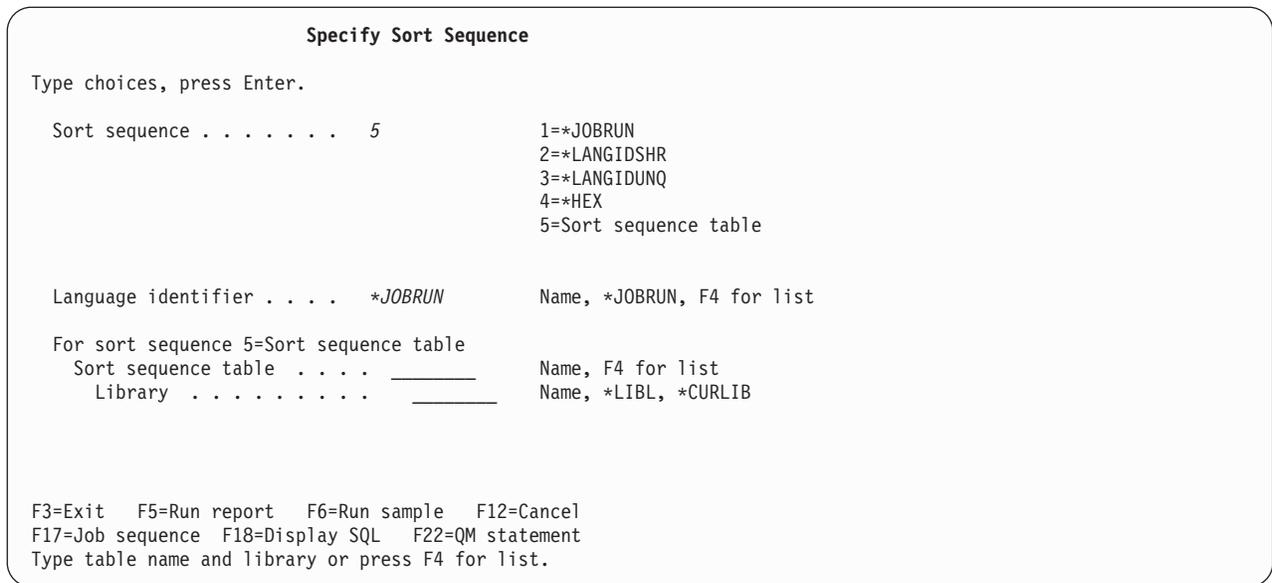


Figure 55. Specify Sort Sequence Display

The options for Language identifier and their meanings are:

***JOBRUN**

The program uses the value from the LANGID keyword in the job when the query runs.

Name The three-character language identifier. Press F4 for a list of the supported languages and their identifiers.

You may leave the language identifier blank if you select options 4 (*HEX) or 5 (Sort sequence table). The program sets the LANGID value stored with the query to *JOBRUN. When you return to this display, the language identifier is filled in.

Defining a report form in Query Manager

If you choose to specify report formatting from the Define Prompted Query display (see page 79), Query Manager shows the Specify Report Formatting display. An example of this display is shown in Figure 56 on page 100.

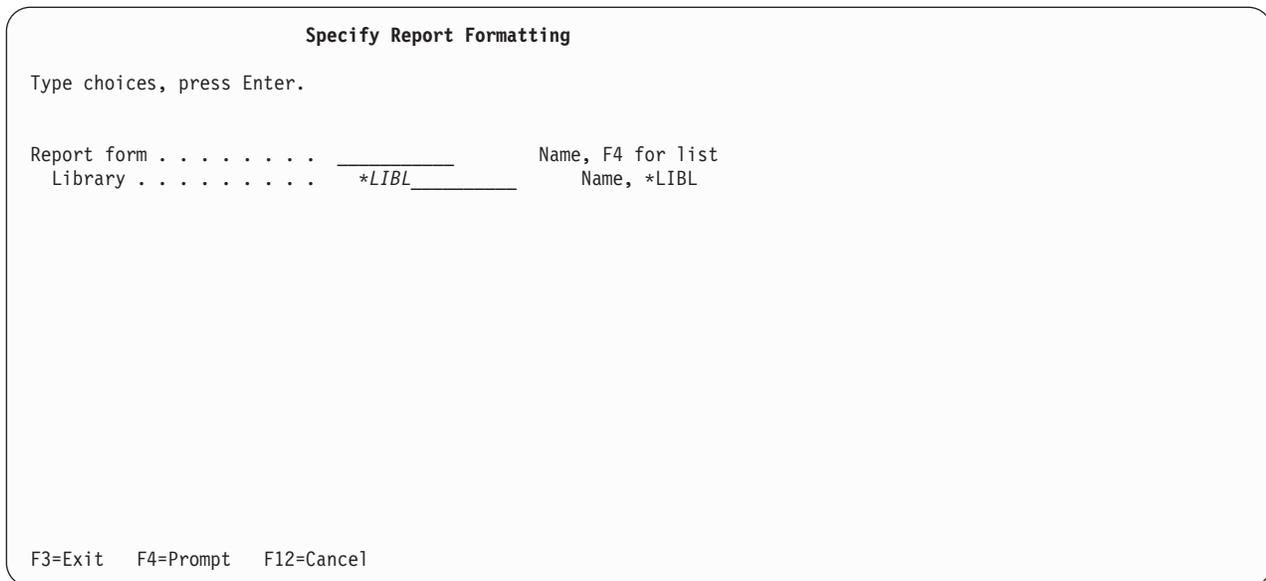


Figure 56. Specify Report Formatting Display

Specify the name of the report form that you want to create or change, and the library in which it resides; then press the Enter key to go to the Select Report Format display. To view a list of all report forms in the current library, position the cursor on the prompt for “Report form” and press F4 (Prompt).

When you create a report form as part of a prompted query definition, Query Manager extracts information from the query definition to insert as default values in the Edit Column Formatting display. These default values make it faster and easier for you to complete the information on this display. The following default values are loaded from the query definition:

- The columns selected by the query are inserted as default column names and headings.
- Columns are sequenced in the same order as they are selected by the query.

If the report form you choose is not the active form, and if the active form has been edited since it was last saved, pressing the Enter key takes you to the Exit display. You need to specify whether you want to save the changes made to the active form before you can go to the Select Report Format display. See “Saving a query: Using the exit display in Query Manager” for instructions.

For detailed instructions on how to create and change report forms through the Select Report Format display, turn to “Creating or changing a Query Manager report form” on page 107.

Saving a query: Using the exit display in Query Manager

The Exit display is used to save queries and report forms.

When you finish creating or changing a query through the Edit Query or Define Prompted Query display, press F3 (Exit) to go to the Exit display. Using the Exit display, you can specify a new name for a query, enter a description of the query (up to a maximum of 50 characters), and specify the library in which you want the query saved. Query naming conventions are described on page 29.

The Exit display prompts you with the following options:

- 1=Save and exit
- 2=Exit without save
- 3=Resume without save
- 4=Save and resume

If you want to return to the “Work with” display, select option 1 to save the query, or option 2 to discard the changes you made to the query. If you want to return to the query editor and continue editing where you left off, select option 3 to return without saving the query, or option 4 to save the changes you made to the query.

An example of the Exit display is shown in Figure 57.

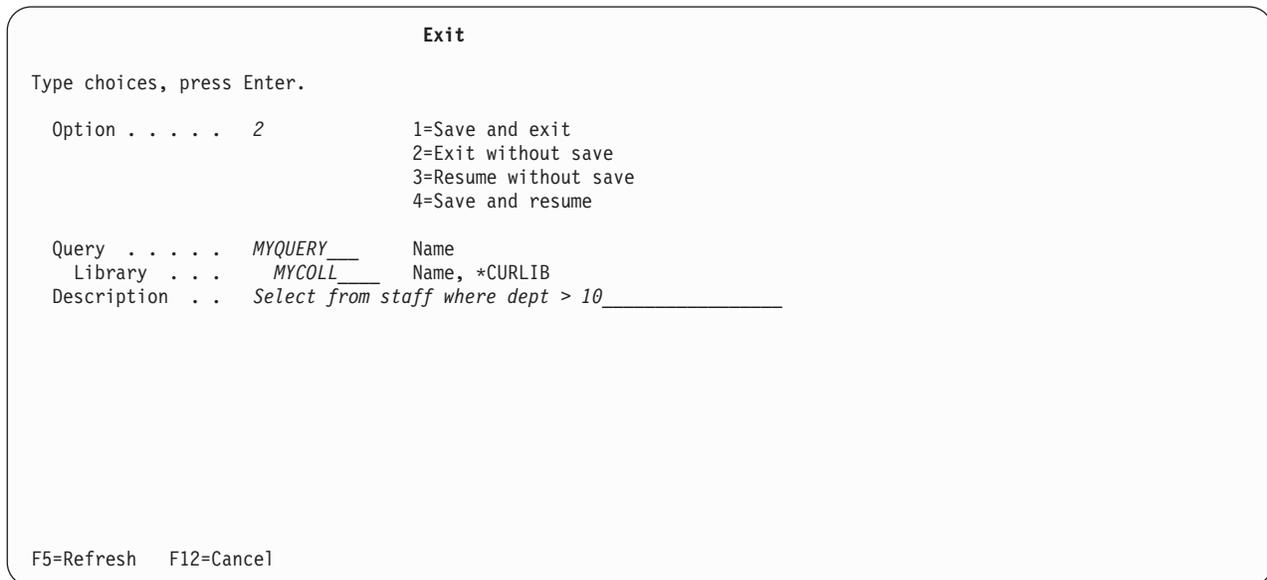


Figure 57. Exit Display

Note that you use the Exit display to save both queries and report forms. If you press F3 (Exit) from the Select Report Format display, you go to an Exit display, through which you can save the created or changed report form. Use this Exit display in the same way as described for queries.

If you created or changed both a query and a report form during the current session, neither of which have yet been saved, the Exit display prompts you to confirm the details of both the query and report form (as shown in Figure 57).

When you save a query or report form, you can create a new object, or replace an existing one. When a query or report form already exists with the same name and library that you specified in the Exit display, Query Manager shows a message warning you that by saving the query or report form you will replace an existing object. If you intended to replace the object, press the Enter key; otherwise, type a different name or library for the query or report form.

You can also save a query by typing the SAVE QUERY AS statement on the Query Manager statement line (see page 256), and you can save a report form by typing the SAVE FORM AS statement on the Query Manager statement line (see page 254).

Whenever you create or change a query or report form, Query Manager always prompts you to save the query or report form before performing any action that would replace or cancel it.

Note: The Exit display is the only place where you can change the description of a query or report form. This description is shown on the “Work with” displays, to provide additional information about queries and report forms. A description can be a maximum of 50 characters in length.

Date and time format considerations while saving a query in Query Manager

When you save a query, it is saved with the date and time format from your current job. If you change the date and time format of your job, it has no effect on existing queries. The existing queries still use the date and time format with which they were saved.

When you select to work with a query, Query Manager checks to see whether the date and time formats match. You are always warned when the formats are different:

- If you choose to change a query that was saved with a date and time format that is different from the date and time format of your current job, a message warns you that the formats are different.
- If you choose to run a query that contains global variables and was saved with a date and time format that is different from the date and time format of your current job, a display warns you that the formats are different, and asks if you want to continue running the query. See page 141.

Changing a query in Query Manager

You change queries in the mode in which they were last saved: either SQL or prompted. When you save the changed query, you can replace the original query definition with the edited definition, or you can save the edited definition as a new query and leave the original query unchanged.

1. Type 1 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Queries display.
2. Type 2 in the Opt prompt next to the names of the queries you want to change; then press the Enter key. The query editor display is shown, containing the first query you specified. Query editor displays for the remaining queries are shown in the same order as the query names appear in the “Work with” display list.
 - If the query you choose to change is an SQL query, the SQL statement that defines the query is shown in an Edit Query display.
 - If the query you choose to change is a prompted query, the definition of the query is shown in the Define Prompted Query displays.

Note: If “Allow change query creation mode” is set to NO in your Query Manager profile, you can change only those queries that are the same type (either SQL or prompted) as your “Default query creation mode”. Your “Query creation mode” and the “Type” for each query are shown on the Work with Query Manager Queries display.

3. Change the query, using the editor in the same way as when you create a query. Turn to “Creating an SQL query through the edit query display in Query Manager” on page 68 for instructions on how to use the SQL query editor. Turn to “Creating a prompted query through the define prompted query display in Query Manager” on page 78 for instructions on how to use the prompted query editor.

Note that when you change a prompted query, the parts of the query that have already been defined are indicated by a “>” sign, shown to the left of the definition steps.

4. When you finish changing the query, press F3 (Exit) to leave the query editor and go to the Exit display. You can save the query under its original name to replace the existing query, or you can enter a new name for the query, to create a new query and leave the existing one unchanged. Naming conventions are described on page 29. Using the Exit display and saving the query are described on page 100.

Note: If the query you change was saved with a date and time format that differs from that of your current job, Query Manager displays a message warning you that the formats are different. This is important if a date or time value is used in a conditional test for a WHERE clause. You might need to change either your query or the date and time format of your job. Position the cursor on the warning message; then press F1 (Help) for more information.

Converting a prompted query to SQL in Query Manager

You can convert a prompted query to SQL when you want to take advantage of the additional SQL functions that the prompted creation mode does not support.

When you choose to convert a prompted query to SQL, you can replace the prompted query definition with the definition of the newly converted SQL query, or you can give the SQL query a new name, and leave the prompted query definition unchanged.

Note: If “Allow change query creation mode” is set to NO in your Query Manager profile and your “Default query creation mode” is prompted, this option is not available through the Work with Query Manager Queries display. You cannot convert a query if you do not have authority to use the SELECT statement.

1. Type 1 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Queries display.
2. Type 10 in the Opt prompt next to the names of the prompted queries that you want to convert to SQL; then press the Enter key to go to the Convert Prompted Query to SQL Query display. This display lists the names of all of the queries you specified. An example of the Convert Prompted Query to SQL Query display is shown in Figure 58.

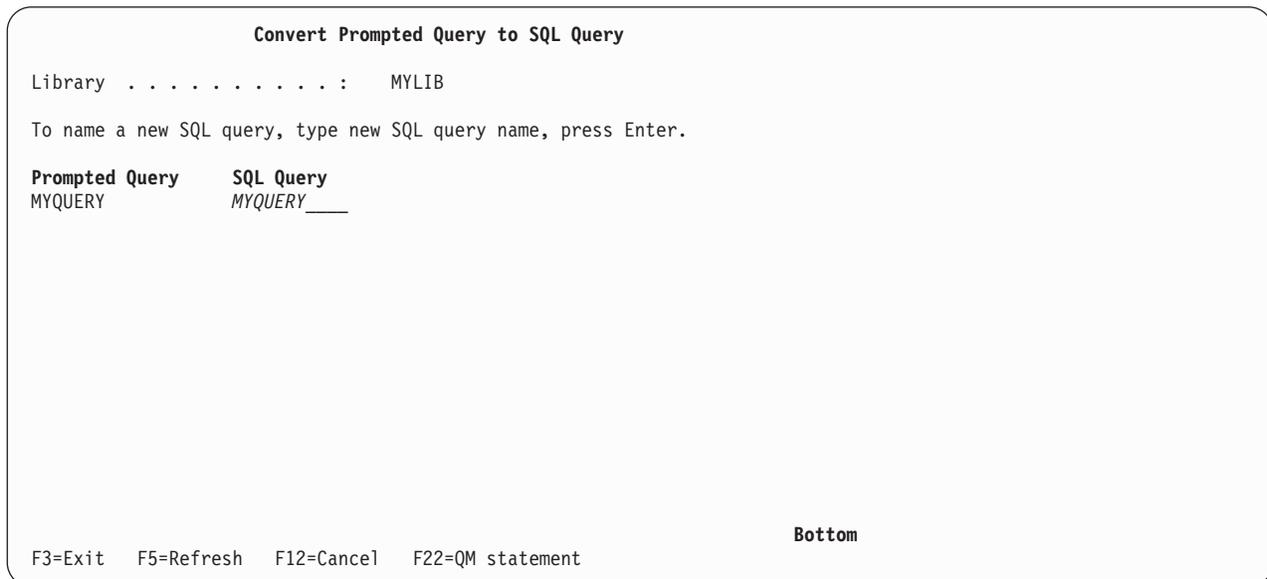


Figure 58. Convert Prompted Query to SQL Query Display

3. If you want to replace the existing prompted query definition with the converted SQL query definition, leave the “SQL Query” name unchanged. If you want to keep the existing prompted query definition, and save the converted SQL query definition as a new query, type a new name in response to the “SQL Query” prompt.

Query naming conventions are described on page 29.

4. Press the Enter key to perform the conversion and return to the Work with Query Manager Queries display.

If you did not type a new name in response to the “SQL Query” prompt, Query Manager displays a message warning that if you complete the conversion, the existing query definition will be lost. Press the Enter key a second time to confirm the conversion and return to the Work with Query Manager Queries display.

Note that when you press the Enter key, you convert all of the queries shown on the display. If you want to leave the Convert Prompted Query to SQL Query display without converting any queries, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

You can convert only those query objects that you have the authority to replace. See “Default object creation authority in Query Manager” on page 34 for more information.

Chapter 6. Working with Query Manager report forms

This chapter describes Query Manager report forms, telling you what they are, and explaining how to create, maintain, and use them.

Report forms are used to format query data when you run a query or report. Query Manager provides a large selection of report formatting options, and its prompt-driven displays make it easy to create both simple and complex report forms.

This chapter begins with some background information on report forms, followed by instructions on how to use the options that are available through the Work with Query Manager Report Forms display. You can learn how to create, change, copy, delete, rename, display, and print report form definitions, and how to run Query Manager reports.

If you have *BASIC* access to Query Manager, you can display and print report form definitions, and run reports.

What is a Query Manager report form?

Report forms are used to format the data that results from running an SQL SELECT statement query or a prompted query.

If you run a query without specifying the report form you want to use to format the query data, Query Manager generates a simple default report form. This default report form, called *SYSDFT, arranges the columns in the order specified by the query, and inserts the column names (from the tables being queried) at the top of each column.

By creating a report form, you can make the data retrieved by the query easier to read and interpret. You can also include summary information and perform arithmetic operations to make the query data more meaningful. Although the data generated is determined by the query, you can use the report form to specify information and formatting such as:

- The order of the columns
- The horizontal and vertical position of information
- Meaningful column headings, page headings, and page footings
- Report breaks and summary operations
- Separators to highlight headings and summary data
- Text for the end of the report, including final summary data

Examples showing how you can use report forms to improve the way that query data is presented, can be found in “Report forms in Query Manager” on page 5.

You might decide to create several different report forms to use with the same query, so that you can alter the appearance of the query data according to your needs. You can also create one report form to use with several different queries.

All of the formatting options that you can use to create and change your report forms are described in detail in this chapter.

Using the work with Query Manager report forms display

When you want to create, change, or use a report form in any way, the Work with Query Manager Report Forms display is the place to begin.

You select the Work with Query Manager Report Forms display from the Query Manager main menu. Type 2 in the Selection prompt; then press the Enter key to go to the Work with Query Manager Report Forms display. An example of this display for a user with an *ALL* access level is shown in Figure 59.

If you have a *BASIC* access level, the only options shown are 5=Display, 6=Print, and 9=Run report.

```
Work with Query Manager Report Forms

Library . . . . . MYLIB_____ Name, F4 for list

Type options, press Enter.
1=Create 2=Change 3=Copy 4=Delete 5=Display 6=Print 7=Rename
9=Run report

Opt Form      Description
-  _____
-  FINAL
-  MYFORM      Example form for DB2 Query Manager
-  STAFF       SELECT * FROM TABLE

Bottom
F3=Exit  F4=Prompt  F5=Refresh  F11=Display form only  F12=Cancel
F16=Repeat position to  F17=Position to  F22=QM statement
```

Figure 59. Work with Query Manager Report Forms Display

The report forms listed on this display are those stored in the library shown at the top of the display.

If you have an *ALL* access level, the library name is underlined, indicating that it is a prompt value. You can type a new library name over the existing name if you want to access report forms from a different library. Position the cursor on the Library prompt, and press F4 (Prompt) to display a list of libraries from which you can make a selection. You can choose any of the following options to work with a report form:

- 1=Create** Shows the Select Report Format display, through which you can create a report form definition. Choose the parts of the report form that you want to define. Prompt-guided displays for each of the parts you choose are shown in the same order as the parts are listed on the Select Report Format display. You define the report form through these displays, specifying column formats, page headings and footings, text for the end of the report, report breaks, and other formatting options. This report form becomes the active form. See page 107.
- 2=Change** Shows the Select Report Format display, through which you can change the definition of the selected report form. Choose the parts of the report form that you want to change; then make any changes you require. This report form becomes the active form. See page 107.
- 3=Copy** Copies a report form. You can replace an existing report form or create a new one. See page 127.
- 4=Delete** Deletes report forms you no longer require. You need to respond to a confirm display before the delete occurs. See page 128.

- 5=Display** Shows the definition of the report form in display-only format. You cannot change any values through this option. The Display Report Format display is shown, prompting you to choose the parts of the report form that you want to display. Displays for each of the parts you choose are shown in the same order as the parts are listed on the Display Report Format display. See page 129.
- 6=Print** Sends a copy of the report form definition to the default printer specified in your Query Manager profile. See page 131.
- 7=Rename** Prompts you to specify new names for existing report forms. See page 132.
- 9=Run report** Runs a report by applying the specified report form to query data. Before the report is run, you can specify run options such as, the query you want to run to generate query data, and the mode in which you want to run the query (batch or interactive). The report form becomes the active form. If you specify to run a query, that query becomes the active query, and the data it generates becomes the active data. See page 133.

If you need help selecting report forms from the “Work with” display, see page 18. If you need help using the “Work with” display function keys, see page 23.

Creating or changing a Query Manager report form

Before you create or change a report form, it is a good idea to run the query that relates to the report form, and create *active data*. Query Manager uses the active data to display the report form, so that you can see how the report form is affecting the layout of the query data. You do not need to run a query every time you want to display the report form. See “Testing a report form” on page 109 for more information.

Query Manager also extracts information from the active data to insert as default values in the Edit Column Formatting display (see Figure 61 on page 111), making it faster for you to complete the information for that display. Active data is described on page 7, and running queries is described on page 60.

You can also load default values for the Edit Column Formatting display from the active query. See “Loading default values from the active query in Query Manager” on page 110 for more information.

You can choose to create or change a report form in the following ways:

- Select option 1 (Create) or 2 (Change) from the Work with Query Manager Report Forms display. This method is described over the next few pages.
- Choose to “Specify report formatting” from the Define Prompted Query display, while you are creating or changing a prompted query. See “Creating a prompted query through the define prompted query display in Query Manager” on page 78 and “Defining a report form in Query Manager” on page 99 for more information.
- Press F13 (Edit form) from the Edit Query display, while you are creating or changing an SQL query. See “Using the edit form function key in Query Manager” on page 77 for more information.

The following information applies regardless of the method you use to specify that you want to create or change a report form. All methods show the Select Report Format display, through which you select the parts of the report form that you want to create or change.

1. Type 2 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Report Forms display.
2. To *create* a report form, type 1 in the Opt prompt next to the blank report form name (at the top of the list). You can specify a name for the report form now, or you can leave it unnamed, and specify a name when you save the report form through the Exit display. Report form naming conventions are described on page 29, and saving report forms is described on page 100. Press the Enter key to show the Select Report Format display.

To *change* a report form, type 2 in the Opt prompt next to the names of the report forms you want to change; then press the Enter key. The Select Report Format display is shown for the first report form you specified. Select Report Format displays for the remaining report forms are shown in the same order as the report form names appear in the “Work with” display list.

An example of the Select Report Format display is shown in Figure 60.

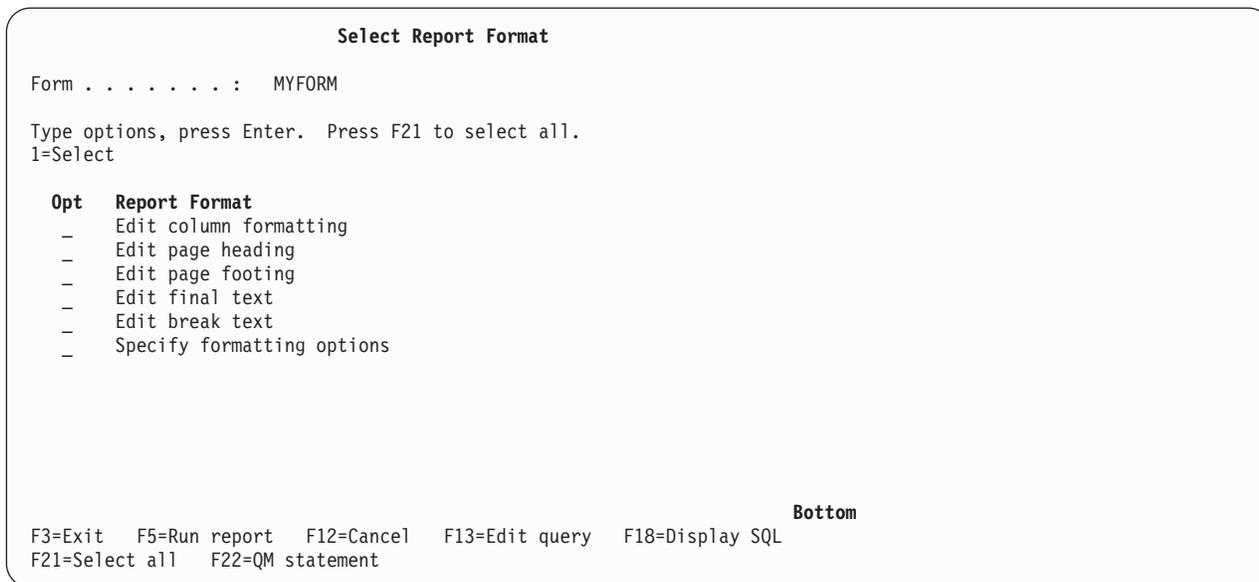


Figure 60. Select Report Format Display

3. Type 1 in the Opt prompt next to the parts of the report form you want to create or change; then press the Enter key. You can choose all parts by pressing F21 (Select all).
4. Create or change the report form by completing the parts that you selected through the Select Report Format display.

Edit column formatting	see page 111
Edit page heading	see page 117
Edit page footing	see page 117
Edit final text	see page 120
Edit break text	see page 122
Specify formatting options	see page 126

Headings, footings, break text, and final text can include both uppercase and lowercase characters.

5. When you finish entering the information for one display, press the Enter key to go to the next display. All displays are shown in the same order as the parts are listed on the Select Report Format display. When you finish entering information for all of the parts that you selected in step 3, press the Enter key to return to the Select Report Format display. From this display, you can once again select parts of the report form to create or change (as described in step 3) if you need to.
6. To display the report form and see how it is affecting the layout of the active data, press the F5 function key. The title of the F5 key changes depending on the active data:
 - If the active data is the result of running a full query, the key is labeled (Display report).
 - If the active data is the result of running a sample query, the key is labeled (Display sample).
 - If there is no active data, or if the active data does not match the report form, the key is labeled (Run report).

Displaying or running the report is described in “Testing a report form” on page 109.

7. When you finish working with the report form, press F3 (Exit) to leave the Select Report Format display and go to the Exit display. Query Manager validates the report form, and makes sure it contains no errors before the Exit display is shown. Through the Exit display, you specify whether you want to save the report form, and whether you want to change its name.

If you are creating a report form, enter a name and description for the report form through the Exit display. If the report form is already named, you can change the name if you desire. Report form naming conventions are described on page 29, and descriptions can be a maximum of 50 characters in length.

If you are changing a report form, you can save the changed report form under its existing name and replace the old report form, or you can save it under a new name and keep both copies of the report form. You can also change the description of the report form. The Exit display is the only place where you can change report form descriptions.

Type 1 to save the report form, or 2 to discard it; then press the Enter key to return to the Work with Query Manager Report Forms display, or the Work with Query Manager Queries display. The Exit display is described on page 100.

If you have not changed the report form definition, you can press F12 (Cancel) instead of F3 (Exit) to leave the Select Report Format display. F12 takes you directly to the Work with Query Manager Report Forms display; the Exit display is not shown.

Note: If you chose to create or change a report form by selecting “Specify report formatting” from the Define Prompted Query display, or by pressing F13 (Edit form) from the Edit Query display, you can press F13 (Edit query) when you finish working with the Report Form to return to the query editor. When you press F3 (Exit) to leave the query editor, the Exit display asks whether you want to save both the query and the report form.

If you want to work through practice exercises in which you create and work with a Query Manager report form, turn to Appendix A, “Practice exercises for Query Manager.”

Testing a report form

At any time while you are creating or changing a report form, you can check to see how the current definition of the report form is affecting the appearance of the report.

To view the layout of the report, press the F5 function key. The title of the F5 key changes depending on the active data:

- If the active data is the result of running a full query, the key is labeled (Display report).
- If the active data is the result of running a sample query, the key is labeled (Display sample).
- If there is no active data, or if the active data does not match the report form, the key is labeled (Run report).

Note: For the active data to match the report form, they both need to contain the same number of columns, and the columns need to have compatible data types. Active data is described on page 7.

When you first press F5, Query Manager validates your report form. If any errors are found in the report form definition, an error message is shown at the bottom of the display, and the report is not displayed or run.

If the report form is valid, and F5 is labeled (Display report) or (Display sample), the report form is applied to the active data, and the resulting report is shown on your display.

If the report form is valid, and F5 is labeled (Run report), the Run Query display is shown, prompting you to specify run options. Enter information such as the name of the query you want to run, and the mode in which you want to run the query. The Run Query display options are described in “Using the run query display in Query Manager” on page 136.

Editing or displaying the active query

While you are creating or changing a report form, you can press F13 (Edit query) to create or change the query that you want to use with the report form.

When you press F13 (Edit query), Query Manager shows the active query in the query editor display. If there is no active query, a prompt display asks you to type the name of the query that you want to create or change, and the library in which it resides. You can press F4 (Prompt) to display a list of all queries in the current library from which you can make a selection.

Type a new name to create a new query, or type the name of an existing query that you want to change; then press the Enter key. New queries are created in your default query creation mode: either prompted or SQL. Existing queries are changed in the mode in which they were last saved. See Chapter 5, “Creating and changing queries in Query Manager” for instructions.

Note: If “Allow change query creation mode” is set to NO in your Query Manager profile, you can change only those queries that were last saved in your default query creation mode. The only SQL queries you can change are those that contain one of the SQL statements you have been granted authority to use (through your Query Manager profile).

When you finish editing the query, and you want to return to the Select Report Formatting display:

- If you are editing an SQL query, press F13 (Edit form).
- If you are editing a prompted query, choose to “Specify report formatting” from the Define Prompted Query display.

If you want to view (rather than edit) the SQL SELECT statement that defines the active query, press F18 (Display SQL). If there is no active query, Query Manager displays an error message. When you choose to display SQL for a prompted query, the SELECT statement is shown with descriptive comments, in the same format as prompted query definitions are printed. See Figure 27 on page 59 for an example of the format in which the SQL statement is presented.

The F13 (Edit query) and F18 (Display SQL) keys are available from most of the report formatting displays.

Loading default values from the active query in Query Manager

When you create or change a report form as part of a prompted query definition, Query Manager takes values from the query definition and inserts them as default values in the Edit Column Formatting display.

These default values make it faster and easier for you to complete the information for the display. (Turn to Figure 61 on page 111 if you want to see an example of the Edit Column Formatting display.)

If the report form you are creating or changing is not part of a prompted query definition, Query Manager takes values from the active data, and inserts them as default values in the Edit Column Formatting display. The default values inserted from the active data are the column names, headings, sequence, and widths. (Active data is created when you interactively run an SQL SELECT statement query or a prompted query.)

You can also choose to load default values from the active query, by pressing F19 (Load from query). This loads the following default values from the query definition:

- The columns selected by the query are inserted as default column names and headings.
- The column usage values are blank.
- The column edit codes are blank.
- Columns are sequenced in the same order as they are selected by the query.

- The indent defaults to 2 spaces.
- The width values are inserted from the column selected by the query.

Note that if your Query Manager profile is set so that you can run queries only in batch mode and “Allow interactive sample run” is NO, you cannot create active data. The only way that you can load default values when you create a report form is by pressing F19 (Load from query).

The F19 function key is available from the Edit Column Formatting display. See “Formatting the columns in the report form in Query Manager” for more information.

Formatting the columns in the report form in Query Manager

If you choose to edit column formatting from the Select Report Format display (see page 108), Query Manager shows the Edit Column Formatting display. An example of this display is shown in Figure 61. You can specify the following information through this display:

- The heading text for each column
- Any special usage to apply to a column: for example, report breaks, and summary operations
- The data type and format of the data in each column
- The order in which the columns are to appear (left to right)
- The spacing between columns
- The width of each column

Edit Column Formatting

Type information, press Enter.
 For Usage and Edit, press F4 for list.
 For Heading, press F4 for prompt.

Column	Heading	Usage	Edit	Seq	Indent	Width
DEPT	DEPT	_____	_____	1	2	14
NAME	NAME	_____	_____	2	2	9
JOB	JOB	_____	_____	3	2	5
SALARY	SALARY	_____	_____	4	2	13
COMM	COMM	_____	_____	5	2	10

Bottom

F2=Alternate keys F3=Exit F4=Prompt F5=Run report F6=Insert line
 F10=Copy line F11=Edit heading F12=Cancel F24=More keys

F2=Base keys F3=Exit F4=Prompt F5=Refresh F6=Insert line
 F10=Copy line F11=Edit heading F12=Cancel F24=More keys

F13=Edit query F14=Delete line F18=Display SQL F19=Load from query
 F20=Display entire name F22=QM statement F24=More keys

Figure 61. Edit Column Formatting Display

If you are creating a report form as part of a prompted query definition, Query Manager inserts default values in the Column and Heading prompts based on the query definition.

If the report form you are creating is not part of a prompted query definition and there is active data, Query Manager inserts default values in the Column, Heading, and Width prompts based on the active

data, as shown in the Figure 61 on page 111. If there is no active data, the Columns are numbered sequentially, and the Headings and Widths are blank. You can also load default values from the active query, by pressing F19 (Load from query). See “Loading default values from the active query in Query Manager” on page 110 for instructions.

When you create and change the report form, you can insert, copy, and delete lines using the F6 (Insert line), F10 (Copy line), and F14 (Delete line) function keys. These function keys are described on page 23.

Enter the following information through the Edit Column Formatting displays:

- **Column headings**

There are two ways in which you can enter and edit column headings. The headings are not entered through the main Edit Column Formatting display (shown in Figure 61 on page 111). Instead, you need to use one of two separate displays: one of which prompts you to enter headings for all columns, while the other prompts you to enter all details (including column heading) for a specific column.

- Press F11 (Edit heading) to show the display through which you can enter headings for all columns. Figure 62 shows the display you go to when you press F11 (Edit heading).

Edit Column Formatting

Type information, press Enter.
 For Usage and Edit, press F4 for list.
 For Heading, press F4 for prompt.

Column	Heading
DEPT	<i>Dept_ID</i> _____
NAME	<i>Employee_Name</i> _____
JOB	<i>Job_Title</i> _____
SALARY	<i>Salary_earned</i> _____
COMM	<i>Commission_paid_against_advance</i> _____

Bottom

F2=Alternate keys F3=Exit F4=Prompt F5=Run report F6=Insert line
 F10=Copy line F11=Edit usage F12=Cancel F24=More keys

F13=Edit query F14=Delete line F18=Display SQL F19=Load from query
 F20=Display entire name F22=QM Statement F24=More keys

Figure 62. Edit Column Heading Display

Type a heading for each of the report columns. When you finish specifying column headings and want to return to the main Edit Column Formatting display, press F11 (Edit Usage).

- Position the cursor on the Heading, Sequence, Indent, or Width prompt for a particular column; then press F4 (Prompt) to show the display through which you can enter all values for that column, including the column heading. Figure 63 on page 113 shows the display you go to when you press F4 (Prompt).

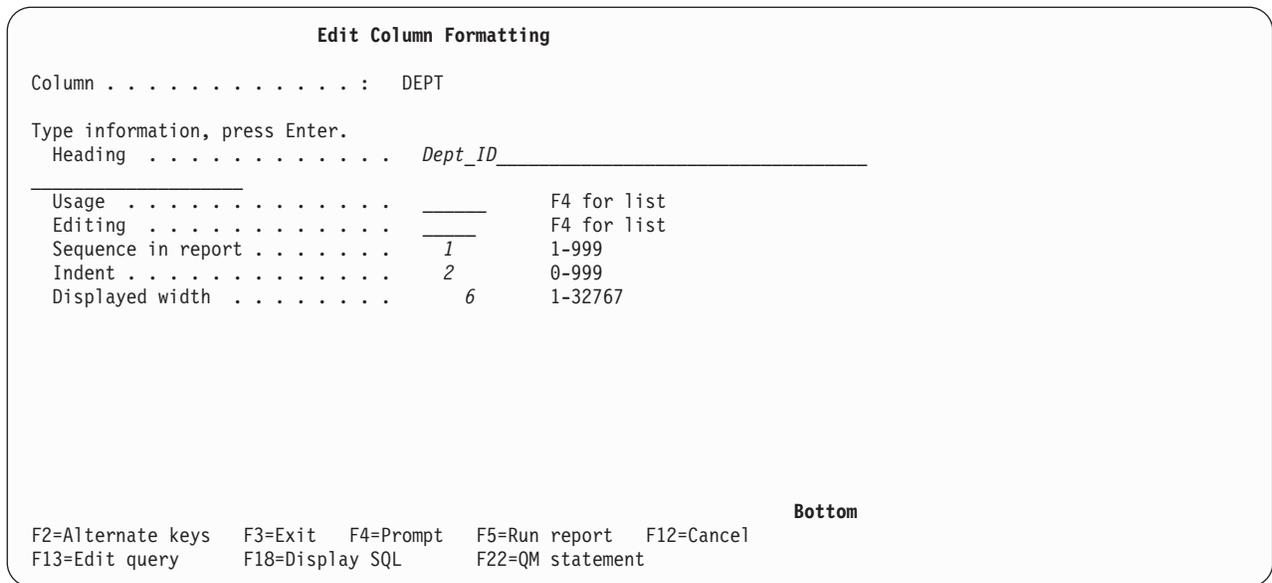


Figure 63. Edit Column Information Display

You can enter all of the values for the selected column through the display shown in Figure 63, including the column heading. When you finish specifying the column information and want to return to the main Edit Column Formatting display, press the Enter key.

Headings can contain uppercase and lowercase letters, numbers, spaces, and special characters. To specify a blank heading for a column, type *NONE. If you do not enter heading text or *NONE for a column, Query Manager uses the column name defined in the database for each column retrieved by the query.

Headings can also contain double-byte character set (DBCS) characters. Note that when you enter DBCS strings through any of the Select Report Format displays, you need to enclose the strings in shift-out and shift-in characters. See “Adding DBCS data to a table in Query Manager” on page 156 for more information on DBCS values.

If you want the column heading to appear on two or more lines, include an underscore (_) in the heading at the position at which you want the heading to break to the next line. A column heading can be a maximum of nine lines. For example, entering a heading of:

Salary_to date

causes the following two line column heading to appear in the report:

Salary
to date

When you return to the main Edit Column Formatting display, any headings you entered are inserted in the Heading column. If any heading is more than 25 characters in length, Query Manager truncates it, and adds “...” to the end of the displayed portion of the heading to indicate that it has been truncated. Press F4 (Prompt) or F11 (Edit Heading) to view the entire heading.

- **Column usage**

Column usage determines how a column is used in the report form. For example, you can specify that you want a column to be totalled, averaged, used as a report break, or omitted from the report. Choose one of the usage codes from Table 8.

Table 8. Options Available for Column Usage

Usage Code	Definition
[blank]	Include the column in the report.
OMIT	Exclude the column from the report.

Table 8. Options Available for Column Usage (continued)

Usage Code	Definition
AVERAGE (AVG)	Average all values in the column.
COUNT	Count the number of non-null values in the column, including repeated values.
FIRST	The first value in the column.
LAST	The last value in the column.
MAXIMUM (MAX)	The maximum value in the column.
MINIMUM (MIN)	The minimum value in the column.
SUM	Total all values in the column.
BREAK n	Cause a new grouping of details lines to occur in the report when the value in the column changes. n can be a value from 1 to 6 to specify up to six levels of report breaks, where 1 is the highest break level and 6 is the lowest. See "Using break levels in the report in Query Manager" on page 6 for further information.

Note that the COUNT column usage for report formatting is not the same as the COUNT summary function for prompted query. Null values are included in the total when the COUNT summary function is specified through prompted query. Null values are not included in the total when the COUNT column usage is specified through report formatting.

The AVERAGE, COUNT, FIRST, LAST, MAXIMUM, MINIMUM, and SUM column usages can insert summary information at the end of the report. If you specify report breaks, you can also insert summary information for each break.

When you specify a BREAK column usage, you should make sure that the query sorts the data by the columns for which you have specified breaks. You sort query data using the ORDER BY clause of the SELECT statement. Using report breaks is described on page 6.

You might want to specify the OMIT column usage when you are using a query that selects many columns. Specify OMIT when you want to use a number of different report forms with the same query data. By omitting columns from reports, you can run the query once; then produce reports using two (or more) different report forms. You can also specify OMIT when you want to use column data as substitution values in Break Text or Final Text, but you do not want the column data in the body of the report.

Position the cursor on the Usage prompt and press F4 (Prompt) to display a full list of the supported usage values, from which you can make a selection. You can specify only one usage value for each column.

When you create a report form, the column Usage prompts default to blanks.

- **Edit code**

Edit codes specify the format in which column values appear in the report. There are a number of different formats in which character, number, date, and time information can appear, as described in Table 9 on page 115.

Table 9. Edit Codes for Column Data

Edit codes for character data:			
<i>Code</i>	<i>Description</i>		
C	If the text cannot fit on one line in the column, the text is truncated according to the width of the column.		
CW	If the text cannot fit on one line in the column, the text is wrapped according to the width of the column.		
CT	If the text cannot fit on one line in the column, the text is wrapped according to spaces (blanks) or full words, if possible.		
Edit codes for graphic data:			
<i>Code</i>	<i>Description</i>		
G	If the value cannot fit on one line in the column, the value is truncated according to the width of the column.		
GW	If the value cannot fit on one line in the column, the value is wrapped according to the width of the column.		
Edit codes for numeric data: The examples show how the codes might format the number -1234567.89. The character following the code (n) indicates the number of decimal places and can be any number from 0 through 31. The examples assume two decimal places.			
<i>Code</i>	<i>Note</i>	<i>Example</i>	
E	Scientific notation	-1.23456789E+06	
Dn	Currency symbol and thousands separators	-\$1,234,567.89	
In	Leading zeros	-0001234567.89	
Jn	Leading zeros, no negative sign	00001234567.89	
Kn	Thousands separators	-1,234,567.89	
Ln	Decimal notation	-1234567.89	
Pn	Percent sign and thousands separators	-1,234,567.89%	
Edit codes for dates: The date separator (x) can be any special character, including blank, but not a letter or number. The examples assume the slash (/).			
<i>Code</i>	<i>Format</i>	<i>Example</i>	
TDYx	YYYYxMMxDD	1992/08/29	
TDMx	MMxDDxYYYY	08/29/1992	
TDDx	DDxMMxYYYY	29/08/1992	
TDYAx	YYxMMxDD	92/08/29	
TDMAx	MMxDDxYY	08/29/92	
TDDAx	DDxMMxYY	29/08/92	
Edit codes for times: The time separator (x) can be any special character, including blank, but not a letter or number. The examples assume the colon (:).			
<i>Code</i>	<i>Format</i>	<i>Note</i>	<i>Example</i>
TTSx	HHxMMxSS	Includes seconds	13:42:35
TTCx	HHxMMxSS	Includes seconds, 12 hour clock	01:42:35
TTAx	HHxMM	Abbreviated (no seconds)	13:42
TTAN	HHMM	Abbreviated, no separator	1342
TTUx	HHxMM AM/PM	USA style	01:42 PM
Edit code for timestamp:			
<i>Code</i>	<i>Format</i>	<i>Example</i>	
TSI	YYYY-MM-DD-HH.MM.SS.NNNNNN	1992-01-31-13.42.19.123456	

When you create a report form, the Edit code prompts default to blanks. If you leave these values blank, Query Manager inserts default values when the report is run. The default edit codes are the data types defined in the database for each column retrieved by the query.

To specify an edit code, type one of the values listed in Table 9 on page 115. For some edit codes, you also need to specify a qualifier. Enter the qualifier as the final character of the code.

- For numeric codes other than E, you can specify the number of decimal places. Type a number from 0 to 31. If you do not enter a number, zero is assumed. If a column value has more decimal places than you specify, the value is rounded. If a column value has fewer decimal places than you specify, the value is padded with zeros.
- For date and time codes other than TTAN, you can specify the character you want to use to separate the parts of the dates and times. The separator can be any special character, including a blank, but it cannot be a letter or number.

Position the cursor on the Edit prompt and press F4 (Prompt) to display a list of the supported Edit codes from which you can make a selection. A prompt window asks you whether the data is Character, Numeric, Date and Time, or Graphic. Specify the data type and press the Enter key. Query Manager then shows a Select Column Editing prompt window, listing the available selections for the data type you specified.

Only those codes that are applicable to the specified data type are shown. An example of the prompt window for numeric data is shown in Figure 64.

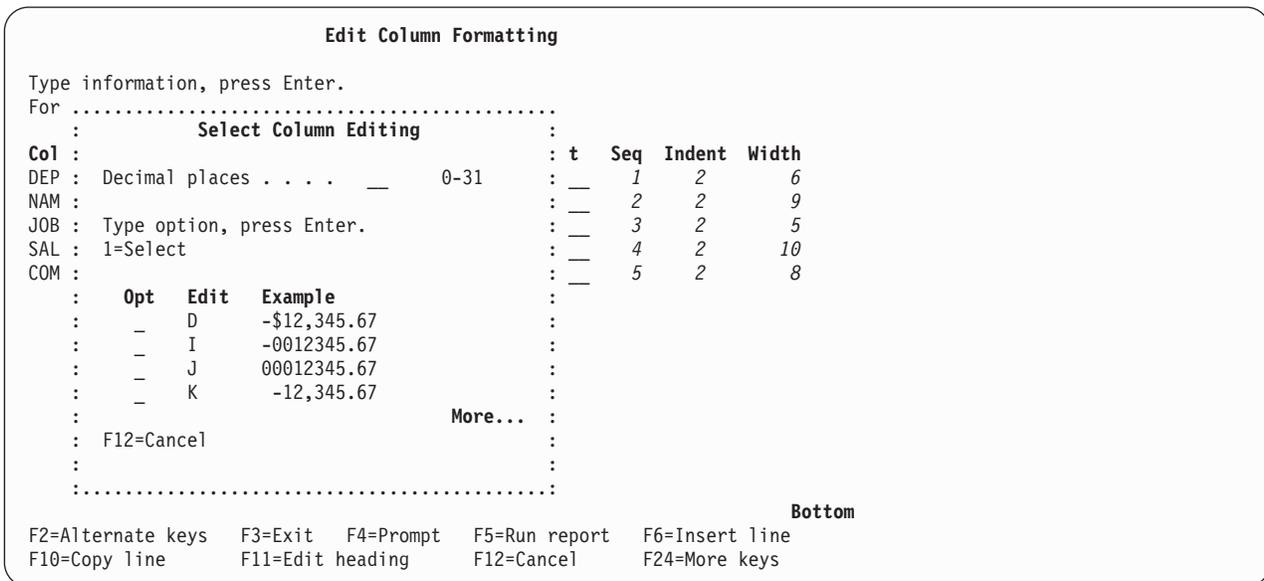


Figure 64. The Select Edit Code Prompt

• **Seq**

Seq (Sequence) specifies the order in which you want columns to appear in the report. The default is for columns to appear in the same order as they are selected by the query. The following rules apply when specifying sequence numbers:

- Type any number from 1 through 999.
- Numbers do not need to be consecutive.
- Columns with the same sequence number appear as adjacent columns in the report, in the same order as they are selected by the query.

Column sequence is particularly important when your report contains breaks and summary data. To make the report easier to read, we recommend that you specify a column sequence so that break columns appear on the left of the report (low sequence numbers), and summary data columns appear on the right (high sequence numbers).

• **Indent**

Indent specifies the spacing between columns. For each column, specify the number of blank character spaces that you want to appear to the left of the column value. For the first column in the report, you specify the number of spaces you want to indent the column from the edge of the page or display. For all remaining columns, you specify the number of spaces you want to indent the left edge of each column from the right edge of the previous column.

You can set the indent to any value from 0 through 999, but a blank value is not permitted. The default is two spaces.

- **Width**

Width specifies the maximum number of characters in which to display or print the column values and heading. A report can be a maximum of 32767 character spaces wide, or 16383 graphic spaces wide.

When you create a report form using active data, Query Manager inserts default widths to the report form definition. The default widths are the widths of the columns (as defined in the database) or the widths of the column names, whichever is greater.

Query Manager adjusts the default widths when you change some of the column formatting attributes such as heading, usage, or edit. If you change a default column width to a specific width, the automatic adjustment is lost for that column width. For example, a column heading will be truncated if you specify a column width smaller than the heading text.

If you insert a line (column) the default column widths are lost. The report form no longer matches the table on which it is based and the default widths no longer have meaning.

The width prompt is blank for all columns when you create a report form without active data, when you create the report form as part of a prompted query definition, or when you load default values from the active query using F19 (Load from query). If you leave the width prompt blank, or if you blank out the value shown in the width prompt, Query Manager inserts runtime defaults when the report is run. The runtime defaults are the widths of the columns (as defined in the database) or the widths of the column headings, whichever is greater.

If a column heading is wider than the specified width, the heading is truncated. If a column value is wider than the specified width, numeric data is replaced by a row of asterisks (*****), and character and graphic data is truncated at the right. (If character or graphic data has an edit code of CW, CT, or GW, the column value wraps onto the next line.)

Specifying page headings and footings in Query Manager

When you choose to edit page headings or footings from the Select Report Format display (see page 108), Query Manager shows the Edit Page Heading and Edit Page Footing displays. An example of the Edit Page Heading display is shown in Figure 65 on page 118. Through these displays, you specify the text that you want to appear at the top and bottom of each page of the report, and the position on the page where you want the heading and footing text to appear.

Edit Page Heading

Type choices, press Enter.

Blank lines before 0__ 0-999

Blank lines after 2__ 0-999

Page text: Use &col, &DATE, &TIME, and &PAGE to cause variable insertion.

Line	Align	Page Heading Text
1	CENTER	_____
2	CENTER	_____
3	CENTER	_____
4	CENTER	_____
5	CENTER	_____

Bottom

F2=Alternate keys F3=Exit F4=Prompt F5=Run report F6=Insert line

F10=Copy line F12=Cancel F13=Edit query F14=Delete line F24=More keys

F2=Base keys F3=Exit F4=Prompt F5=Refresh F6=Insert line

F10=Copy line F12=Cancel F13=Edit query F14=Delete line F24=More keys

F18=Display SQL F22=QM statement F24=More keys

Figure 65. Edit Page Heading Display

When you create and change the heading and footing text, you can insert, copy, and delete lines using the F6 (Insert line), F10 (Copy line), and F14 (Delete line) function keys. These function keys are described on page 23. Note that when you copy lines, the entire line is copied: text, line number, and alignment.

Page headings and footings can contain a maximum of 999 lines each. When creating a report form, the default number of lines is five.

Note: Page headings appear only in printed reports. When you send your report output to display, the first line shown in the report is the column headings.

The information you can enter when defining page headings and footings is described in the next few pages.

- **Blank lines before and after**

For headings: type a number for “Blank lines before” to specify the number of blank lines you want to appear between the top of the page and the first line of heading text. Then, type a number for “Blank lines after” to specify the number of blank lines you want to appear between the last line of heading text and the body of the report.

For footings: type a number for “Blank lines before” to specify the number of blank lines you want to appear between the report body and the first line of footing text. Then, type a number for “Blank lines after” to specify the number of blank lines you want to appear between the last line of footing text and the bottom of the page.

You can type any number in the range 0 to 999. When you create a report form, the default values for headings is 0 lines before and 2 after, and for footings is 2 lines before and 0 after.

The blank lines before and after apply even when you do not specify any text for the page heading or footing.

- **Line numbers**

The sequence of text lines within the heading and footing is determined by the number in the Line prompt. The line with the lowest number appears first, and the line with the highest number appears last. To insert a blank line, simply omit the line number from the display; then specify text for one or more of the following lines. Line numbers do not have to be consecutive, nor do they have to be entered in this display in ascending order.

You can assign the same line number for up to three text entry lines in this display, as long as the alignments are different for each entry line. For example, in the Edit Page Heading display the following choices:

Line	Align	Page Heading Text
1	LEFT	&DATE
1	CENTER	Weekly Sales Report
1	RIGHT	Page &PAGE
3	LEFT	Dept &1;

would generate a page heading with 3 lines, the second of which would be blank:

```
10/12/1992      Weekly Sales Report      Page 1
Dept 10
```

Note: When you press F5 to run a report and direct the output to display, if there are duplicate line numbers, Query Manager displays a message warning you that some text might be overlaid by text from another line. To continue running the report, press F5 again.

- **Text alignment**

The Align prompt controls the position of the page heading or footing text on the report line. Type one of the following alignments:

- RIGHT or R to right justify the text.
- LEFT or L to left justify the text.
- CENTER or C to center the text.

You can press F4 (Prompt) when the cursor is positioned in the Align prompt to display a list of these values.

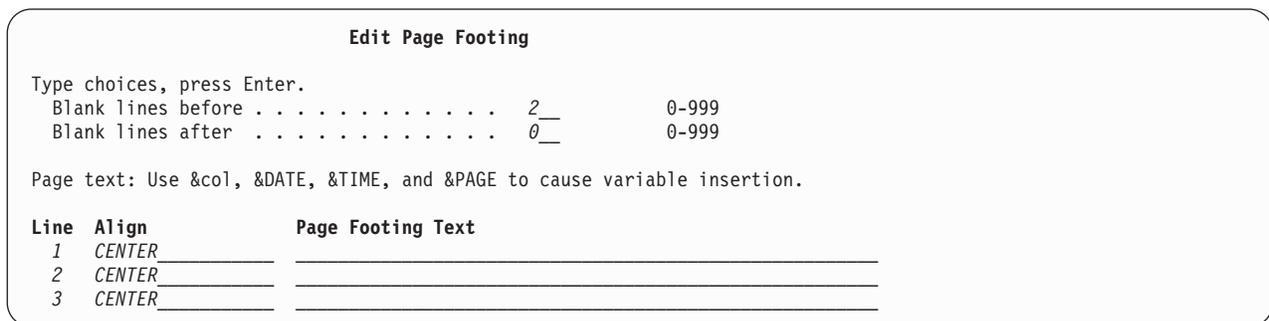


Figure 66. Edit Page Footing Display

- **Page heading or footing text**

Use the “Page Heading Text” and “Page Footing Text” prompts to type the text that you want to appear as the page heading or footing. You can type up to 55 characters on each line. The lines can then be aligned either left, right, or center.

If you want to include blank spaces in the heading or footing text, leading blanks are always included, but trailing blanks are included only when you enclose the entire text in ‘single’ quotation marks.

Blank lines are inserted in the heading or footing when you omit a line number from the description, and specify text for one or more of the following lines. An example of this is shown on page 119.

You can include the following variables in your heading or footing text:

&col Specifies a column name or number. In a page heading, &col has the first value on the

page for the specified column. In a page footing, &col has the last value on the page for the specified column. The column value is in the format you specified for the *Edit* prompt on the Edit Formatting display, unless you specify column wrapping. Column wrapping is ignored when the column value is formatted into the text.

The column name is the name of the column returned from DB2 for i5/OS SQL. You must enter the column name in uppercase. You must refer to the column by column number if the column name is DATE, TIME, or PAGE, or if the column name contains a \$ (dollar sign), # (number sign), @ (at sign), or " (quotation mark). To obtain the column name of a duplicate column, expression, or summary function, use the Edit Column Formatting display.

The column number is determined by the sequence in which the columns are retrieved by the SELECT statement query or the prompted query. The order of the column numbers are not the same as the order you specify in the Seq column in the Edit Formatting display.

You might find this variable useful in reports that contain breaks. For example, you can specify a new page each time the value in the break column changes. By using the &col variable, you can include the break value in the page heading or footing.

&DATE	Inserts the current or report date. You need to type the word DATE in uppercase.
&TIME	Inserts the current or report time. You need to type the word TIME in uppercase.
&PAGE	Inserts the current page number in the report. You need to type the word PAGE in uppercase.

Specifying text for the end of the report in Query Manager

If you choose to edit final text from the Select Report Format display (see page 108), Query Manager shows the Edit Final Text display. An example of this display is shown in Figure 67 on page 121. Use this display to specify the text that you want to appear at the end of the report, the position in which you want the final text to appear, and the line within the final text on which you want to include final summary information.

Edit Final Text

Type choices, press Enter.

New page for final text	N	Y=Yes, N=No
Blank lines before	0	0-999, BOTTOM
Put final summary at line	1	0-999, NONE

Final text: Use &col to cause variable insertion.

Line	Align	Final Text
1	RIGHT	_____
2	RIGHT	_____
3	RIGHT	_____
4	RIGHT	_____
5	RIGHT	_____
6	RIGHT	_____
7	RIGHT	_____
8	RIGHT	_____
9	RIGHT	_____
10	RIGHT	_____

More...

F2=Alternate keys	F3=Exit	F4=Prompt	F5=Run report	F6=Insert line
F10=Copy line	F12=Cancel	F13=Edit query	F14=Delete line	F24=More keys

F2=Base keys	F3=Exit	F4=Prompt	F5=Refresh	F6=Insert line
F10=Copy line	F12=Cancel	F13=Edit query	F14=Delete line	F24=More keys

F18=Display SQL	F22=QM statement	F24=More keys
-----------------	------------------	---------------

Figure 67. Edit Final Text Display

When you create and change the final text, you can insert, copy, and delete lines using the F6 (Insert line), F10 (Copy line), and F14 (Delete line) function keys. These function keys are described on page 23. Note that when you copy lines, the entire line is copied: text, line number, and alignment.

Final text can contain a maximum of 999 lines. When creating a report form, the default number of lines is twelve.

Enter the following information to define the final text for the report.

- **New page for final text**

Type Y if you want the final text to begin on a new page. If you type N and there is not enough space on the current page for the final text in its entirety, the final text begins on a new page.

- **Blank lines before**

Specify the number of blank lines you want to appear between the last line of the report body and the first line of the final text. If you choose to include final summary separators (through the Specify Report Formatting Options display, see page 127), the separator line is considered the last line of the report body.

You can type any number between 0 and 999. When you create a report form, the default value is 0 lines. For printed reports, you can also specify BOTTOM, to position the final text immediately before any page footing text specified for the page. If there is not enough space for the final text on the current page, it is placed at the bottom of the next page.

- **Put final summary at line**

Specify whether you want final summary data to appear in the report, and if so, the line on which you want it to appear within the final text. If the report does not generate summary data, this value is ignored. An example of final summary data is shown in Figure 3 on page 7.

Specify a line number between 1 and 999, or type NONE to suppress the final summary. The line number you type here specifies the line within the final text on which you want the summary data to appear. The summary data is shown beneath the column being summarized. If the number you type is

greater than the number of formatted final text lines, blank lines are inserted to make up the required number. When you create a report form, the default line number is 1.

If you type a line number of NONE, it suppresses final summary information, but has no effect of break summary information, including any breaks that may occur at the end of the report.

Final summary information is the values that are calculated for the entire report, for example, a grand total. This differs to break summary information which is calculated from one report break to the next. You specify summary functions and report breaks through the Usage prompt in the Edit Column Formatting display. See page 111 for more information.

- **Line numbers**

Specify line numbers in the same way as you do for page heading and footing text. See page 118.

- **Text alignment**

Specify text alignment in the same way as you do for page heading and footing text. See page 119.

- **Final text**

Specify final text in the same way as you do for page heading and footing text. See page 119.

You can only use the &col insert variable. You cannot include &DATE, &TIME, or &PAGE variables in final text. The value of the &col variable is the last value of the last record in the specified column. The column value is in the format you specified for the *Edit* prompt on the Edit Formatting display, unless you specify column wrapping. Column wrapping is ignored when the column value is formatted into the text.

The column name is the name of the column returned from DB2 for i5/OS SQL. Specify the name in uppercase. To obtain the column name of a duplicate column, expression, or summary function, use the Edit Column Formatting display.

The column number is determined by the sequence in which the columns are retrieved by the SELECT statement query or the prompted query. The column number is not the same as the order you specify in the Seq column on the Edit Formatting display.

Specifying text for each report break in Query Manager

If you choose to edit break text from the Select Report Format display (see page 108), Query Manager shows the Edit Break Text display. An example of this display is shown in Figure 68 on page 123.

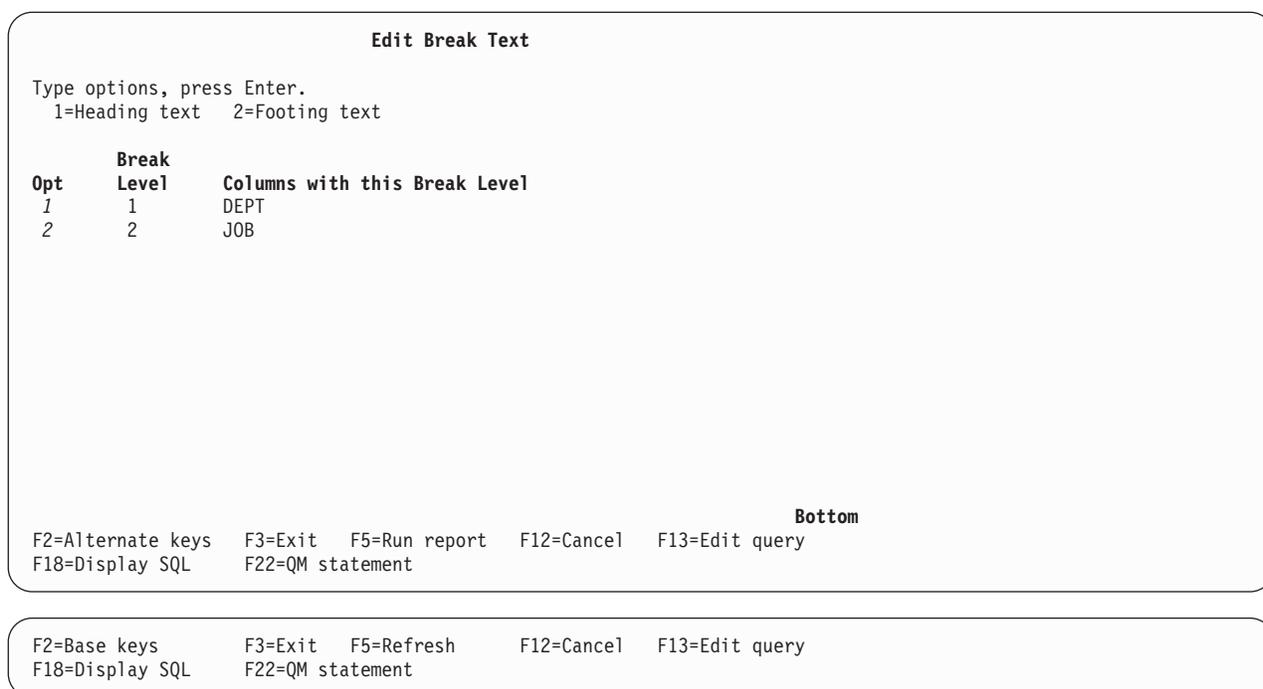


Figure 68. Edit Break Text Display

All of the columns for which you specified a break level are listed on the display. (Specifying break levels is described on page 114.) If there is active data that matches the current report form, or if default values have been loaded from the active query, the column *names* are shown on this display. If there is no matching active data or query default values, the column *numbers* are shown.

Use the Edit Break Text display to specify the type of break text (if any) that you want to appear for the different break levels. A break heading is text that introduces the following group of report detail lines. A break footing is text that follows the report break, and is useful when you want to add descriptive text to summary data.

To specify heading text for a break, type 1 in the Opt prompt next to the break level. To specify footing text, type 2 in the Opt prompt next to the break level. Press the Enter key to show the Edit Break Heading and Edit Break Footing displays. The displays are shown in the same order as the report breaks are listed on the Edit Break Text display.

The information that you enter through these displays to define the break headings and footings is described over the following pages. When you complete entering the heading and footing text, press the Enter key to return to the Edit Break Text display.

You cannot specify both heading and footing text for the same break level in a single operation. Specify to enter either heading text or footing text for the required break. When you complete the heading or footing text, press the Enter key to return to the Edit Break Text display. You can now specify to enter either footing text or heading text for the same break level.

Figure 69 on page 124 shows the Edit Break Heading display.

Edit Break Heading

Break level : 1

Type choices, press Enter.

Put on new page	N	Y=Yes, N=No
Repeat column heading	N	Y=Yes, N=No
Blank lines before	0	0-999
Blank lines after	0	0-999

Break text: Use &col to cause variable insertion.

Line	Align	Break Heading Text
1	LEFT	_____
2	LEFT	_____
3	LEFT	_____
4	LEFT	_____
5	LEFT	_____

Bottom

F2=Alternate keys	F3=Exit	F4=Prompt	F5=Run report	F6=Insert line
F10=Copy line	F12=Cancel	F13=Edit query	F14=Delete line	F24=More keys

F2=Base keys	F3=Exit	F4=Prompt	F5=Refresh	F6=Insert line
F10=Copy line	F12=Cancel	F13=Edit query	F14=Delete line	F24=More keys

F18=Display SQL	F22=QM statement	F24=More keys
-----------------	------------------	---------------

Figure 69. Edit Break Heading Display

When you create and change the break heading and footing text, you can insert, copy, and delete lines using the F6 (Insert line), F10 (Copy line), and F14 (Delete line) function keys. These function keys are described on page 23. Note that when you copy lines, the entire line is copied: text, line number, and alignment.

Break headings and footings can contain a maximum of 999 lines each. When creating a report form, the default number of lines is five.

Enter the following information to define your break headings and footings.

- **Put on new page**
Specified for both break heading and break footing text. Type Y if you want the break text to begin on a separate page.
- **Repeat column heading**
For break headings: specify whether you want column headings repeated above the detail lines for the break group.
Column headings always appear at the top of each page or display. If you type Y for this prompt, the column headings also appear at the start of each break group. This happens regardless of whether you specify any break heading text. However, if the break starts at the top of a printed page, only one set of column headings appears.
- **Blank lines before and after**
For break headings: type a number for “Blank lines before” to specify the number of blank lines you want to appear between the previous detail line and the first break heading line. Then, type a number for “Blank lines after” to specify the number of blank lines you want to appear between the last break heading line and the next detail line.

For break footings: type a number for “Blank lines before” to specify the number of blank lines you want to appear between the last detail line and the first break footing line. Then, type a number for “Blank lines after” to specify the number of blank lines you want to appear between the last break footing line and the next detail line.

You can type any number in the range 0 to 999. For printed reports, you can also type BOTTOM to specify the blank lines before a break footing. This causes the break footing text to appear immediately before any page footing text specified. It also forces a page break, and all following text appears on the next page.

When you create a report form, the default values for break headings is 0 lines before and 0 after, and for break footings is 0 lines before and 1 after.

The blank lines before and after apply even when you do not specify any text for the heading or footing.

- **Put break summary at line**

For break footings: specify whether you want break summary data to appear in the report for this break level, and if so, the line on which you want it to appear within the break footing text. If the report does not generate summary data, this value is ignored.

You can type any number between 1 and 999, or type NONE to suppress the break summary data. The line number you type here specifies the line number within the break footing on which you want the summary data to appear. The summary data is shown beneath the column being summarized. If the number you type is greater than the number of formatted break footing lines, blank lines are inserted to make up the required number. When you create a report form, the default line number is 1.

If you type a line number of NONE, it suppresses break summary data, but has no effect on final summary data. Type NONE when you want final summary data to appear in the report, but you do not want summary data at each break.

The break summary values are those calculated from one report break to the next. This differs from final summary values, which are calculated for the entire report: for example, a grand total. You specify summary functions and report breaks through the Usage prompt in the Edit Column Formatting display. See page 111 for more information.

- **Line numbers**

Specify line numbers in the same way as you do for page heading and footing text. See page 118.

- **Text alignment**

Specify text alignment in the same way as you do for page heading and footing text. See page 119.

- **Break heading or footing text**

Specify break heading and footing text in the same way as you do for page heading and footing text. See page 119.

You can only use the &col insert variable. You cannot include &DATE, &TIME, or &PAGE variables in break heading or footing text. The value of the &col variable is the last value of the last record in the specified column. The column value is in the format you specified for the *Edit* prompt on the Edit Formatting display, unless you specify column wrapping. Column wrapping is ignored when the column value is formatted into the text.

The column name is the name of the column returned from DB2 for i5/OS SQL. Specify the name in uppercase. You must refer to the column by column number if the column name is DATE, TIME, or PAGE, or if the column name contains a \$ (dollar sign), # (number sign), @ (at sign), or " (quotation mark). To obtain the column name of a duplicate column, expression, or summary function, use the Edit Column Formatting display.

The column number is determined by the sequence in which the columns are retrieved by the SELECT statement query or the prompted query. The column number is not the order you specify in the Seq column on the Edit Formatting display.

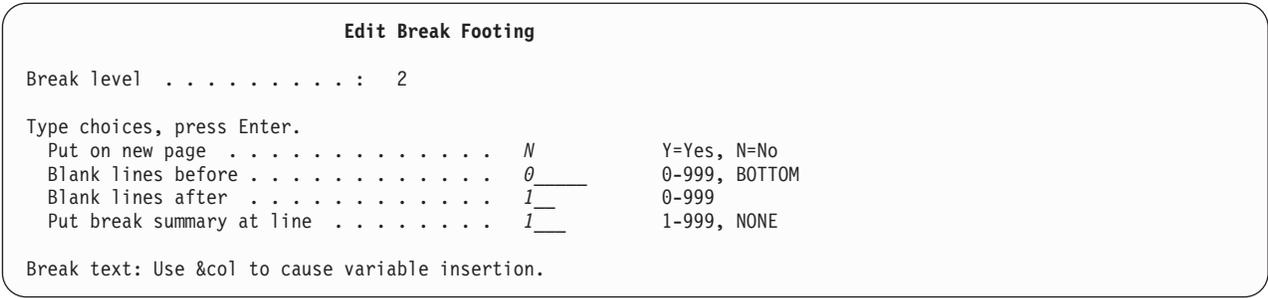


Figure 70. Edit Break Footing Display

Specifying formatting options for the report in Query Manager

If you choose to specify formatting options from the Select Report Format display (see page 108), Query Manager shows the Specify Report Formatting Options display. An example of this display is shown in Figure 71.

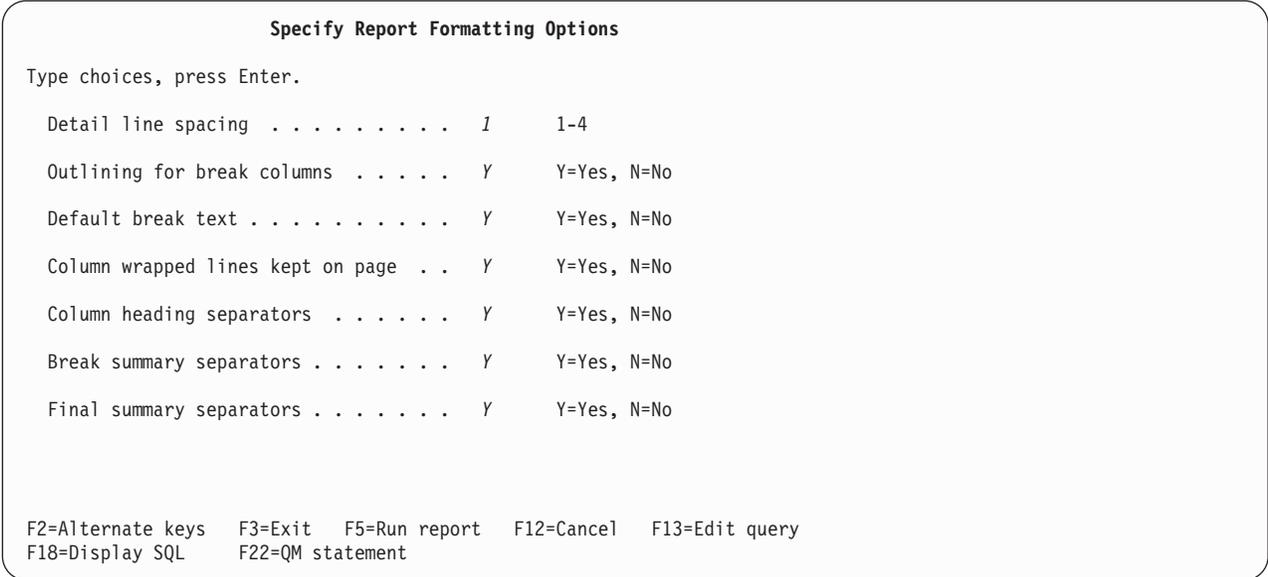


Figure 71. Specify Formatting Options Display

Use this display to enter the following information to specify the formatting for your report.

- **Detail line spacing**
 Specify the spacing between one detail line and the next within the report. Type a value between 1 and 4, where 1 is single spacing, 2 is double spacing, and so on.
- **Outlining for break columns**
 Type N (to suppress outlining) if you want the value in the break column to appear on every detail line of the report, or Y (to enable outlining) if you want the break value to appear only when it changes. This affects the report only if you have specified breaks (see page 114).
 For example, in Figure 3 on page 7, *Department* has been used as a break column. When the department number changes from 20 to 38, a break occurs. Outlining has been used, and the department number is printed only for the first line in each group of detail lines.

- **Default break text**

This prompt affects only those break levels where you specify the position within the break footing at which you want summary data to appear, but you do not enter any break footing text. You position break summary data and enter break footing text through the Edit Break Footing display, which is described in “Specifying text for each report break in Query Manager” on page 122.

Default break text is one or more asterisks that indicate the level of the break. The lowest level break (that is, the break with the highest number) has one asterisk, the next lowest level break has two asterisks, and so on. Asterisks are right justified so they appear immediately to the left of the first column that has summary data.

For example, if the report has two breaks, BREAK1 and BREAK3, one asterisk appears beside the summary data at each level-3 break, and two asterisks appear beside the summary data at each level-1 break.

- **Column-wrapped lines kept on page**

If you specify line wrapping for any of the columns in the report (by selecting an edit code of CW, CT, or GW through the Edit Column Formatting display), this prompt determines whether the column data can be split over more than one page. Type Y if you want to keep the column information on a single page, or N to split the information over multiple pages if necessary.

- **Column heading separators**

Type Y if you want separators (dash lines) to appear under each column heading in the report, or type N if you want to suppress the separators.

- **Break summary separators**

Type Y if you want separators (dash lines) to appear above any summary data at each report break, or type N if you want to suppress the separators.

- **Final summary separators**

Type Y if you want separators (equal signs) to appear above any final summary data at the end of the report, or type N if you want to suppress the separators.

Copying a report form in Query Manager

When you copy a report form, you can create a new report form or replace an existing one.

1. Type 2 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Report Forms display.
2. Type 3 in the Opt prompt next to the names of the report forms you want to copy; then press the Enter key to go to the Copy Report Form display. This display lists the names of all of the report forms you specified. An example of the Copy Report Form display is shown in Figure 72 on page 128.

```

                                Copy Report Form

From library . . . . . : MYLIB

Type information, press Enter:
  To library . . . . . MYLIB_____ Name
  Replace form . . . . . N           Y=Yes, N=No

To rename copied form, change To Form name.

From Form      To Form
VENDINFO       VENDINFO__

                                Bottom

F3=Exit  F5=Refresh  F12=Cancel  F22=QM statement

```

Figure 72. Copy Report Form Display

3. Before you can copy a report form, you need to specify the following information. If you are copying more than one report form, all report forms are copied using the same settings.
 - **To library.** Type the name of the library to which you want the report form copied.
 - **Replace form.** Type Y if you want to replace an existing report form, or N if you want to create a new report form. The default is N.
4. Type the name of the report form you want to create or replace in response to the “To Form” prompt. If you answered N to “Replace form”, the name you type cannot already exist in the specified library. Report form naming conventions are described on page 29.
5. Press the Enter key to perform the copy and return to the Work with Query Manager Report Forms display. If you want to leave the Copy Report Form display without copying any report forms, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

Deleting a report form in Query Manager

When you choose to delete a report form, Query Manager shows a confirm display. No report forms are deleted until you respond to this display.

1. Type 2 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Report Forms display.
2. Type 4 in the Opt prompt next to the names of the report forms you want to delete; then press the Enter key to go to the Confirm Delete of Report Form display. This display lists the names of all of the report forms you selected to delete. An example of this display is shown in Figure 73 on page 129.

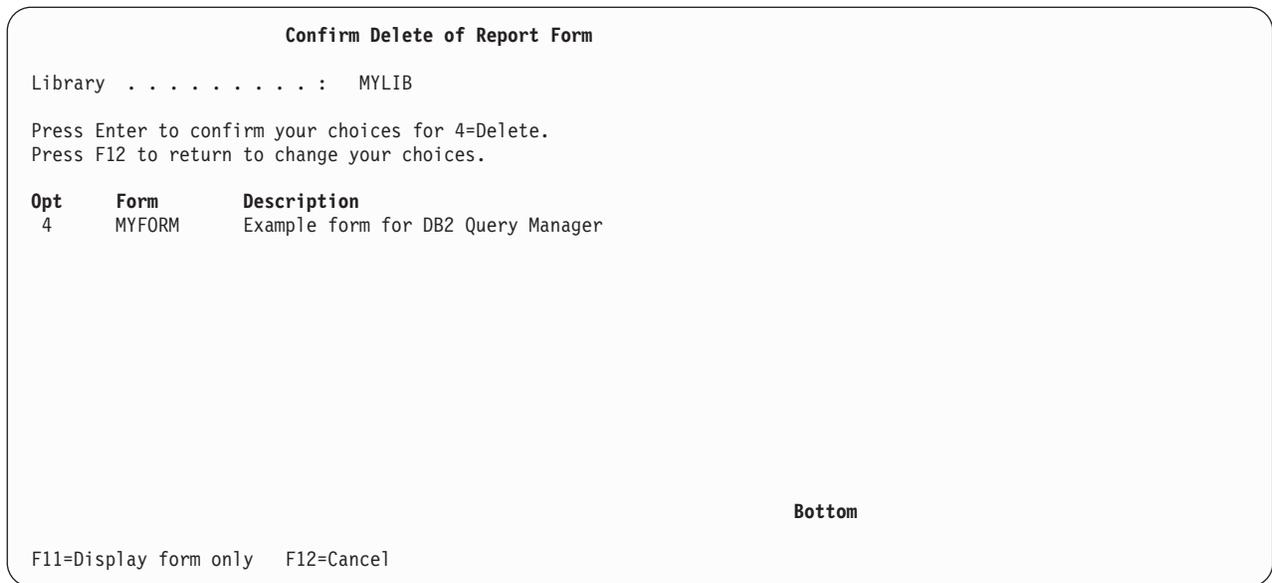


Figure 73. Confirm Delete of Report Form Display

When you choose to delete more than one report form, you may want to press F11 (Display form only) to hide the report form descriptions and show multiple columns of report form names on the display.

3. Press the Enter key to confirm the delete and return to the Work with Query Manager Report Forms display. Note that when you press the Enter key, you delete all of the report forms shown on the display. If you want to leave the display without deleting any report forms, press F12 (Cancel) instead of the Enter key.

Displaying a report form in Query Manager

You can view the definition of a report form in displays that are similar to the Select Report Format displays through which the report form is defined. This information is shown in display-only format. You cannot change any values through this option.

1. Type 2 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Report Forms display.
2. Type 5 in the Opt prompt next to the names of the report forms whose definitions you want to view; then press the Enter key to go to the Display Report Format display. This display is shown for the first report form you specified. Display Report Format displays for the remaining report forms are shown in the same order as the report form names appear in the “Work with” display list. An example of the Display Report Format display is shown in Figure 74 on page 130.

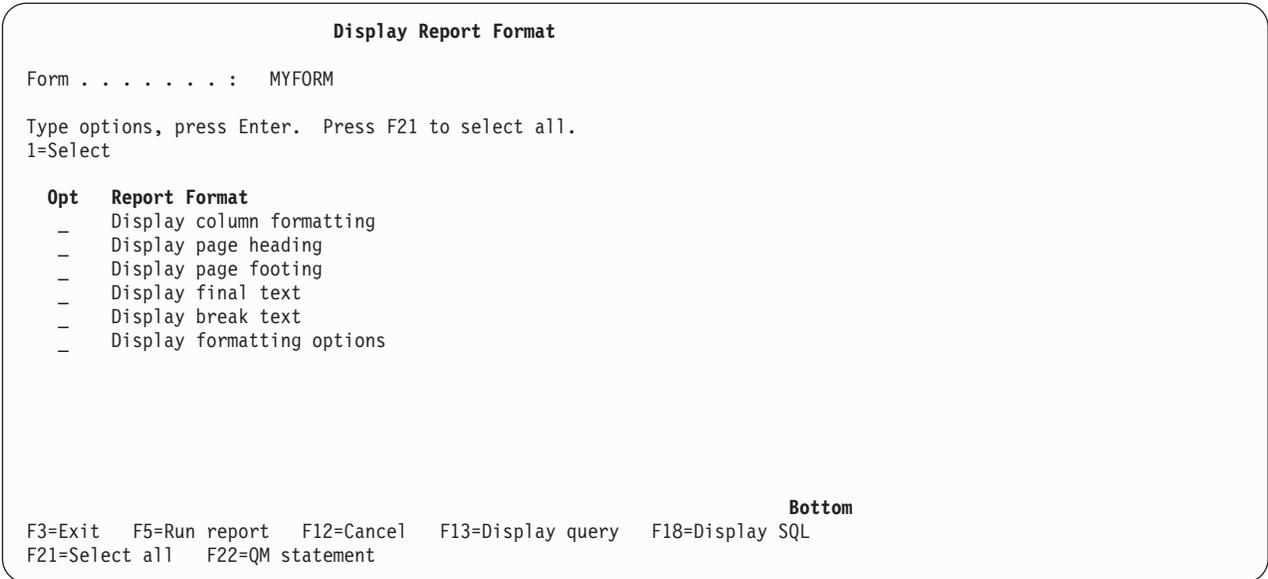


Figure 74. Display Report Format Display

3. Type 1 in the Opt prompt next to the parts of the report form that you want to display; then press the Enter key. You can choose to display all parts by pressing F21 (Select all). Displays for the parts you choose are shown in the same order as the part names appear on the Display Report Format display. When you finish viewing one display, press the Enter key to go to the next display. When you finish viewing all of the parts you selected, press the Enter key to return to the Display Report Format display.

You can find descriptions of the report form parts on the following pages:

Column formatting	page 111
Page heading	page 117
Page footing	page 117
Final text	page 120
Break text	page 122
Formatting options	page 126

4. You can perform the following tasks through this display:
- Press the F5 key to run or display the report. The title of the F5 key changes depending on the active data:
 - If the active data is the result of running a full query, the key is labeled (Display report).
 - If the active data is the result of running a sample query, the key is labeled (Display sample).
 - If there is no active data, or if the active data does not match the report form, the key is labeled (Run report).

Note: For the active data to match the active form, they both need to contain the same number of columns, and the columns need to have compatible data types. Active data is described on page 7.

If F5 is labeled (Display report) or (Display sample), the report form is applied to the active data, and the resulting report is shown on your display. If F5 is labeled (Run report), the Run Query display is shown, prompting you to specify run options such as the name of the query you want to run, and the mode in which you want to run the query. The Run Query display options are described on page 136.

- View the SQL statement that defines the active query. Press F18 (Display SQL) to view the query statement in display-only format. If there is no active query, an error message is shown.

When you choose to (Display SQL) for a prompted query, the SELECT statement is shown with descriptive comments, in the same format as prompted query definitions are printed. See Figure 27 on page 59 for an example of the format in which the SQL statement is presented.

When you finish viewing the query definition, press F12 (Cancel) to return to the Display Report Format display.

- View the definition of any query. Press F13 (Display query) to view the definition of a query. A prompt display is shown, asking you to type the name of the query you want to display. Type a name, or press F4 (Prompt) to display a list of the queries in the current library from which you can make a selection. The query definition is shown in the mode in which the query was last saved: either prompted or SQL. See “Displaying a query in Query Manager” on page 55 for more information.

When you finish viewing an SQL query definition, press F13 (Display form) to return to the Display Report Format display. When you finish viewing a prompted query definition, type 1 in the Opt prompt beside “Specify report formatting” on the Define Prompted Query display. Then press the Enter key to return to the Display Report Format display.

5. When you finish viewing the report form, press F3 (Exit) or F12 (Cancel) to return to the Work with Query Manager Report Forms display.

Printing a report form in Query Manager

You can print the formatting information that defines the report form on the default printer specified in your Query Manager profile.

1. Type 2 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Report Forms display.
2. Type 6 in the Opt prompt next to the names of the report forms whose definitions you want to print; then press the Enter key to send the report form definitions to your default printer. To print the definition at a different printer, you need to change the default printer setting in your Query Manager profile before you choose to print the report form. See page 39.

If you choose to print more than one report form, the report forms are printed in the same order as their names appear in the “Work with” display list.

A message at the bottom of the display tells you when the report forms have been successfully sent to print. (All report form definitions are printed interactively.) The printer file is named QPQXPRTF. An example of a printed report form is shown in Figure 75 on page 132.

```

57xxST1 VxRxMx yymdd          ABC400A  08/02/15  16:38:22
Form . . . . . : MYFORM
Library . . . . . : MYLIB
Text . . . . . : Example Report for DB2 Query Manager

```

Column Information							
Nbr	Heading	Usage	Type	Indent	Width	Edit	Seq
1	Department	BREAK1		0			1
2	Employee_Name			2			2
3	Job	BREAK2		2			3
4	Salary	SUM		2			4
5	Commission	SUM		2			5

```


```

Page Information	
Heading text	NO
Blank lines before heading	0
Blank lines after heading	2
Footing text	NO
Blank lines before footing	2
Blank lines after footing	0

```


```

Final Information	
Final text	YES
New page for final text	NO
Put final summary at line	2
Blank lines before text	0

```

Line Align Final Text
  1 LEFT Grand total --
  2 LEFT Employee Salaries

```

Break Information	
Break number	1
Columns with this break number	1
Heading text	NO
New page for heading	NO
Blank lines before heading	0
Blank lines after heading	0
Repeat column headings	NO
Footing text	YES
New page for footing	NO
Blank lines before footing	0
Blank lines after footing	1
Put break summary at line	1

```

Line Align Footing Text
  1 RIGHT Total for department &1;

```

Figure 75. Example of a Printed Report Form

Renaming a report form in Query Manager

You can specify new names for more than one report form in a single operation.

1. Type 2 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Report Forms display.
2. Type 7 in the Opt prompt next to the names of the report forms you want to rename; then press the Enter key to go to the Rename Report Form display. This display lists the names of all of the report forms you specified. An example of this display is shown in Figure 76 on page 133.

```

Rename Report Form
Library . . . . . : MYLIB
To rename form, type New Name, press Enter.

Form      New Name
VENDINFO  VENDINFO__

F3=Exit  F5=Refresh  F12=Cancel  F22=QM statement
Bottom

```

Figure 76. Rename Report Form Display

3. Type the new name for the report form. Report form naming conventions are described on page 29. You need to enter a report form name that does not already exist in the current library. You cannot use the rename option to replace existing report forms.
If you choose to rename more than one report form, you need to type new names for all of the report forms before pressing the Enter key.
4. Press the Enter key to perform the rename and return to the Work with Query Manager Report Forms display. If you want to leave the Rename Report Forms display without renaming any report forms, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

Running a report in Query Manager

When you run a report, Query Manager runs an SQL SELECT statement query or prompted query, and formats the query data using the specified report form. You can run an SQL SELECT statement query only if you have authority to use the SELECT statement (granted through your Query Manager profile).

1. Type 2 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Report Forms display.
2. Type 9 in the Opt prompt next to the names of the reports you want to run; then press the Enter key to go to the Run Query display. The Run Query display is shown for the first report you specified. Run Query displays for the remaining reports are shown in the same order as the report form names appear in the “Work with” display list.

Note: You can specify in your Query Manager profile whether you want run options to be displayed. This setting applies only when you run a report as the result of pressing a function key. Run options are always displayed when you run a report through a “Work with” display.

3. Specify the run options you want Query Manager to use when the report is run. Run options are described in detail in “Using the run query display in Query Manager” on page 136.
4. Press the Enter key to run the query and produce the report. If there are any *variables* (strings starting with &) in the query, Query Manager prompts you to enter a value for each variable before the query is run. The values you enter are substituted into the query when it is run.

The report is run using the options you specify on the Run Query display.

- If the report was submitted to batch, the Work with Query Manager Report Forms display is shown ready for you to perform the next task.

- If the report was run interactively and the output sent to a printer or table, you need to wait for the report to complete running before the Work with Query Manager Report Forms display is shown.
- If the report was run interactively and the output sent to display, you see the results of the query and report form shown on your display when the report completes running. Press F3 (Exit) or F12 (Cancel) when you want to leave the display and return to the Work with Query Manager Report Forms display.

Note: When a report is run in interactive mode, the number of rows retrieved by the query might be limited by your Query Manager profile (see “Maximum number of rows allowed on interactive run in Query Manager” on page 36). If the maximum number of rows has been reached but there are more rows to be retrieved, all final summary data is omitted from the report, and a message is shown telling you that the report data is incomplete.

For a more complete description of running reports, see Chapter 7, “Running queries and reports in Query Manager.”

Chapter 7. Running queries and reports in Query Manager

This chapter describes the different ways in which you can run queries and reports. You can run any prompted query, and only those SQL queries that contain one of the SQL statements you have authority to use (granted through your Query Manager profile). When you run a report, Query Manager runs the specified SQL SELECT statement query or prompted query, and formats the resulting data using the specified report form.

You can run queries and reports while you are creating query and report form definitions, to make sure that the definitions are producing the results you require. Query Manager validates the definitions before performing the run. You can also run existing queries and reports that you did not create.

This chapter begins with a description of the different ways in which you can run queries and reports. It then explains how you can specify run options, such as the mode in which you want to run the query or report and the destination to which you want the output directed. Following that are instructions on how to use the special function keys that are available when you send your query or report output to display.

Running a query or report in Query Manager

When you run an SQL SELECT statement query, a prompted query, or a report, Query Manager runs the specified query and formats the resulting data using the specified report form.

To run a query, you need to have access to the library in which the query resides, and access to the libraries or collections in which the tables being queried reside. If you want to format the query data using a report form, you need to have access to the library in which the report form resides.

Note: To run an SQL query, you need to have authority to use the SQL statement that defines the query. (Authority to use SQL statements is granted through your Query Manager profile. See “Selecting allowed SQL statements for profiles in Query Manager” on page 48 for details.)

Users with a *BASIC* or *ALL* access level can run queries and reports in the following ways:

- By choosing option 9 (Run) from the Work with Query Manager Queries display. See page 60.
- By choosing option 9 (Run report) from the Work with Query Manager Report Forms display. See page 133.
- By pressing F5 (Run report) or F6 (Run sample) while they are displaying a query definition. See page 55.
- By pressing F5 (Run report) while they are displaying a report form definition. See page 129.

Users with an *ALL* access level can run queries and reports in the following additional ways:

- By pressing F5 (Run report) or F6 (Run sample) while they are creating or changing a query definition. See page 64.
- By pressing F5 (Run report) while they are creating or changing a report form definition. See page 109.
- By entering the RUN QUERY statement on the Query Manager statement line. See page 251.

Running a query in batch mode in Query Manager

You cannot run a query in batch mode if it has not yet been named and saved. Query Manager shows the Exit display, and will not submit the query to batch until it has been named and saved. See “Saving a query: Using the exit display in Query Manager” on page 100 for instructions.

Any changes made to the query since it was last saved are included if you run the query in interactive mode, and ignored if you run it in batch. If you run the query in batch, a message tells you that the most recently saved version of the query is being run. When you return to the query editor, your changes are still there. Running the previously saved version in batch mode has no effect on the version of the query you are editing.

Specifying run options in Query Manager

The options that you are prompted to specify when you run a query or report differ depending on the settings in your Query Manager profile, and the way in which you chose to run the query or report:

- When you run a query by choosing option 9 (Run) from the Work with Query Manager Queries display, the Run Query display is always shown if the query is an SQL SELECT statement or a prompted query.
- When you run a query by pressing F5 (Run report) or F6 (Run sample) while you are creating, changing, or displaying a query definition, the Run Query display might be shown if the query is an SQL SELECT statement or a prompted query:
 - If the “Display run options” setting in your Query Manager profile is YES, the Run Query display is shown.
 - If the “Display run options” setting in your Query Manager profile is NO, the Run Query display is not shown. The query is run using the active form and the default settings from your Query Manager profile.

Note: A Run Query display is shown if the active query does not match the active form. For the active query to match the active form, they need to have the same number of columns, and the columns need to have compatible data types.

- When you run a query by entering the RUN QUERY statement on the Query Manager statement line, no run options display is shown. The query is run using the options you specify as part of the RUN QUERY statement, and the default settings from your Query Manager profile.
- When you run a report by choosing option 9 (Run report) from the Work with Query Manager Report Forms display, the Run Query display is always shown.
- When you run a report by pressing F5 (Run report) while you are creating, changing, or displaying a report form definition, the Run Query display is always shown. If the F5 key is labeled (Display report) or (Display sample), no run options display is shown. The report is produced using the active data, and output to display.

Using the Run Query display is described on page 136.

Using the run query display in Query Manager

Use the Run Query display to specify the way in which you want the query or report to be run. You can change any of the run options shown on this display. The default run options are taken from your Query Manager profile.

The prompts shown on the Run Query display differ depending on whether you are running a query or report.

You run a query by choosing option 9 (Run) from the Work with Query Manager Queries display, or by pressing F5 (Run report) or F6 (Run sample) while you are creating, changing, or displaying a query definition. Figure 77 on page 137 is an example of the Run Query display shown when you run a SELECT query. Figure 78 on page 137 is an example of the Run Query display shown when you run a query other than a SELECT query.

```

                                Run Query
Query . . . . . : MYQUERY
Library . . . . : MYLIB

Type choices, press Enter.
Run query mode . . . 1          1=Interactive
                                2=Batch
Run sample only . . N          Y=Yes, N=No
Form . . . . . *SYSDFT_____ Name, *, *SYSDFT, F4 for list
Library . . . . . _____ Name, *CURLIB, *LIBL
Output . . . . . 1             1=Display, 2=Printer
                                3=Table

F3=Exit  F4=Prompt  F12=Cancel

```

Figure 77. Run Query Display for SELECT and Prompted Queries

```

                                Run Query
Query . . . . . : MYQUERY
Library . . . . : MYLIB

Type choices, press Enter.
Run query mode . . . 1          1=Interactive
                                2=Batch

F3=Exit  F4=Prompt  F12=Cancel

```

Figure 78. Run Query Display for Queries Other than SELECT Queries

You run a report by choosing option 9 (Run report) from the Work with Query Manager Report Forms display, or by pressing F5 (Run report) while you are creating, changing, or displaying a report form definition. Figure 79 on page 138 is an example of the Run Query display shown when you run a report.

```

                                Run Query

Form . . . . . : MYFORM
Library . . . . : MYLIB

Type choices, press Enter.
Run query mode . . . 1          1=Interactive
                                2=Batch
Use active data . . . Y        Y=Yes, N=No
Run sample only . . . N        Y=Yes, N=No
Query . . . . . *              Name, *, F4 for list
Library . . . . . *            Name, *CURLIB, *LIBL
Output . . . . . 1             1=Display, 2=Printer
                                3=Table

F3=Exit  F4=Prompt  F12=Cancel

```

Figure 79. Run Query Display for Reports

Specify the values that you want Query Manager to use when the query or report is run.

Run query mode in Query Manager

Type 1 for interactive mode if you want the query to run as soon as you press the Enter key. Use interactive mode when you want to create active data, run a sample query, or send the query output to display.

Type 2 for batch mode if you want your query submitted to batch. Use batch mode to free your display station immediately after you press the Enter key (to issue the RUN statement).

See page 35 for more information on batch and interactive modes.

Notes:

1. If “Allow change run query mode” is set to NO in your Query Manager profile, this prompt is display-only and cannot be changed.
2. When a query is run in interactive mode, the number of rows retrieved might be limited by your Query Manager profile (see “Maximum number of rows allowed on interactive run in Query Manager” on page 36). If the maximum number of rows has been reached but there are more rows to be retrieved, all final summary data is omitted from the report, and a message is shown telling you that the data is incomplete.
3. You cannot run an unnamed query or report form in batch mode. When you run a query or report form you are creating that you have not yet saved or named, the Exit display is shown. Save and name the query or report form, or choose to perform the run in interactive mode.

Run sample only in Query Manager

Type Y to limit the number of rows retrieved by the query to the value specified for “Number of rows to use for sample” in your Query Manager profile (see page 36). Type N if you want to run a full query.

Sample queries are useful when you want to create active data, but do not want to wait for a full query to complete running. Sample queries are always run in interactive mode and output to *display*. Note that you can run sample queries only if “Allow interactive sample run” is set to YES in your Query Manager profile (see page 36).

Report form and library in Query Manager

If you are running an SQL SELECT statement query or a prompted query, you are prompted to specify the name of the report form you want to use to format the query data, and the name of the library in which it resides. Choose one of the following:

- * Use the active form. This is the default, available only when there is an active form. Leave the library name blank.
- *SYSDFT Use a simple report form, generated by Query Manager when the query is run. This is the default when there is no active form. Leave the library name blank.
- name** Use an existing report form. Type the name of a report form and the library in which it resides, or press F4 (Prompt) to display a list of all report forms in the current library from which you can make a selection. If you do not enter a library name, Query Manager uses the “Default library for QM objects” specified in your Query Manager profile.

Query and library in Query Manager

If you are running a report, you are prompted to specify the name of the query you want to run to generate the query data, and the name of the library in which it resides. Choose one of the following:

- * Use the active query. This is the default, available only when there is an active query. Leave the library name blank.
- name** Use an existing query. Type the name of a query and the library in which it resides, or press F4 (Prompt) to display a list of all queries in the current library from which you can make a selection. If you do not enter a library name, Query Manager uses the “Default library for QM objects” specified in your Query Manager profile.
- blank* Leave the query and library names blank, and specify to run the report using the active data. This option is available only when there is active data.

Use active data in Query Manager

Type Y to produce the report by applying the specified report form to the active data. Leave the prompts for query name and library name blank when you answer Y to this prompt. This prompt is shown only when there is active data.

Active data is the data that resulted from the last SQL SELECT statement query or prompted query that was run interactively during the current Query Manager session.

Output in Query Manager

Type 1 to send the query output to your *display* station, type 2 to send the output to a *printer*, or type 3 to write the output to a *table*. You can send the output to *display* only when the query is run interactively. You need to send the output to *display* when you run a sample query.

If you specified an output destination of *printer* or *table*, press the Enter key to display additional prompts for the printer name, or the table and collection names.

Printer to use for output in Query Manager

If you specified to send your output to a *printer*, you are prompted to enter the ID for the i5/OS output queue or printer that you want to use. Press F4 (Prompt) to view a list of all supported IDs from which you can make a selection. The default is the output queue or printer ID specified in your Query Manager profile.

Table to use for output in Query Manager

If you specified to send your output to a *table*, you are prompted to enter the name of the table, and the collection in which it resides. Press F4 (Prompt) if you want to view a list of all tables in the current collection from which you can make a selection.

The default is the output table and collection specified in your Query Manager profile. If the default table is *NONE, you need to enter a table name before the query is run. If the default collection is blank, Query Manager searches the "Default library for QM objects" specified in your Query Manager profile.

Note: The collection name you specify must exist on your local system. Even if you are connected to a local database, the table is always saved to your local system. Therefore, you should run the query or report in batch mode.

Displaying query output in Query Manager

When you choose to send your query output to display, the report is shown in a display similar to the one shown in Figure 80. Note that page headings defined through a report form appear only when the report is printed. When you send your output to display, the first line shown in the report is the column headings.

Display Report							
Query	MYLIB.SMPQRY			Width	71		
Form				Column	1		
Control							
Line	1	2	3	4	5	6	7
	ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
000001	10	Sanders	20	Mgr	7	18,357.50	.00
000002	20	Pernal	20	Sales	8	18,171.25	612.45
000003	30	Marenghi	38	Mgr	5	17,506.75	.00
000004	40	O'Brien	38	Sales	6	18,006.00	846.55
000005	50	Hanes	15	Mgr	10	20,659.80	.00
000006	60	Quigley	38	Sales	0	16,808.30	650.25
000007	70	Rothman	15	Sales	7	16,502.83	1,152.00
000008	80	James	20	Clerk	0	13,504.60	128.20
000009	90	Koonitz	42	Sales	6	18,001.75	1,386.70
000010	100	Plotz	42	Mgr	7	18,352.80	.00
000011	110	Ngan	15	Clerk	5	12,508.20	206.60
000012	120	Naughton	38	Clerk	0	12,954.75	180.00
000013	130	Yamaguchi	42	Clerk	6	10,505.90	75.60
000014	140	Fraye	51	Mgr	6	21,150.00	.00
							More...

F3=Exit F12=Cancel F19=Left F20=Right F21=Split

Figure 80. Display Report Display

This display provides special function keys that you can use to view the entire report if it is more than one display in width.

- F21 Split.** Splits the report into two displays vertically at the current cursor position. Move the cursor to the column at which you want to split the report; then press F21. Note that the cursor needs to be positioned on the column data, not on the column heading.
- F19 Left.** Shows the columns that appear on the left-hand side of the report. If you defined a split, F19 shows all columns to the left of the split.
- F20 Right.** Shows the columns that appear on the right-hand side of the report. If you defined a split, F20 shows all columns to the right of the split.

The *Control* prompt, shown above the columns of the report, also helps you view the entire report. Through this prompt, you can select and control paging, rolling, and window functions, and you can display a specific row from the report. Position the cursor on the *Control* prompt and press F1 (Help) for full instructions.

Leaving the display report display in Query Manager

There are two ways in which you can leave the Display Report display:

- Press F12 (Cancel) if you do not want the retrieved query data to become the active data.
- Press F3 (Exit) if you do want the retrieved query data to become the active data.

When you run a query interactively and direct the output to *display*, Query Manager runs the query one display at a time, so that the only part of the query that is run is the portion that you view. If you press F3 (Exit) to leave the display before you finish viewing all of the query data, an Exit display is shown asking whether you want to complete running the query. An example of this Exit display is shown in Figure 81.

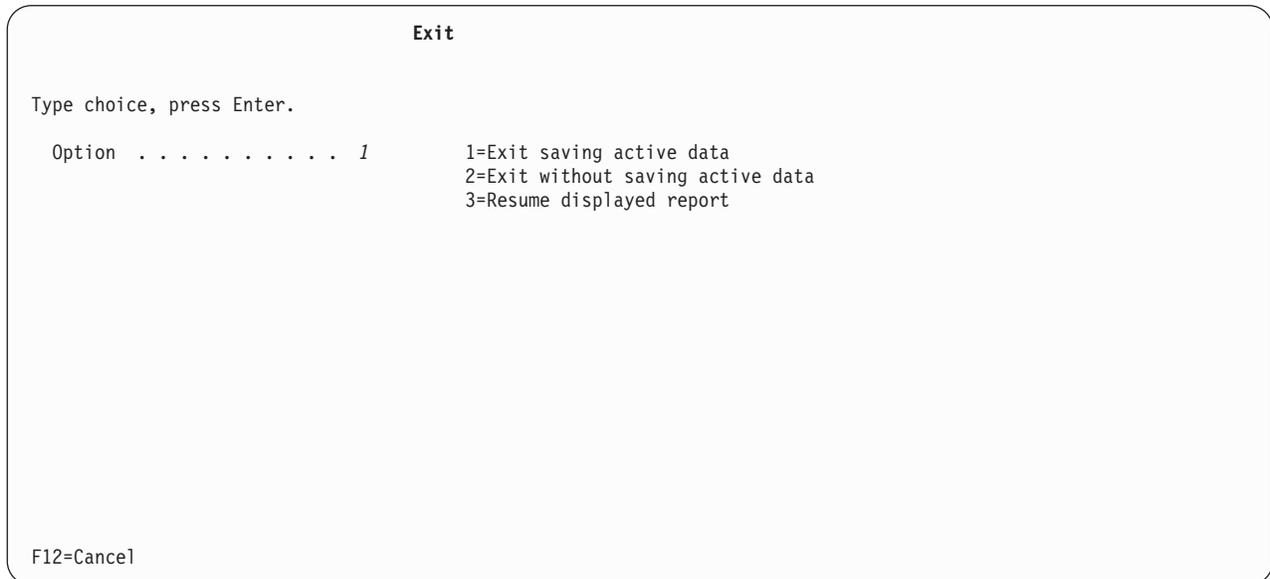


Figure 81. Exit from Display Report Display

Choose one of the following options:

1=Exit saving active data

Choose this option when you want to finish running the query and save the retrieved data as active data. You need to wait for the query to complete running before you return to the display from which you chose to run the query or report.

2=Exit without saving active data

Choose this option to immediately return to the display from which you chose to run the query or report. The query does not complete its run and no active data is saved.

3=Resume displayed report

Choose this option to return to the Display Report display, where you can continue to view the data retrieved by the query.

See page 8 for more information about active data.

Date and time format considerations in Query Manager

If you run a query that was saved with date and time formats that are different from those defined in your current job, the Confirm Run Query display is shown to warn you that the formats are not compatible. An example of this display is shown in Figure 82 on page 142.

```

                                Confirm Run Query

Query . . . . . : MYQUERY
Library . . . . : MYLIB

WARNING

The Query Manager query definition you have requested has a date format
that is different from the date format used in your job. Dates
displayed in the report may be in an unexpected format.

If the query contains global variables, you need to enter the variable
values for any dates using a date format of *USA, *ISO, *EUR, or *JIS.
Entering dates in another format may cause an SQL failure.

Job date format . . . : *DMY           Query date format . . : *MDY
Job date separator . . : .             Query date separator : /

Press Enter to continue.
Press F12 to return without running the query.

F12=Cancel

```

Figure 82. Confirm Run Query Display

Press the Enter key to continue running the query, or F12 (Cancel) to return to the Work with Query Manager Queries display without running the query.

If you choose to continue running the query, be careful if the query contains global variables. If any of these variables are dates, you need to enter the dates in a valid SQL format. When Query Manager runs the query, it translates the SQL date that you entered into the date format used by the query. Select one of the following formats:

*DMY	dd.mm.yyyy	31.10.1992	SQL format: EUR
*MDY	mm/dd/yyyy	10/31/1992	SQL format: USA
*YMD	yyyy-mm-dd	1992-10-31	SQL format: ISO/JIS

Notice that the characters used to separate the different parts of the dates are different for all three of the formats.

Note: Typing date variable values in a non-SQL format might cause an SQL failure.

Running a query against databases from non-i5/OS databases in Query Manager

Some sort sequence capabilities do not function correctly when you run them against remote databases that do not have the same sort sequence capabilities. These databases reside on systems other than i5/OS.

When the query uses a sort sequence other than *HEX, the Query Manager presents the Confirm Run Query display (shown in Figure 83).



Figure 83. Confirm Run Query Display with Sort Sequence Warning

If the query specifies a particular sort sequence table, the display shows the sort sequence table name and the library in which it resides.

The warning in Figure 83 appears when the sort sequence is *LANGIDSHR, *LANGIDUNQ, or Sort sequence table. It also appears when the sort sequence is *JOB RUN and the job default sort sequence is other than *HEX.

You can avoid this warning by changing the sort sequence to *HEX.

Chapter 8. Working with Query Manager tables

This chapter describes Query Manager tables, and explains how you can create, maintain, and use them. You can add and change database information in your Query Manager tables, that can later be printed, viewed, and manipulated using the Tables, Queries, and Report Forms options. You create and maintain tables through Query Manager's prompt-guided displays, which help to make this option simple to use.

The chapter begins with some explanations and descriptions that you might want to read through before creating a table. It tells you what Query Manager tables are, and suggests where and when you might find these tables useful.

Following the background information are instructions on how to use the options that are available through the Work with Query Manager Tables display. You can learn how to create, copy, delete, rename, and display a table; and how to add, change, search for, display, and print rows of data.

Note: Your access to the Work with Query Manager Tables display might be restricted through your Query Manager profile. If "Allow access to QM tables option" is set to NO, the (Work with Query Manager tables) option is not shown in the main menu, and you cannot access the Work with Query Manager Tables display. See "Allow access to tables option in Query Manager" on page 41 for more information.

What are Query Manager tables?

Query Manager tables contain database information that you can add to, manipulate, format, and view. All Query Manager users can create tables and add information to them. This information can later be viewed, printed, and manipulated through the Tables, Queries, and Report Forms options.

Use Query Manager tables to store information such as:

- The results from your latest marketing survey
- The targets and current sales figures for all sales staff in your department
- Your available supplies on hand

If you want to store confidential information in your tables, see your security administrator about setting up an *EXCLUDE authority for the collection or library in which your tables are stored. The *EXCLUDE authority stops other users from being able to access the information in your tables unless you specifically grant them access privileges, so your confidential information is secure.

You can access tables that were created outside Query Manager through the Work with Query Manager Tables display, as long as the tables are in a collection or library to which you have access, and as long as they contain only those data types that are supported in Query Manager. A list of supported data types can be found on page 152.

Each Query Manager table is named by the person who creates it. The following table is named "ORG".

Table 10. The ORG Table

DEPTNO	DEPTNAME	MANAGER	DIVISION	LOCATION
10	Head Office	160	Corporate	New York
15	New England	50	Eastern	Boston
20	Mid Atlantic	10	Eastern	Washington
38	South Atlantic	30	Eastern	Atlanta

Table 10. The ORG Table (continued)

DEPTNO	DEPTNAME	MANAGER	DIVISION	LOCATION
42	Great Lake	100	Midwest	Chicago
51	Plains	140	Midwest	Dallas
66	Pacific	270	Western	San Francisco
84	Mountain	290	Western	Denver

A table consists of vertical columns and horizontal rows. Each column has a name which you use to refer to information in the table. The column names in the ORG table are DEPTNO, DEPTNAME, MANAGER, DIVISION, and LOCATION. A row is a sequence of values, one for each column of the table; it is a group of related data treated as a unit.

You can find a more detailed description of tables, columns, and rows in the introduction to this User Guide, see "Databases, tables, columns, and rows in Query Manager" on page 2.

Using the work with Query Manager tables display

When you want to create, copy, print, or use a Query Manager table in any way, the Work with Query Manager Tables display is the place to begin.

You select the Work with Query Manager Tables display from the Query Manager main menu. Type 3 in the Selection prompt; then press the Enter key to go to the Work with Query Manager Tables display. An example of this display is shown in Figure 84.

Work with Query Manager Tables

Library MYCOLL____ Name, F4 for list

Type options, press Enter.

1=Create table 3=Copy table 4=Delete table 5=Display table
 6=Print table 7=Rename table 8=Display definition 9=Add data
 10=Change data 11=Display data

Opt	Table	Description
<u>1</u>	<u>STAFF</u>	
—	JOB_APPLICANT_LIST	Table of job applicants
—	LONG_TABLE_NAME_IS >	Sample CARS Table
—	EMPLOYEE	Personnel in each in each department
—	ORG	Corp.'s organization information
—	PRODUCT	Description of corp. products
—	SCREENS	Output file for STRCPYSCN
—	VENDINFO	Vendor Information

Bottom

F3=Exit F4=Prompt F5=Refresh F11=Display table only F12=Cancel
 F16=Repeat position to F17=Position to F24=More keys

F20=Display entire name F22=QM Statement F24=More keys

Figure 84. Work with Query Manager Tables Display

The tables listed on this display are those stored in the collection shown at the top of the display. If you have an ALL access level, the collection name is underlined, indicating that it is a prompt value. You can type a new collection name over the existing name if you want to access the tables from a different collection. Position the cursor on the Collection prompt, and press F4 (Prompt) to display a list of

collections from which you can make a selection. You need to have *CHANGE authority for the collection that you specify if you want to use all options available through the Work with Query Manager Tables display.

Notes:

1. The Query Manager tables option works with local data only. If you are using a remote database connection when you select to work with tables, Query Manager stores the details; then breaks the connection. The connection is restored when you exit from the Tables option. For more information on connection with relational databases, see Chapter 9, "Distributed Relational Database Architecture in Query Manager," on page 173.
2. You cannot issue the CONNECT, or SET CONNECTION statements while you are working with Query Manager tables.
3. It is recommended that you not issue the DISCONNECT or RELEASE statements while you are working with Query Manager tables.
4. You cannot work with Query Manager tables if you have any COMMIT or ROLLBACK statements outstanding (see "Commitment control level in Query Manager" on page 40). Once you go to the Work with Query Manager Tables display, Query Manager ignores your commitment control level, and issues COMMIT statements for all data and updates automatically.
5. When in WORK WITH TABLES, the connection is locked to local and cannot be changed by the CONNECT or SET CONNECTION statements. The local or previous connection can be destroyed through the DISCONNECT statement. For more information, see "Work with tables connections in Query Manager DRDA" on page 179.

You can choose any of the following options to work with a table.

1=Create table

Creates a Query Manager table. Query Manager prompts you to specify the name, data type, length, and number of decimal places for all of the columns you want to include in the table. See page 149.

3=Copy table Copies a table. You can replace an existing table or create a new one. You can make an exact copy of the table definition, or you can make modifications to the definition before the copy occurs. You can also choose to copy the table definition only, or to copy the definition and the table data. See page 163.

4=Delete table

Deletes tables you no longer require. You need to respond to a confirm display before the delete occurs. See page 166.

5=Display table

Displays a report, showing selected rows from a table on your display. You are prompted to specify search conditions. Only those rows that match the search conditions are displayed. If you do not specify search conditions, all rows from the table are displayed. See page 167.

Note: This option is not available if you are running Query Manager in batch mode. See "Run query mode in Query Manager" on page 35.

6=Print table Prints a report, showing selected rows from a table on your default printer. You are prompted to specify search conditions. Only those rows that match the search conditions are printed. If you do not specify search conditions, all rows from the table are printed. See page 168.

7=Rename table

Prompts you to specify a new name for existing tables. See page 169.

8=Display definition

Shows the definition of a table in display-only format. You cannot change any values through this option. See page 170.

9=Add data Shows a data entry display through which you can add row data to a table. See page 155.

10=Change data

Prompts you to select specific rows from a table. These rows are then shown, one at a time, in a data entry display. You can either change the row data (by typing new values over the existing ones), or you can delete the row from the table. See page 157.

11=Display data

Prompts you to select specific rows from a table. These rows are then shown, one at a time, in a display similar to the data entry display. The row information is shown in display-only format. You cannot change any values through this option. See page 162.

If you need help selecting tables from the “Work with” display, see page 18. If you need help using the “Work with” display function keys, see page 23.

Specifying a collection for Query Manager tables

If the “Default collection for QM tables” setting in your Query Manager profile is **NONE* (see page 38), you need to specify a collection or library before you can start to work with tables. When you select to Work with Query Manager Tables from the Query Manager main menu, you see a prompt window similar to the one shown in Figure 85, asking you to specify a collection or library name. Type the name of the existing collection or library you want to use; then press the Enter key.

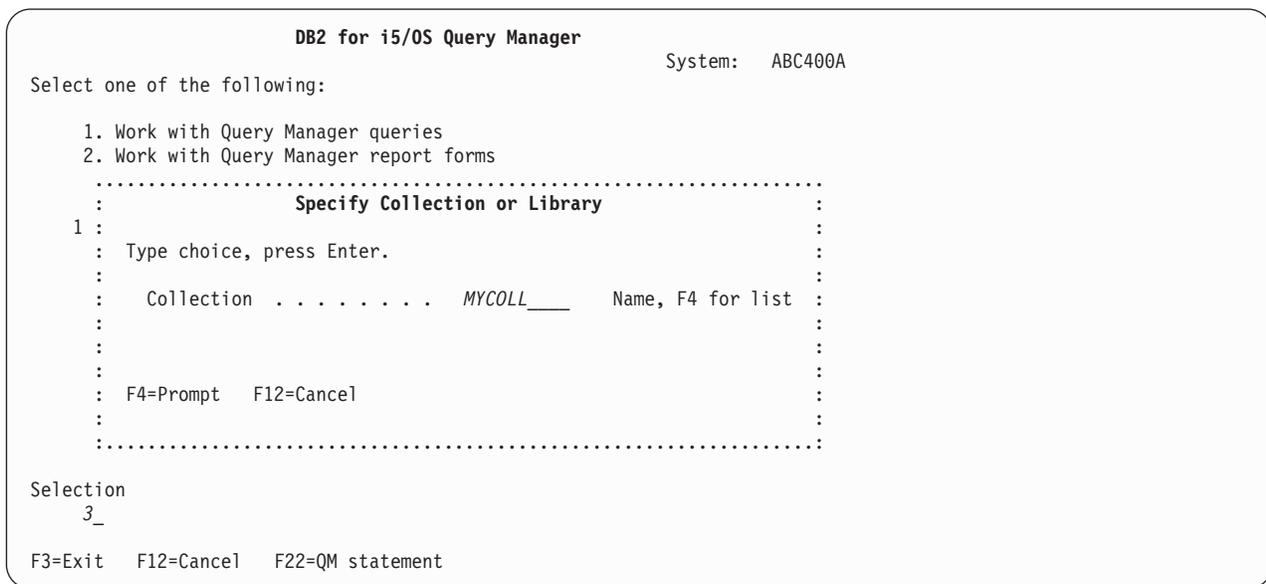


Figure 85. The Specify Collection or Library Window

The Specify Collection or Library window is also shown if you do not have authority to use the collection or library specified in your Query Manager profile, or if the collection or library specified does not exist.

Note: You need to have **CHANGE* authority for the collection or library that you specify if you want to use all of the options available through the Work with Query Manager Tables display. If you specify a collection or library for which you have **USE* authority, you cannot create or rename tables, and you can copy tables only if you have **CHANGE* authority for the collection or library to which you are copying.

You can create a new collection or library for Query Manager tables through the Work with Query Manager Profiles option. See “Default collection for tables in Query Manager” on page 38 for more information.

Creating a table in Query Manager

Creating tables is easy using the prompt-guided Create Query Manager Table display. You are prompted to specify the name, data type, length, and number of decimal places for all of the columns you want to include in your table.

Note: You need to have *CHANGE authority for the current collection to create a table through Query Manager.

1. Type 3 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a “Default collection for QM tables” specified in your Query Manager profile, you are prompted to specify the name of the collection you want to use (see page 148).
2. Type 1 in the Opt prompt next to the blank table name (at the top of the list)
3. Name the table by doing one of the following. (For more information on how to name tables, see “Table and file name conventions in Query Manager” on page 29.)
 - a. If you want the name to be no longer than 18 characters, type the name.
 - b. Press the Enter key to show the Create Query Manager Table display.
You can change the table name through this display, if desired, by typing over the existing name. Table naming conventions are described on page 29.
 - c. If you want a table name longer than 18 characters,
 - 1) Leave the name blank.
 - 2) Press Enter to go directly to the Create Query Manager Table display.
 - 3) Use F20 to bring up the Display Entire Name display.

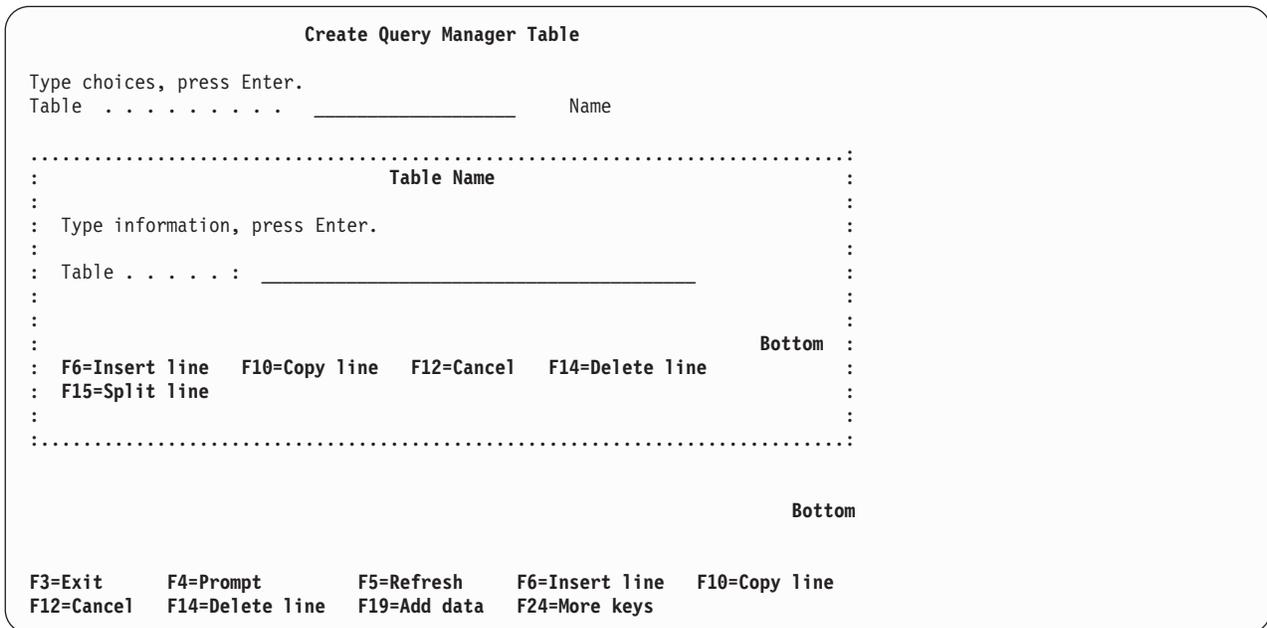


Figure 86. Display Entire Name display

- 4) Type a name.

The name can be up to 128 characters long not including quotes. The maximum length of the name including quotes is 258.

Table naming conventions are described on page 29.

An example of the CREATE QUERY MANAGER TABLE display is shown in Figure 87 on page 150.

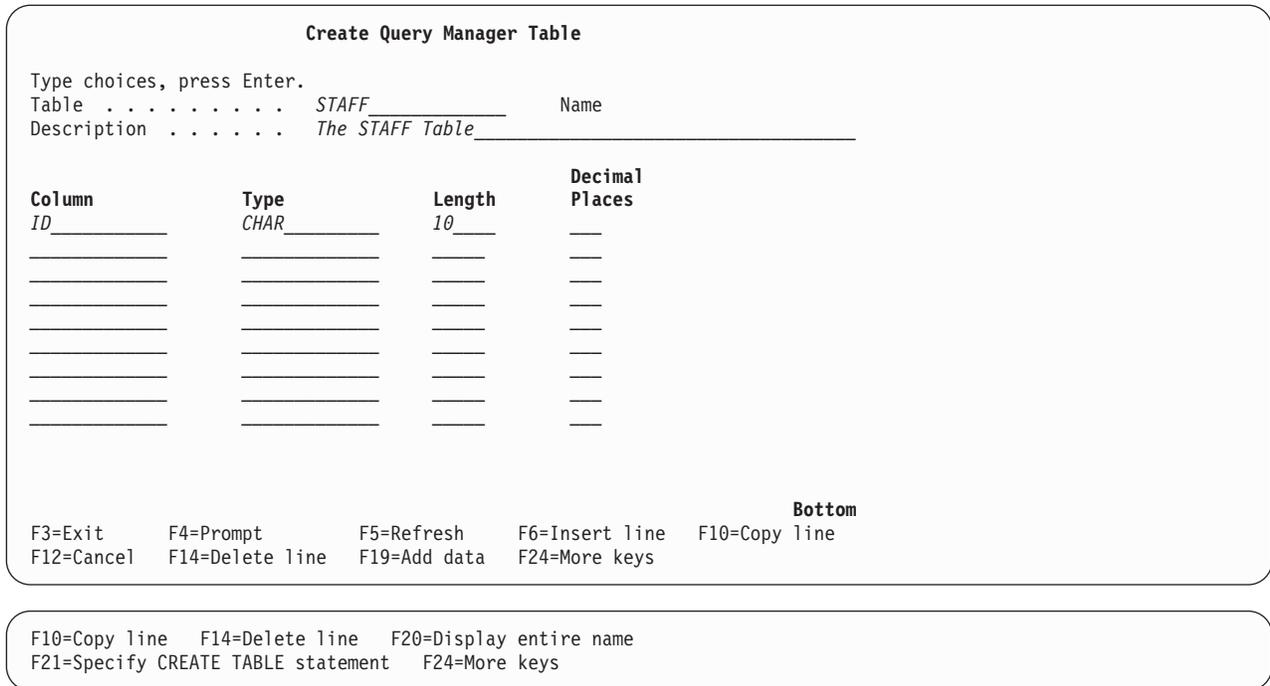


Figure 87. Create Query Manager Table Display

4. Type a description for the table (a maximum of 50 characters); then move the cursor to the first Column prompt to begin defining the table.
5. Define the columns that you want to include in the table. (See page 151 for general information on defining table columns.)

Specify the following information for each of the columns you want to define:

- **Column.** A column name must begin with a letter and can be a maximum of 30 characters in length. The first 18 characters can be entered directly on the Create Query Manager Table display. Additional characters can be entered using the Display entire name display. It cannot include any spaces. The name must be unique within the table being defined; columns in different tables can have the same name.

For more information on how to name columns, see “Column name, field name, and expression name conventions in Query Manager” on page 30.

- **Type.** When the cursor is positioned on the data type prompt, you can press F4 (Prompt) for a list of all available data types from which you can make a selection. The data types that are supported for Query Manager tables are described on page 152.
- **Length.** You need to specify a length for CHARACTER, VARCHAR, GRAPHIC, VARGRAPHIC, DECIMAL, NUMERIC, and FLOAT data types:
 - CHARACTER values can be 1 to 32765 characters in length.
 - VARCHAR values can be 1 to 32739 characters.
 - GRAPHIC values can be 1 to 16383 characters.
 - VARGRAPHIC values can be 1 to 16370 characters.
 - DECIMAL and NUMERIC can be a maximum of 31 digits.
 - FLOAT can be a maximum of 53 digits.

All other data types have set lengths. If you specify a length for a set length data type, Query Manager displays an error message.

- **Decimal Places.** If the data type is NUMERIC or DECIMAL, you need to specify the number of decimal places. Type a number between 0 and the length you specified for the column, remembering that the maximum number of digits for both of these data types is 31.

When you create a table, you can insert, copy, and delete lines using the F6 (Insert line), F10 (Copy line), and F14 (Delete line) function keys. These function keys are described on page 23.

6. When you finish defining all of the table columns, press the Enter key to save the table definition. If you want to exit without saving the definition, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

Query Manager will not save a table that contains column definitions that are not valid. For example, you cannot specify a CHARACTER data type with decimal places. If Query Manager finds any errors when you try to save the table, it highlights the values that are not valid, and shows messages at the bottom of the display telling you how to correct each entry.

When the table is saved, you see a message at the bottom of the display saying, "Table successfully created. Press F19 to add rows." Press F19 (Add data) if you want to begin adding data rows to the newly created table. This function key works in the same way as if you chose 9 (Add data) from the Work with Query Manager Tables display. See page 155 for instructions.

7. When you finish creating (and adding data rows to) the table, press F3 (Exit) or F12 (Cancel) to return to the Work with Query Manager Tables display.

Note: If you create a table with a name that exceeds 10 characters in length or contains special characters, you will see two table names in the Work With Query Manager Tables display once you return to that display after leaving it. One name is the name you gave the table. The other name is a name generated by the system. Both names refer to the same table.

While you are creating a table you can change a column definition or delete an entire column. However, once the table definition is saved, you cannot add, delete, or copy columns, or change the column definitions in any way.

The only way to change the definition of an existing table is to copy it. Choose option 3 (Copy table) from the Work with Query Manager Tables display to create a new table by copying the definition of an existing one. When you copy the table, you can copy, delete, and add columns, and change column definitions in the same way as if you were creating a new table. If you need to change a table definition, see "Copying a table in Query Manager" on page 163 for more information.

The F21=Specify CREATE TABLE statement function key is provided for more sophisticated users who want to specify more detailed information about each column. When F21 is pressed, the interactive SQL Create Table display appears. Additional things the user can specify are:

- Whether a column can contain NULL data
- Whether the user can assign a different CCSID to a particular column

All information that was previously entered on the Query Manager Create Table display is carried over to the Specify Create Table display. Once the user fills in the desired information on the Specify Create Table display and presses <ENTER> the Display SQL display appears. The user sees the exact CREATE TABLE SQL statement that was used to create the table.

If you want to work through practice exercises in which you create and work with a Query Manager table, turn to Appendix A, "Practice exercises for Query Manager."

Defining table columns in Query Manager

The first step in defining a table is to decide what data the table should contain.

In a table, each column of a row is related in some way to all the other columns for that row. Columns of a table identify particular types of information. Each column needs to be of a particular data type, such as CHARACTER, INTEGER, DECIMAL, DATE, or TIME. When you define columns, you are enforcing a set of entry rules to help maintain data integrity.

The rows contain the actual data of the table. The data in a row must conform to the column data types defined for the table. Each row is a sequence of column values that conform to the column data types defined for the table.

Before you can define a table, you need to have some idea of the types of data you want in the table. In the STAFF table, shown below, the NAME column contains CHARACTER data, the ID column contains INTEGER data, and the SALARY column contains DECIMAL data.

Table 11. The STAFF Table

ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
10	Sanders	20	Mgr	7	18357.50	0
20	Pernal	20	Sales	8	18171.25	612.45
30	Marenghi	38	Mgr	5	17506.75	0
40	O'Brien	38	Sales	6	18006.00	846.55
50	Hanes	15	Mgr	10	20659.80	0
60	Quigley	38	Sales	0	16808.30	650.25
70	Rothman	15	Sales	7	16502.83	1152.00
80	James	20	Clerk	0	13504.60	128.20
90	Koonitz	42	Sales	6	18001.75	1386.70
100	Plotz	42	Mgr	7	18352.80	0

When you define a column's data type, length, and number of decimal places, you indicate the kind of data your table can contain for that column, and what operations can be performed using the data. For example, since DECIMAL data can have arithmetic operations performed on it, you could calculate SALARY plus COMM in a report form.

You should also determine the order in which the columns should appear. As a rule, you should consider an order appropriate for the person entering the data. For example, if the information is being entered from employee time sheets, define the table with the columns in the same order as the information appears on the time sheet.

After you have determined the particular types of data the columns in your table should contain and the order in which the columns should appear, you are ready to begin creating the table.

Supported data types in Query Manager

All of the supported data types that you can use when defining Query Manager tables are described in Table 12. Do not specify a length for set length data types.

Table 12. Query Manager Table Data Types

Data Type	Definition
CHARACTER	A CHARACTER or CHAR is a fixed length column that can hold any SBCS or DBCS characters. CHARACTER columns can range from 1 to 32,765 characters in length.
VARCHAR	A VARCHAR is a variable length character column that can hold any SBCS or DBCS characters. VARCHAR columns can range from 1 to 32,739 characters in length.
DECIMAL	A DECIMAL or DEC column holds numeric data that contains a decimal point. There can be a maximum of 31 digits in a DECIMAL column, with 0 to 31 decimal places.
NUMERIC	A NUMERIC or NUM column holds zoned decimal numeric data. There can be a maximum of 31 digits in a NUMERIC column, with 0 to 31 decimal places.
INTEGER	An INTEGER or INT column holds a large positive or negative whole number: from -2,147,483,648 to 2,147,483,647. (Long binary.) INTEGER columns are set length.

Table 12. Query Manager Table Data Types (continued)

Data Type	Definition												
SMALLINT	A SMALLINT or SMALL column holds a small positive or negative whole number: from -32,768 to 32,767. (Short binary.) SMALLINT columns are set length.												
REAL	A REAL column holds single precision short floating-point numeric data (scientific notation). REAL columns have a set length of 23 digits.												
DOUBLE	A DOUBLE column holds double precision long floating-point numeric data (scientific notation). DOUBLE columns have a set length of 53 digits.												
FLOAT	A FLOAT column holds floating-point numeric data (scientific notation). The length you specify determines whether the FLOAT column is a REAL or a DOUBLE data type. A length of 1 to 23 digits indicates a REAL data type; a length of 24 to 53 digits indicates a DOUBLE data type.												
DATE	A DATE column holds a three-part value that denotes year, month, and day in one of the formats shown below. DATE columns are set length. <table style="margin-left: 40px; border: none;"> <tr> <td>ISO</td> <td>yyyy-mm-dd</td> <td>1992-10-12</td> </tr> <tr> <td>USA</td> <td>mm/dd/yyyy</td> <td>10/12/1992</td> </tr> <tr> <td>EUR</td> <td>dd.mm.yyyy</td> <td>12.10.1992</td> </tr> <tr> <td>JIS</td> <td>yyyy-mm-dd</td> <td>1992-10-12</td> </tr> </table>	ISO	yyyy-mm-dd	1992-10-12	USA	mm/dd/yyyy	10/12/1992	EUR	dd.mm.yyyy	12.10.1992	JIS	yyyy-mm-dd	1992-10-12
ISO	yyyy-mm-dd	1992-10-12											
USA	mm/dd/yyyy	10/12/1992											
EUR	dd.mm.yyyy	12.10.1992											
JIS	yyyy-mm-dd	1992-10-12											
TIME	A TIME column holds a three-part value that denotes hour, minute, and second in one of the formats shown below. TIME columns are set length. <table style="margin-left: 40px; border: none;"> <tr> <td>ISO</td> <td>hh.mm.ss</td> <td>13.30.05</td> </tr> <tr> <td>USA</td> <td>hh:mm AM/PM</td> <td>5:30 PM</td> </tr> <tr> <td>EUR</td> <td>hh.mm.ss</td> <td>13.30.05</td> </tr> <tr> <td>JIS</td> <td>hh:mm:ss</td> <td>13:30:05</td> </tr> </table>	ISO	hh.mm.ss	13.30.05	USA	hh:mm AM/PM	5:30 PM	EUR	hh.mm.ss	13.30.05	JIS	hh:mm:ss	13:30:05
ISO	hh.mm.ss	13.30.05											
USA	hh:mm AM/PM	5:30 PM											
EUR	hh.mm.ss	13.30.05											
JIS	hh:mm:ss	13:30:05											
TIMESTAMP	A TIMESTAMP column holds the system date and time as a seven-part value that denotes year, month, day, hour, minute, second, and microsecond entered in the format shown below. TIMESTAMP columns are set length. yyyy-mm-dd-hh.mm.ss.nnnnnn 1992-10-12-13.30.05.123456												
GRAPHIC	A GRAPHIC is a fixed length column that holds double-byte character set (DBCS) data. GRAPHIC values cannot be operated on arithmetically. GRAPHIC columns can range from 1 to 16,383 characters in length. (Length specifications are given in characters, not bytes.)												
VARGRAPHIC	A VARGRAPHIC is a variable length graphic column that holds double-byte character set (DBCS) data. VARGRAPHIC values cannot be operated on arithmetically. VARGRAPHIC columns can range from 1 to 16,370 characters in length. (Length specifications are given in characters, not bytes.)												
BIGINT	A big integer is a binary number composed of 8 bytes (64 bits) with a precision of 19 digits. The range of big integers is -9223372036854775808 to +9223372036854775807.												
BLOB	A Binary Large Object (BLOB) is a varying-length string with a maximum length of 2 147 483 647. A BLOB is designed to store non-traditional data such as pictures, voice, and mixed media. BLOBs can also store structured data for use by distinct types and user-defined functions. A BLOB is considered to be a binary string. Although BLOB strings and FOR BIT DATA character strings might be used for similar purposes, the two data types are not compatible. The BLOB function can be used to change a FOR BIT DATA character string into a binary string. The CCSID of a BLOB is 65535.												
CLOB	A Character Large Object (CLOB) is a varying-length character string with a maximum length of 2 147 483 647. A CLOB is designed to store large SBCS data or mixed data, such as lengthy documents. For example, you can store information such as an employee resume, the script of a play, or the text of novel in a CLOB. The CCSID of a CLOB cannot be 65535.												
DATALINK	A DATALINK value is an encapsulated value with a set of built-in scalar functions. The maximum length must be in the range of 1 through 32717.												
DBCLOB	A Double-Byte Character Large Object (DBCLOB) is a varying-length graphic string with a maximum length of 1 073 741 823 double-byte characters. A DBCLOB is designed to store large DBCS data, such as lengthy documents in UCS-2. The CCSID of a DBCLOB cannot be 65535.												

Table 12. Query Manager Table Data Types (continued)

Data Type	Definition
ROWID	A row ID is a value that uniquely identifies a row in a table. A column or a host variable can have a row ID data type. A ROWID column enables queries to be written that navigate directly to a row in the table. Each value in a ROWID column must be unique. Database manager maintains the values permanently, even across table reorganizations. When a row is inserted into the table, database manager generates a value for the ROWID column unless one is supplied. If a value is supplied, it must be a valid row ID value that was previously generated by either DB2 for z/OS® or DB2 for i5/OS. The internal representation of a row ID value is transparent to the user. The value is never subject to CCSID conversion because it is considered to contain BIT data. The length attribute of a ROWID column is 40.

The difference between DECIMAL and NUMERIC in Query Manager

You enter number values for the DECIMAL and NUMERIC data types in exactly the same format. The only difference between these two data types is the way in which the values are stored by the i5/OS operating system. If you are going to perform arithmetic operations with a number, it is more efficient to define it as DECIMAL; if a number is going to be used mostly for display purposes, it is more efficient to define it as NUMERIC.

The difference between CHARACTER and VARCHAR in Query Manager

You enter values for the CHARACTER and VARCHAR data types in exactly the same format. The only difference between these two data types is the way in which the values are stored by the i5/OS operating system. If you define a CHARACTER column with a length of 20, Query Manager stores the column value with a fixed length of 20 characters. If you define a VARCHAR column with a maximum length of 20, Query Manager checks to see what the actual length of the column value is. Any trailing blanks are stripped from the value before it is stored so that a value that is only 5 characters in length takes only 5 characters of storage space instead of 20.

Note that a VARCHAR value containing no characters (an implied length of zero), does not have a NULL value.

Default values for data types in Query Manager

When you add data rows to a Query Manager table, if you leave any column values unfilled, Query Manager inserts default values for the empty columns. CHARACTER, VARCHAR, GRAPHIC, and VARGRAPHIC columns have blanks inserted as their default values. DATE, TIME, and TIMESTAMP columns have the current date and/or time inserted as their default values. The remaining data types, which all hold number values, have zeros inserted as their default values.

Default values are also used when you copy a Query Manager table. If you choose to copy data and you change the table definition by adding new columns, Query Manager inserts the default values into the newly created columns of the copied data rows.

NULL values in Query Manager

A null value is a value that is not known. This differs from a blank value which actually contains a blank character or space. The tables that you create through the Work with Query Manager Tables display do not contain null values as default, but you can enter null values by typing the word NULL (in uppercase) as a column value. Tables that were created outside Query Manager that you access through the Work with Query Manager Tables display can also contain null values.

Query Manager indicates a null value by the word NULL. If you want to change the value of a column to a null value, type the word NULL over the existing column value. This ensures that the column

contains nothing, rather than a blank character or space. You can also search for rows that contain null values by typing NULL as the value for which you want to search. When a null value is printed or displayed on a report, it is shown as a hyphen (-).

Adding data to a table in Query Manager

You can add data rows to a table in two ways: either by selecting option 9 (Add data) from the Work with Query Manager Tables display, or by pressing F19 (Add data) immediately after you create or copy a Query Manager table.

1. Type 3 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a “Default collection for QM tables” specified in your Query Manager profile, you are prompted to specify the name of the collection you want to use (see page 148).
2. Type 9 in the Opt prompt next to the names of the tables to which you want to add data rows; then press the Enter key to show the Add Data to Query Manager Table display for the first table you specified. Add Data displays for the remaining tables are shown in the same order as the table names appear in the “Work with” display list. An example of the Add Data display is shown in Figure 88.

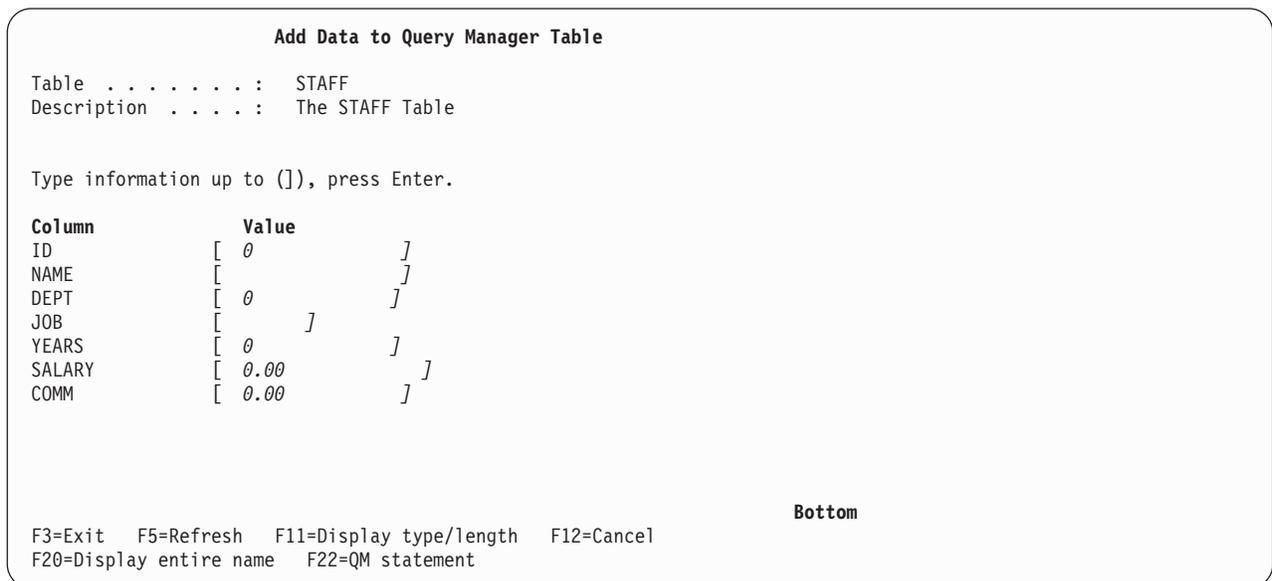


Figure 88. Add Data to Query Manager Table Display

3. Type the values that make up the row. The square brackets [] on the entry lines show you the maximum length defined for each column. If the prompt for a column is more than one line in length, Query Manager automatically line wraps for you, and moves the cursor from the end of entry line 1 to the beginning of entry line 2, allowing you to continue data entry.

If you want to enter a null value for a column, type the word NULL in uppercase. Null values are described on page 154.

When you finish entering the value for one column, press the Field Exit key or Tab key to move the cursor to the prompt for the next column. Do not press the Enter key until you have finished entering all values for the row. Pressing the Enter key saves whatever is currently shown on the display. If you save an incomplete row, you can use option 10 (Change data) to correct it. See page 157 for instructions.

If you are unsure what values you can enter for a particular column, you can press F11 (Display type/length) to view the table definition. See “Viewing display type/length information in Query Manager” on page 157 for instructions.

4. Press the Enter key when you finish typing the row data. This saves the row, and shows an empty data entry display ready for you to enter the next row.
If you made any mistakes typing the row data, (for example, if you enter letters in a number prompt), Query Manager highlights the errors, and shows messages at the bottom of the display telling you how to correct each entry. You cannot save a row that contains information that is not valid. Correct your errors; then press the Enter key again.
5. Press F3 (Exit) or F12 (Cancel) when you want to leave the Add Data to Query Manager Table display and return to the Work with Query Manager Tables display.

Adding DBCS data to a table in Query Manager

The double-byte character set (DBCS) is a set of characters in which each character is represented by two bytes. Languages such as Japanese, Chinese, and Korean, which contain more symbols than can be represented by 256 code points, require double-byte character sets. Because each character requires two bytes, the typing, displaying, and printing of DBCS characters requires hardware and programs that support DBCS.

You can enter DBCS characters for Query Manager table values for a column defined with a GRAPHIC, VARGRAPHIC, CHARACTER, or VARCHAR data type.

Each DBCS value needs to be enclosed between shift-out (SO) and shift-in (SI) characters. When you are using a DBCS-capable keyboard, Query Manager automatically places the SO/SI characters in GRAPHIC and VARGRAPHIC input fields, which forces you to enter only DBCS characters. If you accidentally delete one or both of the SO/SI characters, Query Manager displays an error message telling you that the value is not a valid DBCS string. Press F5 (Refresh) to restore the previous values for the display; then re-enter the DBCS value.

If you enter a value that is longer than the maximum length defined for the column, Query Manager truncates it, and discards the excess characters and blank spaces to the right of the value. If the prompt for a DBCS value is more than one line in length, Query Manager will concatenate the DBCS strings that you enter as long as the first character on each line is a shift-out character.

DBCS values need to be entered in insert mode. When you are in insert mode, every time you type a character, the square bracket that indicates the maximum length for the column moves one character space to the right. You might need to delete the blank spaces between the shift-in character and the square bracket before you can enter your column value.

If you are using a keyboard that is not DBCS-capable, you can enter non-DBCS characters for a GRAPHIC or VARGRAPHIC data type. You must enter an even number of characters between the shift-out and shift-in characters. The non-DBCS characters are valid on a non-DBCS-capable display, but they may not be valid DBCS characters.

Note: When you create a table using a display station that is DBCS-capable, all columns defined with CHARACTER and VARCHAR data types are “DBCS-open”, which means that they accept both SBCS and DBCS characters.

Query Manager automatically places the SO/SI characters in input fields on the Add Data to Query Manager Table and Change Data in Query Manager Table displays for GRAPHIC and VARGRAPHIC data types. If you want to enter a DBCS string on the Find Data in Query Manager Table display, or on any of the Select Report Format or Define Prompted Query displays, you need to enter the SO/SI characters yourself.

Viewing display type/length information in Query Manager

If you want to view the definition of a table to see what the data types, lengths, and number of decimal places are for the different columns, press F11 (Display type/length). The table definition is displayed in a format similar to the Create Query Manager Table display.

This table definition is shown in display-only format. You cannot change any of the information shown in the display. If you want to change the table definition, you need to copy the table (see page 163).

When you finish viewing the table definition, press F11 (Display value) to return to the data entry display. An example of the F11 (Display type/length) display is shown in Figure 89.

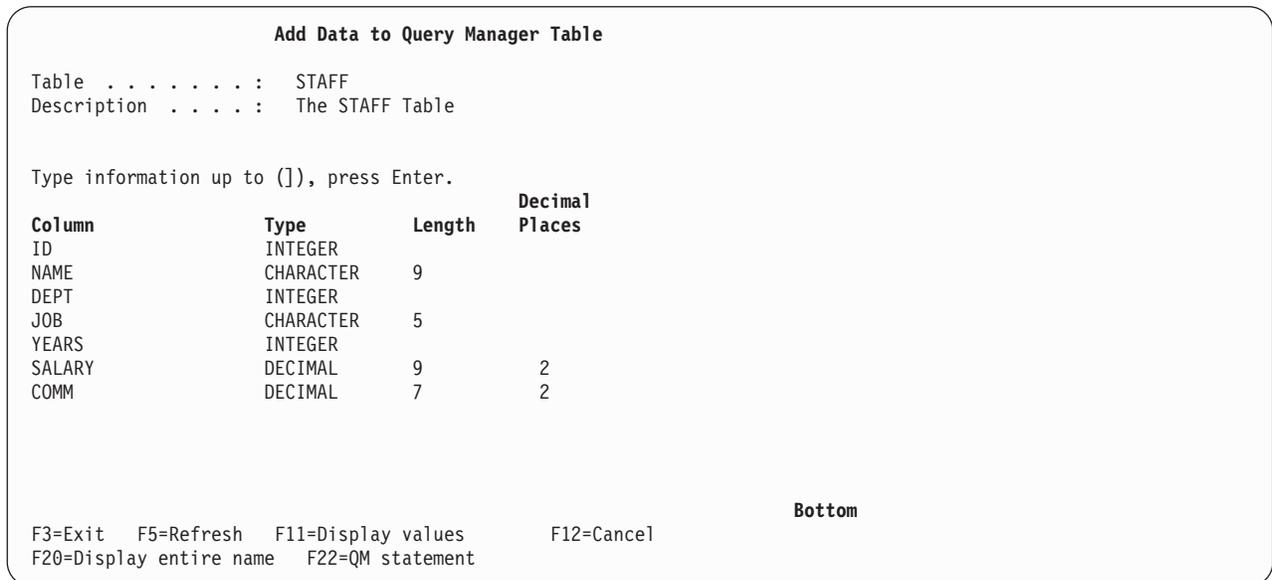


Figure 89. Display Type/Length Information Display

Changing data in a table in Query Manager

You can use the Change Data option to change the contents of individual rows in a table and to delete rows no longer required.

1. Type 3 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a "Default collection for QM tables" specified in your Query Manager profile, you are prompted to specify the name of the collection you want to use (see page 148).
2. Type 10 in the Opt prompt next to the names of the tables that contain the row data you want to change or delete; then press the Enter key to go to the Change Data option. The Find Data in Query Manager Table display is shown for the first table you specified. Find Data displays for the remaining tables are shown in the same order as the table names appear in the "Work with" display list.

An example of the Find Data display is shown in Figure 90 on page 158.

3. Specify search conditions to select the rows you want to change; then press the Enter key. If you want to change all rows, press the Enter key without specifying any search conditions. Specifying search conditions is described on page 158.

Query Manager performs a search using the conditions you specified; then shows the first row it found in a Change Data in Query Manager Table display. An example of the Change Data display is shown in Figure 92 on page 161.

4. Type new row values over the existing values that you want to change; then press the Enter key to save your changes. Press F3 (Exit) or F12 (Cancel) to leave the display without saving the changes you made. See page 160 for instructions.

5. Press F15 (Next data row) to display the next row in the currently selected set of rows, or F14 (Previous data row) to display the previous row. Press F16 (Find data) if you want to return to the Find Data display, and alter the existing search conditions to find a new set of rows. See page 161 for information on the Change Data display function keys.
6. Press F3 (Exit) or F12 (Cancel) when you want to leave the Change Data display and return to the Work with Query Manager Tables display. When you exit from the Change option, Query Manager discards all of the search conditions you specified.

Searching for rows in Query Manager

Before you can change data, you need to tell Query Manager which rows you want to change. You do this by defining search conditions for the different columns. For example:

- If you want to select the manager for department 10, tell Query Manager to search for all rows where DEPT equals 10 and JOB equals Mgr.
- If you want to select all sales staff who have been with the company for more than 6 years, tell Query Manager to search for all rows where JOB equals Sales and YEARS is greater than 6.

You use the search option not only to find data rows to change, but also to find data rows to use with the following Work with Query Manager Tables options:

- 5=Display table
- 6=Print table
- 11=Display data

Specifying search conditions in Query Manager

The first display you see after choosing to Change Data, is the Find Data in Query Manager Table display. You use this display to define your search conditions. An example of the Find Data display is shown in Figure 90.

Find Data in Query Manager Table

Table : STAFF
 Description : The STAFF Table

Type search conditions, press Enter.
 No conditions entered will find all data.

AND,OR, (,)	Column	Test	Value
(_____	___	_____
___	_____	___	_____
___	_____	___	_____
___	_____	___	_____
___	_____	___	_____
___	_____	___	_____
___	_____	___	_____
)	_____	___	_____

Bottom

F3=Exit F4=Prompt F6=Insert line F10=Copy line F12=Cancel
 F14=Delete line F20=Display entire name F22=QM Statement

Figure 90. Find Data in Query Manager Table Display

You can specify search conditions for all of the columns in the currently selected table. To create a search condition, you need to enter the following information:

- **AND, OR, (,)**. All searches need to start with an opening parenthesis '(' and end with a closing parenthesis ')'. You can also use parentheses to group search conditions. Use AND or OR to join search conditions and groups of conditions. You can press F4 (Prompt) while the cursor is positioned on the AND, OR, (,) prompt, to display a description of these values.

Use AND if two or more conditions or groups of conditions need to be true. For example, to select all employees whose salaries range between \$16,000 and \$18,000, you would search for SALARY greater than 16000 “AND” SALARY less than 18000.

Use OR if only one of the conditions needs to be true. For example, to select all clerks and all sales staff, you would search for JOB equals Sales “OR” JOB equals Clerk.

- **Column.** Type the name of the column on which you want the search condition performed. If you are unsure of the column names for this table, press F4 (Prompt) while the cursor is positioned on this prompt, to display a list. Type 1 in the Opt prompt next to the name of the column you want to choose; then press the Enter key.
- **Test.** You can press F4 (Prompt) while the cursor is positioned on this prompt, to display a list of all available test conditions, from which you can make a selection. The conditions that are supported for Query Manager tables are shown in Table 13.

Table 13. Search Conditions

Cond	Description
EQ	Equal to (Exact match)
NE	Not Equal to
GT	Greater Than
GE	Greater Than or Equal to
LT	Less Than
LE	Less Than or Equal to

- **Value.** Type the value that you want Query Manager to compare against the row data from the specified “Column”. Make sure the value you enter is compatible with the column’s data type and length. If the value you want to enter is longer than the prompt shown on the display, press F4 (Prompt) while the cursor is positioned on this prompt, to display an extended entry window through which you can type the value.

If you are performing the search on number data, you can enter a number, an expression, or the name of another column that contains number data.

If you are performing the search on a character value, you can enter a character string, or the name of another column that contains character data. Enclose column names in double quotation marks, but do not enclose character strings in quotation marks. When you enter a character string, Query Manager searches for the value exactly as you type it, recognizing uppercase and lowercase letters.

If you are performing the search on a graphic value, you can enter a graphic string, a character string, or the name of another column that contains graphic data. Enclose column names in double quotation marks, and character strings in shift-out (SO) and shift-in (SI) characters. You can enter either SBCS or DBCS strings as graphic values. When you enter SBCS strings, the characters should be uppercase letters only, and remember that each character needs to be two bytes in length. When you enter a graphic string, it needs to begin with the letter G (to identify the string as graphic) and be enclosed in single quotation marks and DBCS SO/SI characters. The following example uses < and > to indicate the SO/SI characters: G'<A B C D E >'. For more information on graphic strings, turn to “Adding DBCS data to a table in Query Manager” on page 156.

You can search for null values in number, character, and graphic columns. To search for a null value, type the word NULL (in uppercase) as the search value. Null values are described on page 154.

The Find Data in Query Manager Table display provides nine lines on which you can define your search conditions. You can use F6 (Insert line), F10 (Copy line), and F14 (Delete line) to increase or decrease the number of lines, and otherwise edit the search conditions as you create them. These function keys are described on page 23.

When you finish defining the search conditions, press the Enter key to begin the search.

Note: If you press the Enter key without having defined any search conditions, Query Manager selects all rows in the table.

Figure 91 shows the search conditions you would enter to find all employees who work in either DEPT 20 or DEPT 42.

Find Data in Query Manager Table

Table : STAFF
 Description : The STAFF Table

Type search conditions, press Enter.
 No conditions entered will find all data.

AND,OR, (,)	Column	Test	Value
(DEPT_____	EQ	20_____
OR_	DEPT_____	EQ	42_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
)	_____	_____	_____

Bottom

F3=Exit F4=Prompt F6=Insert line F10=Copy line F12=Cancel
 F14=Delete line F20=Display entire name F22=QM Statement

Figure 91. Example Search Condition

If you made any errors defining the search conditions, Query Manager highlights the errors, and shows error messages at the bottom of the display telling you how to correct each entry. Correct any errors; then press the Enter key again to perform the search.

If no rows are found in Query Manager

If the search is unsuccessful and no data rows are found, Query Manager shows an error message at the bottom of the Find Data display, and prompts you to enter new search conditions.

Type the new conditions, or press F3 (Exit) or F12 (Cancel) to leave the Find Data display and return to the Work with Query Manager Tables display.

Note: The error message is displayed only if you are searching for rows through the Change Data, Display Data, or Print Table options. If a search finds no rows when you are using the Display Table option, Query Manager shows a blank display report instead of an error message.

Changing the data in Query Manager

When Query Manager completes the search, it shows a Change Data in Query Manager Table display containing the first data row found that matched the search conditions. The Change Data display is similar in appearance to the Add Data display, and the same data entry rules apply. See page 155 for data entry instructions.

An example of the Change Data display is shown in Figure 92 on page 161.

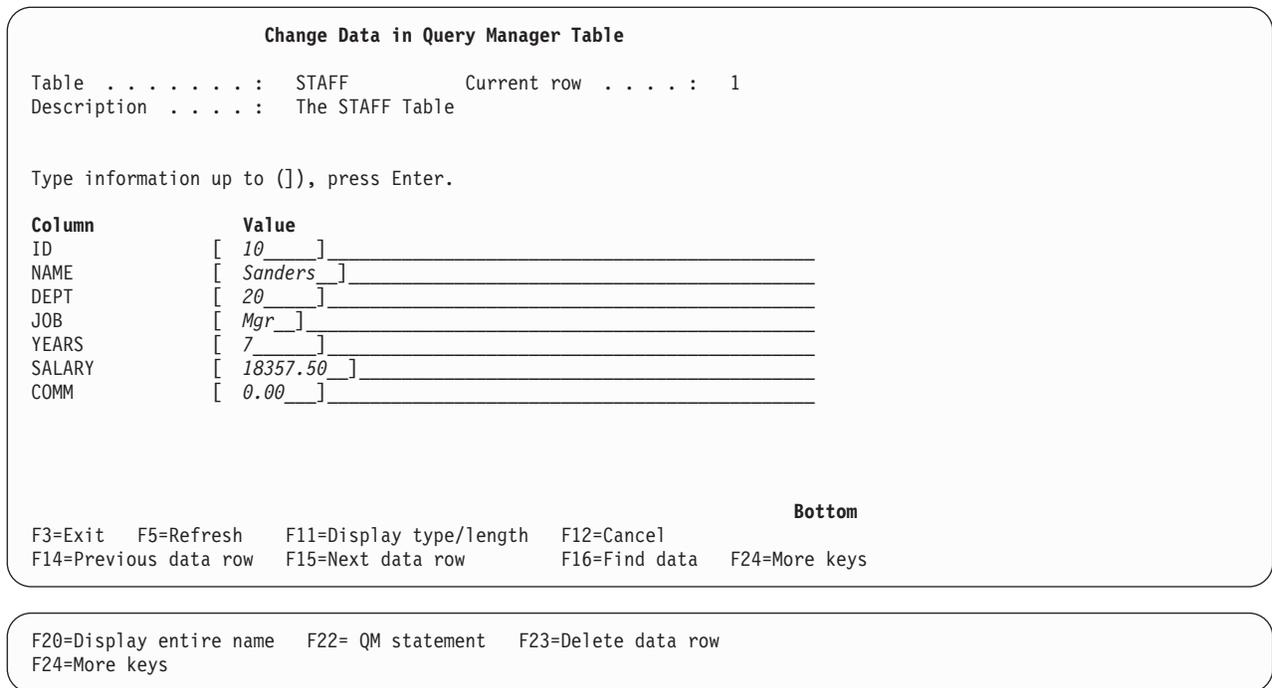


Figure 92. Change Data in Query Manager Table Display

Move the cursor to the value you want to change and type a new value over the existing one. When you complete changing all values in the currently displayed row, press the Enter key to save your changes.

If you made any mistakes entering the row data, Query Manager highlights the errors, and shows messages at the bottom of the display telling you how to correct each entry. You cannot save a row that contains information that is not valid. Correct your errors; then press the Enter key again.

If one of the displayed prompts contains a value of NULL, that column contains no information. If you want to change a column to have a null value, type the word NULL (in uppercase) as the prompt value. For more information on null values, see page 154.

Using the change data display function keys in Query Manager

You can use F14 (Previous data row) and F15 (Next data row) to display the previous and following rows that were selected as a result of the search. F23 (Delete data row) deletes the currently displayed row, and F16 (Find data) displays the Find Data in Query Manager Table display, through which you can alter the existing search conditions. These function keys are described below. The other function keys that are used throughout Query Manager are described on page 23.

- F11 Display type/length.** Changes the display so you can view the table definition, and see what the data types, lengths, and number of decimal places are for the different columns. When you complete viewing the definition, press F11 (Display values) to return to the Change Data display.
- F14 Previous data row.** Displays the data row immediately prior to the currently displayed row (from within the set of selected rows).
- F15 Next data row.** Displays the data row immediately following the currently displayed row (from within the set of selected rows).
- F16 Find data.** Displays the Find Data in Query Manager Table display, through which you can alter the existing search conditions. The Find Data display holds all of the settings for the current search.

If you want to discard the existing conditions and create a new search, you can either:

- Blank out the existing conditions on the Find Data display.

- Press F3 (Exit) or F12 (Cancel) to return to the Work with Query Manager Tables display. When you exit from the Change Data option, Query Manager discards all of the search conditions you specified. If you now choose the Change Data option, you can define new search conditions.

F20 Display entire name. Brings up a window that displays the entire name of a column if only part of the name appears on the display.

F23 Delete data row. Deletes the currently displayed data row. You need to respond to a confirm message before the delete occurs. Press F23 a second time to perform the delete.

Note: If you make changes to a data row, the only way you can save those changes is by pressing the Enter key. If you press F14 (Previous data row) or F15 (Next data row) before pressing the Enter key, any changes you made to the row are discarded.

Displaying data in a table in Query Manager

You can view selected table rows one at a time in a format similar to the Add Data display. The information is shown in display-only format. You cannot change any values through this option.

1. Type 3 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a “Default collection for QM tables” specified in your Query Manager profile, you are prompted to specify the name of the collection you want to use (see page 148).
2. Type 11 in the Opt prompt next to the names of the tables that contain the row data you want to display; then press the Enter key to go to the Display Data option. The Find Data in Query Manager Table display is shown for the first table you specified. Find Data displays for the remaining tables are shown in the same order as the table names appear in the “Work with” display list.
3. Specify search conditions to select the rows you want to display; then press the Enter key. See “Searching for rows in Query Manager” on page 158 for instructions. If you want to display all rows, press the Enter key without specifying any search conditions.

Query Manager performs a search using the conditions you specified; then shows the first data row it found in a Display Data in Query Manager Table display. If no rows are found as a result of the search, you see a message telling you that no rows were found, and asking if you want to redefine the search conditions.

An example of the Display Data display is shown in Figure 93 on page 163.

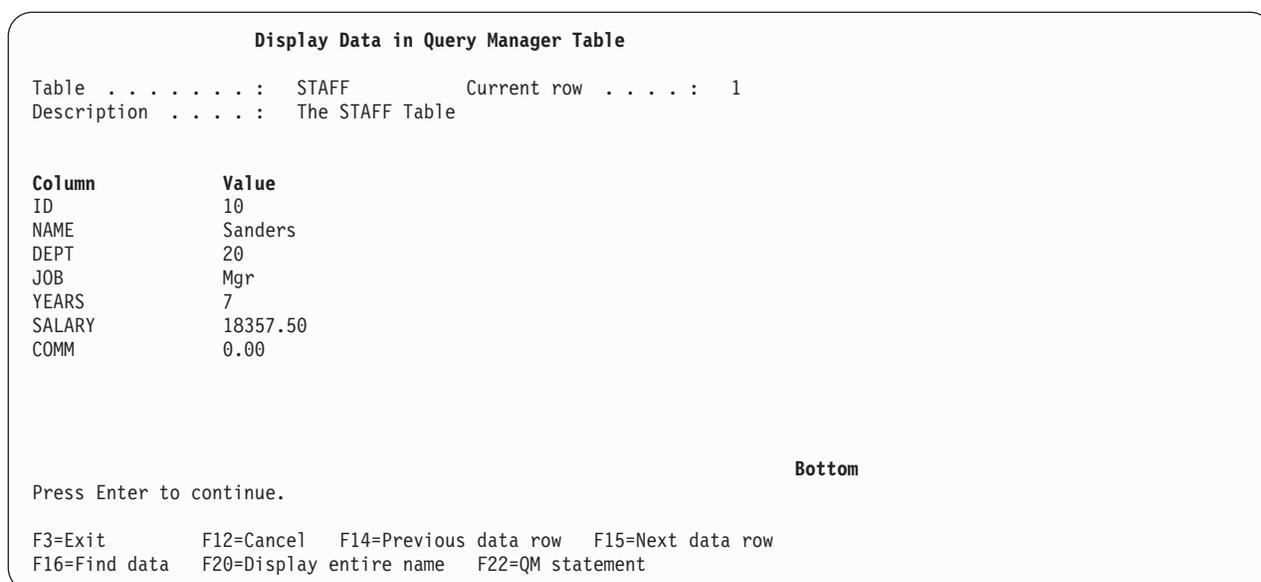


Figure 93. Display Data in Query Manager Table Display

- When you finish viewing a row, you can press F14 (Previous data row) or F15 (Next data row) to view the rows immediately before or immediately after the currently displayed row (from within the set of selected rows). Pressing F16 (Find data) returns you to the Find Data display, through which you can alter the existing search conditions.

If you want to define new search conditions rather than altering the existing conditions, you can either:

- Blank out the existing conditions on the Find Data display.
 - Press F3 (Exit) or F12 (Cancel) to return to the Work with Query Manager Tables display. When you exit from the Display Data option, Query Manager discards all of the search conditions you specified. If you now choose the Display Data option, you can define new search conditions.
- Press F3 (Exit) or F12 (Cancel) when you want to leave the Display Data display and return to the Work with Query Manager Tables display.

Copying a table in Query Manager

When you copy a Query Manager table, you can create a new table, or replace an existing one. The copied table can be an exact copy of the original table's definition, or you can make modifications to the definition before the copy occurs. You can also choose to copy the table definition only, or to copy the definition and the table data.

Copying is the only way that you can change the definition of a Query Manager table. There is no Change Table Definition option available through the Work with Query Manager Tables display.

Note: If you have a *BASIC* access level, you need to have *CHANGE authority for the current collection to copy a table through Query Manager.

- Type 3 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a "Default collection for QM tables" specified in your Query Manager profile, you are prompted to specify the name of the collection you want to use (see page 148).
- Type 3 in the Opt prompt next to the names of the tables you want to copy; then press the Enter key to go to the Copy Query Manager Table display. This display lists the names of all of the tables you specified. An example of the Copy Table display is shown in Figure 94 on page 164.

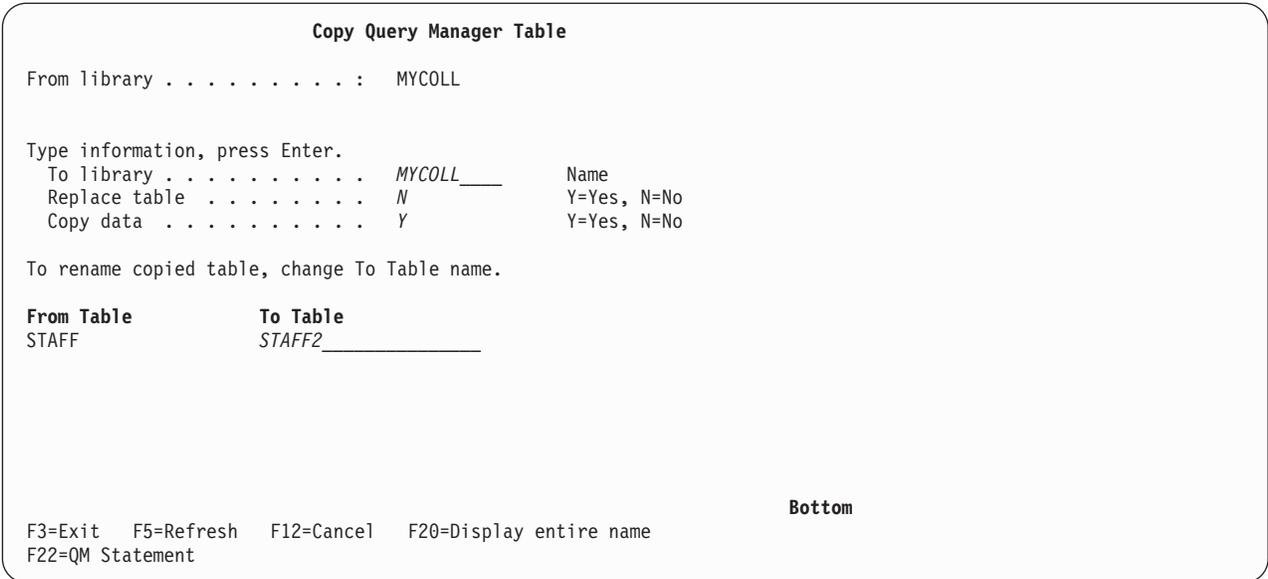


Figure 94. Copy Query Manager Table Display

3. Before you can copy a table, you need to specify the following information. If you choose to copy more than one table, all tables are copied using the same settings.
 - **To collection.** If you have an *ALL* access level, you can type the name of the collection to which you want the table copied. You need to have *CHANGE authority for the collection to which you are copying.
 - **Replace table.** Type Y if you want to replace an existing table, or N if you want to create a new table. The default is N.
 - **Copy data.** Type Y if you want to copy the data rows the table contains, or N if you want to copy the table definition only. The default is N.
4. Type the name of the table you want to create or replace in response to the “To Table” prompt. If you answered N to the “Replace table” prompt, the name you type cannot already exist in the specified collection.
 Table naming conventions are described on page 29.
5. Press the Enter key to show the Create Query Manager Table display showing the definition of the first table you specified. Create Table displays for the remaining tables are shown in the same order as the table names appear in the “Work with” display list. An example of the Create Table display is shown in Figure 95 on page 165.

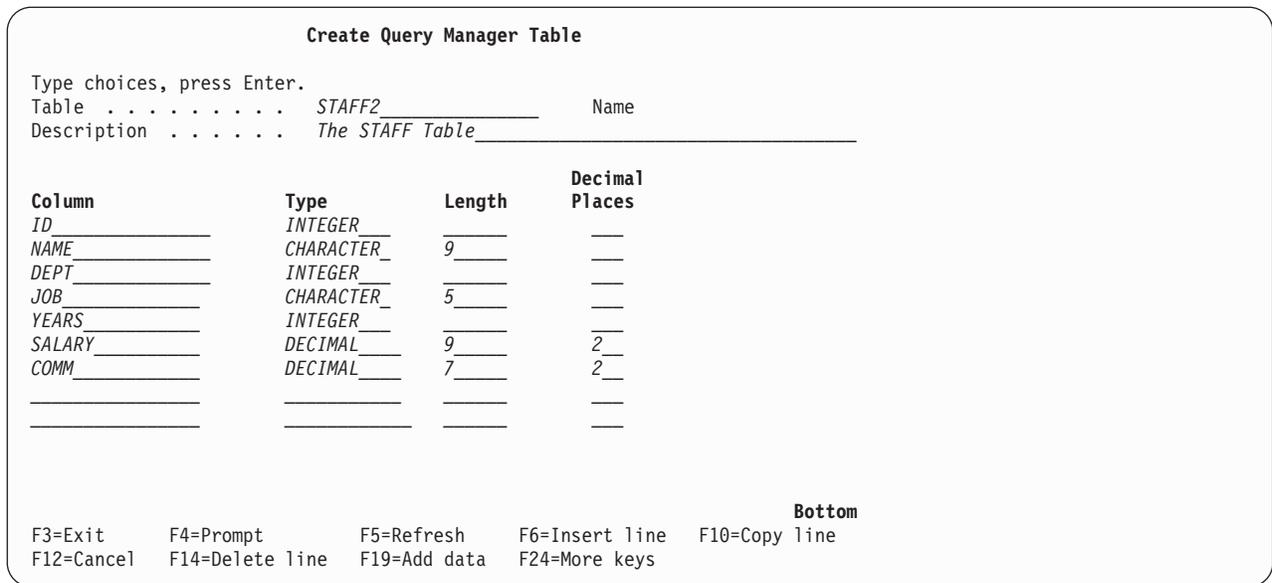


Figure 95. Create Copied Table Display

6. You can change the table definition while the message “Press Enter to create the copied table and copy the data.” is displayed. When you copy an existing table, you effectively create a new one. You can now change the definition of the table the same way you would if you were using option 1 (Create table) from the Work with Query Manager Tables display. See page 149 for instructions on how to use the Create Table display and its function keys.

If you copied table data in addition to copying the definition, you should be careful not to make major changes to the table definition. Query Manager does its best to fit the data into the newly defined columns using the following guidelines:

- Data is copied when a column in the new table has the same name as a column in the old table, as long as the columns have compatible data types. You can change the length of the column and its position within the definition, but you cannot change its name or give it an incompatible data type.
 - CHARACTER and VARCHAR are compatible. If the columns hold only DBCS characters, or an even number of SBCS characters, they can also be copied to GRAPHIC and VARGRAPHIC columns.
 - GRAPHIC and VARGRAPHIC are compatible. These columns can also be copied to CHARACTER and VARCHAR columns.
 - NUMERIC and DECIMAL are compatible.
 - INTEGER and SMALLINT are compatible.
 - REAL, DOUBLE, and FLOAT are compatible.
- When you decrease the length of a character column, any column values that are longer than the new length are truncated on the right.
- When you change the length of a number column, if a significant number of digits needs to be truncated because a shorter length is specified, the column is set to the default value of zero. If the length or number of decimal places is increased, zeros are added before or after the number.
- The new columns you create are filled with default values depending on their data types (for example, blanks for characters and zeros for numbers).
- Query Manager discards the data from the columns that existed in the old table but do not exist in the new one.

7. Press the Enter key when you are ready to complete the copy and save the table definition. You cannot save a table that contains column definitions that are not valid. If Query Manager finds any errors when you try to save the table, it highlights the values that are not valid one at a time, and shows messages at the bottom of the display telling you how to correct each entry.

If you want to leave the Create Table display without saving your newly copied table definition, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

When the table has been successfully saved, you see a message at the bottom of the display telling you that the table has been copied. You can now press F19 (Add data) if you want to add row data to the newly copied table. See “Adding data to a table in Query Manager” on page 155 for data entry instructions.

8. Press F3 (Exit) or F12 (Cancel) when you want to leave the Create Table display and return to the Work with Query Manager Tables display.

Deleting a table in Query Manager

When you choose to delete the definition and data of a Query Manager table, Query Manager shows a confirm display. No tables are deleted until you respond to this display.

1. Type 3 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a “Default collection for QM tables” specified in your Query Manager profile, you are prompted to specify the name of the collection you want to use (see page 148).
2. Type 4 in the Opt prompt next to the names of the tables that you want to delete; then press the Enter key to go to the Confirm Delete of Table display. This display lists the names of all of the tables you selected to delete. When you delete a table that is represented by two names, both table names are deleted. There are two table names anytime you name a table:
 - A name longer than 10 characters
 - A name that contains characters not valid in a system name

For more information on how tables are named, see “Rules for table name generation in Query Manager” on page 20. An example of the Confirm Delete display is shown in Figure 96.

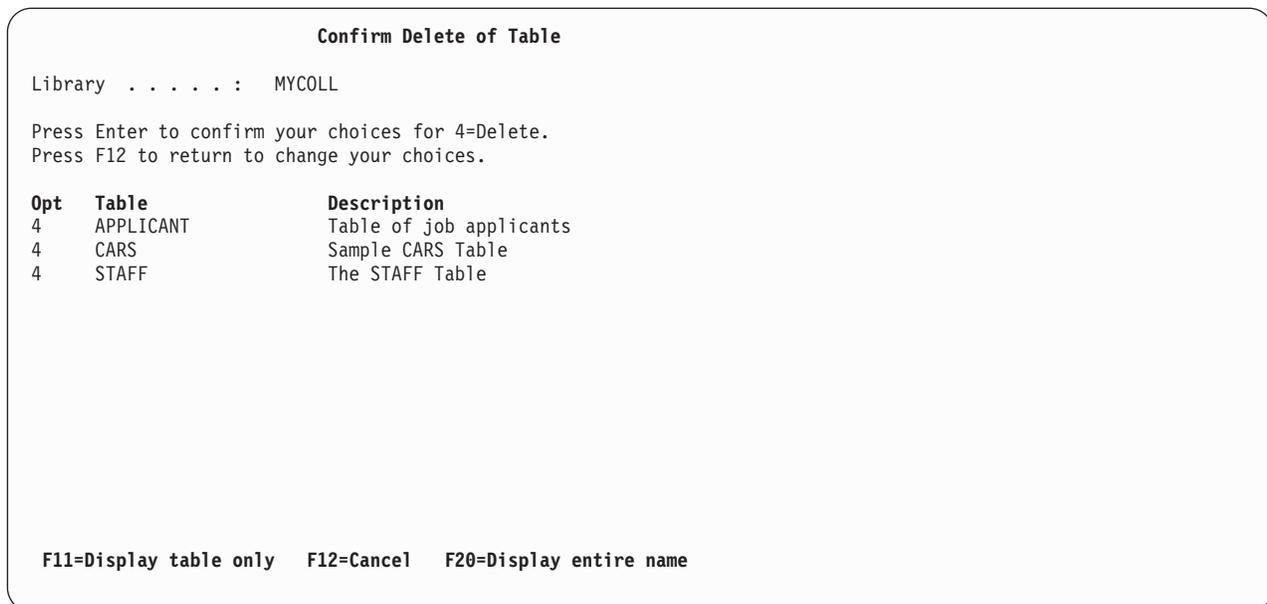


Figure 96. Confirm Delete of Table Display

When you choose to delete more than one table, you may want to press F11 (Display table only) to hide the table descriptions and show multiple columns of table names on the display.

3. Press the Enter key to confirm the delete and return to the Work with Query Manager Tables display. Note that when you press the Enter key, you delete all of the tables shown on the display. If you want to leave the Confirm Delete display without deleting any tables, press F12 (Cancel) instead of the Enter key.

Displaying a table in Query Manager

You can view selected rows of data from a table in a Display Report. Use this option to view table reports prior to printing.

Note: If the “Run query mode” setting in your Query Manager profile is batch, you cannot use your display for output, so this option is not available through the Work with Query Manager Tables display. See “Run query mode in Query Manager” on page 35 for more information.

1. Type 3 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a “Default collection for QM tables” specified in your Query Manager profile, you are prompted to specify the name of the collection you want to use (see page 148).
2. Type 5 in the Opt prompt next to the names of the tables that contain the rows you want to display; then press the Enter key to go to the Display Table option. The Find Data in Query Manager Table display is shown for the first table you specified. Find Data displays for the remaining tables are shown in the same order as the table names appear in the “Work with” display list.
3. Specify search conditions to select the rows you want to display; then press the Enter key. If you want to display all rows, press the Enter key without specifying any search conditions. See “Searching for rows in Query Manager” on page 158 for instructions.

Query Manager performs a search using the conditions you specified; then displays all of the rows it selected in a Display Report. When you see More... in the lower right-hand corner of the display, it means that the report is more than one display in length. Use the display station’s roll keys to view the entire report.

An example of the Display Report display is shown in Figure 97 on page 168.

If no rows are displayed, it means that the search was unsuccessful and found no rows. Press F3 (Exit) or F12 (Cancel) to leave the Display Report display and return to the Work with Query Manager Tables display. You can then choose the Display Table option again if you want to define new search conditions.

4. Press F3 (Exit) or F12 (Cancel) when you want to leave the Display Report display and return to the Work with Query Manager Tables display. When you exit from the Display Table option, Query Manager discards all of the search conditions you specified.

Note: If you press F12 (Cancel) to leave the Display Report display, ignore any messages that warn you that you might lose active data. If you press F3 (Exit) to leave the display, answer NO to any prompt asking if you want to continue running a query. The Query Manager tables options have no effect on active data. The only way that you can create active data in Query Manager is to run an SQL SELECT statement query or prompted query in interactive mode.

Display Report							
Width :	71						
Column :	1						
Control :	_____						
Line :	1	2	3	4	5	6	7
	ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
000001	10	Sanders	20	Mgr	7	18,357.50	.00
000002	20	Pernal	20	Sales	8	18,171.25	612.45
000003	30	Marenghi	38	Mgr	5	17,506.75	.00
000004	40	O'Brien	38	Sales	6	18,006.00	846.55
000005	50	Hanes	15	Mgr	10	20,659.80	.00
000006	60	Quigley	38	Sales	0	16,808.30	650.25
000007	70	Rothman	15	Sales	7	16,502.83	1,152.00
000008	80	James	20	Clerk	0	13,504.60	128.20
000009	90	Koonitz	42	Sales	6	18,001.75	1,386.70
000010	100	Plotz	42	Mgr	7	18,352.80	.00
000011	110	Ngan	15	Clerk	5	12,508.20	206.60
000012	120	Naughton	38	Clerk	0	12,954.75	180.00
000013	130	Yamaguchi	42	Clerk	6	10,505.90	75.60
000014	140	Fraye	51	Mgr	6	21,150.00	.00
							More...

F3=Exit F12=Cancel F19=Left F20=Right F21=Split

Figure 97. Display Report Display

This display provides special function keys that you can use to view the entire report if it is more than one display in width.

- F21 Split.** Splits the report into two displays vertically at the current cursor position. Move the cursor to the column at which you want to split the report; then press F21. Note that the cursor needs to be positioned on the column data, not on the column heading.
- F19 Left.** Shows the columns that appear on the left-hand side of the report. If you defined a split, F19 shows all columns to the left of the split.
- F20 Right.** Shows the columns that appear on the right-hand side of the report. If you defined a split, F20 shows all columns to the right of the split.

The *Control* prompt, shown above the columns of the report, also helps you view the entire report. Through this prompt, you can select and control paging, rolling, and window functions, and you can display a specific row from the report. Position the cursor on the *Control* prompt and press F1 (Help) for full instructions.

Printing a table in Query Manager

When you print a table, you can choose to print the entire table, or you can search through the table and print only those rows that meet your search conditions.

1. Type 3 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a "Default collection for QM tables" specified in your Query Manager profile, you are prompted to specify the name of the collection you want to use (see page 148).
2. Type 6 in the Opt prompt next to the names of the tables that contain the rows you want to print; then press the Enter key to go to the Print Table option. The Find Data in Query Manager Table display is shown for the first table you specified. Find Data displays for the remaining tables are shown in the same order as the table names appear in the "Work with" display list.
3. Specify search conditions to select the rows you want to print; then press the Enter key. See "Searching for rows in Query Manager" on page 158 for instructions. If you want to print all rows, press the Enter key without specifying any search conditions.

If you want to leave the Find Data display without printing a report, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

Query Manager performs a search using the conditions you specified; then prints all of the rows it selected in a report. If no rows are found as a result of the search, you see a message telling you that no rows were found, and asking if you want to redefine the search conditions.

Query Manager displays a message at the bottom of the display telling you when the report has been successfully sent to print or batch. You then return to the Work with Query Manager Tables display. When you leave the Print Table option, Query Manager discards all of the search conditions you specified.

The printed report shows columns in the same order as they appear in the table definition, with the table's column names being used for the report headings. Column values are displayed using the width from the table definitions, and column names that are longer than the specified width are truncated.

The table is printed using the default settings from your Query Manager profile. If you want to change any of your print settings, you should alter your profile before you choose this print option. See "Run query mode in Query Manager" on page 35 and "Printer to use for output in Query Manager" on page 39 for more information. If you print the table in interactive mode, you should also see "Maximum number of rows allowed on interactive run in Query Manager" on page 36.

Renaming a table in Query Manager

You can only change system names. You cannot change a table's name if the name contains special characters or is longer than 10 characters.

You can specify new names for more than one Query Manager table in a single operation.

Note: You need to have *CHANGE authority for the current collection to rename a table through Query Manager. You can copy the table and assign a new name for the copied table.

To rename a table:

1. Type 3 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a "Default collection for QM tables" specified in your Query Manager profile, you are prompted to specify the name of the collection you want to use (see page 148).
2. Type 7 in the Opt prompt next to the names of the tables that you want to rename; then press the Enter key. The Rename Query Manager Table display is shown, listing the names of all of the tables you specified. An example of this display is shown in Figure 98 on page 170.

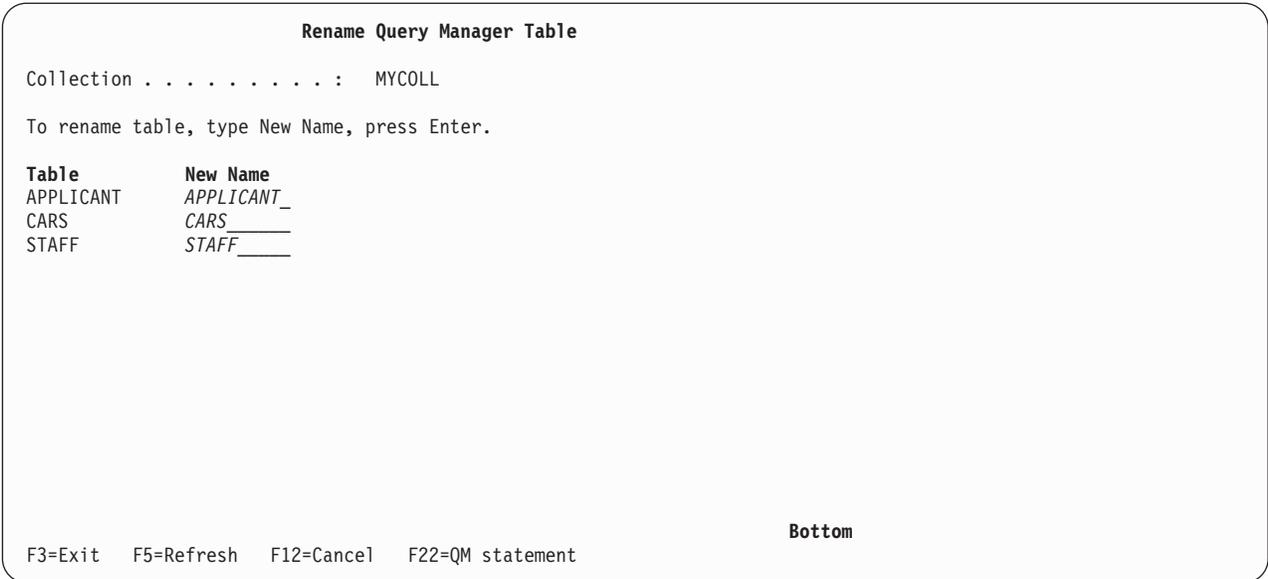


Figure 98. Rename Query Manager Table Display

3. Type the new name for the table. Table naming conventions are described on page 29. You need to enter a table name that does not already exist in the current collection. You cannot use the Rename Table option to replace existing tables.
If you choose to rename more than one table, you need to type new names for all of the tables before pressing the Enter key.
4. Press the Enter key to save the renamed tables, and return to the Work with Query Manager Tables display. If you want to exit from the Rename Table display without specifying new table names, press F3 (Exit) or F12 (Cancel) instead of the Enter key.

Displaying a table definition in Query Manager

Query Manager displays the definition of a table in a format similar to the Create Table display, showing the name, data type, length, and number of decimal places for all of the table columns. This information is shown in display-only format. You cannot change any values through this option.

1. Type 3 in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a “Default collection for QM tables” specified in your Query Manager profile, you are prompted to specify the name of the collection you want to use (see page 148).
2. Type 8 in the Opt prompt next to the names of the tables whose definitions you want to view; then press the Enter key. The Display Query Manager Table Definition display is shown for the first table you specified. Display Definition displays for the remaining tables are shown in the same order as the table names appear in the “Work with” display list. An example of the Display Table Definition display is shown in Figure 99 on page 171.

Display Query Manager Table Definition

Table : STAFF
 Description : The STAFF Table

Column	Type	Length	Decimal Places
ID	INTEGER		
NAME	CHARACTER	9	
DEPT	INTEGER		
JOB	CHARACTER	5	
YEARS	INTEGER		
SALARY	DECIMAL	9	2
COMM	DECIMAL	7	2

Bottom

Press Enter to continue.

F3=Exit F12=Cancel F20=Display entire name F22=QM statement

Figure 99. Display Query Manager Table Definition Display

3. Press F3 (Exit) or F12 (Cancel) when you finish viewing the table definition to return to the Work with Query Manager Tables display.

Chapter 9. Distributed Relational Database Architecture in Query Manager

The Distributed Relational Database Architecture™ (DRDA) function of Query Manager allows the user to access multiple remote databases and perform commit and rollback operations on the databases in an organized way. Query Manager supports two types of connection management:

- Remote unit of work (RUW)
- Distributed unit of work (DUW)

The Query Manager profile allows you to select which connection management method to use.

Remote unit of work (RUW) in Query Manager DRDA

Remote Unit of Work (RUW) is the default connection management method for Query Manager. With RUW, Query Manager continues to connect to its remote databases as it has in the past. Under RUW, only one connection is allowed to a relational database. Commits and rollbacks apply to the one allowed connection.

Distributed unit of work (DUW) in Query Manager DRDA

DUW connection management is much more powerful than RUW connection management. Under DUW, multiple relational database connections are allowed. Commits and rollbacks can be performed to several systems in an organized way.

Connection management statements in Query Manager DRDA

Query Manager supports the following connection statements:

- CONNECT
- COMMIT
- DISCONNECT
- RELEASE
- SET CONNECTION

These statements can be entered from the Query Manager Command Line. Only the COMMIT command is allowed in Query Manager Queries. These commands are discussed in detail in Appendix B, “Query Manager statements,” on page 235.

Connection management in Query Manager DRDA

The CONNECT and RELEASE statements control whether a connection is in a held or released state. Released state refers to a condition when a disconnect is to occur for the connection at the next successful commit operation. A released state can be thought of as a pending disconnect. A rollback has no effect on connections. A held state means that a connection is not to be disconnected at the next commit operation. A connection is placed in the held state by the CONNECT statement. A connection is moved to the released state from the held state by the RELEASE statement. A connection in the released state cannot be returned to or placed in the held state. This means that a connection remains in a released state across unit-of-work boundaries when a rollback is issued or a commit results in a rollback.

Regardless of whether a connection is in the held or released state, a connection can also be in the current or in the dormant state. A database in *current state* is the database where all SQL statements will be run.

Dormant state refers to a condition when the connection is suspended. While the connection is in the dormant state, SQL statements use the connection only for commits and rollbacks. The SET CONNECTION and CONNECT statements change the connection for the named relational database to the current state while existing connections are placed in or remain in the dormant state. Only one connection can be in the current state at any given time. When a dormant connection becomes current in the same unit of work, all locks, cursors, and prepared statements are restored to reflect their last use when the connection was current.

The DISCONNECT statement destroys specified connections. Once a connection to a relational database is disconnected, an application must connect to that relational database again if SQL statements need to be directed to the relational database. For protected conversations, the RELEASE statement must be used.

A protected conversation is a conversation that uses two-phase commit protocols to ensure that, even if a failure occurs, updates made on all databases that are part of the transaction are all committed or all rolled back to retain the integrity of the databases.

Default activation group and Query Manager DRDA

Query Manager runs in the Default Activation Group. Consequently, Query Manager allows you to manage the connections associated with the default activation group.

Connecting to a relational database in Query Manager DRDA

You can connect to a database using the CONNECT or SET CONNECTION statements. To establish a new connection use the CONNECT statement. To display a list of databases to which you can connect:

1. Prompt from the Query Manager Command Line
2. Select the CONNECT TO statement
3. Prompt again on the 'Relational database' field.

Use the SET CONNECTION statement to re-establish a dormant connection.

Displaying a connection list and connection status in Query Manager DRDA

To display your connections and connection states:

1. Prompt from the Query Manager Command Line.

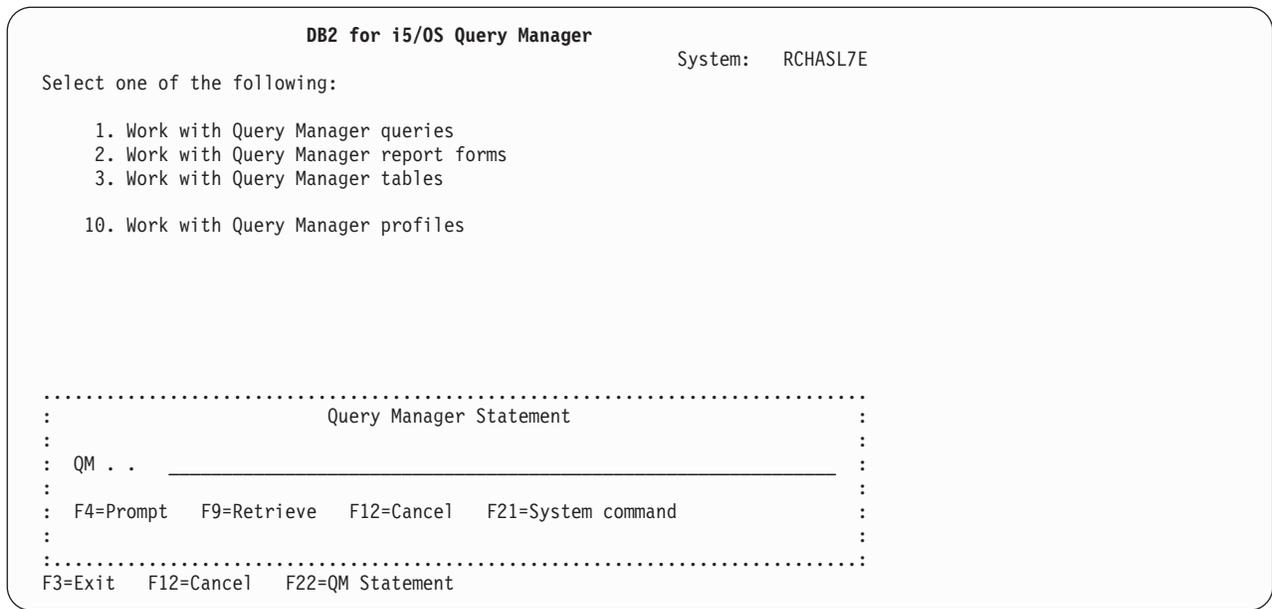


Figure 100. Example of Query Manager Statement display

Upon pressing F4, the list of Query Manager statements is displayed. The Query Manager connection statements on this display are COMMIT, DISCONNECT, RELEASE, and SET.

2. Select the SET CONNECTION, the DISCONNECT, or the RELEASE statement.

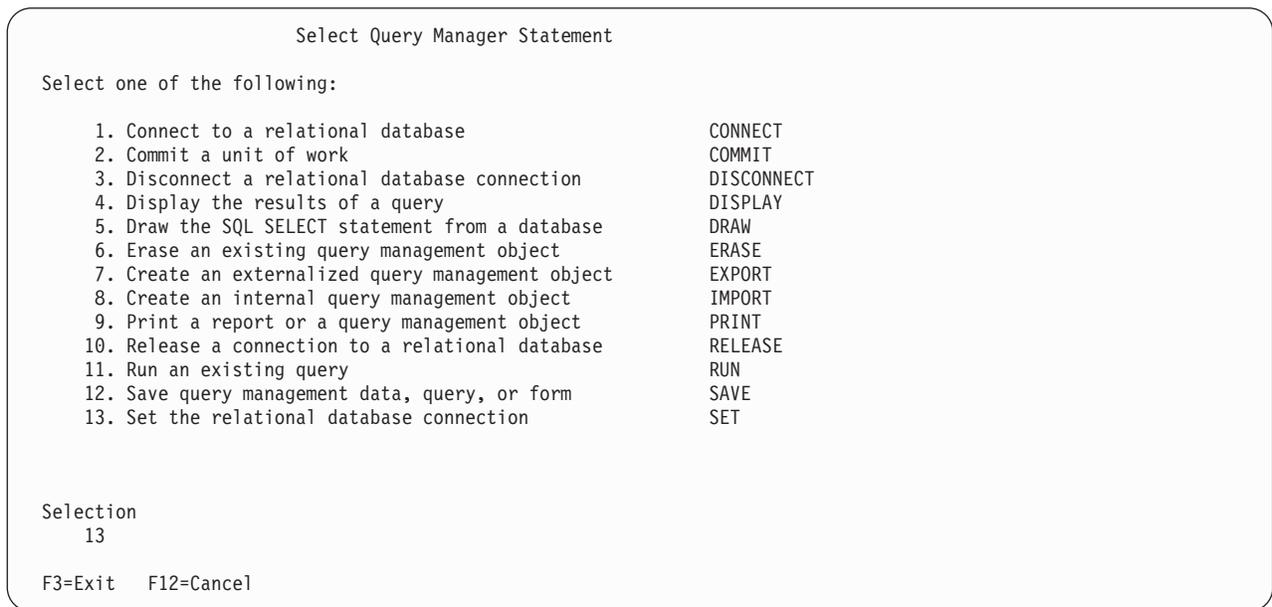


Figure 101. Example of Select Query Manager Statement display

Upon entering option 13 on the "Select Query Manager Statement" panel, the SET CONNECTION prompt will display.

Read-only in Query Manager DRDA

YES

Connection is read-only. If running under commitment control, updates cannot be performed over this connection.

NO

Connection is not read-only. Updates can be performed over this connection. If an update is performed over this connection and the connection has a Conversation Type of Local or Protected, then for this unit-of-work updates are also allowed to all other connections that have a Conversation Type of Local or Protected and do not have a Read-only value of YES. Otherwise, if an update is performed over this connection and it has a Conversation Type of Not protected, then updates are only allowed over this connection for the unit-of-work.

Status in Query Manager DRDA

HLD

A held state means that a connection is not to be disconnected at the next commit operation. A connection is placed in the held state by the CONNECT statement.

RLS

A released state means that a disconnect is to occur for the connection at the next successful commit operation (a rollback has no affect on connections). A connection is placed in the released state from the held state by the RELEASE statement. A connection in the released state cannot be put into the held state.

Connection management considerations in Query Manager DRDA

The function of the CONNECT depends on the connection management method you are using. The methods are distributed-unit-of-work (DUW) and remote-unit-of-work (RUW). The default, unless you change it, is RUW.

Table 14. CONNECT Command Differences Between *DUW and *RUW

DUW	RUW
Multiple connections allowed	One connection allowed
CONNECT to additional database puts previous connection in dormant state. The previous connections are not disconnected.	CONNECT to additional database disconnects previous connections. The previous connection or connections are disconnected before performing the connection.
Consecutive CONNECTs to same database fails	Consecutive CONNECTs to same database results in no current connection change

A system running under DUW connecting to a system running under RUW may result in a read-only connection.

Note: A homogenous connection is read-only as far as commitment control is concerned. A read-only connection is not allowed to make updates under commitment control. However, an homogenous read-only connection can still make non-committable updates.

Profile in Query Manager DRDA

The default connection management method is RUW. The Connection Management method can be changed at anytime, but it only takes effect when you exit Query Manager and sign back on to DB2 for i5/OS by using the STRQM command. The profile value is not often changed. Keep in mind that the connection management method specified does affect when connections are disconnected.

If you specified *SYS naming conventions in your Query Manager profile, the only databases you can connect to are those on a local machine or those on another i5/OS operating system.

Work with tables connections in Query Manager DRDA

When in Work With Tables, the connection is locked to local and cannot be changed by the CONNECT or SET CONNECTION statements. This is because the Work With Tables function of Query Manager only works with local tables. The local or the previous connection can be destroyed by the DISCONNECT or the RELEASE statements, or a COMMIT statement which destroys a released connection after it is successful. If the local connection is destroyed, then Query Manager remains in an unconnected state. Work With Tables uses a commitment control level of None. This does not cause any connections in a released state to be destroyed because a COMMIT statement is not issued. Although Query Manager commits all data and updates automatically, the work is not done through commitment control. To reconnect, you must exit out of Work With Tables. The previous connection is restored when you exit from Work With Tables.

Prompted query in Query Manager DRDA

If you change the connection from the Query Manager Command Line while creating, changing, or displaying a prompted query, the new connection lasts only while the command window is shown. The prompted query connection can be destroyed by the DISCONNECT or the RELEASE statements, or a COMMIT statement which destroys a released connection after it is successful. If the local connection is destroyed, then Query Manager remains in an unconnected state. To reconnect, you must issue a CONNECT statement.

Outfile processing in Query Manager DRDA

R UW connection management does not allow remote outfile processing. Under DUW connection management, remote data can be used to create an outfile on the local system.

SET transaction considerations in Query Manager DRDA

You can override the commitment control level by running a SET TRANSACTION statement in a DB2 for i5/OS query. This does not change the commitment control level in your Query Manager profile. It does set a new commitment control level until you issue a COMMIT or ROLLBACK statement, or until another SET TRANSACTION is issued. The original commitment control level is restored when a COMMIT or ROLLBACK operation is performed. For more information about commitment control, refer to SQL reference.

Notes:

1. If you choose change, cursor stability, all, or repeatable read you are responsible for issuing all COMMIT and ROLLBACK statements. For more information on the COMMIT and ROLLBACK statements, see page 51.
2. You cannot choose change, cursor stability, or all, if you have not been granted authority to use the COMMIT and ROLLBACK statements. For information on granting authority for SQL statements, see page 48.
3. You need to issue all outstanding COMMIT or ROLLBACK statements before you can start Query Manager.
4. You need to issue all outstanding COMMIT or ROLLBACK statements before you can go to the Work with Query Manager Tables display. While you are working with Query Manager tables, you have no control over when COMMIT and ROLLBACK statements are issued; Query Manager commits all data and updates automatically.
5. If you choose none, and you are connected to a remote application server other than DB2 for i5/OS, Query Manager performs all COMMIT and ROLLBACK statements automatically when you run queries. DB2 and SQL/DS do not support the commitment control level of none.

6. A SET TRANSACTION statement will fail if Query Manager is connected to a remote system. Conversely, a CONNECT to a remote system through Query Manager will fail if a SET TRANSACTION statement is in effect.

Appendix A. Practice exercises for Query Manager

This appendix contains exercises that lead you through the basics of Query Manager. If you are a new user, you can work your way through these exercises to familiarize yourself with the i5/OS operating system and Query Manager. If you have not used Query Manager for a while, you might also find these exercises useful to refresh your memory.

The Query Manager tasks you can perform differ depending on whether you have a *BASIC* or *ALL* access level assigned in your Query Manager profile. Therefore, this appendix has been divided into two parts.

- **Part 1** includes exercises suitable for users with *BASIC* or *ALL* access levels, including creating a table and adding data to it.
- **Part 2** includes exercises suitable for users with an *ALL* access level, including creating a query and report form, and running the query.

You need to complete the exercises in Part 1 of this appendix before you can begin the exercises in Part 2. The query and report form you create in the exercises in Part 2 use data retrieved from the table that you create in Part 1.

The displays in these exercises use the terms collection, table, column, and row rather than library, file, field, and record.

Exercise: Working with tables in Query Manager

The exercises in Part 1 lead you through the following tasks:

- Creating a table named with 18 characters or less
- Creating a table named with 19 characters or more
- Adding data to a table
- Displaying individual rows from a table
- Copying a table: creating a new table
- Changing the definition of a copied table
- Changing data in a table
- Viewing table definitions
- Deleting a table

Work your way through these exercises in the order shown above. In most cases, in order to perform one exercise, you need to have completed all previous exercises.

Exercise: Before you begin tables in Query Manager

The first exercise leads you through the steps required to create the STAFF table shown in Table 15.

Table 15. The STAFF Table

ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
10	Sanders	20	Mgr	7	18357.50	0
20	Pernal	20	Sales	8	18171.25	612.45
30	Marenghi	38	Mgr	5	17506.75	0
40	O'Brien	38	Sales	6	18006.00	846.55
50	Hanes	15	Mgr	10	20659.80	0

Table 15. The STAFF Table (continued)

ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
60	Quigley	38	Sales	0	16808.30	650.25
70	Rothman	15	Sales	7	16502.83	1152.00
80	James	20	Clerk	0	13504.60	128.20
90	Koonitz	42	Sales	6	18001.75	1386.70
100	Plotz	42	Mgr	7	18352.80	0

Create this table in your default collection or library (as specified in your Query Manager profile). The examples in this appendix show the table being created in a collection called MYCOLL. Your displays will show the table being created in your default collection or library.

Note that you need to have *CHANGE authority for your default collection or library in order to create a table through Query Manager.

The values shown in **bold** type are the values that you should type to complete the exercises in this appendix.

Exercise: Creating a table named with 18 characters or less in Query Manager

This exercise assumes that you have started Query Manager, and that the main menu is displayed.

1. Type **3** in the Selection prompt from the main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a "Default collection for QM tables" specified in your Query Manager profile, you are prompted to specify the name of the collection or library you want to use (see page 148).
2. Type **1** in the Opt prompt next to the blank table name (at the top of the list) and press Enter to choose option 1 (Create table).
3. Type **STAFF** in the Table prompt to name the table. An example of the Work with Query Manager Tables display showing the entries required to create the STAFF table is shown in Figure 105 on page 183.

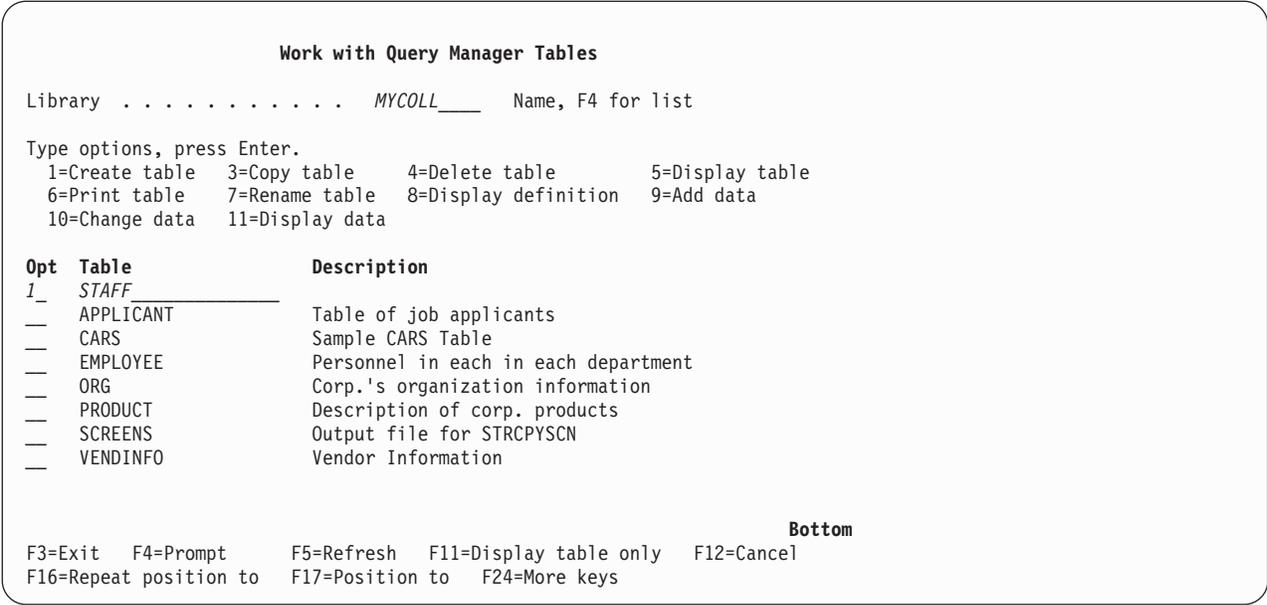


Figure 105. Tutorial: Create Table Display

Note: If a table called STAFF already exists in your current collection or library, you need to give the table you are creating a different name (for example, name it after yourself). You cannot have two tables, both named STAFF, in the same collection or library.

- Press the Enter key to go to the Create Query Manager Table display. An example of the Create Table display is shown in Figure 106.

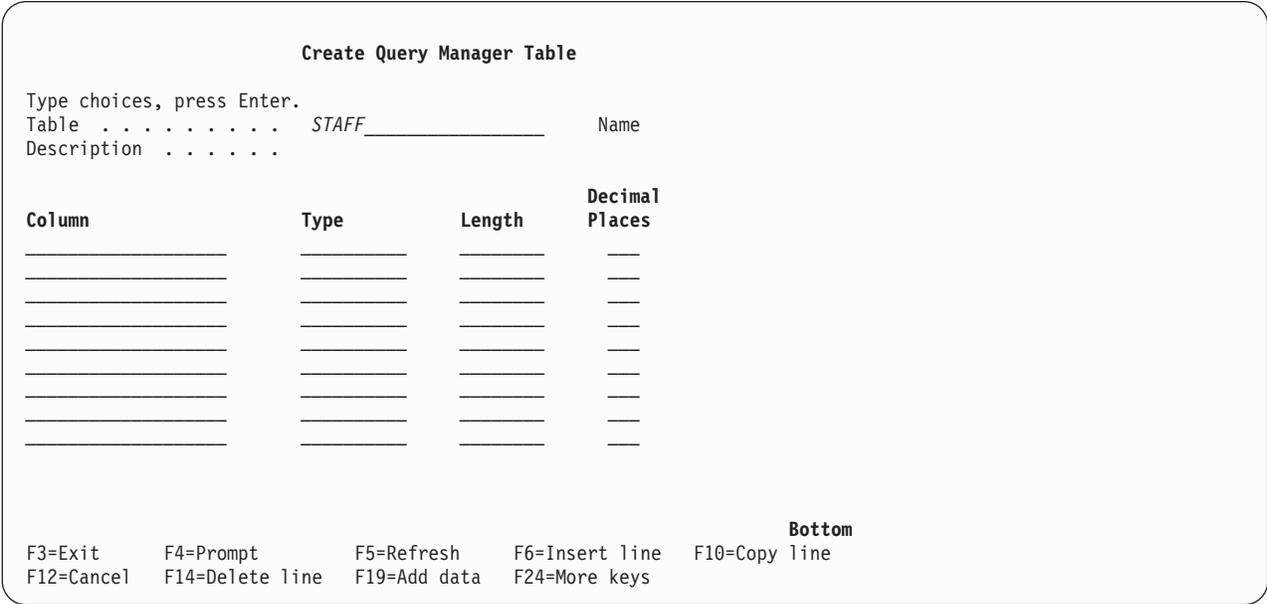


Figure 106. Tutorial: Create Table Display

- Type **The STAFF Table** in the Description prompt to describe the table. You are now ready to define the table columns. Move the cursor to the first Column prompt. This is where you type the column name.
- Type **ID** as the name of the first column; then move the cursor to the Type prompt.

- Press F4 (Prompt) to display a list of all available data types. A prompt window opens on your display as shown in Figure 107.

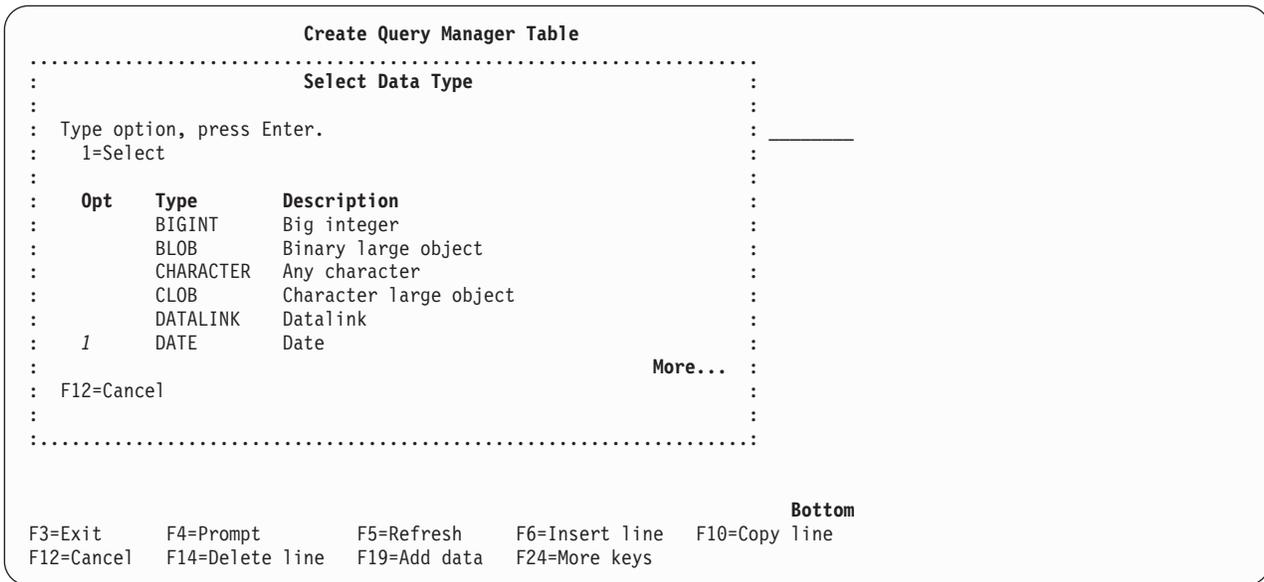


Figure 107. Tutorial: Create Table Display

- Type **1** in the Opt prompt next to “INTEGER” to choose an integer data type; then press the Enter key. Query Manager inserts INTEGER into the Type prompt for ID. (An integer is a whole number with no decimal places.)

You have now completed defining the first column of the table. INTEGER is a set length data type, so you should not specify a length for the column. (See page 152 for information on the valid lengths for the different data types.)

Move the cursor to the second Column prompt, to begin defining the second column of the table. The display should appear as shown in Figure 108.

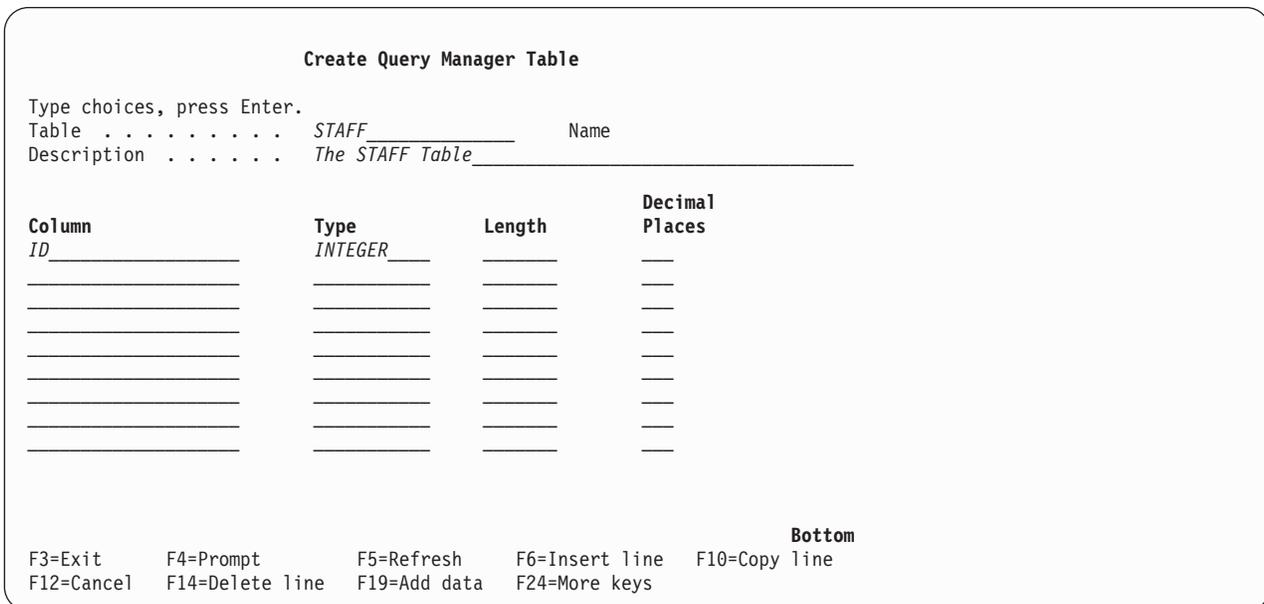


Figure 108. Tutorial: Create Table Display

9. Type **NAME** as the name of the second column, choose **CHARACTER** as its data type, and type **9** as its length.
Move the cursor to the third Column prompt.
10. Type **DEPT** as the name of the third column, and choose **INTEGER** as its data type. Do not specify a length.
Move the cursor to the fourth Column prompt.
11. Type **JOB** as the name of the fourth column, choose **CHARACTER** as its data type, and type **5** as its length.
Move the cursor to the fifth Column prompt.
12. Type **YEARS** as the name of the fifth column, and choose **INTEGER** as its data type. Do not specify a length.
Move the cursor to the sixth Column prompt.
13. Type **SALARY** as the name of the sixth column, choose **DECIMAL** as its data type, type **9** as its length, and **2** as its number of decimal places.
Move the cursor to the seventh Column prompt.
14. Type **COMM** as the name of the seventh column, choose **DECIMAL** as its data type, type **7** as its length, and **2** as its number of decimal places.
You have now finished defining the table. Your display should contain the information shown in Figure 109.

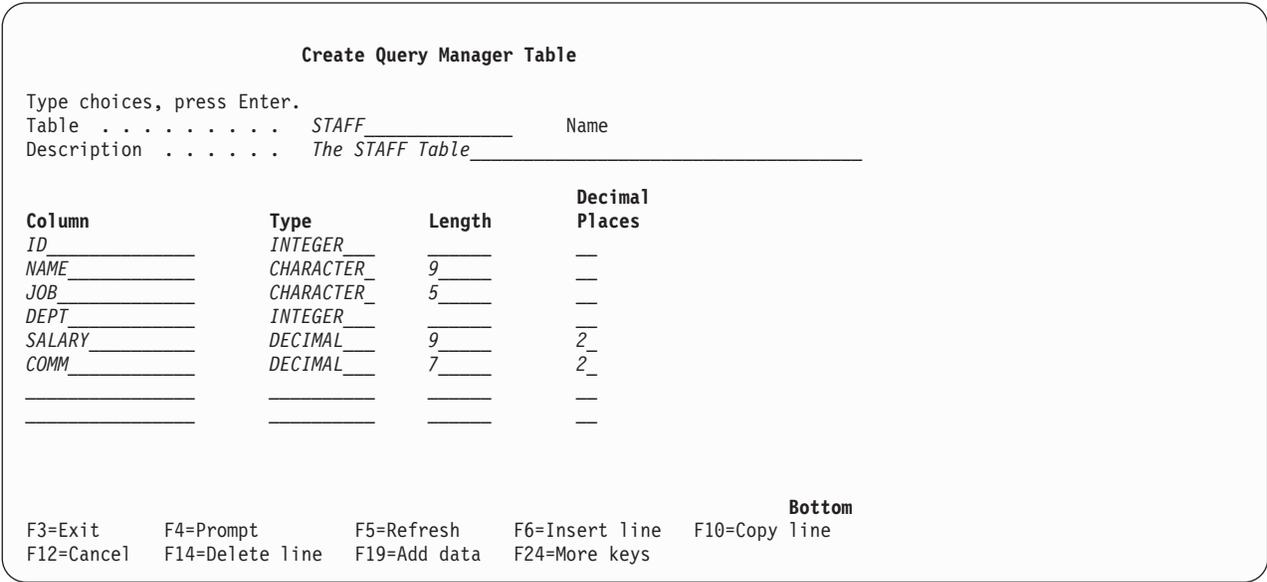


Figure 109. Tutorial: Create Table Display

15. Press the Enter key to save your table definition.
 If you made any mistakes typing the definition values (for example, if you defined a CHARACTER data type with decimal places), Query Manager highlights the errors, and shows messages at the bottom of the display telling you how to correct each entry. You cannot save a table if it contains any incorrect column definition values. Correct your errors; then press the Enter key again.
 If you do make a mistake, and have trouble understanding the displayed error message, position the cursor on the message; then press F1 (Help). Help information is available for all Query Manager messages. When you finish viewing the Help display, press F12 (Cancel) to return to the Create Query Manager Table display. Displaying help for messages is described in "Help for messages in Query Manager" on page 22.

When the table is successfully created, you see a message at the bottom of the display telling you the table has been created, and that you can press F19 (Add data) if you want to begin adding row data to the table.

Exercise: Creating a table named with 19 characters or more in Query Manager

To create a table which has a name that is 19 characters or more:

1. Type **3** in the Selection prompt from the main menu; then press the Enter key to show the Work with Query Manager Tables display. If you do not have a "Default collection for QM tables" specified in your Query Manager profile, you are prompted to specify the name of the collection or library you want to use (see page 148).
2. Type **1** in the Opt prompt next to the blank table name (at the top of the list) to choose option 1 (Create table). An example of the Work with Query Manager Tables display showing the 1 in the Opt prompt shown in Figure 110.

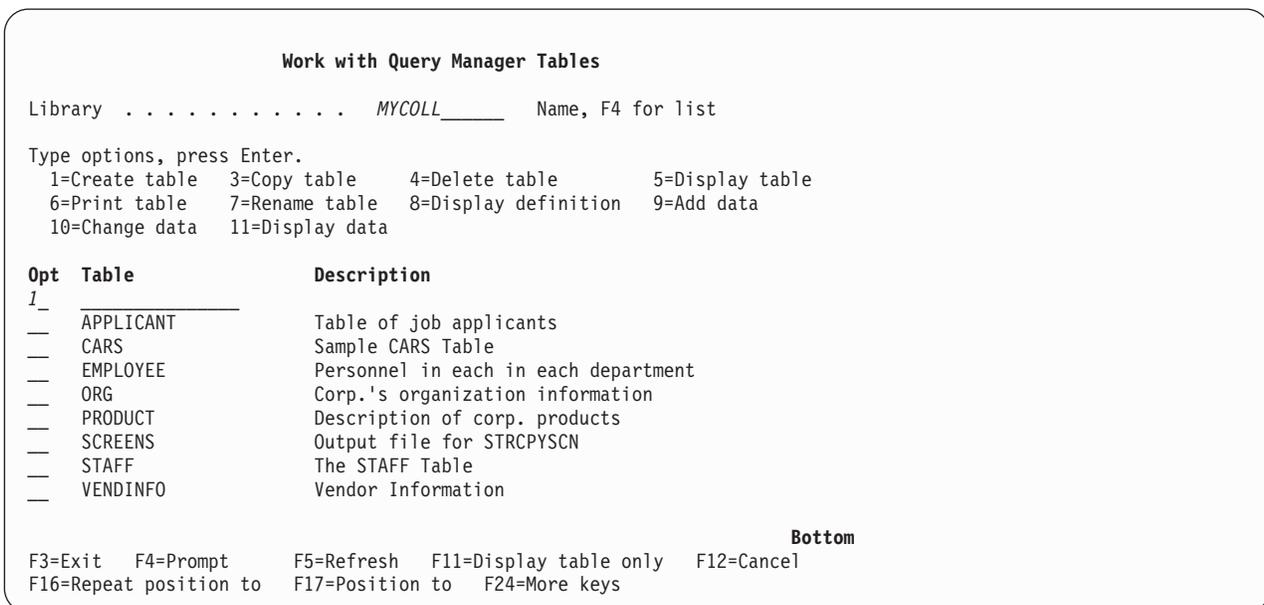


Figure 110. Tutorial: Create Table Display

3. Do not type anything in the Table prompt.
4. Press Enter.
The Create Manager Table display appears with the cursor positioned in the blank table field.
5. Press F24 (More keys). The F keys at the bottom of the screen have changed.
6. Press F20 (Display entire name) The Display Entire Name display appears. An example of the Display Entire Name display is shown in Figure 111 on page 187.

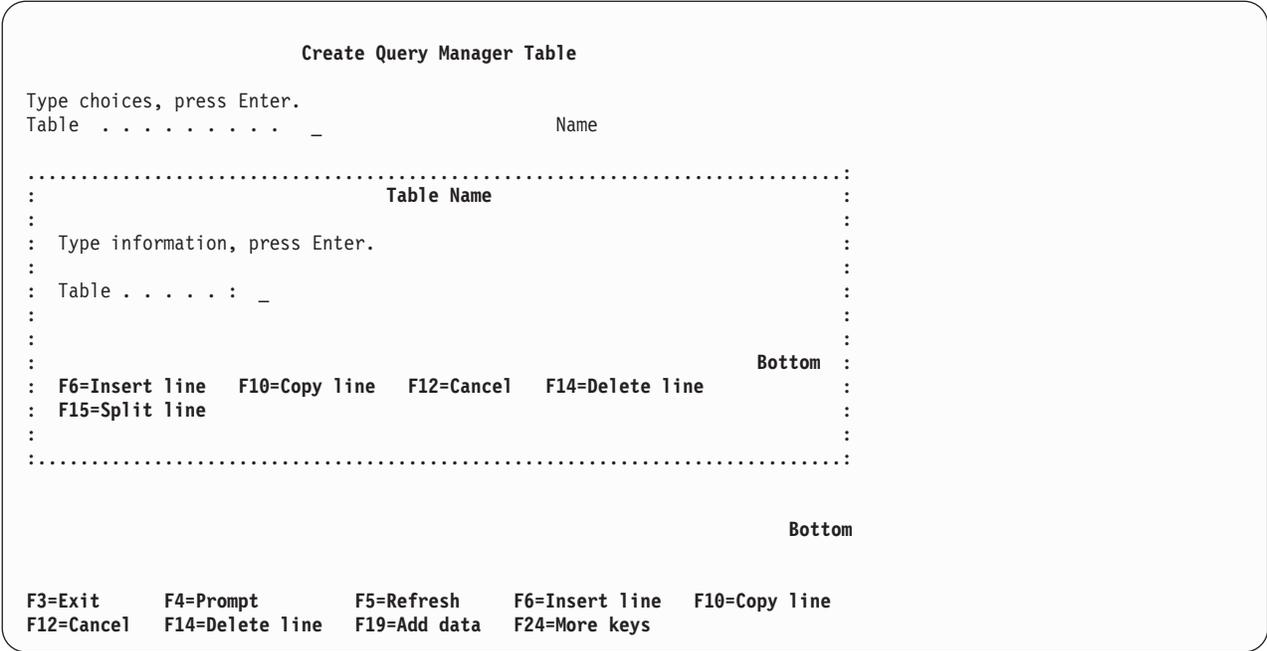


Figure 111. Tutorial: Display Entire Name Table display

7. Type "This_is_the_Marketing_Division_Table" (the name of the table) in the Display entire name display. (You could type a name as long as 128 characters not including quotes.)
8. Press the Enter key to go to the Create Query Manager Table display and enter data to create the table. An example of the Create Query Manager Table display with the new table name is shown in Figure 112. Only the first eighteen characters are visible. The overflow symbol > indicates that the name is longer.

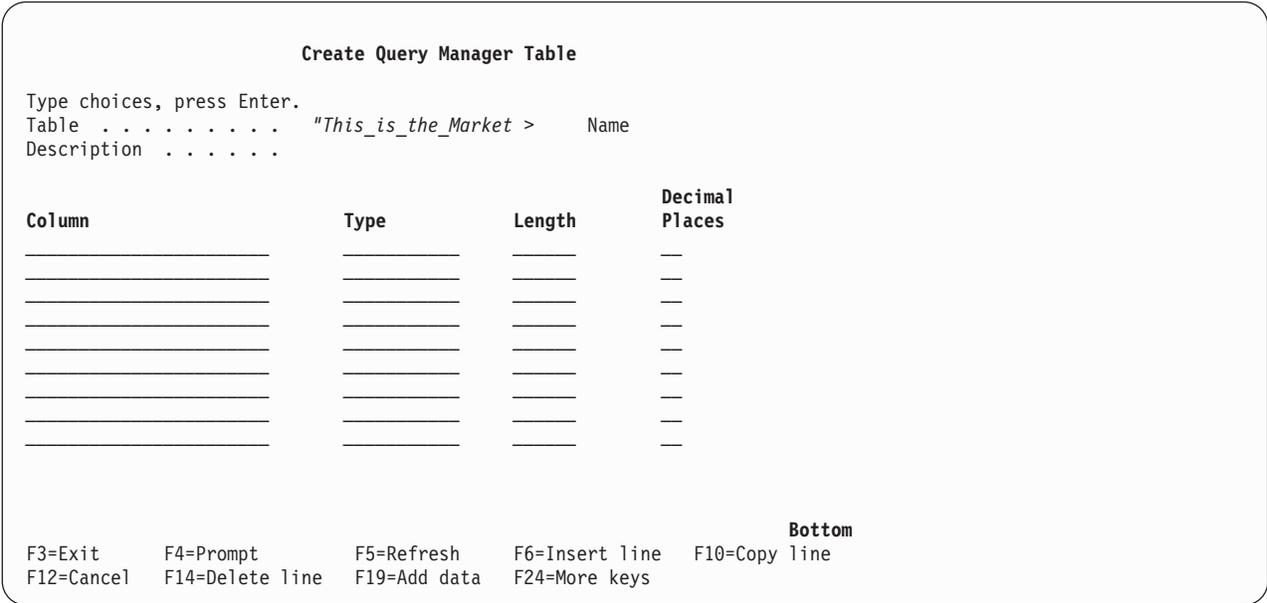


Figure 112. Tutorial: Create Table Display

- You are now ready to define the table columns.
9. Move the cursor to the first Column prompt.
 10. Do not type anything in the Column prompt.
 11. Press F24 (More keys). The F keys at the bottom of the screen have changed.

- Press F20 (Display entire name) The Display Entire Name display appears. An example of the Display Entire Name display is shown in Figure 113.

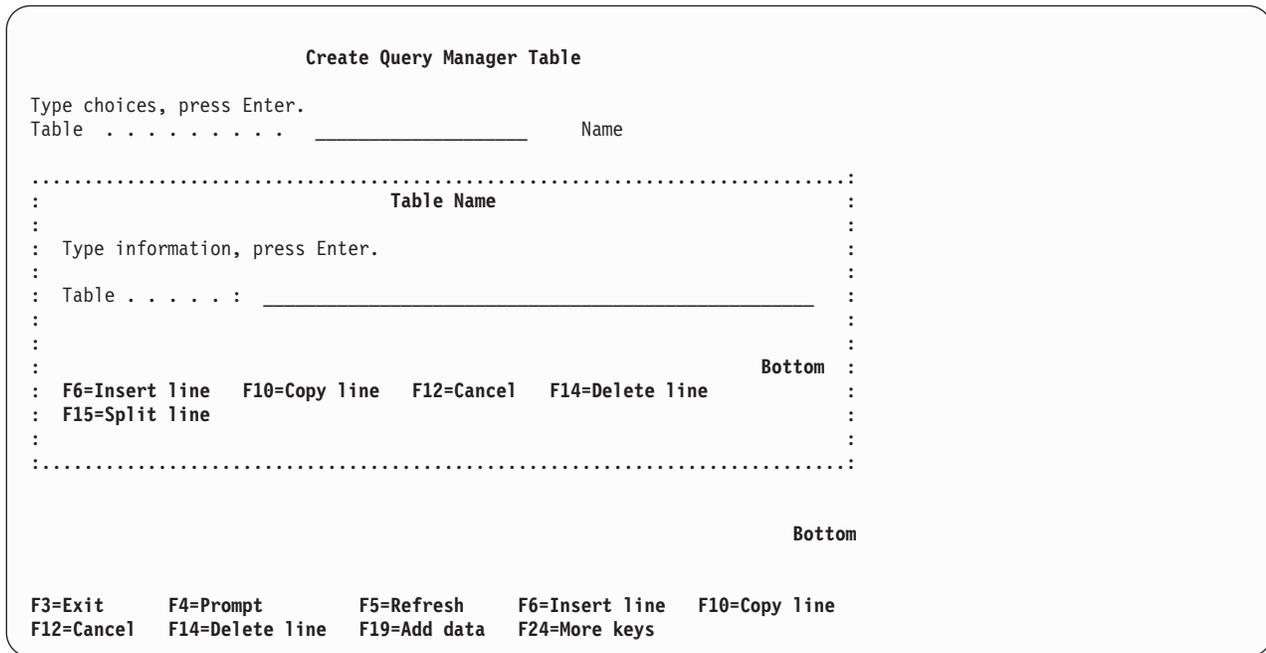


Figure 113. Tutorial: Display Entire Name Table display

- Type "This_is_the_Marketing_Division_Table" (the name of the column) in the Display entire name display. (You could type a name as long as 30 characters including quotes.)
- Press the Enter key to go to the Create Query Manager Table display and enter data to create the table.

Follow the other directions as described under "Exercise: Creating a table named with 18 characters or less in Query Manager" on page 182 or continue to the next exercise.

Exercise: Adding data to a table in Query Manager

There are two ways of adding data rows to a table:

- By typing 9 (Add data) on the Work with Query Manager Tables display next to the names of the tables to which you want to add data
- By pressing F19 (Add data) immediately after you create or copy a table definition

This exercise assumes you have completed defining the STAFF table, and that there is a message at the bottom of the display telling you to press F19 to add data.

- Press F19 (Add data) to go to the data entry display, shown in Figure 114 on page 189. The square brackets [] on the entry lines show you the maximum length for each value.

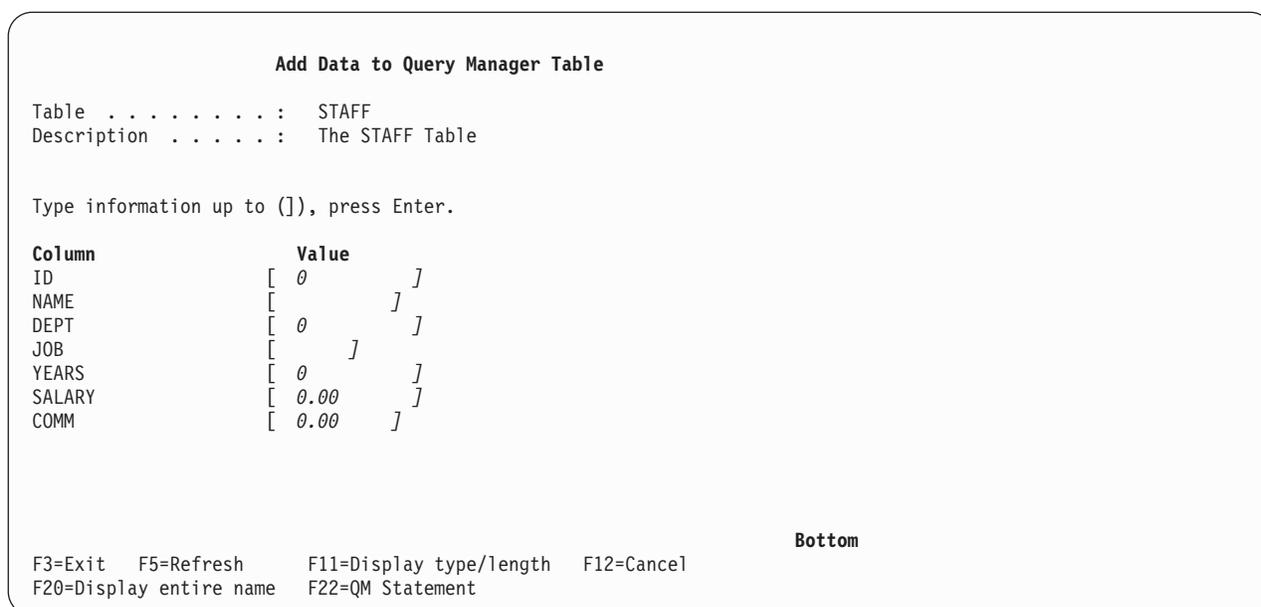


Figure 114. Tutorial: Add Data to Table Display

2. Enter the values from the STAFF table columns (shown on page 181). When you finish entering the value for one column, press the Field Exit or Tab key to move the cursor to the prompt for the next column. Query Manager does not automatically advance the cursor for you, you need to move the cursor manually.
3. When you complete typing all of the values that make up a row, press the Enter key. Pressing the Enter key saves whatever is currently shown on the display, so be careful not to press the Enter key before the row data is complete. If you make any errors while adding data, see page 196 for instructions on how to correct or complete row data.

If Query Manager finds any mistakes in the row data (for example, if you type letters in a number field), it highlights the errors one at a time and shows messages at the bottom of the display telling you how to correct each entry. You cannot save a row that contains information that is not valid. Correct your errors; then press the Enter key again.

If you do make a mistake, and have trouble understanding the displayed error message, position the cursor on the message; then press F1 (Help). Help information is available for all Query Manager messages. When you complete viewing the Help display, press F12 (Cancel) to return to the Add Data display.

4. Press F11 (Display type/length) to view the definition of the STAFF table. This key is useful if you cannot remember what values you can enter for a particular column.
 An example of the definition display you see when you press F11 is shown in Figure 115 on page 190.

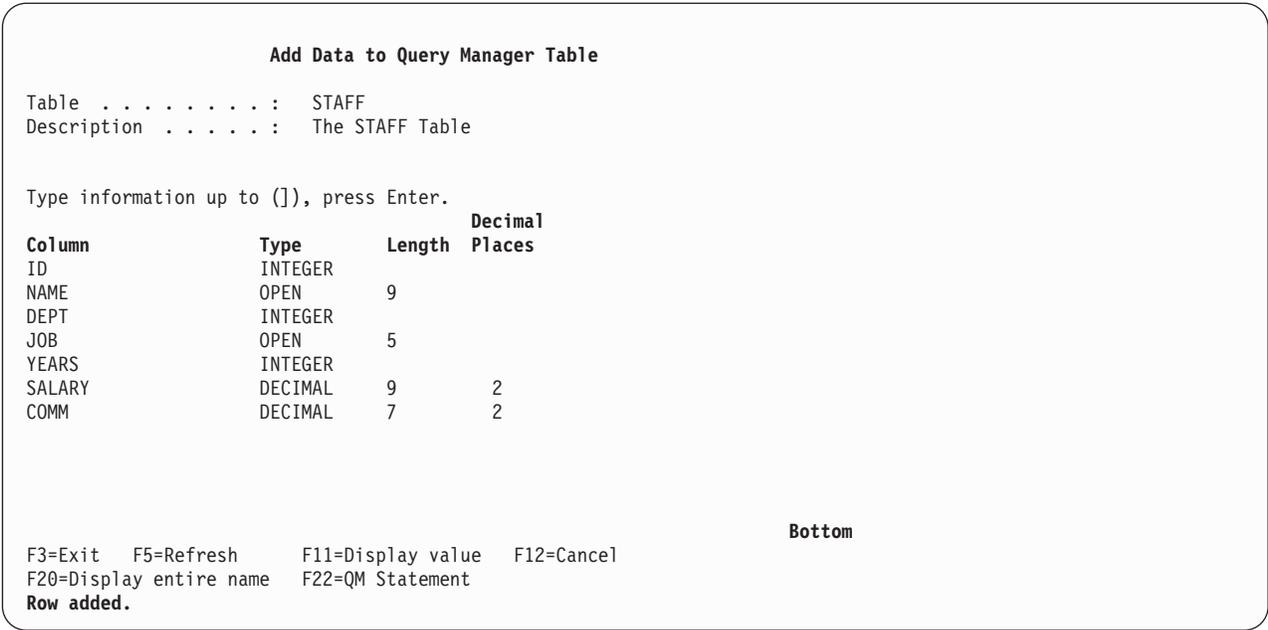


Figure 115. Tutorial: Add Data to Table Display

When you finish viewing the definition of the table, press F11 (Display values) to return to the data entry display.

- When you complete adding all rows of data, press F3 (Exit) to leave the Add Data display, and return to the Work with Query Manager Tables display. Notice that the STAFF table has been added to the list of table names shown on this display.

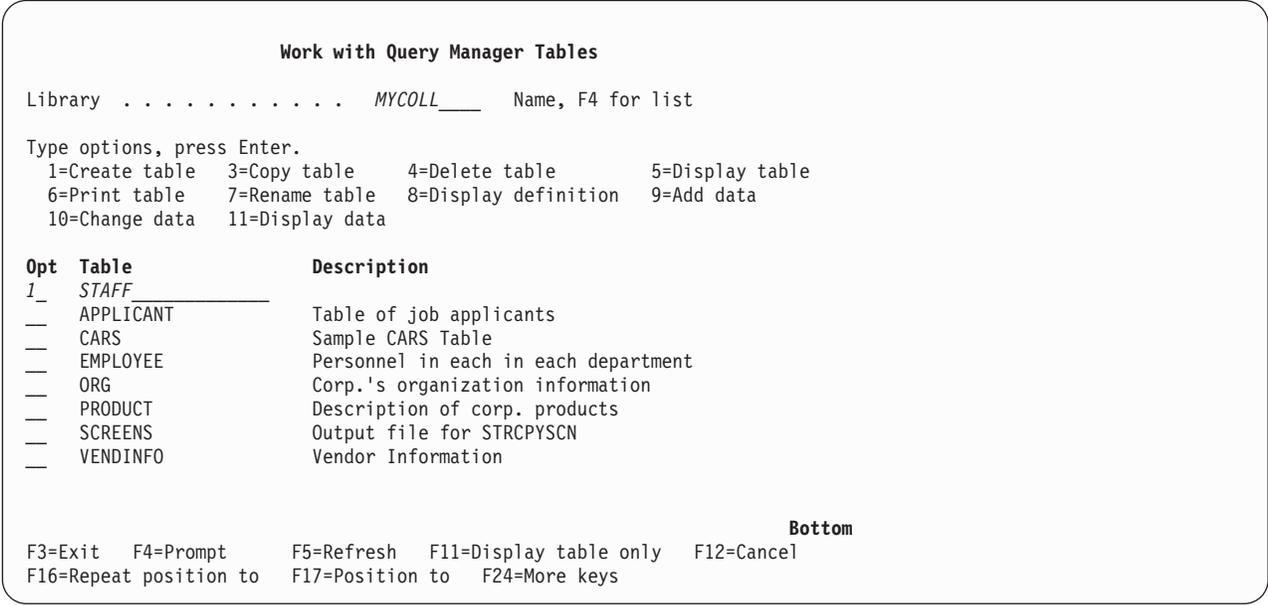


Figure 116. Tutorial: Create Table Display

Exercise: Displaying a table in Query Manager

Now that you have created the STAFF table and added rows to it, you can display your handiwork.

Note: You are not able to perform this exercise if you are running Query Manager in batch mode (see “Run query mode in Query Manager” on page 35). If you cannot perform this exercise, turn to the next exercise, “Exercise: Creating a new table from a copy in Query Manager” on page 192.

Display Report							
Width . . .:	142						
Column . .:	1						
Control . . .:							
Line:	1	2	3	4	5	6	7
	ID	NAME	DEPT	JOB	YEARS		
000001	10	Sanders	20	Mgr	7		
000002	20	Pernal	20	Sales	8		
000003	30	Marenghi	38	Mgr	5		
000004	40	O'Brien	38	Sales	6		
000005	50	Hanes	15	Mgr	10		
000006	60	Quiqley	38	Sales	0		
000007	70	Rothman	15	Sales	7		
000008	80	James	20	Clerk	0		
000009	90	Koonitz	42	Sales	6		
000010	100	Plotz	42	Mgr	7		
***** * * * * * E N D O F D A T A * * * * *							

Bottom

F3=Exit F12=Cancel F19=Left F20=Right F21=Split

Figure 118. Tutorial: Display Table Data Display

- When you finish viewing the STAFF table, press F12 (Cancel) to leave the Display Report display and return to the Work with Query Manager Tables display.
Ignore any messages that warn you that you might lose active data. The Query Manager tables options have no effect on active data. The only way that you can create active data in Query Manager is to run an SQL SELECT statement query or prompted query in interactive mode.

Exercise: Creating a new table from a copy in Query Manager

When you copy a table, you can create a new table or replace an existing one. You can also choose to make an exact copy of the table definition, or you can make modifications to the definition before the copy occurs. And you can copy the table definition only, or you can copy both the definition and the data rows.

In this exercise, you will make a copy of the STAFF table, copying both the definition and the table data, and you will change the definition of the table before saving it.

- Make sure the Work with Query Manager Tables display is shown. Type 3 in the Opt prompt next to the STAFF table; then press the Enter key to go to the Copy Query Manager Table display, as shown in Figure 119 on page 193.

```

                                Copy Query Manager Table

From library . . . . . : MYCOLL

Type information, press Enter.
To library . . . . . MYCOLL      Name
Replace table . . . . . N          Y=Yes, N=No
Copy data . . . . . N             Y=Yes, N=No

To rename copied table, change To Table name.

From Table           To Table
STAFF                STAFF_____

                                Bottom

F3=Exit  F5=Refresh  F12=Cancel  F20=Display entire name
F22=QM Statement

```

Figure 119. Tutorial: Copy Table Display

If you have an *ALL* access level, the name of the collection or library that you are copying to is underlined, indicating that it is a prompt value that you can change. Leave the “To collection” name unchanged to copy the table to your default collection or library.

2. Do not change the default value of **N** in response to the “Replace table” prompt. You are going to create a new table, not replace an existing one.
3. Type **Y** in response to the “Copy data” prompt, to tell Query Manager to copy the data rows from the STAFF table into the newly created table.
4. Type **STAFF2** in response to the “To Table” prompt, to name the new table.

Note: If a table called STAFF2 already exists in your default collection or library, you need to give this table a different name. You cannot have two tables, both named STAFF2, in the same collection or library.

The Copy Query Manager Table display should contain the same information shown in Figure 120 on page 194.

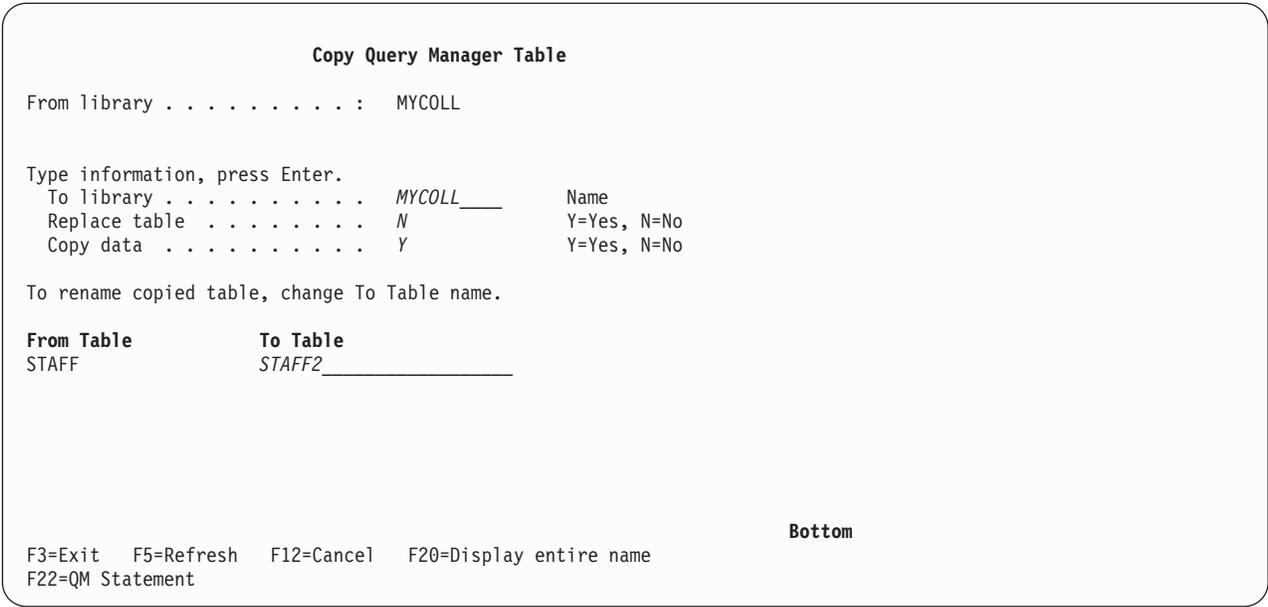


Figure 120. Tutorial: Copy Table Display

- Press the Enter key to perform the copy. You go to a Create Query Manager Table display, showing the definition for the STAFF2 table. An example of the display is shown in Figure 121.
The definition and data from the STAFF table have not yet been copied to the STAFF2 table. The next exercise in this appendix shows you how to change the STAFF2 table definition before completing the copy.

Exercise: Changing the definition of a copied table in Query Manager

This exercise assumes that you have just copied the STAFF table, and you have not yet saved the definition of the newly copied STAFF2 table. Your display should appear as shown in Figure 121.

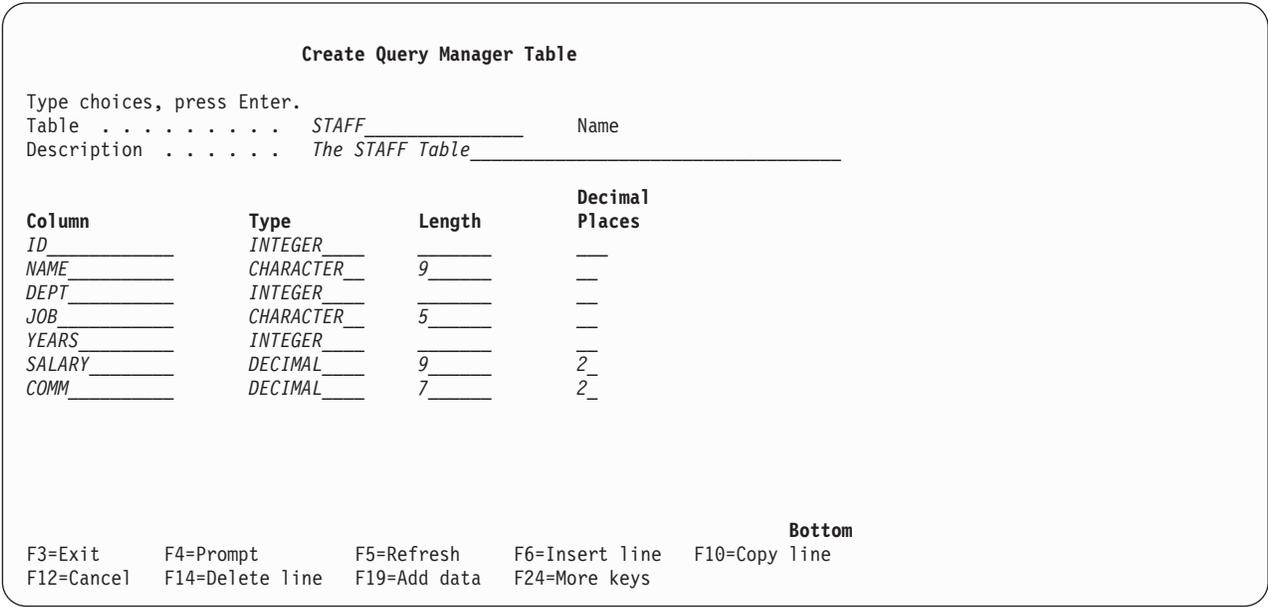


Figure 121. Tutorial: Copy Table Display

If you choose to copy data when you copy a table, be careful not to make major changes to the table definition. Query Manager does its best to fit the data into the newly defined columns using the following guidelines:

- Data is copied when a column in the new table has the same name as a column in the old table, as long as the columns have compatible data types. You can change the length of the column and its position within the definition, but you cannot change its name or give it an incompatible data type. Changing the column to an incompatible data type will prevent any data in the table from being copied.
- The new columns you create are filled with default values depending on their data types (for example, blanks for characters and zeros for numbers).
- Query Manager discards the data from the columns that existed in the old table but do not exist in the new one.

You are going to make some simple changes to the STAFF2 table definition. You will reverse the order of the DEPT and JOB columns, delete the YEARS column, and increase the size of the SALARY and COMM columns.

1. Type **Copy of the STAFF Table** as the table description. The first change to make to the definition is to reverse the order of the DEPT and JOB columns.
2. Position the cursor on the word JOB; then press F10 (Copy Line) to select JOB as the line you want to copy.
3. Move the cursor to the word NAME; then press F10 (Copy Line) a second time to specify the position you want the line copied to. The copy line function key copies the line to the position immediately below the line on which the cursor is placed when you press F10 the second time.

You now have two JOB columns in your table definition. You need to delete the JOB that you do not want (you cannot save a table definition that has two columns defined with the same name).

4. Move the cursor to the second JOB line (the one that comes after DEPT); then press F14 (Delete line). This deletes the second JOB line from the definition.

You have now reversed the order of the JOB and DEPT columns. The next thing you want to do is delete the YEARS column.

5. Move the cursor to the YEARS line; then press F14 (Delete line). This deletes the YEARS column from the table definition.

The remaining change you want to make to the STAFF2 table before you save it is to increase the size of the SALARY and COMM columns.

6. Move the cursor to the Length prompt for the SALARY column; then type **11** to increase the column length from 9 to 11.
7. Move the cursor to the Length prompt for the COMM column; then type **9** to increase the column length from 7 to 9.

You have now completed all of your changes to the definition of the STAFF2 table. The Create Query Manager Table display should appear as shown in Figure 122 on page 196.

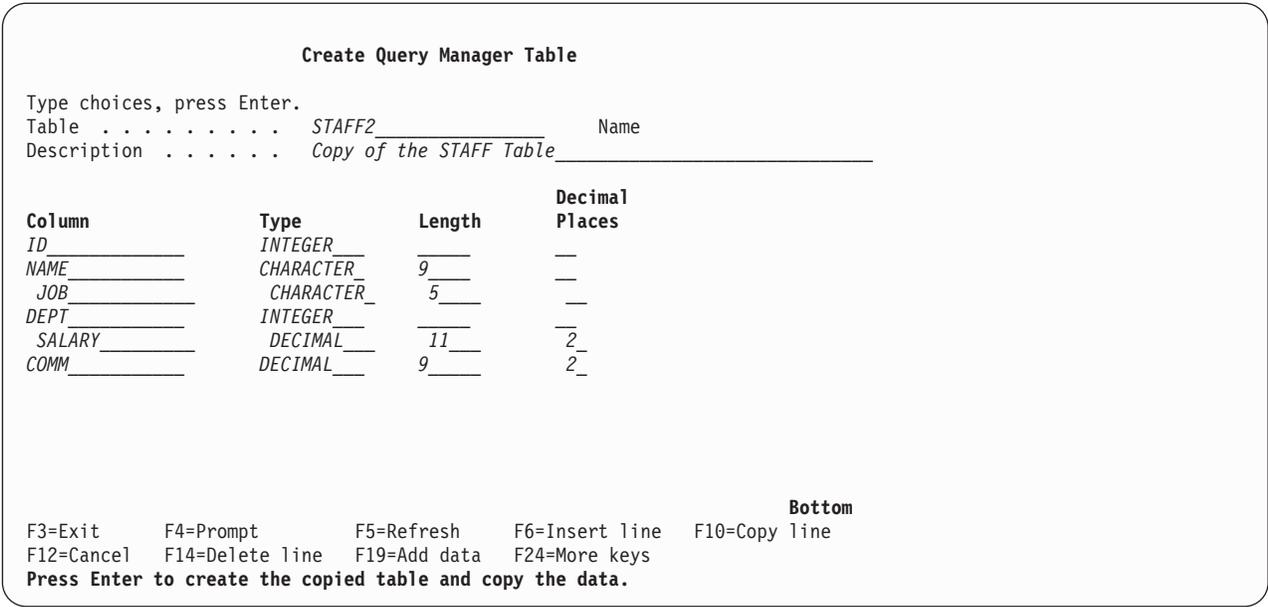


Figure 122. Tutorial: Copy Table Display

8. Press the Enter key to create the STAFF2 table with the definition you have just copied and changed. You see a message at the bottom of the display telling you that the table has been created, and that you can press F19 (Add data) if you want to add rows to the table.
9. Press F3 (Exit) to leave the Create Table display, and return to the Work with Query Manager Tables display. Notice that STAFF2 has been added to the list of tables shown on this display.

Exercise: Changing data in a table

You can use the Change Data option to select, then change, the contents of individual rows in a table, and to delete the rows you no longer require. In this exercise, you will make changes to rows in the STAFF2 table, deleting the row for the employee with an ID of 100, and giving pay increases to all Sales staff and Clerks who earn less than \$18,000.

Exercise: Searching for table rows in Query Manager

1. Make sure that the Work with Query Manager Tables display is shown. Type 10 in the Opt prompt next to the STAFF2 table; then press the Enter key to go to the Find Data in Query Manager Table display. Before you can change data, you need to tell Query Manager which rows you want to change. An example of the Find Data in Query Manager Table display is shown in Figure 123 on page 197.

```

Find Data in Query Manager Table

Table . . . . . : STAFF2
Description . . . . . : Copy of the STAFF Table

Type search conditions, press Enter.
No conditions entered will find all data.

AND,OR,
(,)
(
Column Test Value
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
)
Bottom

F3=Exit F4=Prompt F6=Insert line F10=Copy line F12=Cancel
F14=Delete line F20=Display entire name F22=QM Statement

```

Figure 123. Tutorial: Change Data in a Table Display

Use this display to define search conditions that find the rows you want to change or delete. You need to find the employee whose ID is 100, and all employees who have a JOB of Sales or Clerk with a SALARY of less than \$18,000.

Notice that the search conditions start with an opening parenthesis ‘(’ and end with a closing parenthesis ‘)’. All searches need to start and end with parentheses. You also use parentheses to group search conditions, as demonstrated in this exercise.

The first search condition that you want to define is to find the employee with an ID of 100. Move the cursor to the Column prompt on the first search line.

2. Press F4 (Prompt) to display a list of all of the columns that make up the STAFF2 table. Your display should appear as shown in Figure 124.

```

Find Data in Query Manager Table

Table . . . . . : STAFF2
Description . . . . . : Copy of the STAFF Table

:
: Select Column :
Type sear : :
No condit : Type option, press Enter. :
: 1=Select :
AND,OR, : :
(,) : opt Column opt Column :
( : 1 ID SALARY :
: NAME COMM :
: JOB :
: DEPT :
: Bottom :
: F12=Cancel :
: :
: :
) :
Bottom

F3=Exit F4=Prompt F6=Insert line F10=Copy line F12=Cancel
F14=Delete line F20=Display entire name F22=QM Statement

```

Figure 124. Tutorial: Change Data in a Table Display

- Type **1** in the Opt prompt next to ID to choose the ID column; then press the Enter key. Query Manager inserts ID into the Column prompt.
- Move the cursor to the Test prompt.
- Press F4 (Prompt) to display a list of all of the supported test conditions that you can include in the search. Your display should appear as shown in Figure 125.

```

Find Data in Query Manager Table

Table . . . . . : STAFF2
Description . . . . . : Copy of the STAFF Table

Type search c :
No conditions :
: Type option, press Enter.
AND,OR, : 1=Select
(,) C :
( I : Opt Test Description
: 1 EQ Equal to
: NE Not equal to
: GT Greater than
: GE Greater than or equal to
: LT Less than
: LE Less than or equal to
: Bottom
) : F12=Cancel
: Bottom
F3=Exit : F12=Cancel
F14=Delete line F20=Display entire name F22=QM Statement

```

Figure 125. Tutorial: Change Data in a Table Display

- You want to find the row where ID is equal to 100, so type **1** in the Opt prompt next to EQ; then press the Enter key. Query Manager inserts EQ into the Test prompt.
- Move the cursor to the Value prompt.
- Type a value of **100** to complete the search condition. Your display should appear as shown in Figure 126.

```

Find Data in Query Manager Table

Table . . . . . : STAFF2
Description . . . . . : Copy of the STAFF Table

Type search conditions, press Enter.
No conditions entered will find all data.

AND,OR,
(,) Column Test Value
( ID EQ 100
:
:
:
:
:
:
:
) Bottom
F3=Exit F4=Prompt F6=Insert line F10=Copy line F12=Cancel
F14=Delete line F20=Display entire name F22=QM Statement

```

Figure 126. Tutorial: Change Data in a Table Display

Move the cursor to the AND, OR, (,) prompt on the second line. In this prompt, you type either AND or OR to join search conditions or groups of search conditions.

- Type AND if both the current and previous condition (or groups of conditions) need to be true. For example, you want to find all sales staff who earn less than \$18,000, so JOB must equal Sales AND SALARY must be less than 18000.
- Type OR if either the current or previous condition (or groups of conditions) needs to be true. For example, you want to find all sales staff and all clerks, so JOB must equal Sales OR JOB must equal Clerk.

Use the opening and closing parentheses () to start and end the search conditions, and again to start and end groups of search conditions.

7. Press F4 (Prompt) to display the list of the supported entries. Your display should appear as shown in Figure 127.

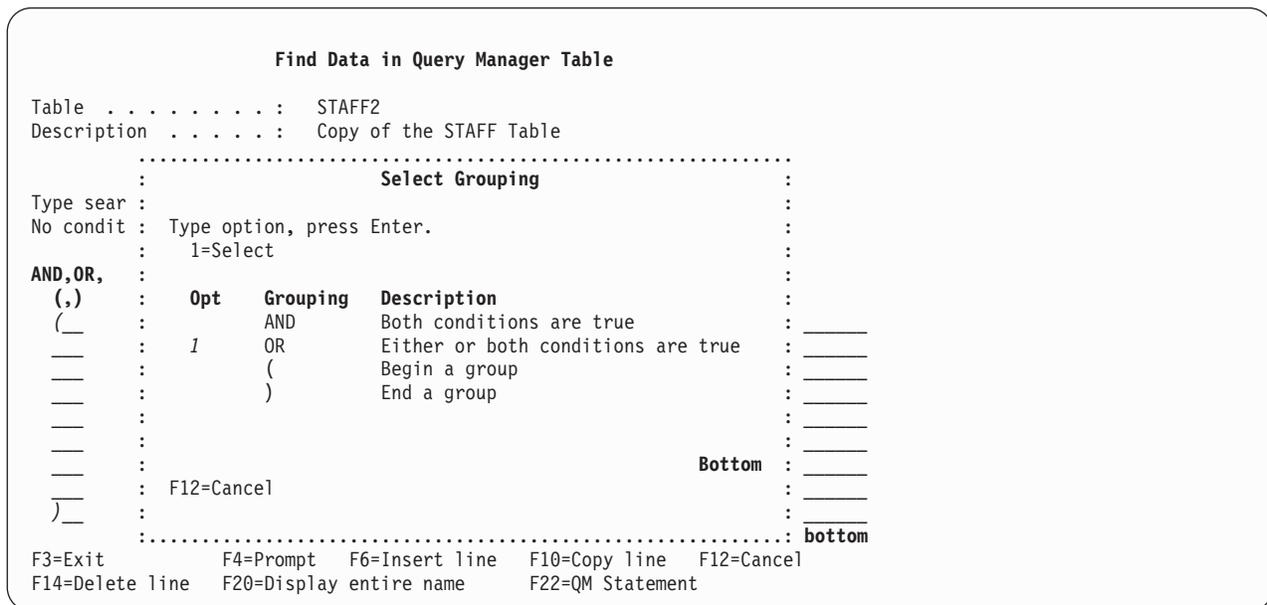


Figure 127. Tutorial: Change Data in a Table Display

8. Type 1 in the Opt prompt next to OR; then press the Enter key. You want the search to select a row where either the ID equals 100, OR the JOB equals Sales or Clerk and the SALARY is less than \$18,000.
 Because you want to select only those sales staff who earn less than \$18,000, and only those clerks who earn less than \$18,000, you need to enter the next three conditions as a group. Move the cursor to the AND, OR, (,) prompt immediately below the OR you just entered.
9. Type (to tell Query Manager that you are defining a group of search conditions. Everything that comes between this opening parenthesis and its matching closing parenthesis is treated as a group. Because you want to find all of the sales staff and all of the clerks, and then select only those who earn less than \$18,000, you need to create a second grouping, that joins the two JOB conditions. Move the cursor to the AND, OR, (,) prompt immediately below the "(" you just entered.
10. Type (to tell Query Manager that you are defining another group of search conditions. Everything that comes between this opening parenthesis and its matching closing parenthesis is treated as a group.
 Move the cursor to the Column prompt.
 Your display should appear as shown in Figure 128 on page 200.

Find Data in Query Manager Table

Table : STAFF2
 Description : Copy of the STAFF Table

Type search conditions, press Enter.
 No conditions entered will find all data.

AND,OR, (,) (_	Column ID_____	Test EQ_	Value 100_____
—	_____	—	_____
—	_____	—	_____
—	_____	—	_____
—	_____	—	_____
—	_____	—	_____
—	_____	—	_____
—	_____	—	_____
—	_____	—	_____
)_	_____	—	_____

Bottom

F3=Exit F4=Prompt F6=Insert line F10=Copy line F12=Cancel
 F14=Delete line F20=Display entire name F22=QM Statement

Figure 128. Tutorial: Change Data in a Table Display

11. Type **JOB** as the Column name. Move the cursor to the Test prompt.
12. Type **EQ** as the Test condition. Move the cursor to the Value prompt.
13. Type **Sales** as the Value, telling Query Manager to search for all staff with a job of sales. When you search for a character value, you need to type the search value in uppercase and lowercase letters, exactly as it appears in the table. Move the cursor to the AND, OR, (,) prompt. The next condition you define searches for all clerks.
14. Type **OR** to tell Query Manager that either this condition OR the previous condition needs to be true for it to select a row. Move the cursor to the Column prompt.
15. Type **JOB** as the Column name. Move the cursor to the Test prompt.
16. Type **EQ** as the Test condition. Move the cursor to the Value prompt.
17. Type **Clerk** as the Value, telling Query Manager to search for all staff with a job of clerk. Move the cursor to the AND, OR, (,) prompt.
18. Type **)** to tell Query Manager that you have finished defining a group of search conditions. Move the cursor to the AND, OR, (,) prompt on the next line. The next condition you define tells Query Manager to select only those sales staff and clerks who earn less than \$18,000.
19. Type **AND** to tell Query Manager that this condition AND the previous condition(s) need to be true for it to select a row. Move the cursor to the Column prompt.
20. Type **SALARY** as the Column name. Move the cursor to the Test prompt.
21. Type **LT** (less than) as the Test condition. Move the cursor to the Value prompt.
22. Type **18000** as the Value, telling Query Manager to search for sales staff and clerks with a salary less than \$18,000. Move the cursor to the AND, OR, (,) prompt.
23. Type **)** to tell Query Manager that you have finished defining the group of search conditions. Your display should appear as shown in Figure 129 on page 201.

3. Type **17327.97** as the new salary for employee Rothman; then press the Enter key to save the changed row.
4. Press F15 (Next data row) to display the next row in the selected set.
5. Type **14179.83** as the new salary for employee James; then press the Enter key to save the changed row.
6. Press F15 (Next data row) to display the next row in the selected set. This is the row for employee Plotz whose ID is 100. This is the employee you want to delete. Notice that there is no function key labeled “delete” shown on the display.
7. Press F24 (More keys) to display the remaining function keys that you can use with this display. Notice that F23 (Delete data row) is now displayed.
8. Press F23 (Delete data row) to delete employee Plotz. You see a message at the bottom of the display telling you to press F23 a second time to confirm the delete. Press F23 again to delete the row. You see a message at the bottom of the display telling you that the row has been successfully deleted.
9. Press F24 (More keys) to return to the original display of function keys.
10. Press F15 (Next data row) to display the next row in the selected set. You see a message telling you that you are at the end of the selected set of rows. You have now completed changing all employee rows.
11. Press F3 (Exit) to leave the Change Data option and return to the Work with Query Manager Tables display.

Exercise: Viewing table definitions in Query Manager

Query Manager presents the definition of a table in a format similar to the Create Query Manager Table display, showing the name, data type, length, and number of decimal places for all of the table columns. The definition is shown in display-only format. You cannot change any values through this option.

1. Make sure the Work with Query Manager Tables display is shown. Type **8** in the Opt prompts next to both the STAFF and STAFF2 tables; then press the Enter key.

When you choose more than one option from a “Work with” display, Query Manager deals with the options in the same order as the names appear in the list. Therefore, the Display Query Manager Table Definition display for the STAFF table is shown first.

Display Query Manager Table Definition

Table : STAFF
 Description : The STAFF Table

Column	Type	Length	Decimal Places
ID	INTEGER		
NAME	OPEN	9	
DEPT	INTEGER		
JOB	OPEN	5	
YEARS	INTEGER		
SALARY	DECIMAL	9	2
COMM	DECIMAL	7	2

Bottom

Press Enter to continue.

F3=Exit F12=Cancel F22=QM Statement

Figure 131. Tutorial: Display Table Definition Display

2. When you finish viewing the STAFF table definition, press the Enter key to leave the display. Query Manager then shows the Display Query Manager Table Definition display for the STAFF2 table.

- When you finish viewing the STAFF2 table definition, press the Enter key to leave the display. There are no more tables selected through the "Work with" display, so pressing the Enter key returns you to the Work with Query Manager Tables display.

Exercise: Deleting a table in Query Manager

When you choose to delete the definition and row data of a table you no longer require, Query Manager shows a Confirm Delete of Table display. No tables are deleted until you respond to this display.

- Make sure the Work with Query Manager Tables display is shown. Type **4** in the Opt prompt next to the STAFF2 table; then press the Enter key to go to the Delete Table option. You see a Confirm Delete of Table display similar to the one shown in Figure 132.

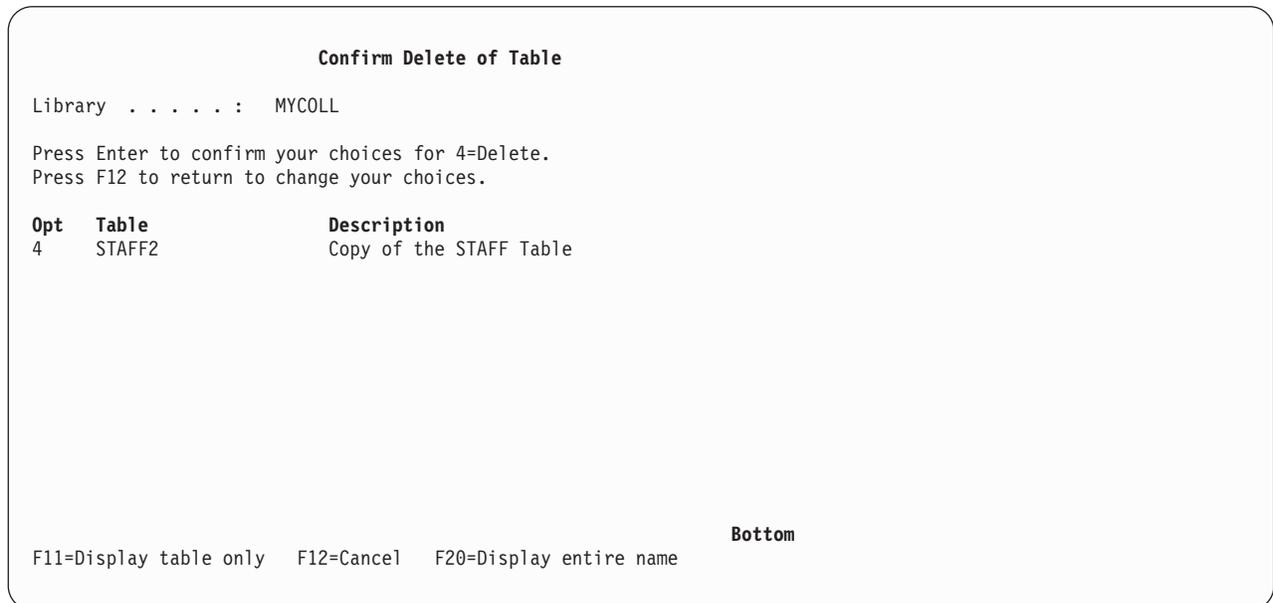


Figure 132. Tutorial: Delete Table Display

When you press the Enter key, all of the tables listed on this display are deleted. If you want to exit from the display without deleting any tables, press F12 (Cancel) instead of the Enter key.

- Press the Enter key to confirm the deletion of the STAFF2 table. Query Manager deletes the table; then returns to the Work with Query Manager Tables display.

You have now completed the Work with Query Manager Tables portion of these exercises.

- Press F3 (Exit) to leave the Work with Query Manager Tables display and return to the Query Manager main menu.

If you have an *ALL* access level, you can continue with the exercises in this appendix, and create, run, change, and delete a query and report form.

Exercise: Working with queries and report forms in Query Manager

The exercises in Part 2 lead you through the following tasks:

- Creating a prompted query
- Creating an SQL query
- Saving a query: using the Exit display
- Running a query: creating active data
- Creating a report form
- Displaying a report
- Changing a prompted query

- Changing an SQL query
- Running the changed query
- Exiting without saving a query or report form
- Deleting a query

These exercises are intended for users with an *ALL* access level. You need to have created the STAFF table from Part 1 of this appendix before you can perform any of these exercises.

Work your way through these exercises in the order shown above. In many cases, in order to perform one exercise you need to have completed all previous exercises.

Exercise: Before you begin queries and reports in Query Manager

The exercises in this part of the appendix lead you through the steps required to create the TUTQRY query and the TUTORPT report form. Instructions are provided showing you how to create and change the TUTQRY query in both the prompted and the SQL query creation modes.

Note: Before you can create the TUTQRY query using the SQL query creation mode, you need to have authority to use the SELECT statement (granted through your Query Manager profile). See “Selecting allowed SQL statements for profiles in Query Manager” on page 48 for details.

Create this query and report form in your default library. The example displays in this appendix show the table being created in a library called MYLIB. Your displays will show the query and report form being created in your default library (as specified in your Query Manager profile).

Each query and report form within a library must have a unique name. If a query named TUTQRY or a report form named TUTORPT already exist in your default library, you need to give the query and/or report form you create through these exercises different names (for example, name them after yourself). You cannot have two queries or two report forms with the same name in the same library.

The values shown in **bold** type are the values that you should type to complete the exercises in this appendix.

Exercise: Creating a prompted query in Query Manager

Perform the following exercise if your current query creation mode is prompted. If your query creation mode is SQL, turn to “Exercise: Creating an SQL query in Query Manager” on page 210.

This exercise leads you through the steps required to create the tutorial query (TUTQRY) shown below.

```
SELECT DEPT, NAME, JOB, SALARY, COMM
      FROM MYCOLL.STAFF
      WHERE DEPT = 20 OR DEPT = 38
      ORDER BY DEPT, JOB
```

The TUTQRY query retrieves data from the STAFF table created through Part 1 of this appendix. Turn to “Exercise: Creating a table named with 18 characters or less in Query Manager” on page 182 if you have not yet created the STAFF table.

1. Make sure the Query Manager main menu is displayed. Type **1** in the Selection prompt; then press the Enter key to go to the Work with Query Manager Queries display.
2. Type **1** in the Opt prompt next to the blank query name (at the top of the list) to choose option 1 (Create).
3. Type **TUTQRY** in the Query name prompt to name the tutorial query; then press the Enter key to go to the Create option and show the Define Prompted Query display. An example of the Define Prompted Query display is shown in Figure 133 on page 205.

```

                                Define Prompted Query

Query . . . . . : TUTQRY

Type options, press Enter. Press F21 to select all.
1=Select

Opt  Prompted Query Selection
1     Specify tables
-     Define expressions
-     Select and sequence columns
-     Select rows
-     Select sort columns
-     Select summary functions
-     Specify duplicate rows
-     Specify report formatting

F3=Exit      F5=Run report  F6=Run sample  F12=Cancel  F18=Display SQL
F21=Select all  F22=QM statement

```

Figure 133. Tutorial: Create Prompted Query Display

Note: If a query named TUTQRY already exists in your default library, you need to give a different name to the query you are creating. You cannot have two queries, both named TUTQRY, in the same library.

Use the Define Prompted Query display to choose the attributes of the query that you want to define. You can type 1 in the Opt prompt to select individual attributes, or press F21 (Select all) to select all of the definition attributes.

To create the TUTQRY query, you need to select the following attributes through the Define Prompted Query display:

- **Specify tables.** Tell Query Manager that you want to query the MYCOLL.STAFF table.
 - **Select and sequence columns.** Name the columns that you want to select from MYCOLL.STAFF, and the sequence in which you want the columns selected.
 - **Select rows.** Specify the rows that you want the query to select. (Define the WHERE clause of the SELECT statement.)
 - **Select sort columns.** Specify the order in which you want the rows to be sorted. (Define the ORDER BY clause of the SELECT statement.)
4. Type a 1 in the Opt prompt beside all four of these options. The Define Prompted Query display should appear as shown in Figure 134 on page 206.

```

                                Define Prompted Query

Query . . . . . : TUTQRY

Type options, press Enter. Press F21 to select all.
 1=Select

Opt Prompted Query Selection
 1 Specify tables
   Define expressions
 1 Select and sequence columns
 1 Select rows
 1 Select sort columns
   Select summary functions
   Specify duplicate rows
   Specify report formatting

F3=Exit      F5=Run report  F6=Run sample  F12=Cancel  F18=Display SQL
F21=Select all  F22=QM statement

```

Figure 134. Tutorial: Create Prompted Query Display

5. Press the Enter key to begin defining the query.
 The first display you go to is the Specify Tables display, through which you choose the tables that you want to query. Displays for the remaining definition attributes are shown in the same order as the attribute descriptions appear on the Define Prompted Query display.
 An example of the Specify Tables display is shown in Figure 135.

```

                                Specify Tables

Type choices, press Enter.

Table . . . . . A STAFF_____ Name, F4 for list
Collection . . . . . MYCOLL_____ Name

+ for more tables . . . . _

F3=Exit  F4=Prompt  F5=Run report  F6=Run sample  F12=Cancel
F18=Display SQL  F20=Display entire name  F22=QM statement

```

Figure 135. Tutorial: Create Prompted Query Display

6. Type **STAFF** as the name of the table you want to query, and **MYCOLL** as the name of the collection in which it resides (where MYCOLL is the name of your default collection for Query Manager tables). Then press the Enter key to go to the display for the next definition attribute that you chose, the Select and Sequence Columns display.
 You use the Select and Sequence Columns display to tell Query Manager which columns you want to select from the table (or tables) you chose through the Specify Tables display, and to specify the

sequence in which you want the columns selected. An example of the Select and Sequence Columns display is shown in Figure 136.

Select and Sequence Columns

Type sequence number (0-9999) for the name of each column to appear in the report, press Enter.

Seq	Column	Seq	Column
	STAFF -- ALL		
	A.ID		
2	A.NAME		
1	A.DEPT		
3	A.JOB		
	A.YEARS		
4	A.SALARY		
5	A.COMM		

F3=Exit F5=Run report F6=Run sample F10=Duplicate column
 F11=Display description F12=Cancel F18=Display SQL F24=More keys

Figure 136. Tutorial: Create Prompted Query Display

- Type sequence numbers in the Opt prompts beside the names of the columns that you want to be selected by the query. You are defining the TUTQRY query:

```
SELECT DEPT, NAME, JOB, SALARY, COMM
FROM MYCOLL.STAFF ...
```

so you need to type a sequence number of **1** for DEPT, **2** for NAME, **3** for JOB, **4** for SALARY, and **5** for COMM, as shown in Figure 136. Type the sequence numbers; then press the Enter key. Notice that the display now lists the columns in the sequence you specified, and that the columns have been renumbered: 10, 20, 30, 40, 50.

Press the Enter key a second time to go to the display for the next definition attribute that you chose, the Select Rows display. You use the Select Rows display to specify the rows that you want Query Manager to select from the specified table columns, and define the WHERE clause of the SELECT statement. An example of the Select Rows display is shown in Figure 137 on page 208.

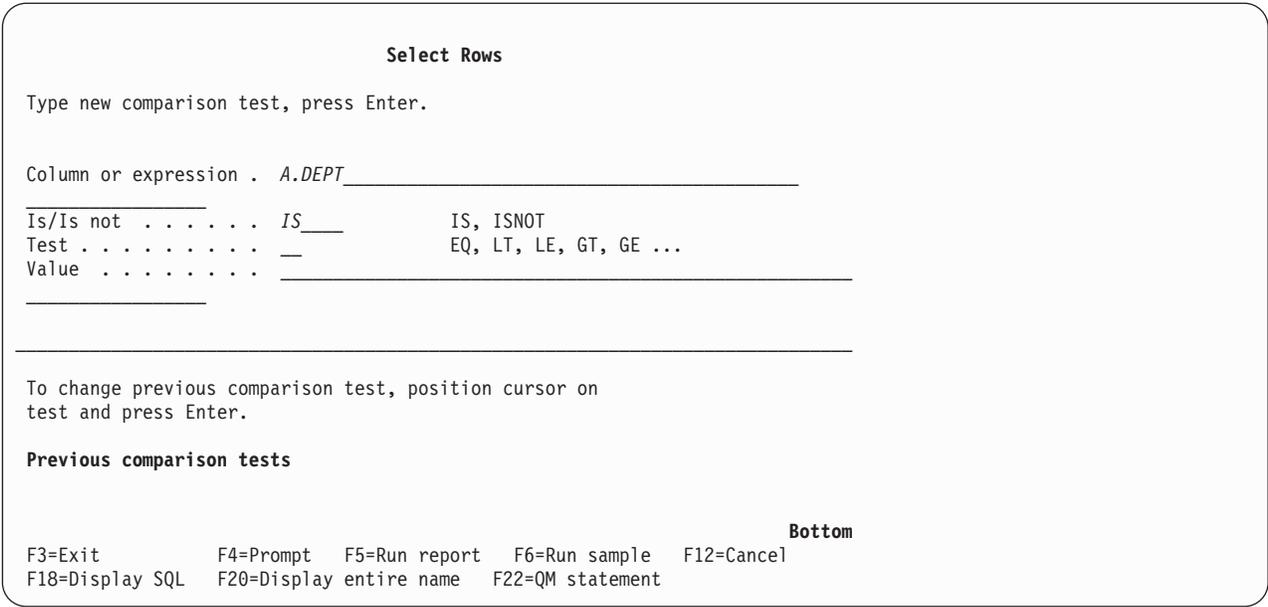


Figure 137. Tutorial: Create Prompted Query Display

Define the row comparison test to select only those rows that you require. You are defining the TUTQRY query:

```
SELECT DEPT, NAME, JOB, SALARY, COMM
...
WHERE DEPT = 20 OR DEPT = 38
```

This means that you want to select only those rows where the DEPT is equal to either 20 or 38.

8. Type **DEPT** as the name of the column for which you are defining the comparison test, and **IS** as the "Is/Is not" condition. Your display should appear as shown in Figure 137.
9. Press F4 (Prompt) to display a list of all of the available Test Operators that you can choose. Your display should appear as shown in Figure 138.

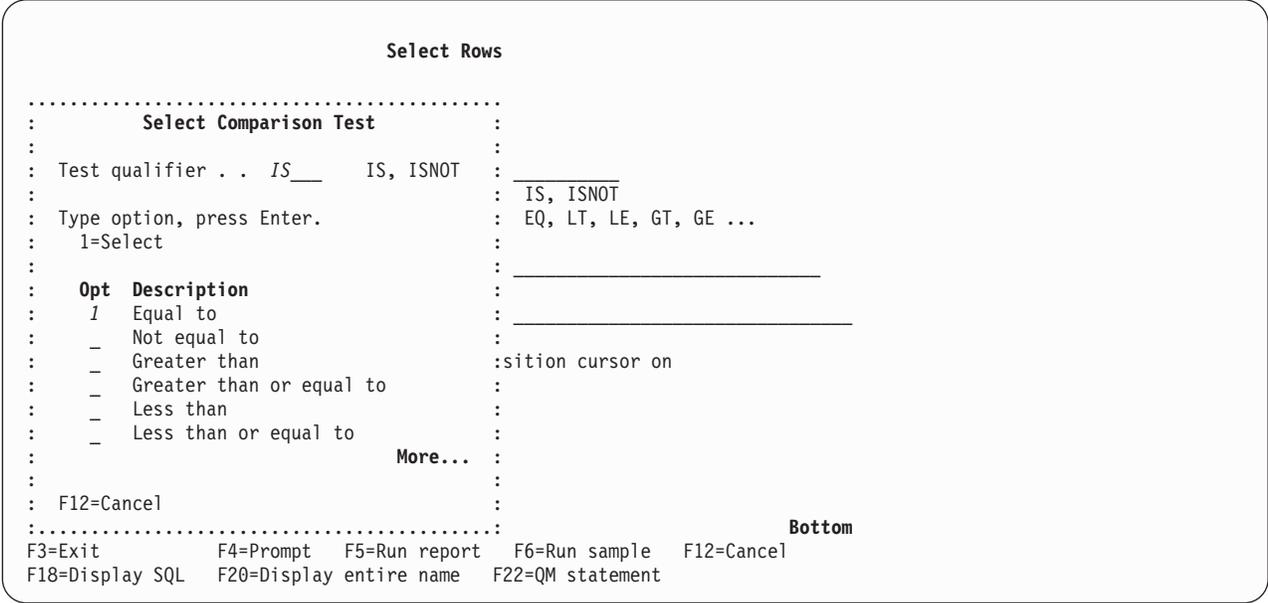


Figure 138. Tutorial: Create Prompted Query Display

- Type **1** in the Selection prompt to choose “Equal to” and press the Enter key. Then move the cursor to the prompt for Value and press F4 (Prompt) to display a window through which you can enter the values for the comparison test. An example of this window is shown in Figure 139.

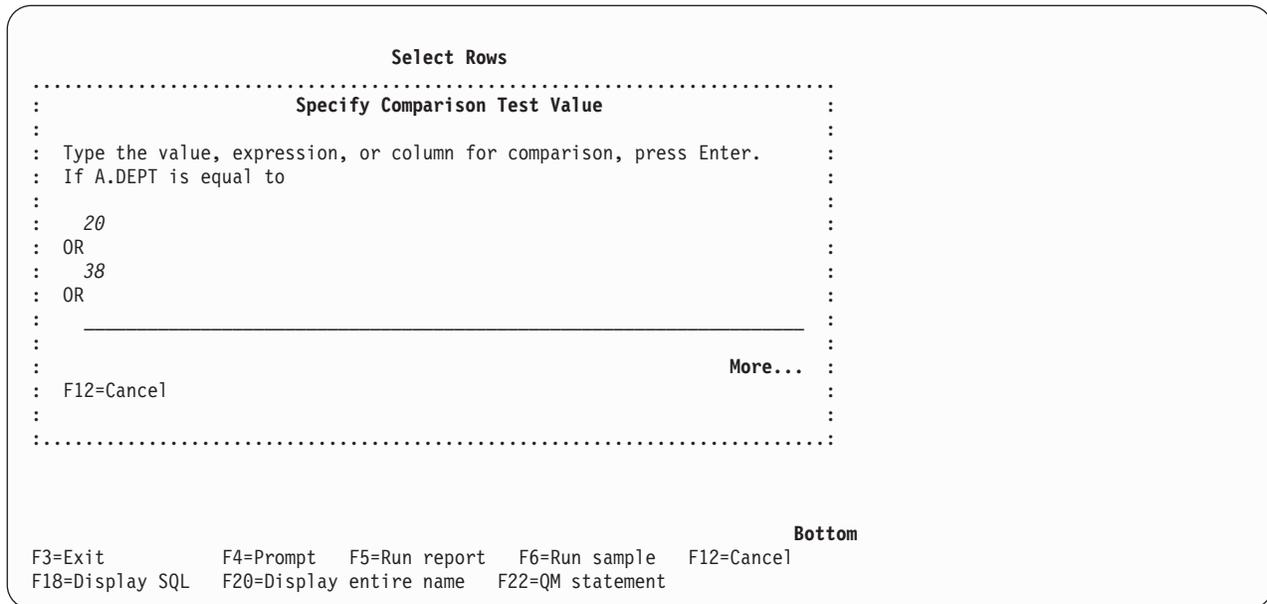


Figure 139. Tutorial: Create Prompted Query Display

- Type **20** and **38** as the two test values to select all rows with a department number of 20 or 38. You have now finished defining the comparison test.
- Press the Enter key to save the test. The display should appear as shown in Figure 140.

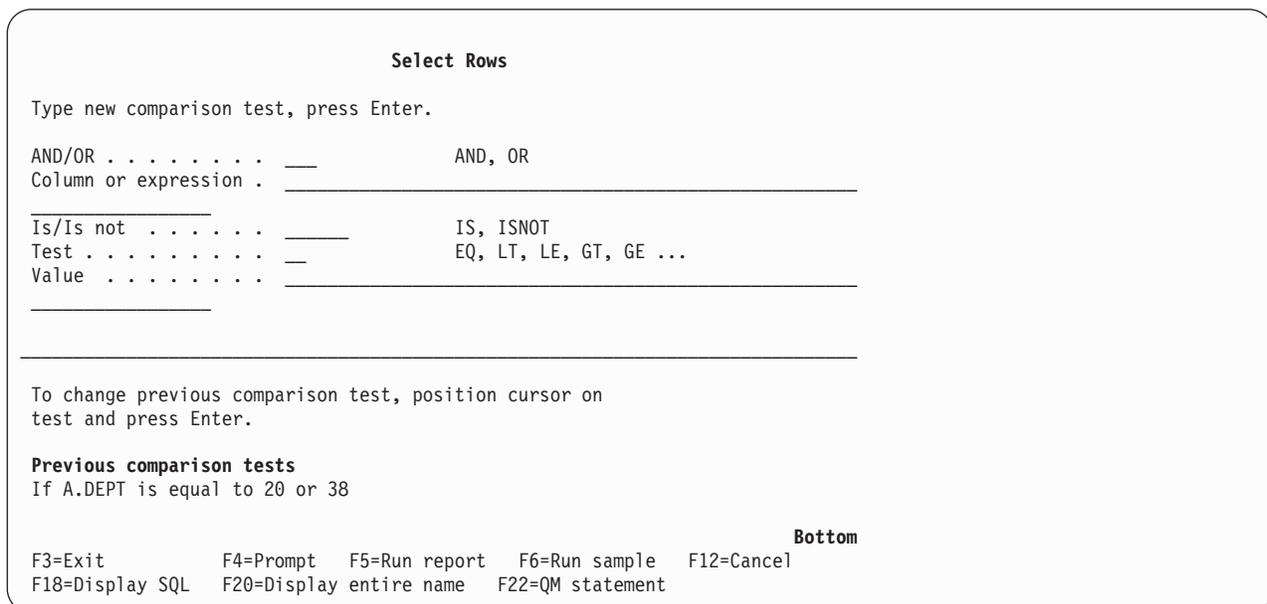


Figure 140. Tutorial: Create Prompted Query Display

The comparison test you have just defined is shown at the bottom of the display, and the prompts at the top of the display are ready for you to define the next comparison test.

Notice that an “AND/OR” prompt has been added to the top of the display. When you define more than one comparison test, you need to specify the connector you want to use to join the tests. You

would choose AND if you wanted both tests to be true for a row to be selected, or OR if you wanted either of the tests to be true for a row to be selected.

- You have completed defining the row selection test for the query. Press the Enter key to go to the next definition attribute that you chose, the Select Sort Columns display.

You use the Select Sort Columns display to specify the sort sequence for the columns being selected, and define the ORDER BY clause of the SELECT statement. An example of the Select Sort Columns display is shown in Figure 141.

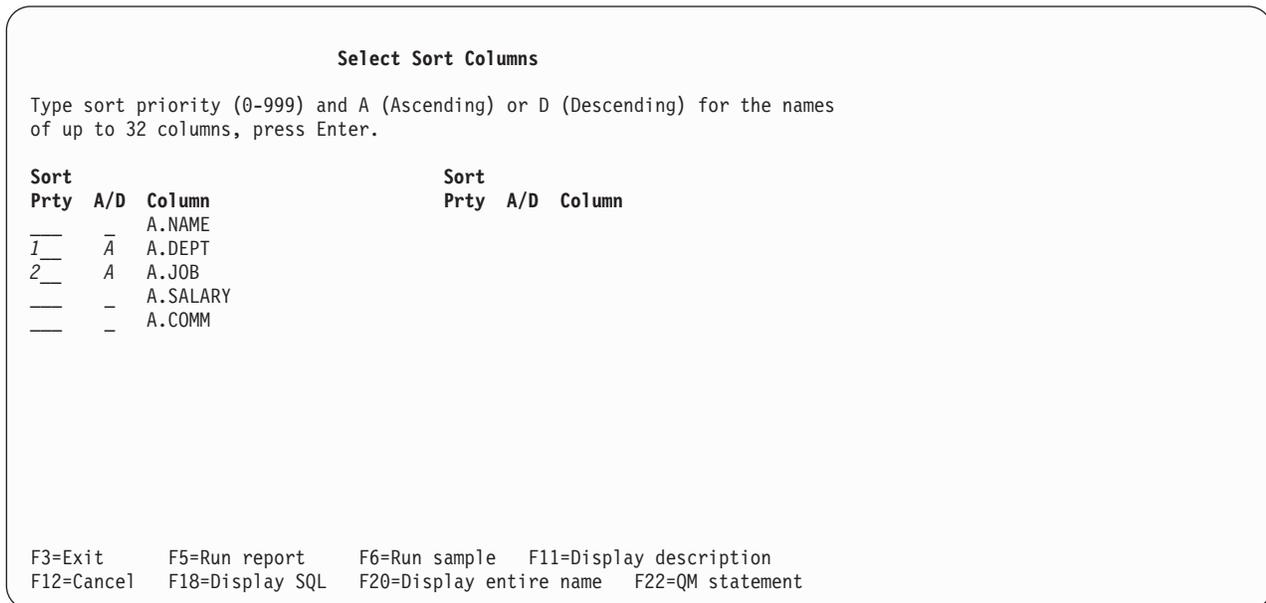


Figure 141. Tutorial: Create Prompted Query Display

- Select each of the columns that you want to sort. Type a number from 0 to 999 to specify the priority for each sort. Then, type A to specify that you want to sort the column in ascending order, or D to specify that you want to sort the column in descending order. You are defining the TUTQRY query:

```
SELECT DEPT, NAME, JOB, SALARY, COMM
...
ORDER BY DEPT, JOB
```

This means that you want to sort the selected columns in DEPT order, and within each DEPT, sort by JOB order. Type a sort priority of 1 for DEPT, and 2 for JOB. Both sorts are in ascending order (which is the default). Your display should appear as shown in Figure 141.

- Press the Enter key to return to the Define Prompted Query display. You have now completed all of the Prompted Query displays that you chose through this display, which means that you have now defined the TUTQRY query. Note that there is a ">" sign beside each part of the query that you have defined.
- Press F3 (Exit) to leave the Define Prompted Query display and go to the Exit display. You save and describe queries using the Exit display. Turn to "Exercise: Using the exit display to save a query in Query Manager" on page 213 to continue with the exercises in this appendix.

Exercise: Creating an SQL query in Query Manager

Perform the following exercise if your current query creation mode is SQL. If your query creation mode is prompted, turn to "Exercise: Creating a prompted query in Query Manager" on page 204.

This exercise leads you through the steps required to create the tutorial query (TUTQRY) shown below.

Specify SELECT Statement

Type information for SELECT statement. Press F4 for a list.

FROM tables _____
SELECT columns _____
WHERE conditions _____
GROUP BY columns _____
HAVING conditions _____
ORDER BY columns _____
FOR UPDATE OF columns _____

Bottom

Type choices, press Enter.

DISTINCT rows in result table N Y=Yes, N=No
UNION with another SELECT N Y=Yes, N=No
Specify additional options N Y=Yes, N=No

F3=Exit F4=Prompt F5=Refresh F6=Insert line F9=Specify subquery
F10=Copy line F12=Cancel F14=Delete line F15=Split line F24=More keys

Figure 143. Tutorial: Create SQL Query Display

You can now type values in response to the prompts on this display to define the TUTQRY query.

6. Type **MYCOLL.STAFF** in response to the “FROM tables” prompt, to specify the STAFF table from your MYCOLL collection (where MYCOLL is the name of your default collection for Query Manager tables). If you are using *SYS naming conventions, type **MYCOLL/STAFF**.
7. Type **DEPT, NAME, JOB, SALARY, COMM** in response to the “SELECT columns” prompt, to specify the columns you want to select from the table.
8. Type **DEPT = 20 OR DEPT = 38** in response to the “WHERE conditions” prompt, to select all rows with a department number of 20 or 38.
9. Type **DEPT, JOB** in response to the “ORDER BY columns” prompt, to sort the selected rows by employee DEPT number, and within each DEPT, sort by JOB order. The display should appear as shown in Figure 144.

Specify SELECT Statement

Type information for SELECT statement. Press F4 for a list.

FROM tables MYCOLL.STAFF
SELECT columns DEPT, NAME, JOB, SALARY, COMM
WHERE conditions DEPT = 20 OR DEPT = 38
GROUP BY columns _____
HAVING conditions _____
ORDER BY columns DEPT, JOB
FOR UPDATE OF columns _____

Bottom

Type choices, press Enter.

DISTINCT rows in result table N Y=Yes, N=No
UNION with another SELECT N Y=Yes, N=No
Specify additional options N Y=Yes, N=No

F3=Exit F4=Prompt F5=Refresh F6=Insert line F9=Specify subquery
F10=Copy line F12=Cancel F14=Delete line F15=Split line F24=More keys

Figure 144. Tutorial: Create SQL Query Display

- When the SELECT statement options are typed correctly, press the Enter key to leave the Specify SELECT Statement display and return to Edit Query display. Your display should contain the query statement shown in Figure 145.

Note: When you use F4 (Prompt) to create or change a query, Query Manager inserts the statement to the Edit Query display on a single line if possible. The query statement in Figure 145 has been formatted to make it easier for you to read. The query statement in your Edit Query display will appear as one continuous line.

```

                                Edit Query
Columns . . . . :      1  68      Query . . . . . : TUTQRY
QM . . . . .
-----
Type SQL Statement.
***** Beginning of data *****
0001.00 SELECT DEPT, NAME, JOB, SALARY, COMM
0002.00   FROM MYCOLL.STAFF
0003.00   WHERE DEPT = 20 OR DEPT = 38
0004.00   ORDER BY DEPT, JOB
***** End of data *****

                                Bottom
F2=Alternate keys  F3=Exit   F4=Prompt  F5=Run report  F6=Run sample
F9=Retrieve        F15=Check syntax F24=More keys

```

Figure 145. Tutorial: Create SQL Query Display

You have now finished defining the TUTQRY query. Press F3 (Exit) to leave the Edit Query display and go to the Exit display. You save and describe queries using the Exit display, as described in the following exercise: “Exercise: Using the exit display to save a query in Query Manager.”

Exercise: Using the exit display to save a query in Query Manager

You cannot accidentally exit from the Create Query option without saving your query. Every time you exit from the Edit Query or Define Prompted Query displays, you go to the Exit display which asks whether you want to save the query you have just created. This Exit display is also shown after you change a query, and after you create or change a report form.

- If you have not already done so, press F3 (Exit) to leave the query editor display and go to the Exit display. An example of the Exit display is shown in Figure 146 on page 214.

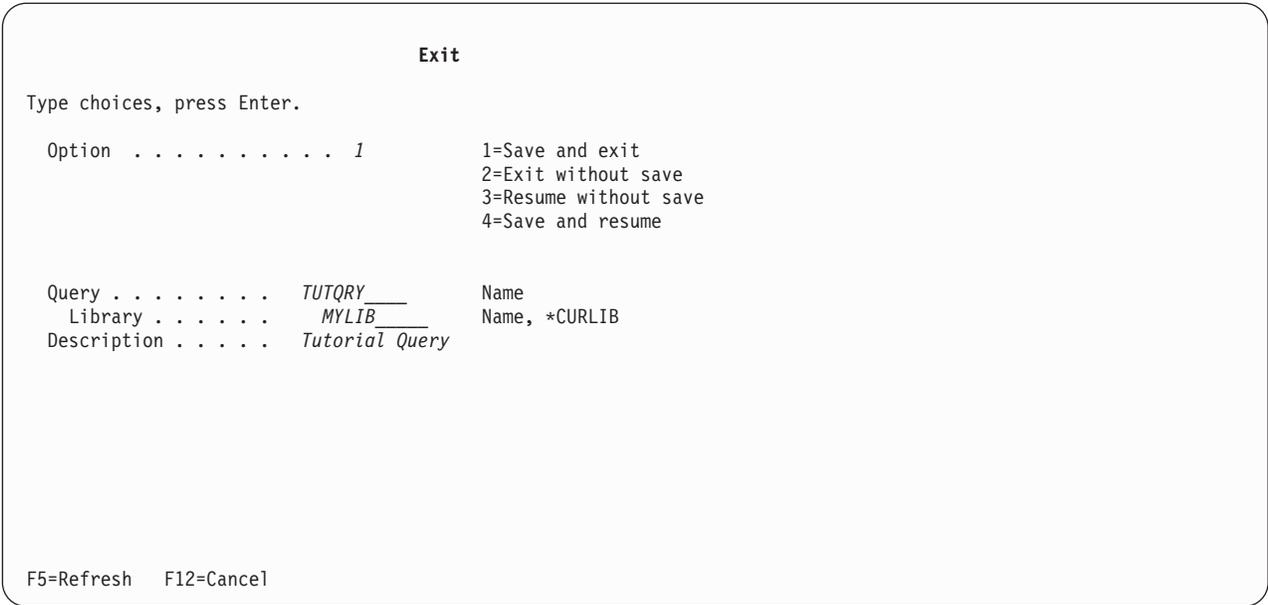


Figure 146. Tutorial: Save Query Display

2. Type **Tutorial Query** as the description for this query.
3. You want to save the query and exit from the Create Query option, so press the Enter key to accept the default value of 1 (Save and exit), and return to the Work with Query Manager Queries display. Notice that the TUTQRY query has been added to the list of queries shown on this display.

When you save a newly created query, it becomes the active query. TUTQRY is now the active query.

Exercise: Running a query to creating active data in Query Manager

Now that you have created the TUTQRY query, you can run it and view the information that the query retrieves and sorts. Running a query interactively creates active data, which you will use in the next exercise in this appendix, “Exercise: Creating a report form in Query Manager” on page 216.

Note: If your Query Manager profile is set so that you can run queries only in batch mode and “Allow interactive sample run” is set to NO, you cannot create active data. Active data is created only when a query is run interactively.

The way you run a query can differ depending on the settings in your Query Manager profile.

1. Make sure that the Work with Query Manager Queries display is shown. Type **9** in the Opt prompt next to the TUTQRY query; then press the Enter key to go to the Run Query display, as shown in Figure 147 on page 215.

```

                                Run Query
Query . . . . . : TUTQRY
Library . . . . . : MYLIB

Type choices, press Enter.

Run Query Mode . . . 1          1=Interactive
                                2=Batch
Run sample only . . . Y          Y=Yes, N=No
Form . . . . . : *SYSDFT_____ Name, *, *SYSDFT, F4 for list
Library . . . . . : _____ Name, *CURLIB, *LIBL
Output . . . . . : 1 _____ 1=Display, 2=Printer,
                                3=Table

F3=Exit  F4=Prompt  F12=Cancel

```

Figure 147. Tutorial: Run Query Display

- Alter the run options if necessary to run the query in **interactive** mode and send the output to **display**; then press the Enter key to run the query. Note that you can run a sample query only if “Allow interactive sample run” is set to YES in your Query Manager profile. Run options are described in “Using the run query display in Query Manager” on page 136 and the “Allow interactive sample run” profile setting is described on page 36.

Because you have not yet defined a report form for the TUTQRY query, Query Manager creates a default form (called *SYSDFT) in which to present the query data. When the query has completed running, its results are shown on your display.

If you are unable to run queries in interactive mode, run the query in **batch** mode and send the output to a specified **printer**. No active data will be created, but you can see the result of running the query. Go to step 4 on page 216.

```

                                Display Report
Query . . . . . : MYLIB.TUTQRY      Width . . . . . : 71
Form . . . . . : *SYSDFT           Column . . . . . : 1
Control . . . . . : _____
Line . . . . . : 1.....2.....3.....4.....5.....6.....7.
DEPT  NAME  JOB  SALARY  COMM
-----
000001  20 James Clerk 13,504.60 128.20
000002  20 Sanders Mgr 18,357.50 .00
000003  20 Pernal Sales 18,171.25 612.45
000004  38 Marengi Mgr 17,506.75 .00
000005  38 O'Brien Sales 18,006.00 846.55
000006  38 Quigley Sales 16,808.30 650.25

**** End of Data ****

                                Bottom

F3=Exit  F12=Cancel  F19=Left  F20=Right  F21=Split

```

Figure 148. Tutorial: Run Query Display

- When you finish viewing the results of the query, press F3 (Exit) to return to the Work with Query Manager Queries display.

When Query Manager runs a SELECT statement query interactively, it creates active data. In the next exercise in this appendix, you are going to create a report form to format the data retrieved by the TUTQRY query. When there is active data, Query Manager is able to supply default values (such as column headings and widths) that you can use when creating your report form.

- Press F3 (Exit) to leave the Work with Query Manager Queries display and return to the Query Manager main menu.

Exercise: Creating a report form in Query Manager

This exercise leads you through the steps to create a report form for the TUTQRY query. Report formatting can be quite complex, and only a few of its options are described in this exercise. For a complete description of the report formatting options available through Query Manager, see “Creating or changing a Query Manager report form” on page 107.

This exercise assumes you have created and run the TUTQRY query, and that the Query Manager main menu is displayed. Turn to “Exercise: Creating a prompted query in Query Manager” on page 204 or “Exercise: Creating an SQL query in Query Manager” on page 210 if you have not yet created the TUTQRY query. Turn to “Exercise: Running a query to creating active data in Query Manager” on page 214 if you have not yet run the query.

- Type **2** in the Selection prompt from the Query Manager main menu; then press the Enter key to show the Work with Query Manager Report Forms display.
- Type **1** in the Opt prompt next to the blank report form name (at the top of the list) to choose option 1 (Create).
- Type **TUTRPT** in the Form name prompt to name the tutorial report form; then press the Enter key to go to the Create option and show the Select Report Format display, as shown in Figure 149.

```

                                Select Report Format

Form . . . . . :  TUTRPT

Type options, press Enter.  Press F21 to select all.
1=Select

Opt  Report Format
  _    Edit column formatting
  _    Edit page heading
  _    Edit page footing
  _    Edit final text
  _    Edit break text
  _    Specify formatting options

                                Bottom
F3=Exit  F5=Display report  F12=Cancel  F13=Edit query  F18=Display SQL
F21=Select all  F22=QM statement

```

Figure 149. Tutorial: Create Report Form Display

Note: If a report form called TUTRPT already exists in your default library, you need to give a different name to the report form you are creating. You cannot have two report forms, both called TUTRPT, in the same library.

Use the Select Report Format display to choose the attributes of the report that you want to format. You can type **1** in the Opt prompts to select individual attributes, or press F21 (Select all) to select all attributes.

- Press F21 (Select all) to place a 1 in the Opt prompt for all attributes; then press the Enter key to show the Edit Column Formatting display. Displays for the attributes you choose are shown in the same order as they appear on the Select Report Format display. An example of the Edit Column Formatting display is shown in Figure 150.

Edit Column Formatting

Type information, press Enter.
 For Usage and Edit, press F4 for list.
 For Heading, press F4 for prompt.

Column	Heading	Usage	Edit	Seq	Indent	Width
DEPT	DEPT	_____	_____	_1	_2	_14
NAME	NAME	_____	_____	_2	_2	_9
JOB	JOB	_____	_____	_3	_2	_5
SALARY	SALARY	_____	_____	_4	_2	_13
COMM	COMM	_____	_____	_5	_2	_10

Bottom

F2=Alternate keys F3=Exit F4=Prompt F5=Display sample F6=Insert line
 F10=Copy line F11=Edit heading F12=Cancel F24=More keys

Figure 150. Tutorial: Create Report Form Display

Use the Edit Column Formatting display to control the way in which column information is arranged in the report. You can type headings for all columns, specify the column widths, and specify break levels and summary functions to include sub-totals and totals in your report.

Note that if you could not run the TUTQRY query interactively to create active data, no default values are shown on the Edit Column Formatting display. The Columns and Headings are shown as numbers, and the Width prompts are blank. You can load default values for the Columns, Headings, and Widths from the active query.

- If your Edit Column Formatting display contains default values for Column and Heading, go to step 6. If there are no default values, press F24 (More keys). Notice that F19 (Load from query) is now shown on the display.

Press F19 to load default values for Column and Heading from the active query (TUTQRY). The prompts for Column and Heading should now contain the information shown in Figure 150.

- Press F11 (Edit heading) to show a display through which you can enter column headings. Type the column headings shown in Figure 151 on page 218.

When you complete typing the column headings, press F11 (Edit usage) to return to the main Edit Column Formatting display.

Edit Column Formatting

Type information, press Enter.
For Usage and Edit, press F4 for list.
For Heading, press F4 for prompt.

Column	Heading
DEPT	<i>Department</i>
NAME	<i>Employee Name</i>
JOB	<i>Job</i>
SALARY	<i>Salary</i>
COMM	<i>Commission</i>

Bottom

F2=Alternate keys F3=Exit F4=Prompt F5=Display sample F6=Insert line
F10=Copy line F11=Edit usage F12=Cancel F13=Edit query F24=More keys

Figure 151. Tutorial: Create Report Form Display

7. Move the cursor to the Usage prompt. You use this prompt to specify break levels, and summary operations such as Average, Count, Sum, Maximum, and Minimum. You can specify one usage for each column in the report.
Press F4 (Prompt) to display a list of all of the supported Usage options. The More... at the bottom of the list indicates that there is more than one window of information. Use your display station's roll keys to view the entire list.
8. Specify a **BREAK1** Usage for DEPT, a **BREAK2** Usage for JOB, and a **SUM** Usage for SALARY and COMM. Report breaks are described in detail in "Using break levels in the report in Query Manager" on page 6.
The next prompt on the display is Edit, through which you specify the format in which you want column information to appear.
9. Move the cursor to the Edit prompt; then press F4 (Prompt) for a list of all of the formats in which column information can appear. (For each column, you need to specify whether the column holds character, numeric, graphic, or date/time data before the list of formats can be displayed.) If there is a More... at the bottom of a list, it indicates that there is more than one window of information. Use your display station's roll keys to view the entire list.
10. Specify an **L** numeric format for DEPT, an **L2** numeric with 2 decimal places format for SALARY and COMM, and a **C** character format for the NAME and JOB columns.
11. Move the cursor to the Width prompt. If you have active data, or an active query, default widths are shown on the display.
Specify a width of **10** for the DEPT column, **13** for NAME, **5** for JOB, **10** for SALARY, and **10** for COMM.
Leave the remainder of the formatting prompts on this display unchanged, and use the default values supplied by Query Manager.
 - **Seq** specifies the sequence in which you want the columns to appear. The default is for columns to appear in the same order as they are retrieved by the query.
 - **Indent** specifies the number of spaces you want to insert before the column to indent the first column from the edge of the page, and separate all remaining columns from the previous columns. The default value is two spaces.Your completed Edit Column Formatting display should contain the information shown in Figure 152 on page 219.

Edit Column Formatting

Type information, press Enter.
 For Usage and Edit, press F4 for list.
 For Heading, press F4 for prompt.

Column	Heading	Usage	Edit	Seq	Indent	Width
DEPT	Department	BREAK1_	_____	1	2	14
NAME	Employee Name	_____	_____	2	2	9
JOB	Job	break2_	_____	3	2	5
SALARY	Salary	sum_____	_____	4	2	13
COMM	Commission	sum_____	_____	5	2	10

Bottom

F2=Alternate keys F3=Exit F4=Prompt F5=Display sample F6=Insert line
 F10=Copy line F11=Edit heading F12=Cancel F24=More keys

Figure 152. Tutorial: Create Report Form Display

- Press the Enter key to leave the Edit Column Formatting display, and show the next display in report formatting sequence: the Edit Page Heading display.
 Use the Edit Page Heading display, shown in Figure 153, to specify the text that you want to appear at the top of each page of the report. Note that the page heading appears only when a report is printed.

Edit Page Heading

Type choices, press Enter.

Blank lines before 0 0-999
 Blank lines after 2 0-999

Page text: Use &n, &DATE, &TIME, and &PAGE to cause variable insertion.

Line	Align	Page Heading Text
1	CENTER	_____
2	CENTER	_____
3	CENTER	_____
4	CENTER	_____
5	CENTER	_____

Bottom

F2=Alternate keys F3=Exit F4=Prompt F5=Display report F6=Insert line
 F10=Copy line F12=Cancel F13=Edit query F14=Delete line F24=More keys

Figure 153. Tutorial: Create Report Form Display

- The "Blank lines before" and "Blank lines after" prompts specify the vertical position in which you want the page heading to appear (in relationship to the top of the page and the first detail line). Specify 0 blank lines before, and 1 blank line after.
- Move the cursor to the first Line prompt, to enter the heading text for line 1. Leave the line number of 1 and the alignment of CENTER unchanged, to center the heading on the line. Type **Tutorial Report Form** as the page heading.

Move the cursor to the second Line prompt. You are going to enter additional heading text for line 1 on this line. You can specify up to three values for one heading line as long as all values have different alignments: LEFT, CENTER, and RIGHT.

15. Type **1** as the line number, **RIGHT** as the alignment, and **&DATE** as the heading text. (You need to type the word DATE in uppercase.) This causes the current date to appear on the same line as the report heading. The variable insertion values you can enter are described on page 119. The Edit Page Heading display should appear as shown in Figure 154.

Edit Page Heading

Type choices, press Enter.

Blank lines before	0	0-999
Blank lines after	1	0-999

Page text: Use &col, &DATE, &TIME, and &PAGE to cause variable insertion.

Line	Align	Page Heading Text
1	CENTER	Tutorial Report Form
1	right	&DATE
3	CENTER	_____
4	CENTER	_____
5	CENTER	_____

Bottom

F2=Alternate keys F3=Exit F4=Prompt F5=Display sample F6=Insert line
 F10=Copy line F12=Cancel F13=Edit query F14=Delete line F24=More keys

Figure 154. Tutorial: Create Report Form Display

16. Press the Enter key to save the page heading information, and show the next display in report formatting sequence: the Edit Page Footing display.
 Use the Edit Page Footing display, shown in Figure 155 on page 221, to specify the text that you want to appear at the bottom of each page of the report. You use this display in the same way as the Edit Page Heading display.

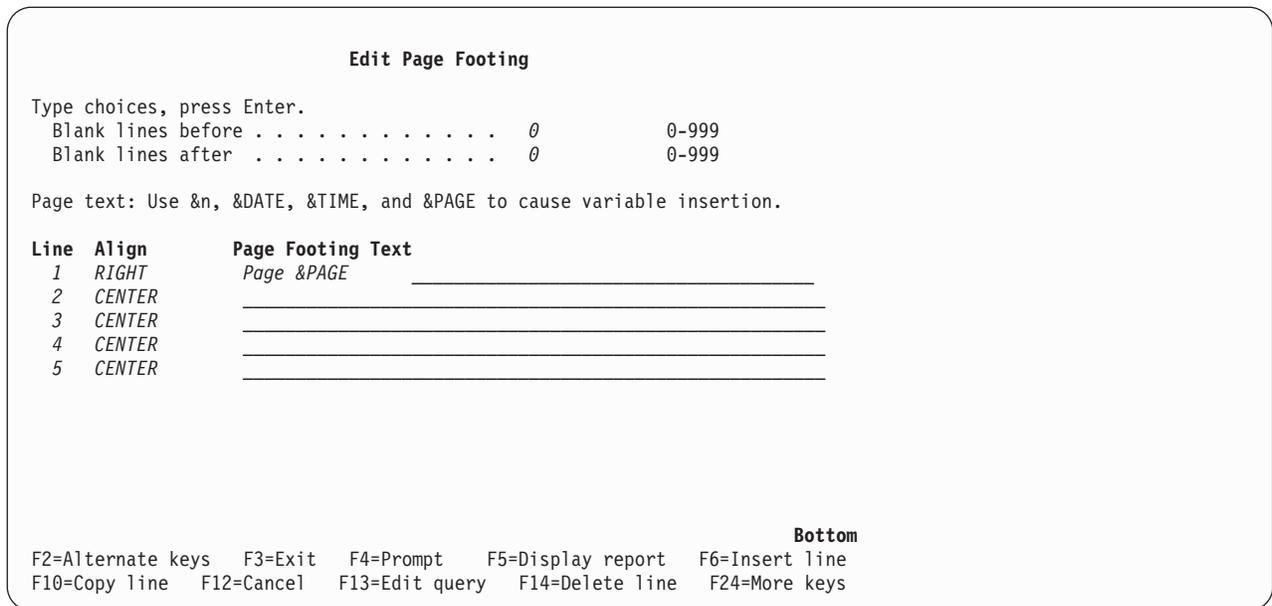


Figure 155. Tutorial: Create Report Form Display

- Specify 0 “Blank lines before” and 0 “Blank lines after”.
- Move the cursor to the first Line prompt, to enter the footing text for line 1. Type an alignment of **RIGHT**, and **Page &PAGE** as the page footing text. (You need to type the second occurrence of the word PAGE in uppercase.) This causes the word “Page” followed by the page number (&PAGE) to appear in the bottom right-hand corner of each page.
- Press the Enter key to save the page footing information, and show the next display in report formatting sequence: the Edit Final Text display.
 Use the Edit Final Text display, shown in Figure 156, to specify the text that you want to appear at the end of the report.

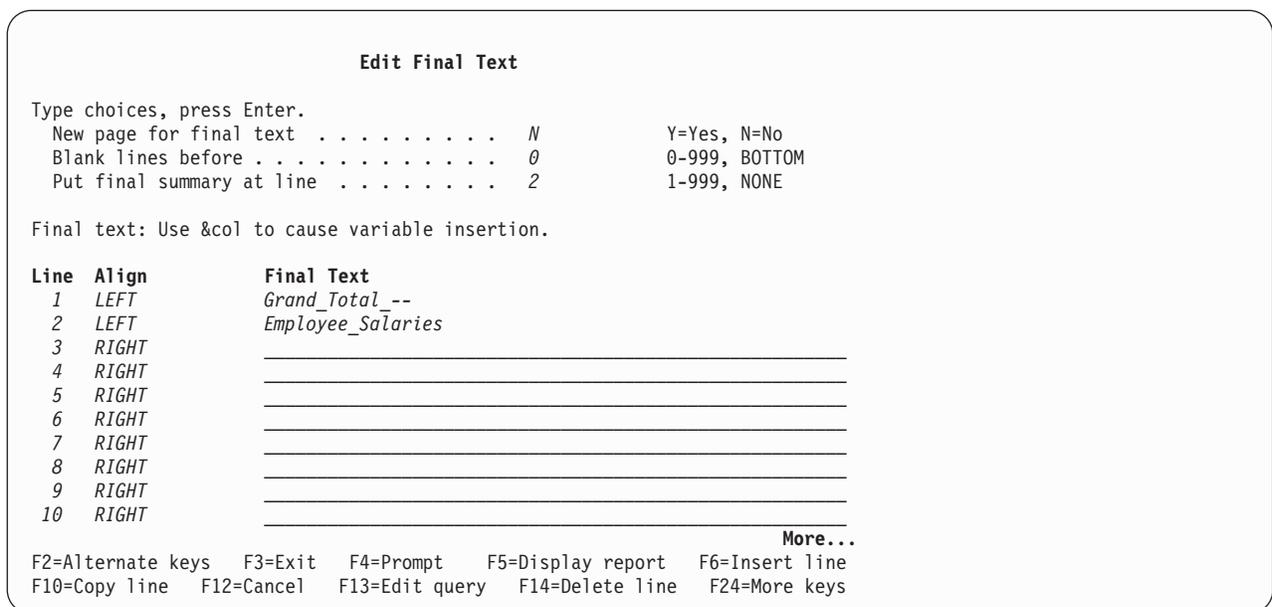


Figure 156. Tutorial: Create Report Form Display

You use the Edit Final Text display in the same way as the Edit Page Heading and Edit Page Footing displays. The only differences are that you can specify that the final text is to begin on a new page, and you can choose the line within the final text on which you want final summary information to appear.

20. Type **N** to stop the final text appearing on a new page. Leave "Blank lines before" as **0**, and type **2** to specify that you want summary figures (the total SUM for the Salary and Commission columns) to appear on the second line of the final text.
21. Move the cursor to the first Line prompt. Type an alignment of **LEFT**, and **Grand Total --** as the text for the first line of final text.
22. Move the cursor to the second Line prompt. Type an alignment of **LEFT**, and **Employee Salaries** as the text for the second line of final text.

This causes the text:

```
Grand Total --
Employee Salaries          99999.99    9999.99
```

to appear at the end of the report. You have already specified that you want the summary figures to appear on the second line of final text, so the totals for the Salary and Commission columns will appear on the same line as "Employee Salaries". Summary figures always appear under the column that they summarize.

The Edit Final Text display should contain the information shown in Figure 156 on page 221.

23. Press the Enter key to save the final text information, and show the next display in report formatting sequence: the Edit Break Text display.

Use the Edit Break Text display, shown in Figure 157, to specify the information you want to appear for each break level within your report form.

Edit Break Text

Type options, press Enter.
1=Heading text 2=Footing text

Opt	Break Level	Columns with this Break Level
1	1	DEPT
2	2	JOB

Bottom

F2=Alternate keys F3=Exit F5=Display report F12=Cancel F13=Edit query
F18=Display SQL F22=QM statement

Figure 157. Tutorial: Create Report Form Display

24. Type **1** beside Break level 1 to specify Heading text, and **2** beside Break level 2 to specify Footing text; then press the Enter key to show the Edit Break Heading display.

You use the Edit Break Heading and Footing displays in much the same way as the Edit Page Heading and Footing displays. The only differences are:

- You can force break text to begin on a new page.
- You can repeat column headings above the detail lines for the break group.
- You can specify the line within the break footing on which you want summary data to appear.

An example of the Edit Break Heading display is shown in Figure 158.

```

                                Edit Break Heading

Break level . . . . . : 1

Type choices, press Enter.
Put on new page . . . . . N          Y=Yes, N=No
Repeat column heading . . . . . N    Y=Yes, N=No
Blank lines before . . . . . 0       0-999
Blank lines after . . . . . 1        0-999

Break text: Use &col to cause variable insertion.

Line  Align      Break Heading Text
 1  LEFT      Beginning_of_department_&DEPT
 2  LEFT      _____
 3  LEFT      _____
 4  LEFT      _____
 5  LEFT      _____

                                Bottom
F2=Alternate keys  F3=Exit  F4=Prompt  F5=Display report  F6=Insert line
F10=Copy line     F12=Cancel F13=Edit query F14=Delete line  F24=More keys

```

Figure 158. Tutorial: Create Report Form Display

25. Type **N** in response to the “Put on new page” prompt, to keep the new break information on the same page as the previous break. Type **N** in response to the “Repeat column heading” prompt to stop the column headings from being repeated under the break heading text.
Specify **0** blank lines before the break heading, and **1** blank line after.
26. Move the cursor to the first Line prompt, to enter the break heading text for line 1. Leave the line number and alignment unchanged. Type **Beginning of department &DEPT** as the text. When Query Manager prints the heading, it replaces the &DEPT variable with the value from the DEPT column in the current row (where the break occurs), so the current department number is inserted in the heading line.
27. Press the Enter key to save the break heading information, and show the next display that you specified through the Edit Break Text display: the Edit Break Footing display for Break level 2.
An example of the Edit Break Footing display is shown in Figure 159 on page 224.

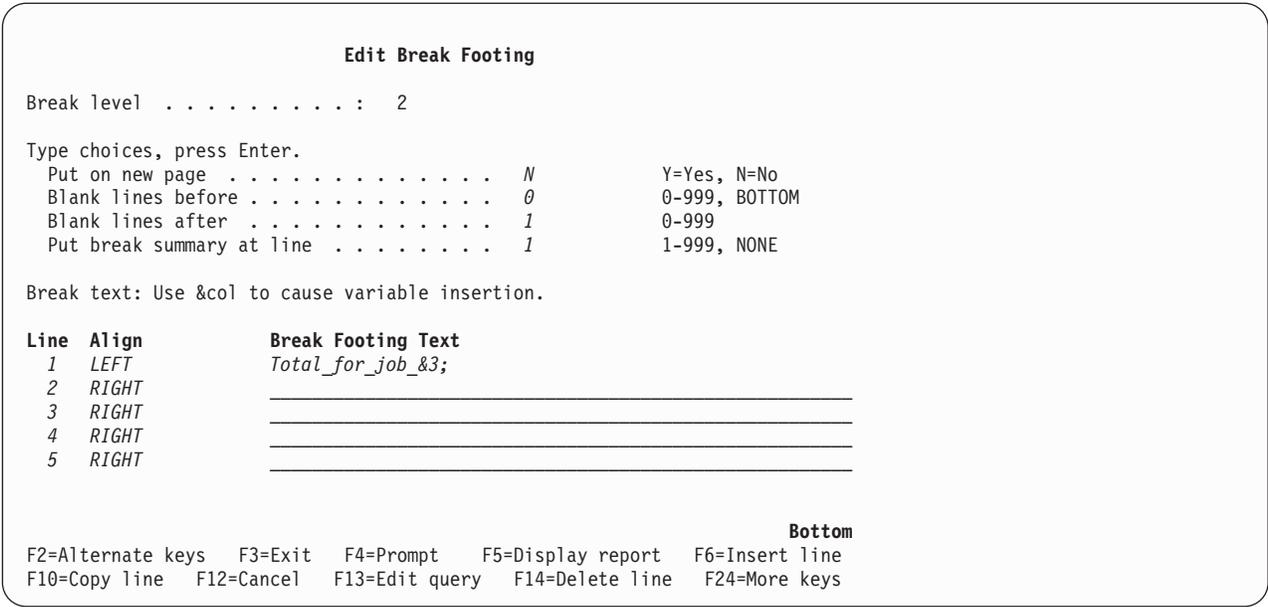


Figure 159. Tutorial: Create Report Form Display

28. Type **N** in response to the “Put on new page” prompt, to keep the footing text on the same page as the break detail lines. Specify **0** blank lines before the break footing, and **1** blank line after. Type **1** as the line number (within the break footing) at which you want the break summary information to appear.
29. Move the cursor to the first Line prompt, to enter the break footing text for line 1. Type an alignment of **LEFT**, and **Total for job &3** as the text. When Query Manager prints the footing, it replaces the &3 variable with the value from column 3 in the current row (where the break occurs). Column 3 is the JOB column, so the current job description is inserted in the footing line.
 Because you specified that the summary data was to appear on line 1 of the break footing, the summary figures follow the heading: Total for job &3.
30. Press the Enter key to save the break footing information, and return to the Edit Break Text display. You are going to specify both break heading text and break footing text for Break level 1. This is done in two separate operations.
 First, you specified the heading text for break 1. The next thing you are going to do is specify the footing text for break 1. Type **2** beside Break level 1 to specify Footing text for the DEPT break; then press the Enter key to show the Edit Break Footing display for Break level 1. Figure 159 shows an example of the Edit Break Footing display.
31. Type **N** in response to the “Put on new page” prompt, to keep the footing text on the same page as the break detail lines. Specify **0** blank lines before the break footing, and **1** blank line after. Type **1** as the line number (within the break footing) at which you want the break summary information to appear.
32. Move the cursor to the first Line prompt, to enter the break footing text for line 1. Type an alignment of **LEFT**, and **Total for department &1** as the text. When Query Manager prints the footing, it replaces the &DEPT variable with the value from the DEPT column in the current row (where the break occurs), so the current department number is inserted in the footing line.
 Because you specified that the summary data was to appear on line 1 of the break footing, the summary figures follow the heading, “Total for department &1”.
33. Press the Enter key to save the break footing information, and return to the Edit Break Text display. You have now finished editing break text information, so press the Enter key to progress to the next display in report formatting sequence: the Specify Report Formatting Options display.

Use the Specify Report Formatting Options display, shown in Figure 160, to specify spacing, separators, and other options to format your report.

Specify Report Formatting Options

Type choices, press Enter.

Detail line spacing	1	1-4
Outlining for break columns	Y	Y=Yes, N=No
Default break text	Y	Y=Yes, N=No
Column wrapped lines kept on page . .	Y	Y=Yes, N=No
Column heading separators	Y	Y=Yes, N=No
Break summary separators	Y	Y=Yes, N=No
Final summary separators	Y	Y=Yes, N=No

F2=Alternate keys F3=Exit F5=Display report F12=Cancel F13=Edit query
 F18=Display SQL F22=QM statement

Figure 160. Tutorial: Create Report Form Display

34. Accept the default values for all prompts. Leave all of the formatting options on this display unchanged to produce the report using Query Manager’s default values. (These default values are described on page 126.)
35. Press the Enter key to save the report formatting options and return to the Select Report Format display. You have now completed all of the report format displays that you chose through this display.

In the next exercise, you will run the new report form that you have just defined (but have not yet saved).

Exercise: Displaying a report in Query Manager

You can now display the report form that you created. Apply the report form to the active data to see the way that the definition of the report form affects the appearance of the report.

This exercise assumes that you have active data from running the TUTQRY query, and that you have just completed defining the TUTRPT report form and the Select Report Format display is shown.

Note: If your Query Manager profile is set so you can run queries only in batch mode, you cannot create active data. You cannot display the report, but you can run it in batch mode, and direct the output to a specified printer.

1. Press the F5 key, which is labeled (Display report) if your active data is the result of running a full query, or (Display sample) if your active data is the result of running a sample query. An example of the displayed report is shown in Figure 161 on page 226.

If there is no active data and the F5 key is labeled (Run report), go to step 4.

Display Report					
Query	*		Width	71	
Form	MYLIB.TUTRPT		Column	1	
Control					
Line	1	2	3	4	5
	Department	Employee Name	Job	Salary	Commission
000001	Beginning of department 20				
000002					
000003	20	James	Clerk	13504.60	128.20
000004					
000005	Total for job Clerk			13504.60	128.20
000006					
000007		Sanders	Mgr	18357.50	.00
000008					
000009	Total for job Mgr			18357.50	.00
000010					
000011		Pernal	Sales	18171.25	612.45
000012					
000013				18171.25	612.45
000014					

More...

F3=Exit F12=Cancel F19=Left F20=Right F21=Split

Figure 161. Tutorial: Display Report Display

- Use the display station’s roll keys to view the entire report.
- When you finish viewing the report, press F12 (Cancel) to return to the Select Report Format display. Go to step 5.
- If there is no active data, the F5 key is labeled (Run report). Press F5 to go to the Run Query display. Choose to run the report in **batch** mode using the active query (*), and direct the output to your default **printer**. Run options are described in “Using the run query display in Query Manager” on page 136.
- In the next exercise, you will change the TUTQRY query. If you created TUTQRY as a prompted query, go to page 226. If you created TUTQRY as an SQL query, go to page 229.

Exercise: Changing a prompted query in Query Manager

Perform the following exercise if you created and saved the TUTQRY query using the prompted query creation mode. If you created and saved the TUTQRY query as an SQL query, turn to “Exercise: Changing an SQL query in Query Manager” on page 229.

In this exercise, you are going to change the definition of the active query. Instead of selecting all employees who work in department 20 or 38, you will select all sales staff.

This exercise assumes that TUTQRY is the active query, that you have just displayed the TUTRPT report, and that the Select Report Format display is shown.

- Press F13 (Edit query) to leave the Select Report Format display and show the Define Prompted Query display containing TUTQRY, which is the active query. An example of the Define Prompted Query display is shown in Figure 162 on page 227.

```

Define Prompted Query

Query . . . . . : TUTQRY

Type options, press Enter. Press F21 to select all.
1=Select

Opt Prompted Query Selection
_ > Specify tables
_ Define expressions
_ > Select and sequence columns
I > Select rows
_ > Select sort columns
_ Select summary functions
_ Specify duplicate rows
_ Specify report formatting

F3=Exit      F5=Run report  F6=Run sample  F12=Cancel  F18=Display SQL
F21=Select all  F22=QM statement

```

Figure 162. Tutorial: Change Prompted Query Display

Notice that one of the options shown on the Define Prompted Query display is “Specify report formatting”. You select this option when you want to return to the Select Report Format display.

2. Type **1** in the Opt prompt next to “Specify row selections”; then press the Enter key to go to the Specify Row Selections display. You use this display to create and change the row selection tests that tell Query Manager which rows to select from the specified table columns. An example of the Select Rows display is shown in Figure 163.

```

Select Rows

Type new comparison test, press Enter.

AND/OR . . . . . ___      AND, OR
Column or expression . _____

Is/Is not . . . . . _____      IS, ISNOT
Test . . . . . ___      EQ, LT, LE, GT, GE ...
Value. . . . . _____

_____

To change previous comparison test, position cursor on
test and press Enter.

Previous comparison tests
If A.DEPT is equal to 20 or 38

Bottom
F3=Exit      F4=Prompt  F5=Run report  F6=Run sample  F12=Cancel
F18=Display SQL  F20=Display entire name  F22=QM statement

```

Figure 163. Tutorial: Change Prompted Query Display

You want to replace the existing comparison test with the new test:

```
If A.JOB is equal to 'Sales'
```

3. Move the cursor to the “Previous comparison tests” shown on the bottom half of the display. Make sure that the cursor is positioned somewhere on the line that says:

```
If A.DEPT is equal to 20 or 38
```


You need to enclose the word 'Sales' in single quotation marks, and type it in uppercase and lowercase letters, exactly as it appears in the database table.

7. Press the Enter key to accept the changed row selection test. The test is removed from the top half of the display, and

If A.JOB is equal to 'Sales'

is shown at the bottom of the display, as a "Previous comparison test".

8. Press the Enter key a second time to return to the Define Prompted Query display.

You are now going to run the changed TUTQRY query. Turn to "Exercise: Running the changed query in Query Manager" on page 230 to continue with the exercises in this appendix.

Exercise: Changing an SQL query in Query Manager

Perform the following exercise if you created and saved the TUTQRY query using the SQL query creation mode. If you created and saved the TUTQRY query as a prompted query, turn to "Exercise: Changing a prompted query in Query Manager" on page 226.

In this exercise, you are going to change the definition of the active query. Instead of selecting all employees who work in department 20 or 38, you will select all sales staff.

This exercise assumes that TUTQRY is the active query, that you have just displayed the TUTRPT report, and that the Select Report Format display is shown.

1. Press F13 (Edit query) to leave the Select Report Format display and show the Edit Query display containing TUTQRY, which is the active query.
2. Press F24 (More keys) to view additional function key definitions for the Edit Query display. Notice that the description for F13 has changed to (Edit form). You can use F13 to switch back and forth between the currently active SQL query and report form.
3. Move the cursor to the part of the query that reads:

WHERE DEPT = 20 OR DEPT = 38

and replace it with **WHERE JOB = 'Sales'**. You need to enclose the word 'Sales' in single quotation marks, and type it in uppercase and lowercase letters, exactly as it appears in the database table.

```

                                Edit Query
Columns . . . . :      1  68      Query . . . . . : TUTQRY
QM . . . . .
-----
Type SQL Statement.
***** Beginning of data *****
0001.00 SELECT DEPT, NAME, JOB, SALARY, COMM
0002.00   FROM MYCOLL.STAFF
0003.00   WHERE JOB = 'Sales'
0004.00   ORDER BY DEPT, JOB
***** End of data *****

                                Bottom
F10=Cursor  F13=Edit form  F16=Repeat find  F17=Repeat change
F19=Left    F20=Right     F21=System command  F24=More keys

```

Figure 166. Tutorial: Change SQL Query Display

You can make changes to the query by typing new or corrected values over the existing statement, or by pressing F4 (Prompt) to show the prompt display for the SQL statement that defines the query. You might need to use the F20 (Right) and F19 (Left) function keys to display the part of the query statement that you want to change.

Now that you have changed the query, you can run it to view the changes you have made. Press F24 (More keys) to view additional function key definitions for the Edit Query display. Then perform the next exercise in this appendix: Exercise: Running the changed query in Query Manager.

Exercise: Running the changed query in Query Manager

You are now going to run the TUTQRY query, to view the changes that you made. This exercise assumes that you have just changed the TUTQRY query, and that the Define Prompted Query display or Edit Query display is shown.

1. Press F5 (Run report) to run the query using the TUTORPT report form.
 If the "Display run options" setting in your Query Manager profile is set to NO, Query Manager runs the report using the default settings from your profile, and formats it using the active form (the TUTORPT report form that you defined). If "Display run options" is set to YES, you can now alter any run options you require. Type an asterisk * to run the report using the active form (TUTORPT). We suggest that you choose **interactive** mode and direct the output to **display**. Run options are described on page 136.
2. Press the Enter key to run the report.
 When the report has completed running, you either see it shown on your display, or you see a message at the bottom of the current display telling you the report has been sent to a printer or table. An example of the report generated by the changed query is shown in Figure 167 on page 231.

```

                                Display Report
Query . . . . . : MYLIB.TUTQRY      Width . . . . . : 71
Form . . . . . : MYLIB.TUTRPT      Column . . . . . : 1
Control . . . . .
Line . . . . .1 . . . . .2 . . . . .3 . . . . .4 . . . . .5 . . . . .6 . . . . .7 .
      Department  Employee Name  Job          Salary      Commission
-----
000001 Beginning of department 15
000002
000003      15      Rothman      Sales      16502.83      1152.00
000004
000005 Total for job Sales          16502.83      1152.00
000006
000007
000008 Total for department 15      16502.83      1152.00
000009
000010 Beginning of department 20
000011
000012      20      Pernal      Sales      18171.25      612.45
000013
000014 Total for job Sales          18171.25      612.45
More...
F3=Exit  F12=Cancel  F19=Left  F20=Right  F21=Split

```

Figure 167. Tutorial: Run Query Display

- If you directed the query output to display, press F3 (Exit) when you finish viewing the Display Report, to return to the Define Prompted Query display or the Edit Query display. If an Exit display is shown, choose option 1 to complete running the query and create active data.

Exercise: Exiting without saving the query or report form in Query Manager

You have now created and run a query, created a report form, displayed a report, and changed and run a query. You have finished most of the exercises in this part of the appendix.

This exercise assumes you have just run the changed query, and that the Define Prompted Query display or Edit Query display is shown.

- Press F3 (Exit) to leave the query editor display and show the Exit display. An example of the Exit display is shown in Figure 168 on page 232.



Figure 168. Tutorial: Exit Display

Notice that this Exit display shows both the changed TUTQRY query and the newly created TUTRPT report form. An Exit display is shown every time you create or change a query or report form.

2. You want to exit from the query editor display without saving the changed query or the new report form, so type **2**; then press the Enter key to exit without saving. Query Manager returns you to the Work with Query Manager Report Forms display.

The final exercise in this appendix is to delete the TUTQRY query which you no longer require. You delete queries through the Work with Query Manager Queries display, so you need to exit from the Work with Query Manager Report Forms display, and go to the Work with Query Manager Queries display.

3. Press F3 (Exit) to leave the Work with Query Manager Report Forms display and return to the main menu.
4. Type **1** in the Selection prompt; then press the Enter key to go to the Work with Query Manager Queries display.

Exercise: Deleting a query in Query Manager

In this exercise you delete the TUTQRY query. When you choose to delete a query, Query Manager shows a Confirm Delete of Query display. No queries are deleted until you respond to this display.

1. Make sure the Work with Query Manager Queries display is shown. Type **4** in the Opt prompt next to the TUTQRY query; then press the Enter key to go to the Confirm Delete of Query display. An example of this display is shown in Figure 169 on page 233.

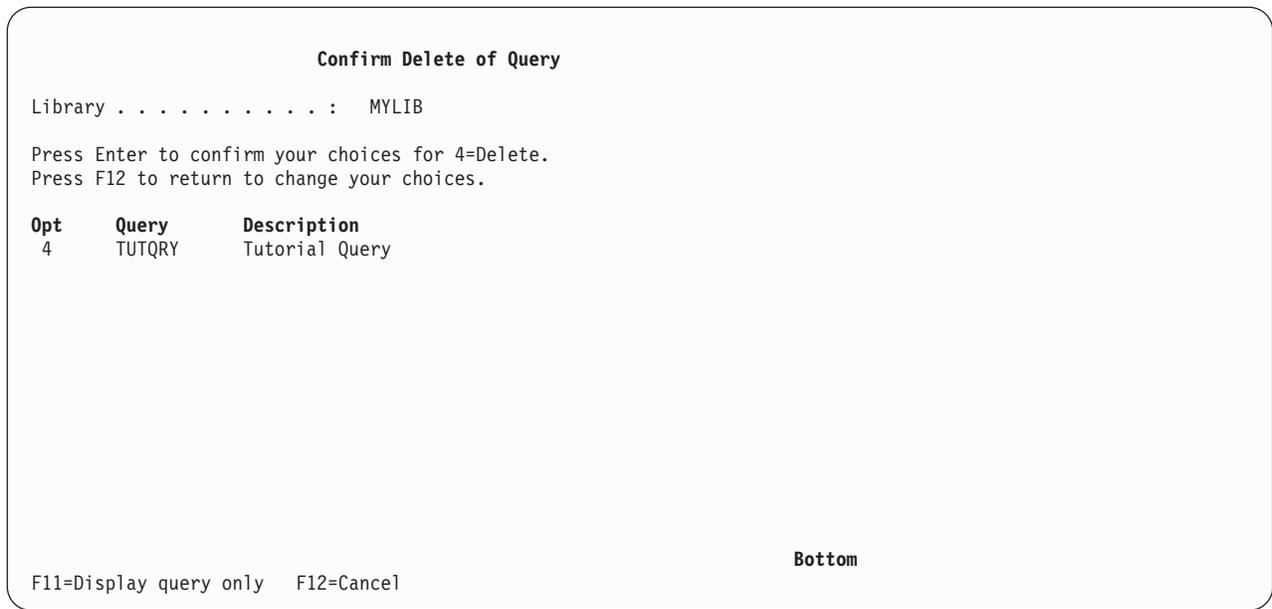


Figure 169. Tutorial: Delete Query Display

When you press the Enter key, all of the queries listed on this display are deleted. If you want to exit from the display without deleting any queries, press F12 (Cancel) instead of the Enter key.

2. Press the Enter key to confirm the deletion of the TUTQRY query. Query Manager deletes the query and returns to the Work with Query Manager Queries display.
3. Press F3 (Exit) to leave the Work with Query Manager Queries display and return to the Query Manager main menu. Then press F3 (Exit) a second time to leave Query Manager and return to the i5/OS menu or display that was shown before you started Query Manager.

You have completed all of the exercises in this appendix.

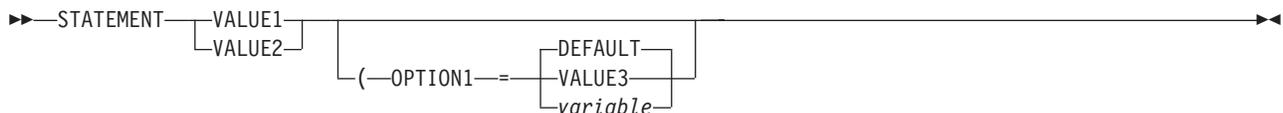
Appendix B. Query Manager statements

This appendix describes the Query Manager statements that you can enter on the Query Manager statement line, through either the command window (see page 28) or the Edit Query display (see page 71). The one exception is the DRAW statement, which can be issued only through the Edit Query display.

When typing in any of the following statements, you can press F4 (Prompt) while the cursor is on the Query Manager statement line, to display a list of the supported statements and their syntax. Depending on how much of the statement you have already entered, you will be prompted only for the parameters you have omitted.

COMMIT	CONNECT
DISCONNECT	DISPLAY
DRAW	ERASE
EXPORT	IMPORT
PRINT	RELEASE
RUN	SAVE DATA AS
SAVE FORM AS	SAVE QUERY AS
SET CONNECTION	

The descriptions of the Query Manager statements include syntax diagrams, which show the structure of each statement. An example of a syntax diagram is shown below:



- STATEMENT is the name (or keyword) of the Query Manager statement. You need to type the statement keyword exactly as shown in the diagram.
- VALUE1 is on the same line as the statement keyword, so it is a required part of the statement and must be entered. When two or more values are joined in the same way as VALUE1 and VALUE2, you are being offered a choice, and can enter any one of the values shown in the diagram. For example, the above syntax diagram tells you to enter either STATEMENT VALUE1 or STATEMENT VALUE2.
- OPTION1 is not on the same line as the statement keyword, so it is an optional part of the statement. Enter optional parts of statements only when required. The opening parenthesis shown in the syntax diagram needs to be typed before the option keyword.
- DEFAULT, VALUE3, and *variable* are the choices you can make for OPTION1. VALUE3 is on the same line as OPTION1, so you need to enter one of these choices when you specify the OPTION1 part of the statement. When a choice is shown above the line on which a keyword or option appears, that choice is the DEFAULT value. The default value is used when you do not enter the OPTION1 part of the statement.

Variable values are shown in *italics*. Replace the variable shown in the diagram with the actual value that you want to use as part of the statement. For example, a variable could be the name of a table, report form, or query.

COMMIT in Query Manager

The COMMIT statement terminates a unit of recovery and commits database changes that were made by that unit of recovery.

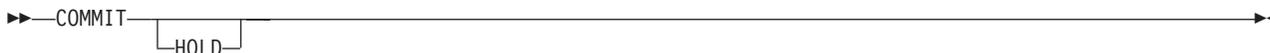
COMMIT

Authorization

None required.

Syntax of COMMIT in Query Manager

A syntax diagram of the COMMIT statement follows:



HOLD

Indicates a hold on resources. If specified, currently open cursors are not closed, prepared SQL statements are preserved, and all resources acquired during the unit of work held. Locks on specific rows and objects implicitly acquired during the transaction, however, are released. If HOLD is omitted, open cursors (except those declared with WITH HOLD clause) are closed, prepared SQL statements are discarded, and held resources are released.

If the COMMIT statement is successful, all work will be committed and all connections in a released state will be disconnected from the default activation group. If the COMMIT statement is unsuccessful, the connection state of the default activation group and the states of its connections will be unchanged. The COMMIT statement is still allowed in Query Manager queries.

Examples of COMMIT statement in Query Manager

You do not need the connection to RDB1 in the next unit of work. The following statements remove the connection, assuming the commit operation is successful.

```
RELEASE RDB1  
COMMIT
```

You want to commit the changes made to RDB2 but hold the resources acquired during the current unit of work.

```
COMMIT HOLD
```

CONNECT in Query Manager

Use the CONNECT statement to change the database under which you are running Query Manager. CONNECT allows you to access a database for running queries and procedures.

The function of the CONNECT depends on the connection management method you are using. The methods are distributed-unit-of-work (DUW) and remote-unit-of-work (RUW). The default, unless you change it, is RUW. For information on changing the connection management method, see Chapter 9, "Distributed Relational Database Architecture in Query Manager," on page 173.

Table 16. CONNECT Command Differences Between *DUW and *RUW

DUW	RUW
Multiple connections allowed	One connection allowed
CONNECT to additional database puts previous connection in dormant state. The previous connections are not disconnected.	CONNECT to additional database disconnects previous connections. The previous connection or connections are disconnected before performing the connection.
Consecutive CONNECTs to same database fails	Consecutive CONNECTs to same database results in no current connection change

For more information about Query Manager tables, prompted queries, and connection management, see Chapter 9, "Distributed Relational Database Architecture in Query Manager," on page 173.

CONNECT

Examples of the CONNECT statement under DUW connection management in Query Manager

The following CONNECT statement creates the RDB1 connection and places it in the current state.

```
CONNECT TO RDB1
```

The following CONNECT statement puts the current connection in a dormant state and creates a connection to the local database. The local database is now the current connection.

```
CONNECT RESET
```

The following CONNECT statement puts the current connection in a dormant state and creates a connection to RDB2. Now the RDB1 and local connections are in a dormant state.

```
CONNECT TO RDB2 (USER=PARENTIS PASSWORD=SECRET
```

DISCONNECT in Query Manager

The DISCONNECT statement destroys one or more connections from the default activation group.

An identified connection must not be a connection that was used to execute SQL statements during the current unit of work and must not be a connection for a protected conversation. To end connections on protected conversations, use the RELEASE statement.

If the DISCONNECT statement is successful, each identified connection is destroyed. If the current connection is destroyed, the default activation group is placed in the unconnected state. Use the CONNECT or SET CONNECTION statements to reestablish a connection.

If the DISCONNECT command is unsuccessful, the connection state of the default activation group and the states of its connections are unchanged.

A list of relational databases connected to the default activation group and their connection information can be obtained by prompting on the DISCONNECT statement. Relational databases with protected conversations are not displayed for this statement.

The DISCONNECT statement is not allowed in Query Manager queries.

Authorization

None required.

Syntax of DISCONNECT in Query Manager

A syntax diagram of the DISCONNECT statement follows:



rdbname The name of the relational database (rdb) that is currently being accessed. An *rdbname* can be up to 18 characters in length and can only consist of uppercase letters, numerics, or an underscore. The first character must be an uppercase letter.

CURRENT Identifies the current connection of the activation group.

ALL Identifies all connections in the default activation group.

Examples of the DISCONNECT statement in Query Manager

The connection to RDB1 is not needed in the next unit of work. The following statement is run after a commit operation.

```
DISCONNECT RDB1
```

The current connection is not needed in the next unit of work. The following statement is run after a commit operation.

```
DISCONNECT CURRENT
```

None of the existing connections are needed in the next unit of work. The following statement is run after a commit operation.

```
DISCONNECT ALL
```

DISPLAY in Query Manager

Use the DISPLAY statement to apply a report form to the active data that was generated from the most recent interactively run SQL SELECT statement query or prompted query. If there is no active data, an error message is displayed. See page 8 for information about active data.

Note: If your Query Manager profile is set so you can run queries only in batch mode and “Allow interactive sample run” is set to NO, you cannot create active data, so you cannot use the DISPLAY statement.

To run a sample you can either:

- Select option 9 (Run) from the Work with Query Manager Queries display; then set the Run Sample prompt to Y on the Run Query display.
- Select option 9 (Run report) from the Work with Query Manager Report Forms display; then set the Run Sample prompt to Y on the Run Query display.
- Press F6 (Run sample) from the Edit Query or Display Query display.
- Press F6 (Run sample) from any of the Define Prompted Query or Display Prompted Query displays.
- Press F5 (Run report) from any of the Select Report Format or Display Report Format displays; then set the Run Sample prompt to Y on the Run Query display.

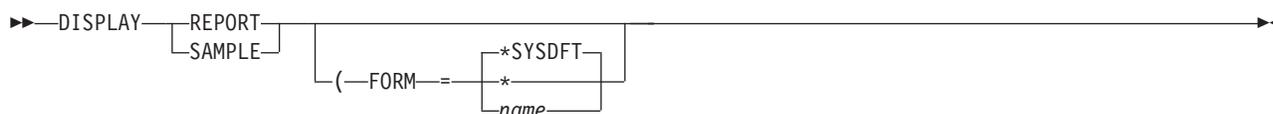
Authorization

The privileges held by the user profile running the DISPLAY REPORT or DISPLAY SAMPLE statement must have one of the following:

- If a *QMFORM object is specified on the statement:
 - *USE system authority on the library that contains the *QMFORM object.
 - *USE system authority on the *QMFORM object.
- *ALLOBJ special authority.

Syntax of DISPLAY in Query Manager

A syntax diagram of the DISPLAY statement follows:



REPORT This option displays a full report, using the specified report form applied to the active

DISPLAY

data. If there is no active data, or if there is sample active data as the result of running an SQL SELECT statement query or prompted query with the sample restriction, an error message is displayed.

SAMPLE This option displays a sample report, using the specified report form applied to the active sample data. If there is no sample data, an error message is displayed.

FORM=*SYSDFT | * | *name*

The name of the report form to be applied to the active data. If you omit the FORM option, Query Manager generates a default report form (*SYSDFT). The report form can be specified as:

***SYSDFT**

A simple default report form, generated from the active data. See "Report forms in Query Manager" on page 5 for a description of the *SYSDFT report form.

***** The active form. (The last report form that was created or changed, or used to format an SQL SELECT statement query or prompted query.)

name The name of the report form to be used, and the name of the library where it resides. If you do not specify a library name, the default library for query objects specified in your Query Manager profile is searched for the named report form when the statement is run. You can specify the name of the report form and library in one of the following ways:

- **library.formname** Use this format if your Query Manager profile specifies that you use the SQL naming convention.
- **library/formname** Use this format if your Query Manager profile specifies that you use the system naming convention. Specify *LIBL to search your library list.

Examples of DISPLAY statement in Query Manager

```
DISPLAY REPORT (FORM=*
```

```
DISPLAY SAMPLE
```

```
DISPLAY REPORT (FORM=SMITH.SAL_REPT
```

DRAW in Query Manager

The DRAW statement is allowed only in the Edit Query display. It builds an SQL SELECT statement for a named table, and adds this statement to any text that exists in the display. The SELECT statement names columns explicitly rather than using the asterisk (*). Column names, library names, and table names that are reserved words will be quoted.

```
SELECT "YEARS", COL1, COL2 FROM SMITH."TABLE"
```

Authorization

The privileges held by the user profile running the DRAW statement must have one of the following:

- For the table specified on the statement:
 - The system authority of *OBJOPR on the table.
 - The system authority of *EXECUTE on the library containing the table.
- *ALLOBJ special authority.

Syntax of DRAW in Query Manager

A syntax diagram of the DRAW statement follows:

►—DRAW—*tablename*—◄

- tablename** The name of the table from which the SELECT statement is to be constructed, and the name of the library (or collection) in which it resides. If you do not specify a library (or collection) name, the default library for query objects specified in your Query Manager profile is searched for the named table when the statement is run. You can specify the name of the table and library (or collection) in one of the following ways:
- **collection.tablename** Use this format if your Query Manager profile specifies that you use the SQL naming convention.
 - **library/filename** Use this format if your Query Manager profile specifies that you use the system naming convention. Specify *LIBL to search your library list.

Examples of DRAW Statement in Query Manager

DRAW STAFF

DRAW SMITH.STAFF

DRAW SMITH.STAFF_CHICAGO MANAGERS_SALESPLAN_1994

ERASE in Query Manager

The ERASE statement removes a report form, procedure, query, or table from the database.

Authorization

ERASE FORM:

The privileges held by the user profile running the ERASE FORM command must include at least one of the following:

- For the *QMFORM object specified on the command:
 - *EXECUTE system authority on the library that contains the *QMFORM object.
 - *OBJOPR and *OBJEXIST system authority on the *QMFORM object.
- *ALLOBJ special authority.

ERASE QUERY:

The privileges held by the user profile running the ERASE QUERY command must include at least one of the following:

- For the *QMQRy object specified on the command:
 - *EXECUTE system authority on the library that contains the *QMQRy object.
 - *OBJOPR and *OBJEXIST system authority on the *QMQRy object.
- *ALLOBJ special authority.

ERASE PROC:

The privileges held by the user profile running the ERASE PROC command must include at least one of the following:

- For the *FILE object specified on the command:
 - *EXECUTE system authority on the library that contains the *FILE object.

ERASE

- *OBJOPR, *OBJEXIST and *DLT system authority on the *FILE object.
- *ALLOBJ special authority.

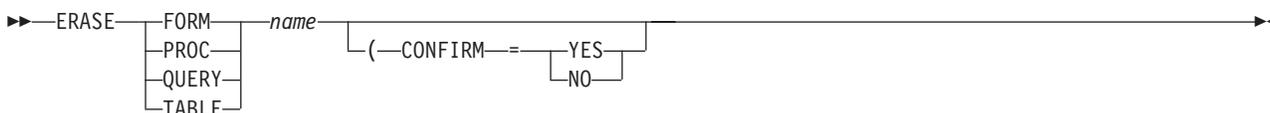
ERASE TABLE:

The privileges held by the user profile running the ERASE TABLE command must include at least one of the following:

- For the *FILE object specified on the command:
 - *EXECUTE system authority on the library that contains the *FILE object.
 - *OBJOPR, *OBJEXIST and *READ system authority on the *FILE object.
- *ALLOBJ special authority.

Syntax of ERASE in Query Manager

A syntax diagram of the ERASE statement follows:



name The name of the report form, procedure, query, or table to be removed, and the name of the library where it resides. If you do not specify a library name, the default library for query objects specified in your Query Manager profile is searched for the object when the statement is run. You need to have the appropriate ownership and database or query authorization to remove an object. You can specify the name of the object and library in one of the following ways:

- **library.objectname** Use this format if your Query Manager profile specifies that you use the SQL naming convention.
- **library/objectname** Use this format if your Query Manager profile specifies that you use the system naming convention. Specify *LIBL to search your library list.

CONFIRM=YES | NO

This option provides for a check before performing your ERASE request. If the option is set to YES, you are prompted to confirm that the existing object is to be erased. If the option is set to NO, the erase occurs without confirmation.

The default value is YES. The default can be changed in your Query Manager profile (see “Confirmation messages in Query Manager” on page 37).

Examples of ERASE statement in Query Manager

```
ERASE TABLE EMP
```

```
ERASE TABLE SMITH.EMP (CONFIRM=YES)
```

EXPORT in Query Manager

The EXPORT statement is used to create a file containing the contents of certain Query objects. The following objects can be exported: report form, procedure, and query.

Authorization

EXPORT FORM:

The privileges held by the user profile running the EXPORT FORM command must have one of the following:

- The following system authorities:
 - For the *QMFORM object specified on the command:
 - *USE system authority on the library that contains the *QMFORM object.
 - *USE system authority on the *QMFORM object.
 - If the *FILE object specified on the command does not exist:
 - *ADD and *EXECUTE system authority on the library that will contain the *FILE object.
 - If the *FILE object specified on the command exists:
 - *ADD and *EXECUTE system authority on the library that contains the *FILE object.
 - *CHANGE and *OBJMGT system authority on the *FILE object.
- *ALLOBJ special authority.

EXPORT PROC:

The privileges held by the user profile running the EXPORT PROC command must have one of the following:

- The following system authorities:
 - For the first *FILE object specified on the command:
 - *EXECUTE system authority on the library that contains the *FILE object.
 - *USE system authority on the *FILE object.
 - If the second *FILE object specified on the command does not exist:
 - *ADD and *EXECUTE system authority on the library that will contain the *FILE object.
 - If the second *FILE object specified on the command exists:
 - *ADD and *EXECUTE system authority on the library that contains the *FILE object.
 - *CHANGE and *OBJMGT system authority on the *FILE object.
- *ALLOBJ special authority.

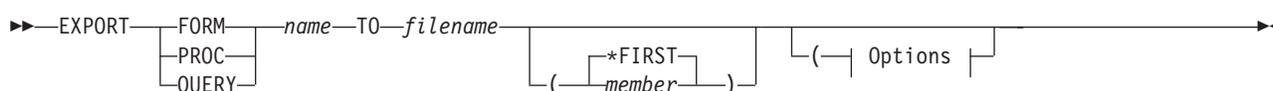
EXPORT QUERY:

The privileges held by the user profile running the EXPORT QUERY command must have one of the following:

- The following system authorities:
 - For the *QMQRy object specified on the command:
 - *USE system authority on the library that contains the *QMQRy object.
 - *USE system authority on the *QMQRy object.
 - If the *FILE object specified on the command does not exist:
 - *ADD and *EXECUTE system authority on the library that will contain the *FILE object.
 - If the *FILE object specified on the command exists:
 - *ADD and *EXECUTE system authority on the library that contains the *FILE object.
 - *CHANGE and *OBJMGT system authority on the *FILE object.
- *ALLOBJ special authority.

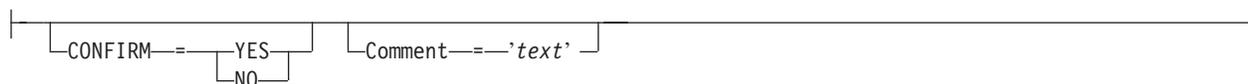
Syntax of EXPORT in Query Manager

A syntax diagram of the EXPORT statement follows:



EXPORT

Options:



name The name of the report form, procedure, or query to be exported, and the name of the library where it resides. If you do not specify a library name, the default library for query objects specified in your Query Manager profile is searched for the object when the statement is run. You can specify the name of the object and library in one of the following ways:

- **library.objectname** Use this format if your Query Manager profile specifies that you use the SQL naming convention.
- **library/objectname** Use this format if your Query Manager profile specifies that you use the system naming convention. Specify *LIBL to search your library list.

filename (member)

The name of the system file (and member) that receives the exported object. If you do not specify a *member*, *FIRST is used (that is, the first member in the specified file).

To be consistent across systems, you should not specify more than a single file name without library names or extensions. This allows system defaults to take effect.

Query Manager qualifies the single name to fit the data naming requirements of the operating environment.

You need to be aware of these naming restrictions when transporting Query Manager objects between operating environments.

CONFIRM=YES | NO

This option provides for a check before performing your EXPORT request. If the existing file is about to be replaced and the option is set to YES, you are prompted to confirm the replacement. If the option is set to NO, the replacement takes place automatically.

The default value is YES, but you can change the default in your Query Manager profile (see “Confirmation messages in Query Manager” on page 37).

COMMENT='text'

Use this option to supply a comment to describe the exported FORM, PROC, or QUERY. If the comment contains multiple words or imbedded blanks, you need to enclose it in single quotation marks. Quotation marks within the comment need to be entered as two adjacent single quotation marks:

```
COMMENT='January's sales figures'
```

Examples of EXPORT statement in Query Manager

```
EXPORT QUERY SAMP1 TO SAMP1EX
```

```
EXPORT FORM EXLIB/EX1 TO EXLIB/FILE(EX1F) (CONFIRM=YES)
```

IMPORT in Query Manager

You can use the IMPORT statement to copy a file containing an exported object into a report form, procedure, or query. The IMPORT statement does not affect the external file.

Authorization

IMPORT FORM:

The privileges held by the user profile running the IMPORT FORM command must have one of the following:

- The following system authorities:
 - If the *QMFORM object specified on the command already exists:
 - *CHANGE system authority on the library that contains the *QMFORM object.
 - *ALL system authority on the *QMFORM object.
 - If the *QMFORM object specified on the command does not exist:
 - *CHANGE system authority on the library that will contain the *QMFORM object.
 - For the *FILE object specified on the command:
 - *EXECUTE system authority on the library that contains the *FILE object.
 - *USE system authority on the *FILE object.
- *ALLOBJ special authority.

IMPORT QUERY:

The privileges held by the user profile running the IMPORT QUERY command must have one of the following:

- The following system authorities:
 - If the *QMORY object specified on the command already exists:
 - *CHANGE system authority on the library that contains the *QMORY object.
 - *ALL system authority on the *QMORY object.
 - If the *QMORY object specified on the command does not exist:
 - *CHANGE system authority on the library that will contain the *QMORY object.
 - For the *FILE object specified on the command:
 - *EXECUTE system authority on the library that contains the *FILE object.
 - *USE system authority on the *FILE object.
 - If a *TBL object is specified on the command with the SRTSEQ keyword:
 - *EXECUTE system authority on the library that contains the *TBL object.
 - *USE system authority on the *TBL object.
- *ALLOBJ special authority.

IMPORT PROC:

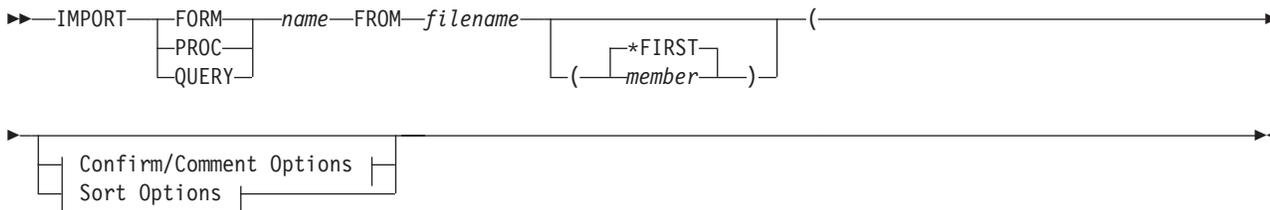
The privileges held by the user profile running the IMPORT PROC command must have one of the following:

- The following system authorities:
 - If the first *FILE object specified on the command does not exist:
 - *ADD and *EXECUTE system authority on the library that will contain the *FILE object.
 - If the first *FILE object specified on the command exists:
 - *ADD and *EXECUTE system authority on the library that contains the *FILE object.
 - *CHANGE and *OBJMGT system authority on the *FILE object.
 - For the second *FILE object specified on the command:
 - *EXECUTE system authority on the library that contains the *FILE object.
 - *USE system authority on the *FILE object.
- *ALLOBJ special authority.

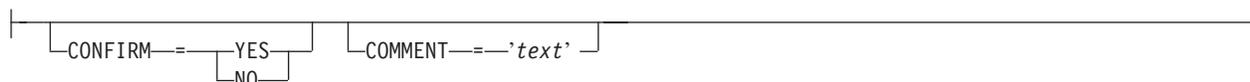
IMPORT

Syntax of IMPORT in Query Manager

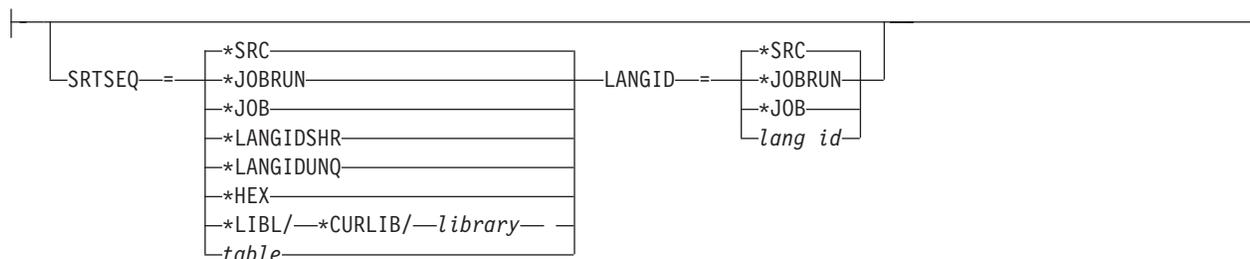
A syntax diagram of the IMPORT statement follows:



Confirm/Comment Options:



Sort Options:



name The name of the report form, procedure, or query to be imported, and the name of the library in which it resides. If you do not specify a library name, the default library for query objects specified in your Query Manager profile is searched for the object when the statement is run. You can specify the name of the object and library in one of the following ways:

- **library.objectname** Use this format if your Query Manager profile specifies that you use the SQL naming convention.
- **library/objectname** Use this format if your Query Manager profile specifies that you use the system naming convention. Specify *LIBL to search your library list.

filename (member)

The name of the system file (and member) that Query Manager is to read (that is, the source file for the imported object). If you do not specify a *member*, *FIRST (the first member in the specified file) is used.

In order to be consistent across systems, do not specify more than a single name without library names or extensions; you need to allow system defaults to be taken.

CONFIRM=YES | NO

This option provides for a check before performing your IMPORT request. If an existing object in the database is about to be replaced and the option is set to YES, you are prompted to confirm that the existing object is to be replaced. If the option is set to NO, replacement occurs without confirmation.

The default value is YES, but you can change the default in your Query Manager profile (see “Confirmation messages in Query Manager” on page 37).

COMMENT=*'text'*

Use this option to supply a comment to describe the imported FORM, PROC, or QUERY. If the

comment contains multiple words or imbedded blanks, you need to enclose it in single quotation marks. Quotation marks within the comment need to be entered as two adjacent single quotation marks:

```
COMMENT='Bernie's greatest work'
```

SRTSEQ=SRC | *JOB RUN | *JOB | *LANGIDSHR | *LANGIDUNQ | *HEX | table

Use this option to specify the sort sequence to use for this query. The SRTSEQ parameter is allowed only when importing a QUERY. The possible values are:

- *SRC** The source file member contains the sort sequence specification. If the source file member does not contain the sort sequence, *JOB RUN is used. *SRC is the default if you do not specify SRTSEQ.
- *JOB RUN** Use the SRTSEQ associated with the job at the time you run the query.
- *JOB** Use the SRTSEQ associated with the job at the time you import the query.
- *LANGIDSHR** Use the sort sequence table that is associated with the language specified by the LANGID parameter, and that shares collating weights between some characters.
- *LANGIDUNQ** Use the sort sequence table that is associated with the language specified by the LANGID parameter, and that has unique collating weights for all characters.
- *HEX** Use the binary value of the characters for the sort sequence.
- table* Use this external sort sequence table object.

LANGID=SRC | *JOB RUN | *JOB | Lang ID

Use this option to specify the language for the query. LANGID specifies what sort sequence table to use when you specify *LANGIDSHR or *LANGIDUNQ for the SRTSEQ parameter. The possible values are:

- *SRC** The source file member contains the language identifier. If the source file member does not contain the language identifier, *JOB RUN is used. *SRC is the default if you do not specify LANGID.
- *JOB RUN** Use the LANGID associated with the job at the time you run the query.
- *JOB** Use the LANGID associated with the job at the time you import the query.
- Lang ID** The three-character language identifier.

The IMPORT statement is typically used in the following situations:

- To copy report form, procedure, and query objects from one Query Manager installation to another (objects are exported by the sending installation and imported by the receiving installation).
- To use a full-function editor outside Query Manager.
- For users who want to migrate SQL queries from program libraries that typically reside outside Query Manager to libraries inside Query Manager for purposes of modification and interactive processing.

The IMPORT statement copies the contents of the specified file into the database. For SQL queries and procedures, each record in the file becomes a separate line in the object. All files that were exported using the Query Manager EXPORT statement can be imported. When importing files containing SQL queries and procedures, Query Manager accepts records having a logical record length greater than 79 even though the resulting data may be truncated. If Query Manager finds a logical record length greater than 79, it displays a warning message.

If the imported file has a fixed record format (and a logical record length greater than 79), then Query Manager accepts only data in positions 1 to 79 and ignores the rest.

IMPORT

When importing files with a logical record length less than 79, Query Manager does not perform any validation or semantic checking on the contents of the files. Therefore, it is possible to establish query and procedure objects containing non-displayable characters. (This could happen if a program's object file were imported as a query). Also, it is possible to import SQL statements into the PROC object and vice versa. It is your responsibility to avoid such mistakes, because Query Manager contains no provision for "re-categorizing" contents.

Query Manager validates FORM objects. If some part of the file fails a validation test, the object is brought into the database and a warning messages are issued. It is possible for the file to pass the validation test, yet supply unpredictable results when used for formatting.

Examples of IMPORT statement in Query Manager

```
IMPORT FORM REPORT1 FROM REPT1EX
```

```
IMPORT QUERY SALARYWK FROM JENSON
```

PRINT in Query Manager

You can use the PRINT statement to print a hard copy of a report form, procedure, query, or report. The following objects print as they are written: report forms, procedures, and queries. If you select to print a report, the report is applied to the active data produced by the last interactively run SQL SELECT statement query or prompted query. If there is no active data, an error message is returned.

Authorization

PRINT FORM:

The privileges held by the user profile running the PRINT FORM command must have one of the following:

- For the *QMFORM object specified on the command:
 - *USE system authority on the library that contains the *QMFORM object.
 - *USE system authority on the *QMFORM object.
- *ALLOBJ special authority.

PRINT PROC:

The privileges held by the user profile running the PRINT PROC command must have one of the following:

- For the *FILE object specified on the command:
 - *EXECUTE system authority on the library that contains the *FILE object.
 - *USE system authority on the *FILE object.
- *ALLOBJ special authority.

PRINT QUERY:

The privileges held by the user profile running the PRINT QUERY command must have one of the following:

- For the *QMQRy object specified on the command:
 - *USE system authority on the library that contains the *QMQRy object.
 - *USE system authority on the *QMQRy object.
- *ALLOBJ special authority.

PRINT REPORT:

The privileges held by the user profile running the PRINT REPORT command must have one of the following:

- If a *QMFORM object is specified on the command:
 - *USE system authority on the library that contains the *QMFORM object.
 - *USE system authority on the *QMFORM object.
- *ALLOBJ special authority.

Syntax of PRINT in Query Manager

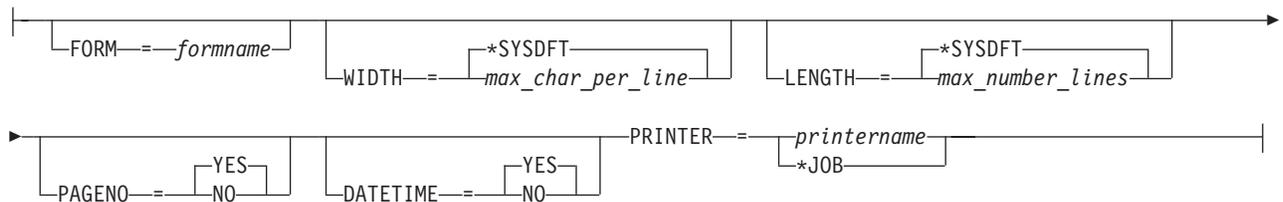
A syntax diagram of the PRINT statement follows:



A syntax diagram of the PRINT REPORT statement follows:



Options:



name The name of the report form, procedure, or query to be printed, and the name of the library where it resides. If you do not specify a library name, the default library for query objects specified in your Query Manager profile is searched for the object when the statement is run. You can specify the name of the object and library in one of the following ways:

- **library.objectname** Use this format if your Query Manager profile specifies that you use the SQL naming convention.
- **library/objectname** Use this format if your Query Manager profile specifies that you use the system naming convention. Specify *LIBL to search your library list.

PRINTER=*JOB | printername

The printer that produces the printed output. The default is the printer specified in your Query Manager profile. *JOB uses the printer specified in your current job.

FORM=formname

The name of the report form that you want to print. If no report form is specified, the form used in the last RUN QUERY that produced the currently active data is used.

WIDTH=*SYSDFT | max characters per print line

An integer between 22 and 378 inclusive to specify the width of the page.

If you do not specify WIDTH, Query Manager uses the corresponding system or user default (*SYSDFT). If this value is unavailable, the default is set to 80. (See "Report forms in Query Manager" on page 5 for a description of the *SYSDFT default values.)

PRINT

Reports wider than the print width specified are split between pages. Query objects wider than the print width specified are truncated on the right. Make sure the width you specify is compatible with the printer you are using.

LENGTH=*SYSDFT | *maximum number of lines per page*

A number between 1 and 255 inclusive to specify the length of the page.

The default is the corresponding system or user default (*SYSDFT). If this value is not available, the default is set to 66. (See "Report forms in Query Manager" on page 5 for a description of the *SYSDFT default values.)

If a report is specified, and the value for LENGTH is less than the total number of lines needed for column headings, page headings and footings, plus the line needed to print the page number and date and time, an error message is generated and the report is not printed.

If the LENGTH value is adequate for the report, Query Manager performs a page eject whenever the number of lines of data printed on a page equals the LENGTH value specified.

PAGENO=YES | NO

This option controls the printing of page numbers on the last line of each page. The default is YES.

DATETIME=YES | NO

This option controls the generation and display of the system date and time on the bottom of each page. If YES, the date and time are placed on the last line of each page. If NO, the system date and time do not print. The default is YES.

Examples of PRINT statement in Query Manager

```
PRINT QUERY MYLIB.STAFF
```

```
PRINT PROC PAYROLL
```

```
PRINT REPORT (WIDTH=80 LENGTH=60 DATETIME=YES PAGENO=YES
```

RELEASE in Query Manager

The RELEASE statement places one or more connections in the released state. A released state can be thought of as a pending disconnect. When a connection is in the released state, this means that a disconnect will occur at the next successful commit operation. A disconnect will not occur at the next rollback because rollbacks have no effect on connections.

If the RELEASE command is successful, each identified connection is placed in the released state and will be disconnected at the next successful commit operation. If the current connection is in the released state when a commit operation runs successfully, the connection is destroyed and the default activation group is left in an unconnected state. Use the CONNECT or the SET CONNECTION statements to reestablish a connection.

If the RELEASE command is unsuccessful, the connection state of the activation group and the states of its connections are not changed.

A list of relational databases connected to the default activation group and their connection information can be obtained by prompting on the RELEASE statement. The RELEASE statement can be used on protected conversations.

The RELEASE statement is not allowed in Query Manager queries.

Authorization

None required.

Syntax of RELEASE in Query Manager

A syntax diagram of the RELEASE statement follows:



rdbname The name of the relational database (rdb) that is currently being accessed. An *rdbname* can be up to 18 characters in length and can only consist of uppercase letters, numerics, or an underscore. The first character must be an uppercase letter.

CURRENT Identifies the current connection of the activation group.

ALL Identifies all connections in the default activation group.

Examples of the RELEASE statement in Query Manager

The connection to RDB1 is not needed in the next unit of work. The following statement causes it to be removed at the next successful commit operation.

```
RELEASE RDB1
```

The current connection is not needed in the next unit of work. The following statement causes it to be removed at the next successful commit operation.

```
RELEASE CURRENT
```

None of the existing connections are needed in the next unit of work. The following statement causes them to be removed at the next successful commit operation.

```
RELEASE ALL
```

RUN in Query Manager

The Query Manager RUN statement processes a procedure or query. When you enter the RUN statement, you need to identify the procedure or query, and that query or procedure needs to exist in the database. If used to process an SQL SELECT statement query or prompted query, the RUN QUERY statement allows you the option of specifying the active query and the active form. If there is no active query or active form, you need to provide the query and report form name. When you process the statement, the query and report form specified become the active query and active form. If you choose to display the results, you should also select a report form.

Notes:

1. If you run queries in batch mode, the Display parameter cannot be YES. A report is spooled to the printer specified in your Query Manager profile (see "Printer to use for output in Query Manager" on page 39).
2. If you run queries interactively and you set the DISPLAY option to NO, the only outcome of processing the statement is the creation of active data.
3. You can use this statement to run any prompted query, but you can run only those SQL queries that contain SQL statements that you have been granted authority to use through your Query Manager profile (see "Select allowed SQL statements in Query Manager" on page 42).

Authorization

RUN PROC:

The privileges held by the user profile running the RUN PROC command must have one of the following:

- For the *FILE object specified on the command:

RUN

- *EXECUTE system authority on the library that contains the
- *FILE object.*USE system authority on the *FILE object.
- *ALLOBJ special authority.

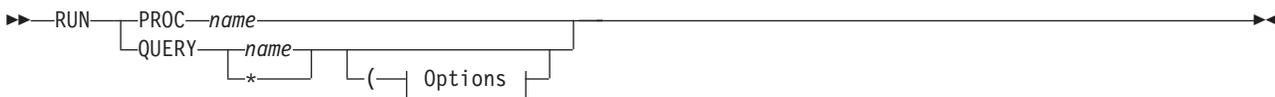
RUN QUERY:

The privileges held by the user profile running the RUN QUERY command must have one of the following:

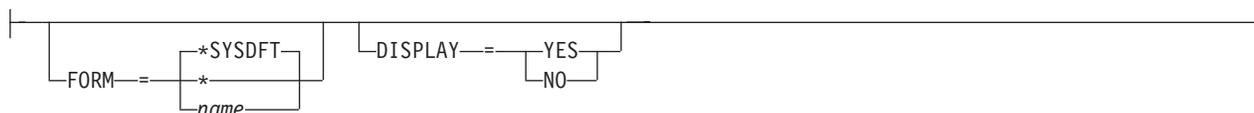
- The following system authorities:
 - For the *QMQRy object specified on the command:
 - *USE system authority on the library that contains the *QMQRy object.
 - *USE system authority on the *QMQRy object.
 - If a *QMFORM object is specified on the command:
 - *USE system authority on the library that contains the *QMFORM object.
 - *USE system authority on the *QMFORM object.
 - For the SQL objects referenced in the query:
 - The required privileges are documented in SQL reference.
- *ALLOBJ special authority.

Syntax of RUN in Query Manager

A syntax diagram of the RUN statement follows:



Options:



name The name of the query or procedure to be run, and the name of the library where it resides. If you do not specify a library name, the default library for query objects specified in your Query Manager profile is searched for the object when the statement is run. You can specify the name of the object and library in one of the following ways:

- **library.objectname** Use this format if your Query Manager profile specifies that you use the SQL naming convention.
- **library/objectname** Use this format if your Query Manager profile specifies that you use the system naming convention. Specify *LIBL to search your library list.

* Uses the active query.

DISPLAY=YES | NO

This option specifies whether the result is to be displayed at your display station. Display cannot be YES if you run queries in batch mode (see “Run query mode in Query Manager” on page 35).

If you omit the DISPLAY option, it defaults to YES if you run queries interactively, or to NO if you run queries in batch mode.

FORM=*SYSDFT | * | *name*

This option specifies the report form to be applied. If you omit the FORM option, Query Manager generates a default report form (*SYSDFT).

The name can be specified as:

***SYSDFT**

Uses a system generated default report form. See “Report forms in Query Manager” on page 5 for a description of the *SYSDFT report form.

***** Uses the active form.

name The name of the report form to be used, and the name of the library where it resides. If you do not specify a library name, the default library for query objects specified in your Query Manager profile is searched for the named form when the statement is run. You can specify the name of the report form and library in one of the following ways:

- **library.formname** Use this format if your Query Manager profile specifies that you use the SQL naming convention.
- **library/formname** Use this format if your Query Manager profile specifies that you use the system naming convention. Specify *LIBL to search your library list.

Examples of RUN statement in Query Manager

```
RUN PROC WEEKREPT
```

```
RUN QUERY * (FORM=*
```

```
RUN QUERY SMITH.STAFF (DISPLAY=NO
```

```
RUN QUERY SMITH.STAFF (FORM=SMITH.SAL_REPT
```

SAVE DATA AS in Query Manager

You use the SAVE DATA AS statement to save data in a table in the database. The saved table object is named according to the name you specify with the statement. If data is saved and a table or view is being replaced, the data needs to be compatible with the existing definition. Compatible data has matching data types, lengths, and null attributes. The number of columns in the data needs to match the target, and the columns need to have compatible data types and null characteristics. If two objects are incompatible, the statement is rejected.

If the name you are saving data to is a view in the database, the table on which the view is defined is changed.

Authorization

The privileges held by the user profile running the SAVE DATA AS command must have one of the following:

- The following system authorities:
 - If the *FILE object specified on the command does not exist:
 - *ADD and *EXECUTE system authority on the library that will contain the *FILE object.
 - If the *FILE object specified on the command already exists:
 - *EXECUTE system authority on the library that contains the *FILE object.
 - *OBJALTER and *CHANGE system authority on the *FILE object.
- *ALLOBJ special authority.

SAVE DATA AS

Syntax of SAVE DATA AS in Query Manager

A syntax diagram of the SAVE DATA AS statement follows:



Options:



DATA This part of the statement refers to the active data produced by the most recent interactively run SQL SELECT statement query or prompted query.

tablename

The name of the table or view in which the data is stored in the database, and the name of the library where it resides. You can specify the name of the table and library (or collection) in one of the following ways:

- **collection.tablename** Use this format if your Query Manager profile specifies that you use the SQL naming convention. If you do not specify a collection name, the default library for query objects specified in your Query Manager profile is searched for the named table when the statement is run.
- **library/filename** Use this format if your Query Manager profile specifies that you use the system naming convention. If you do not specify a library name, your library list (*LIBL) is searched for the named file when the statement is run.

CONFIRM=YES | NO

This option provides for a check before performing your SAVE DATA AS request. If a table or view with the specified name already exists and is about to be replaced, and the option is set to YES, you are prompted to confirm that the existing table or view is to be replaced. If the option is set to NO, replacement occurs without confirmation. The default is YES, but you can change the default value in your Query Manager profile (see “Confirmation messages in Query Manager” on page 37).

ACTION=REPLACE | APPEND

REPLACE causes an existing table or view to be replaced. APPEND causes the data to be added to the end of an existing table or view. The default is REPLACE.

COMMENT=*'text'*

Use this option to supply a comment when saving data as a table. If the comment contains multiple words or imbedded blanks, you need to enclose it in single quotation marks. Quotation marks within the comment need to be entered as two adjacent single quotation marks:

```
COMMENT='Don't ERASE this data without telling Simon!'
```

Examples of SAVE DATA AS statement in Query Manager

```
SAVE DATA AS EMP12
```

```
SAVE DATA AS EMP12 (COMMENT='CLASSIC TWO TABLE JOIN')
```

SAVE FORM AS in Query Manager

Use the SAVE FORM AS statement to save the active form. If there is no active form, an error message is displayed.

Authorization

The privileges held by the user profile running the SAVE FORM AS command must have one of the following:

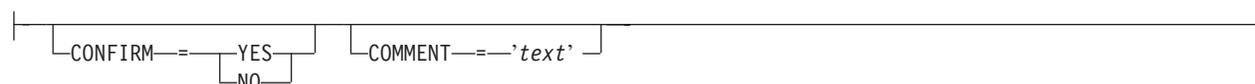
- The following system authorities:
 - If the *QMFORM object specified on the command already exists:
 - *CHANGE system authority on the library that contains the *QMFORM object.
 - *ALL system authority on the *QMFORM object.
 - If the *QMFORM object specified on the command does not exist:
 - *CHANGE system authority on the library that will contain the *QMFORM object.
- *ALLOBJ special authority.

Syntax of SAVE FORM AS in Query Manager

A syntax diagram of the SAVE FORM AS statement follows:



Options.:



name The name of the report form to be saved, and the name of the library where it resides. If you do not specify a library name, the default library for query objects specified in your Query Manager profile is searched for the named form when the statement is run. You can specify the name of the report form and library in one of the following ways.

- **library.formname** Use this format if your Query Manager profile specifies that you use the SQL naming convention.
- **library/formname** Use this format if your Query Manager profile specifies that you use the system naming convention. Specify *LIBL to search your library list.

CONFIRM=YES | NO

This option provides for a check before performing your SAVE request. If a report form with the specified name already exists in the library and the option is set to YES, you are prompted to confirm that the existing report form is to be replaced. If the option is set to NO, replacement occurs without confirmation.

The default value is YES, but you can change the default in your Query Manager profile (see “Confirmation messages in Query Manager” on page 37).

COMMENT='text'

This option allows you to apply a description to the report form. The description is shown in the Work with Query Manager Report Forms display.

Because text usually consists of multiple words and blank spaces, you need to enclose it in single quotation marks. If you want to include a single quotation mark or an apostrophe in the text, you need to enter it as two adjacent single quotation marks. For example:

```
COMMENT='Anne's monthly sales report form'
```

The maximum length of text for the comment is 50 characters, excluding the enclosing quotation marks.

SAVE FORM AS

Examples of SAVE FORM statement in Query Manager

```
SAVE FORM AS SAL_REPT
```

```
SAVE FORM AS SAL_REPT (CONFIRM=NO COMMENT='Monthly sales')
```

SAVE QUERY AS in Query Manager

Use the SAVE QUERY AS statement to save the active query. If there is no active query, an error message is displayed.

Authorization

The privileges held by the user profile running the SAVE QUERY AS command must have one of the following:

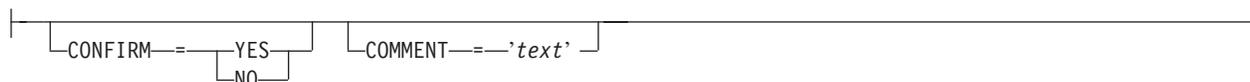
- The following system authorities:
 - If the *QMORY object specified on the command already exists:
 - *CHANGE system authority on the library that contains the *QMORY object.
 - *ALL system authority on the *QMORY object.
 - If the *QMORY object specified on the command does not exist:
 - *CHANGE system authority on the library that will contain the *QMORY object.
- *ALLOBJ special authority.

Syntax of SAVE QUERY AS in Query Manager

A syntax diagram of the SAVE QUERY AS statement follows:



Options:



name The name of the query to be saved, and the name of the library where it resides. If you do not specify a library name, the default library for query objects specified in your Query Manager profile is searched for the object when the statement is run. You can specify the name of the query and library in one of the following ways:

- **library.queryname** Use this format if your Query Manager profile specifies that you use the SQL naming convention.
- **library/queryname** Use this format if your Query Manager profile specifies that you use the system naming convention. Specify *LIBL to search your library list.

CONFIRM=YES | NO

This option provides for a check before performing your SAVE request. If a query with the specified name already exists in the library and the option is set to YES, you are prompted to confirm that the existing query is to be replaced. If the option is set to NO, replacement occurs without confirmation.

The default value is YES, but you can change the default in your Query Manager profile (see “Confirmation messages in Query Manager” on page 37).

COMMENT='text'

This option allows you to apply a description to the query. The description is shown in the Work with Query Manager Queries display.

Because text usually consists of multiple words and blank spaces, you need to enclose it in single quotation marks. If you want to include a single quotation mark or an apostrophe in the text, you need to enter it as two adjacent single quotation marks. For example:

```
COMMENT='Mario's January sales'
```

The maximum length of text is 50 characters, excluding the enclosing quotation marks.

Examples of SAVE QUERY AS statement in Query Manager

```
SAVE QUERY AS SMITH.X41
```

```
SAVE QUERY AS X41 (CONFIRM=NO COMMENT='January sales')
```

SET CONNECTION in Query Manager

Use the SET CONNECTION statement to change the state of a connection from dormant to current. The SET CONNECTION statement is only useful when running under DUW connection management.

A dormant state means that a connection is temporarily suspended. While a connection is dormant, no SQL statements may use the connection, except for commits and rollbacks.

While a connection is current, any SQL statement may use the connection. Only one connection may be in the current state for each activation group.

If a SET CONNECTION command is successful:

- The previous current connection, if any, is placed in the dormant state.
- The identified application server is placed in the current state.

If the SET CONNECTION command is unsuccessful, the connection state of the default activation group and the states of its connections are unchanged.

A list of relational databases connected to the default activation group and their connection information can be obtained by prompting on the SET CONNECTION statement.

The SET CONNECTION statement is not allowed in Query Manager queries.

Authorization

None required.

Syntax of SET CONNECTION in Query Manager

A syntax diagram of the SET CONNECTION statement follows:

```
►►—SET CONNECTION—rdbname—►►
```

rdbname The name of the relational database (rdb) that is currently being accessed. An *rdbname* can be up to 18 characters in length and can only consist of uppercase letters, numerics, or an underscore. The first character must be an uppercase letter.

SET CONNECTION

Examples of the SET CONNECTION statement in Query Manager

The following statements send SQL statements to RDB1 after the first command, to RDB2 after the second, and then to RDB1 again after the third command. The first CONNECT command creates the RDB1 connection and places it in the current state.

```
:  
:  
CONNECT TO RDB1  
:  
:  
SQL statements
```

The next CONNECT command creates the RDB2 connection, places it in the current state, and places RDB1 in the dormant state.

```
:  
:  
CONNECT TO RDB2  
:  
:  
SQL statements
```

The next SET CONNECTION command returns RDB1 to the current state and places RDB2 in the dormant state.

```
:  
:  
SET CONNECTION RDB1  
:  
:  
SQL statements
```

Appendix C. Implications of allowed SQL statements in Query Manager

When you allow and restrict SQL statements for users through their Query Manager profiles, you determine which SQL statements they can use when creating, changing, and running SQL queries through Query Manager (see “Selecting allowed SQL statements for profiles in Query Manager” on page 48). This appendix describes how and when these allowances and restrictions apply, and tells you how to cause the restrictions to apply outside Query Manager.

Query Manager

When you grant and restrict users’ authorities for SQL statements, you limit the statements they can use when creating, changing, and running SQL queries through Query Manager. These limitations do not exist outside Query Manager.

Prompted Queries

Allowed and restricted SQL statements have no effect on prompted queries. Users who have a “Default query creation mode” of prompted, or who can change their query creation modes, can create, change, and run prompted queries. They do not need authority to use the SELECT statement.

Working with SQL Queries

Allowed and restricted SQL statements affect SQL queries only when users create, change, or run them. Users can still copy, rename, display, and print SQL queries containing all SQL statements.

Running Queries in Batch Mode

The authorities and restrictions apply to all Query Manager options and functions that result in SQL queries being run in batch mode. This includes issuing the RUN QUERY statement on the Query Manager statement line, or choosing to use batch mode from the Run Query display.

When the Authorities Apply

The authorities and restrictions apply to all SQL queries created and run interactively in Query Manager. The authorities apply under the following circumstances:

- When any Query Manager option or function is performed that results in creating or running an SQL query.
- When the RUN QUERY, IMPORT QUERY, or SAVE QUERY Query Manager statements are issued on the Query Manager statement line.
- When a Query Management CL command that creates or runs an SQL query is issued: for example, the STRQMORY, CRTQMORY, and STRQMPPRC commands. The SQL restrictions apply if Query Manager is in the program stack when the CL command is issued.

When the Authorities Do Not Apply

The authorities and restrictions do not apply under the following circumstances:

- When users create or run queries using the Query Management Common Programming Interface (CPI). See *Query Management Programming*.
- When users run the STRQMORY, CRTQMORY, or STRQMPPRC CL commands and Query Manager is not on the program stack.
- When users who are restricted to batch mode issue a RUN PROC Query Manager statement on the Query Manager statement line.

Restricting Users outside DB2 Query Manager

Security administrators can use the i5/OS object level authority functions to restrict users from running or creating queries outside Query Manager, although this does not allow the statement type checking available through Query Manager. For example:

- Remove authority to the CRTQMORY CL command, to force users to create all queries through Query Manager or the Query Management CPI.
- Restrict users from creating programs that use the Query Management CPI. You can do this in one of two ways:
 1. Remove authority to the Query Management CPI include files (see *Query Management Programming*). Then, unless users code their own include members, they cannot create programs that use the Query Management CPI.
 2. Remove authority to the C, OPM COBOL, and RPG/400® languages.
- Remove authority to the STRQMPCR CL command, to force users to create and run all queries through Query Manager or the Query Management CPI. Note that users who do not have authority to the STRQMPCR command cannot run procedures in batch mode using Query Manager.
- Remove authority to the STRQMORY CL command, to force users to run all queries through Query Manager or the Query Management CPI. Note that users who do not have authority to the STRQMORY command cannot run queries in batch mode using Query Manager.

Appendix D. Example: Sort sequence in Query Manager

This appendix shows how to use the support for sort and comparison testing in multiple language environments.

These example queries and reports are run against the information shown in Table 17. Notice that the values in the JOB column are in different cases. For example, the job code for manager is entered as Mgr, MGR, and mgr. A sort sequence table can help you manage this situation.

Table 17. Employee Table

ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
10	Sanders	20	Mgr	7	18357.50	0
20	Pernal	20	Sales	8	18171.25	612.45
30	Marenghi	38	Mgr	5	17506.75	0
40	OBrien	38	Sales	6	18006.00	846.55
50	Hanes	15	Mgr	10	20659.80	0
60	Quigley	38	Sales	00	16808.30	650.25
70	Rothman	15	Sales	7	16502.83	1152.00
80	James	20	Clerk	0	13504.60	128.20
90	Koonitz	42	sales	6	18001.75	1386.70
100	Plotz	42	mgr	6	18352.80	0

Example: Sort sequence usages in Query Manager

The Query Manager uses the sort sequence table for several operations:

- Sorting
- Grouping
- Joining
- Selecting records
- Determining minimum and maximum values
- Determining report breaks that involve SBCS character data

In the following examples, you see the query and resulting report using:

- The binary character code sort sequence (*HEX)
- A shared collating weight sort sequence (*LANGIDSHR)
- A unique collating weight sort sequence (*LANGIDUNQ)

Example: Sorting in Query Manager

The following SQL statement causes the report to be sorted using the values in the JOB column.

```
SELECT * FROM EMPLOYEE ORDER BY JOB
```

Figure 170 on page 262 shows how the information in Table 17 sorts using the *HEX sort sequence. The rows are sorted by the value in the JOB column without recognizing that the values are uppercase and lowercase variations of the same words. *MGR* and *mgr* are treated as different values. Also, with the *HEX sort sequence, *sales* sorts before *Sales* and *SALES*.

	ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
000001	100	Plotz	42	mgr	7	18,352.80	.00
000002	90	Koonitz	42	sales	6	18,001.75	1,386.70
000003	80	James	20	Clerk	0	13,504.60	128.20
000004	10	Sanders	20	Mgr	7	18,357.50	.00
000005	50	Hanes	15	Mgr	10	20,659.80	.00
000006	30	Marenghi	38	MGR	5	17,506.75	.00
000007	20	Pernal	20	Sales	8	18,171.25	612.45
000008	40	OBrien	38	Sales	6	18,006.00	846.55
000009	70	Rothman	15	Sales	7	16,502.83	1,152.00
000010	60	Quigley	38	SALES	0	16,808.30	650.25

***** * * * * * E N D O F D A T A * * * * *

Figure 170. SRTSEQ=*HEX. Example report that shows sorting with no sort sequence.

Figure 171 shows how the information shown in Table 17 on page 261 sorts using a shared sort sequence. The lowercase letters are treated the same as their uppercase version. Thus, mgr, Mgr, and MGR are grouped together.

	ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
000001	80	James	20	Clerk	0	13,504.60	128.20
000002	10	Sanders	20	Mgr	7	18,357.50	.00
000003	30	Marenghi	38	MGR	5	17,506.75	.00
000004	50	Hanes	15	Mgr	10	20,659.80	.00
000005	100	Plotz	42	mgr	7	18,352.80	.00
000006	20	Pernal	20	Sales	8	18,171.25	612.45
000007	40	OBrien	38	Sales	6	18,006.00	846.55
000008	60	Quigley	38	SALES	0	16,808.30	650.25
000009	70	Rothman	15	Sales	7	16,502.83	1,152.00
000010	90	Koonitz	42	sales	6	18,001.75	1,386.70

***** * * * * * E N D O F D A T A * * * * *

Figure 171. SRTSEQ=*LANGIDSHR, LANGID=ENU. Example report that shows sorting with a shared sort sequence.

Figure 172 shows how the information in Table 17 on page 261 sorts using a unique sort sequence. The lowercase and uppercase letters are treated as unique, but they have collating weights that cause them to sort adjacently. The lowercase letter sorts before the uppercase. This is the sorting that you see in national language dictionaries.

	ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
000001	80	James	20	Clerk	0	13,504.60	128.20
000002	100	Plotz	42	mgr	7	18,352.80	.00
000003	10	Sanders	20	Mgr	7	18,357.50	.00
000004	50	Hanes	15	Mgr	10	20,659.80	.00
000005	30	Marenghi	38	MGR	5	17,506.75	.00
000006	90	Koonitz	42	sales	6	18,001.75	1,386.70
000007	20	Pernal	20	Sales	8	18,171.25	612.45
000008	40	OBrien	38	Sales	6	18,006.00	846.55
000009	70	Rothman	15	Sales	7	16,502.83	1,152.00
000010	60	Quigley	38	SALES	0	16,808.30	650.25

***** * * * * * E N D O F D A T A * * * * *

Figure 172. SRTSEQ=*LANGIDUNQ, LANGID=ENU. Example report that shows sorting with a unique sort sequence.

Example: Record selection in Query Manager

The following SQL statement selects only the records with the value MGR in the JOB column.

```
SELECT * FROM EMPLOYEE WHERE JOB='MGR'
```

Figure 173 on page 263 shows record selection with the *HEX sort sequence. The rows that exactly match the record selection criteria are selected. Mgr and mgr are not selected because they are not treated the

same as *MGR*.

	ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
000001	30	Marenghi	38	MGR	5	17,506.75	.00
***** * * * * * E N D O F D A T A * * * * *							

Figure 173. *SRTSEQ=*HEX*. Example report that shows record selection with no sort sequence.

Figure 174 shows record selection with a shared sort sequence. The rows with *Mgr*, *MGR*, and *mgr* are all selected because the uppercase and lowercase versions of the letters are treated the same way.

	ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
000001	10	Sanders	20	Mgr	7	18,357.50	.00
000002	30	Marenghi	38	MGR	5	17,506.75	.00
000003	50	Hanes	15	Mgr	10	20,659.80	.00
000004	100	Plotz	42	mgr	7	18,352.80	.00
***** * * * * * E N D O F D A T A * * * * *							

Figure 174. *SRTSEQ=*LANGIDSHR, LANGID=ENU*. Example report that shows record selection with a shared sort sequence.

Figure 175 shows record selection with a unique sort sequence. The lowercase and uppercase letters are treated as unique even though they are adjacent in the collating sequence. *Mgr* and *mgr* are not selected because they are not treated the same as *MGR*.

	ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
000001	30	Marenghi	38	MGR	5	17,506.75	.00
***** * * * * * E N D O F D A T A * * * * *							

Figure 175. *SRTSEQ=*LANGIDUNQ, LANGID=ENU*. Example report that shows record selection with a unique sort sequence.

Example: Report breaks in Query Manager

The following SQL statement sorts the values in the *JOB* column. The report uses a *BREAK1* on the *JOB* column and a *SUM* on the *SALARY* column.

```
SELECT * FROM EMPLOYEE ORDER BY JOB
```

Figure 176 on page 264 shows report breaks with a **HEX* sort sequence. The rows are grouped by the value changes in the *JOB* column. The uppercase and lowercase versions of the letters are treated differently. *MGR* and *mgr* are not treated the same as the mixed case *Mgr* and so are not grouped into the same break level.

	ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
000001	100	Plotz	42	mgr	7	18,352.80	.00
000002						-----	
000003					*	18,352.80	
000004							
000005	90	Koonitz	42	sales	6	18,001.75	1,386.70
000006						-----	
000007					*	18,001.75	
000008							
000009	80	James	20	Clerk	0	13,504.60	128.20
000010						-----	
000011					*	13,504.60	
000012							
000013	10	Sanders	20	Mgr	7	18,357.50	.00
000014	50	Hanes	15		10	20,659.80	.00
000015						-----	
000016					*	39,017.30	
000017							
000018	30	Marenghi	38	MGR	5	17,506.75	.00
000019						-----	
000020					*	17,506.75	
000021							
000022	20	Pernal	20	Sales	8	18,171.25	612.45
000023	40	OBrien	38		6	18,006.00	846.55
000024	70	Rothman	15		7	16,502.83	1,152.00
000025						-----	
000026					*	52,680.08	
000027							
000028	60	Quigley	38	SALES	0	16,808.30	650.25
000029						-----	
000030					*	16,808.30	
000031							

***** * * * * E N D O F D A T A * * * * *

Figure 176. SRTSEQ=*HEX. Example report that shows report breaks with no sort sequence.

Figure 177 shows report breaks with a unique sort sequence. The rows are grouped by the value in the JOB column, and lowercase letters are treated the same as uppercase letters. The values mgr, Mgr, and MGR are grouped together at the same break level.

	ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
000001	80	James	20	Clerk	0	13,504.60	128.20
000002						-----	
000003					*	13,504.60	
000004							
000005	10	Sanders	20	Mgr	7	18,357.50	.00
000006	30	Marenghi	38		5	17,506.75	.00
000007	50	Hanes	15		10	20,659.80	.00
000008	100	Plotz	42		7	18,352.80	.00
000009						-----	
000010					*	74,876.85	
000011							
000012	20	Pernal	20	Sales	8	18,171.25	612.45
000013	40	OBrien	38		6	18,006.00	846.55
000014	60	Quigley	38		0	16,808.30	650.25
000015	70	Rothman	15		7	16,502.83	1,152.00
000016	90	Koonitz	42		6	18,001.75	1,386.70
000017						-----	
000018					*	87,490.13	
000019							

***** * * * * E N D O F D A T A * * * * *

Figure 177. SRTSEQ=*LANGIDSHR, LANGID=ENU. Example report that shows report breaks with a shared sort sequence.

Figure 178 shows report breaks with a unique sort sequence. The rows are sorted by the value in the JOB column. Lowercase and uppercase letters are treated as unique, but they have a weight that causes them to sort adjacently. The lowercase letter sorts first. When the rows are grouped into break levels, only the values that are exactly the same are grouped together.

	ID	NAME	DEPT	JOB	YEARS	SALARY	COMM
000001	80	James	20	Clerk	0	13,504.60	128.20
000002						-----	
000003					*	13,504.60	
000004							
000005	100	Plotz	42	mgr	7	18,352.80	.00
000006						-----	
000007					*	18,352.80	
000008							
000009	10	Sanders	20	Mgr	7	18,357.50	.00
000010	50	Hanes	15	Mgr	10	20,659.80	.00
000011						-----	
000012					*	39,017.30	
000013							
000014	30	Marenghi	38	MGR	5	17,506.75	.00
000015						-----	
000016					*	17,506.75	
000017							
000018	90	Koonitz	42	sales	6	18,001.75	1,386.70
000019						-----	
000020					*	18,001.75	
000021							
000022	20	Pernal	20	Sales	8	18,171.25	612.45
000023	40	OBrien	38	Sales	6	18,006.00	846.55
000024	70	Rothman	15	Sales	7	16,502.83	1,152.00
000025						-----	
000026					*	52,680.13	
000027							
000028	60	Quigley	38	SALES	0	16,808.30	650.25
000029						-----	
000030					*	16,808.30	
000031							

Figure 178. SRTSEQ=*LANGIDUNQ, LANGID=ENU. Example report that shows report breaks with a unique sort sequence.

Example: Grouping in Query Manager

The following SQL statement groups the summary data using the values in the JOB column.

```
SELECT JOB, SUM(SALARY) FROM EMPLOYEE GROUP BY JOB ORDER BY JOB
```

Figure 179 shows a query grouping with a *HEX sort sequence. For report breaks, the rows are grouped by the value in the JOB column. The uppercase and lowercase versions of the same letter are treated differently.

	JOB	SUM (SALARY)
000001	mgr	18,352.80
000002	sales	18,001.75
000003	Clerk	13,504.60
000004	Mgr	39,017.30
000005	MGR	17,506.75
000006	Sales	52,680.08
000007	SALES	16,808.30

Figure 179. SRTSEQ=*HEX. Example report that shows grouping with no sort sequence.

Figure 180 shows query grouping with a shared sort sequence. For report breaks, the rows are grouped by the value in the JOB column, and the lowercase version of a letter is treated the same as the uppercase version. Notice that *mgr*, *Mgr*, and *MGR* are grouped together.

	JOB	SUM (SALARY)
	-----	-----
000001	Clerk	13,504.60
000002	Mgr	74,876.85
000003	Sales	87,490.13
***** * * * * * E N D O F D A T A * * * * *		

Figure 180. *SRTSEQ=*LANGIDSHR, LANGID=ENU*. Example report that shows grouping with a shared sort sequence.

Figure 181 shows a query grouping with a unique sort sequence. The rows are sorted by the value in the JOB column. Lowercase and uppercase letters are treated as unique, but they have weights that cause adjacent sorting. The lowercase letter sorts first. When the rows are grouped into break levels, only the values that are exactly the same are grouped together.

	JOB	SUM (SALARY)
	-----	-----
000001	Clerk	13,504.60
000002	mgr	18,352.80
000003	Mgr	39,017.30
000004	MGR	17,506.75
000005	sales	18,001.75
000006	Sales	52,680.13
000006	SALES	16,808.30
***** * * * * * E N D O F D A T A * * * * *		

Figure 181. *SRTSEQ=*LANGIDUNQ, LANGID=ENU*. Example report that shows grouping with a unique sort sequence.

Appendix E. Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

IBM World Trade Asia Corporation
Licensing
2-31 Roppongi 3-chome, Minato-ku
Tokyo 106-0032, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Corporation

Software Interoperability Coordinator, Department YBWA
3605 Highway 52 N
Rochester, MN 55901
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement, IBM License Agreement for Machine Code, or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs.

Each copy or any portion of these sample programs or any derivative work, must include a copyright notice as follows:

© (your company name) (year). Portions of this code are derived from IBM Corp. Sample Programs. © Copyright IBM Corp. _enter the year or years_. All rights reserved.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Programming interface information

This Query Manager Use publication documents intended Programming Interfaces that allow the customer to write programs to obtain the services of IBM i5/OS.

Trademarks

The following terms are trademarks of International Business Machines Corporation in the United States, other countries, or both:

DB2
Distributed Relational Database Architecture
DRDA
i5/OS
IBM
IBM (logo)
RPG/400
SQL/DS
System i
WebSphere
z/OS

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.

Index

Special characters

- (hyphen) to denote null value 154
- double hyphen in queries 68
- (DUW), distributed unit of work 173
- * to indicate active form or active query 139
- *ALL object creation authority 34
- *CHANGE object creation authority 34
- *CURLIB library 3
- *EXCLUDE authority for a library or collection 145
- *EXCLUDE object creation authority 34
- *JOB printer 39
- *LIBCRTAUT object creation authority 34
- *LIBL library 3
- *NONE to specify a blank column heading in a report form 111
- *OBJMGMGT rights 17, 31, 45
- *QMFORM 1
- *QMQR 1
- *READ rights 17, 31, 45
- *SAA naming convention 37
- *SECADM authority 17, 31, 45
- *SYS naming convention 37
- *SYSDFT report form 5, 77, 105, 139, 215
- *USE object creation authority 34
- & ampersand to denote variable 66
- &col variable 117, 122, 223, 224
- &DATE variable 120, 220
- &n variable 120
- &PAGE variable 120, 221
- &TIME variable 120

A

- access level
 - See* user access level
- activation group, default 174
- active data 8, 35, 77, 107, 109, 139, 141, 214
- active form 8, 99
- active query 7, 65, 110
- add data (F19) function key 163
- add data (F19) function key 149, 155, 188
- all access level 32, 35, 44, 63
- all commitment control level 40
- allow access to QM tables option 41
- allow change query creation mode 41, 64
- allow change run query mode 35, 138
- allow interactive sample run 36
- allowed SQL statements 259
- alternate keys (F2) function key 23
- ampersand (&) to denote variable 66
- AND, OR, (,), for Query Manager tables 158, 196
- AND/OR connector for prompted query 89, 91

- arithmetic operators for prompted query 85
- asterisk (*) to indicate active query or active form 139
- authorization list 34
- AVERAGE (AVG) column usage 111
- AVG (AVERAGE) summary function 95

B

- base keys (F2) function key 23
- basic access level 33, 35, 43, 51, 105
- batch mode 35, 138
- BOTTOM blank lines before 120, 122
- BOTTOM edit command 71
- Bottom indicator 17, 21
- brackets [] 155, 188
- BREAK column usage 111
- breaks
 - definition 6
 - example 263
 - headings and footings 122, 222
 - ORDER BY clause 6, 111
 - report 263
 - sequence 111
 - specifying 111, 218
 - summary data 111, 122
- BT (between) test operator 93

C

- cancel (F12) function key 14, 23
- change commitment control level 40
- CHANGE edit command 71, 73
- change query creation mode (F19)
 - function key 52, 63, 64
- CHARACTER data type 111, 152, 154, 156
- check syntax (F15) function key 68, 73
- CNT (COUNT) summary function 95
- collections
 - *CURLIB collection 3
 - *EXCLUDE authority 145
 - *LIBL collection 3
 - changing the collection 20, 146, 148
 - creating a collection 38
 - default collection for QM tables 38, 146, 148
 - definition 3
 - difference between collection and library 3
- column names displayed, system 42
- columns 2, 149, 151
- command window 28, 37
- comments in queries 68
- COMMIT statement 49, 51, 146, 179, 235
- commitment control level
 - all 40
 - change 40
 - cursor stability 40

- commitment control level (*continued*)
 - repeatable read 40
- CONCAT function 87
- confirm run query 141
- confirmation messages in QM 37
- CONNECT statement 2, 37, 49, 63, 68, 77, 78, 146, 236
 - examples 237, 238
- connecting
 - to a relational database 174
- connection management 173
- connection method, relational database 38
- considerations, SET TRANSACTION 179
- constants in queries 65
- control break
 - See* breaks
- control language (CL) 66
- Control prompt 140, 167
- converting a prompted query to SQL 103
- copy line (F10) function key 23, 194
- COUNT column usage 111
- cursor (F10) function key 73
- cursor stability commitment control level 40
- customized runtime prompts 66

D

- data entry guidelines 155
- data types
 - CHARACTER 111, 152, 154, 156
 - DATE 111, 152
 - DBCS characters 4, 152, 156, 158
 - DECIMAL 152, 154
 - decimal places 149
 - default values 154
 - difference between CHARACTER and VARCHAR 154
 - difference between DECIMAL and NUMERIC 154
 - DOUBLE 152
 - FLOAT 152
 - for report forms 111
 - for tables 149, 152
 - GRAPHIC 111, 152, 156
 - INTEGER 152
 - length 149
 - list 152
 - null values 85, 154
 - NUMERIC 152, 154
 - OPEN 156
 - REAL 152
 - set length 149, 152
 - SMALLINT 152
 - TIME 111, 152
 - TIMESTAMP 111, 152
 - VARCHAR 152, 154, 156
 - VARGRAPHIC 152, 156

database
 *SYS naming considerations 37
 commitment control 40, 51
 definition 2
 remote connection 37, 49, 146, 236
 database connection method 38
 DATE data type 152
 format considerations 102, 141
 separator 111
 date/time format considerations 102, 141
 DB2 for i5/OS 4
 DB2 for i5/OS SQL 10, 51
 DB2 Query Manager 10
 denying access 45
 description 1
 exiting 14
 general concepts 2
 starting 13
 using displays 17
 DBCS characters 4, 152, 156, 158
 DECIMAL data type 152, 154
 default activation group 174
 defaults
 default collection for QM tables 38, 148
 default form 8
 default library for QM tables 38, 148
 default library for Query Manager objects 34
 default object creation authority 34
 default printer 39
 default QM profile 17, 33
 default query 7
 default query creation mode 41
 define expression (F10) function key 95
 define prompted query display 78
 defining expressions in a prompted query 85
 delete data row (F23) function key 161, 201
 delete line (F14) function key 23, 194
 deleting prompted query comparison tests 89
 denied access to tables 14, 16, 41, 145
 DIGITS function 87
 DISCONNECT statement 238
 DISPLAY 239
 report 239
 sample report 239
 display additional details (F10) function key 17
 display column names (F19) function key 78
 display column/system column names (F19) function key 23
 display connection status 23
 display description (F11) function key 23, 83
 display entire name (F20) function key 23
 displaying 161
 display entire name window 26
 display form (F13) function key 23, 55, 129
 display form only (F11) function key 23, 128

display profile only (F11) function key 23
 display query (F13) function key 23, 55, 129
 display query only (F11) function key 23, 54
 display report 167
 display report (F5) function key 107, 109, 129
 display run options 36, 136
 display sample (F5) function key 107, 109, 129
 display SQL (F18) function key 55, 78, 110, 129
 DISPLAY statement 239
 display system column names (F19) function key 78
 display table only (F11) function key 23, 166
 display type/length (F11) function key 155, 157, 161, 188
 display values (F11) function key 157, 161, 188
 displaying query output 140
 Distributed Relational Database Architecture (DRDA) 173
 distributed unit of work 173
 DOUBLE data type 152
 DRAW statement 68, 77, 240
 DRDA
 Distributed Relational Database Architecture 173
 duplicate column (F10) function key 89
 duplicating columns in a prompted query 89
 DUW
 distributed unit of 173

E

edit column formatting 111, 217
 edit commands
 bottom 71
 change 71, 73
 find 71, 73
 left 71
 right 71
 top 71
 edit form (F13) function key 23, 77, 110, 229
 edit heading (F11) function key 111, 217
 edit query (F13) function key 23, 77, 110, 229
 edit usage (F11) function key 111, 217
 editor
 See prompted query editor, SQL query editor
 entering information 18
 entire name window, display 26
 EQ, =, join condition 82
 ERASE statement 241
 error messages 26
 examples
 CONNECT statement
 DUW connection
 management 238

examples (*continued*)
 CONNECT statement (*continued*)
 RUW connection
 management 237
 SET CONNECTION statement 258
 sort sequence 261
 exit (F3) function key 14, 23
 exit display 100, 107, 213, 231
 exiting DB2 Query Manager 14
 exiting the Display Report display 141
 EXPORT statement 242
 extended help (F2) function key 22

F

file to use for output 39, 139
 final summary data omitted 9, 36, 138
 find data (F16) function key 157, 161, 162
 FIND edit command 71, 73
 FIRST column usage 111
 FLOAT data type 152
 forms
 See report forms
 function keys
 F01 17, 22, 23
 F02 Alt 23
 F02 Ext 22
 F03 14, 23, 141
 F04 17, 21, 23, 28, 68, 73
 F05 Dis 107, 109, 129
 F05 Display report 225
 F05 Ref 23
 F05 Run 23, 55, 64, 107, 109, 129, 135
 F06 Ins 23
 F06 Ret 25
 F06 Run 23, 55, 64, 135
 F09 23, 28
 F10 (Copy line) 23, 194
 F10 (Cursor) 73
 F10 (Define expression) 95
 F10 (Display additional details) 17
 F10 (Display messages in job log) 22
 F10 (Duplicate column) 89
 F11 (Display description/Display column only) 83
 F11 (Display description/Display name only) 23, 54, 128, 166
 F11 (Display type/length / Display values) 155, 157, 161, 188
 F11 (Edit heading/Edit usage) 111, 217
 F12 (Cancel) 14, 23, 141
 F13 (Display query/Display form) 23, 55, 129
 F13 (Edit query/Edit form) 23, 77, 110, 229
 F14 (Delete line) 23, 194
 F14 (Previous data row) 157, 161, 162
 F15 (Check syntax) 68, 73, 77
 F15 (Next data row) 157, 161, 162, 201
 F15 (Split line) 23
 F16 (Find data) 157, 161, 162
 F16 (Repeat find) 71, 73
 F16 (Repeat position to) 23, 25
 F17 (Position to) 23, 25

function keys (*continued*)

- F17 (Repeat change) 71, 73
- F18 (Display SQL) 23, 55, 78, 110, 129
- F18 (Sort sequence) 73
- F19 (Add data) 149, 155, 163, 188
- F19 (Change query creation mode) 52, 63, 64
- F19 (Display column names) 78
- F19 (Display column/system column names) 23
- F19 (Display system column names) 78
- F19 (Left) 73, 140, 167
- F19 (Load from query) 110, 111, 217
- F20 (Display entire name) 23, 161
- F20 (Right) 73, 140, 167
- F21 (QM statement/System command) 23, 28
- F21 (Select all) 23, 55, 78, 107, 129, 217
- F21 (Split) 140, 167
- F22 (QM statement) 23, 28
- F23 (Delete data row) 161, 201
- F24 (More keys) 23, 201

G

- GE, >=, join condition 82
- global variables 66
- GRAPHIC data type 111, 152, 156
- GROUP BY clause 95
- group, default activation 174
- grouping 265
- GT, >, join condition 82

H

- help
 - context-sensitive 17, 22
 - extended 22
 - for messages 22
 - help (F1) function key 17, 22
 - job log 22

I

- i5/OS query management 10
- IMPORT statement 244
- incomplete active data 9
- insert line (F6) function key 23
- INTEGER data type 152
- interactive mode 35, 138
 - maximum rows allowed 9, 36
- Is/Is not qualifier 92

J

- job description for batch run 39
- job log 22
- joining tables in a prompted query 82

L

- LAST column usage 111
- LE, <=, join condition 82
- left (F19) function key 73, 140, 167
- LEFT edit command 71
- libraries
 - *CURLIB library 3
 - *EXCLUDE authority 145
 - *LIBL library 3
 - changing the library 20, 52, 106, 146, 148
 - creating a library 34, 38
 - default library for QM tables 38, 146, 148
 - default library for Query Manager objects 34
 - definition 3
 - difference between library and collection 3
- line commands
 - after (A) 72
 - before (B) 72
 - copy (C) 72
 - delete (D) 72
 - go to 72
 - insert (I) 72
 - repeat (RP) 72
 - rules 72
- lists
 - finding objects in a list 20, 25
 - making selections 17
 - using F4 (Prompt) 21
- load from query (F19) function key 110, 111, 217
- LT, <, join condition 82

M

- main menu
 - selecting options 14
- management, connection 173
- MAX (MAXIMUM) summary function 95
- MAXIMUM (MAX) column usage 111
- maximum number of rows allowed on interactive run 9, 36, 60, 133
- message help 22
- messages 26
- method, relational database connection 38
- MIN (MINIMUM) summary function 95
- MINIMUM (MIN) column usage 111
- more keys (F24) function key 23, 201
- More... indicator 17, 21

N

- Name of default library 34
- names displayed, system column 42
- naming conventions 29
 - CONNECT statement considerations 37
 - SAA 37
 - SYS (system) 37
- NE, <>, join condition 82

- next data row (F15) function key 157, 161, 162, 201
- NL (Null) test operator 93
- NONE summary line 120, 122
- null value 85, 154, 158, 160
- number of rows to use for sample 36
- NUMERIC data type 152, 154

O

- object creation authority 34
- OMIT column usage 111
- online information 22
- OPEN character values 156
- OPNQRYF command 10
- Opt prompt 17
- options
 - show sort sequence 41
- ORDER BY clause 6, 94, 111, 210
- outfile
 - processing 179
- output 39, 139

P

- page footing 6, 117, 221
- page heading 6, 117, 219
- position to (F17) function key 23
- position to (F18) function key 23
- position to window 25
- practice exercises 181
- previous data row (F14) function key 157, 161, 162
- PRINT statement 248
- printer to use for output 39, 139
- procedures 10
- processing
 - outfile 179
- profile
 - See Query Manager profile
- prompt (F4) function key 17, 21, 23, 28, 68, 74
- prompted queries 5, 41, 51, 63, 78
- prompted query 179
- prompted query editor 78
 - allowed SQL statements 42, 48
 - arithmetic operators 85
 - changing a query 102
 - checking syntax 64
 - converting to SQL 103
 - define expressions 85
 - duplicating columns 89
 - joining tables 82
 - running the query 64
 - saving the query 100
 - select columns 87, 207
 - select rows 89, 208
 - select sort columns 94, 210
 - select summary functions 95
 - sequence columns 87, 207
 - specify duplicate rows 97
 - specify report formatting 99
 - specify tables 80, 206
 - table identifiers 80
 - table join conditions 82
 - test operators for specifying rows 92

prompted query editor (*continued*)
 testing the query 64
prompts (underlines) 18
 default values 18

Q

QM statement (F21) function key 23, 28
QM statement (F22) function key 23, 28
QM statements 28, 77
QPQXPRTF printer file 131
qualifier 3
queries 51, 63
 allow sample run 36
 allowed SQL statements 42, 48, 76
 changing 63, 102, 110, 226, 229
 changing the description 100
 comments 68
 confirm run 141
 constants 65
 converting a prompted query to
 SQL 103
 copying 53
 creating 51, 63, 68, 78, 110, 204, 210
 default creation mode 41
 default output 39
 definition 4, 51
 deleting 54, 232
 differences between prompted and
 SQL 63
 displaying query output 140
 displaying the definition 55, 110
 incomplete data 9
 interactive mode 8
 maximum rows allowed on interactive
 run 36
 maximum size 72
 naming 100
 options 52
 printing the definition 58
 prompted creation mode 5, 41, 51,
 63, 78, 204
 renaming 59
 replacing 100
 run options 36, 136
 running 55, 60, 64, 135, 214
 sample query 9, 36, 64, 138
 saving 100, 213
 SQL 51
 SQL creation mode 4, 41, 63, 68, 210
 subqueries 63, 74, 77
 syntax checking 64
 testing 64
 variables 66
 work with display 14, 52
query creation mode
 changing the mode 41, 52, 64
 differences between modes 63
 prompted creation mode 41, 51, 63,
 78
 shown on display 52
 SQL creation mode 41, 51, 63, 68
query data output
 display 39, 140
 file 39, 139
 i5/OS output queue 139
 printer 39, 139

query data output (*continued*)
 table 39, 139
query editor
 See prompted query editor, SQL query
 editor
Query for i5/OS 10
Query Manager profile
 additional details display 17
 allowed SQL statements 42, 259
 changing 17, 43
 changing: security administrator 47
 copying 50
 creating 46
 default profile 17, 33
 definition 31
 deleting 45
 displaying 47
 restricting SQL statements 42
 selecting allowed SQL statements 42
 setting up new profiles 50
 work with display 17, 45
Query Manager statements 235
 COMMIT 235
 CONNECT 2, 37, 49, 63, 68, 77, 78,
 236
 DISPLAY REPORT 239
 DISPLAY SAMPLE 239
 DRAW 68, 77, 240
 ERASE 241
 EXPORT 242
 IMPORT 244
 PRINT 248
 RELEASE 250
 RUN 10, 35, 65, 135, 251
 SAVE DATA AS 253
 SAVE FORM AS 100, 254
 SAVE QUERY AS 77, 100, 256
 SET CONNECTION 257
Query Manager tables
 See tables
query, prompted 179

R

REAL data type 152
record selection 262
refresh (F5) function key 23
relational database connection 13, 37, 49
relational database connection
 method 38
RELEASE statement 250
remote database connection 236
remote databases
 non-i5/OS 142
 running query against 142
 sort sequence concerns 142
remote unit of work 173
repeat change (F17) function key 71, 73
repeat find (F16) function key 71, 73
repeat position to (F16) function key 23,
 25
repeatable read commitment control
 level 40
report 5
report break
 See breaks
report breaks 263

report forms 105
 *SYSDFT 5, 77, 105, 139
 &variables 117, 120, 122
 allow sample run 36
 blank column headings 111
 break 6, 111, 122, 218, 222
 changing 99, 107
 changing the description 100
 column formatting 111, 217
 column headings 6, 111, 217
 column indents 111
 column usage 111
 column width 111
 copying 127
 creating 99, 107, 216
 default output 39
 default report form 5, 105, 139
 default values 8, 99, 110, 111
 definition 5, 105
 deleting 128
 displaying 109, 140, 225
 displaying the definition 55, 129
 edit codes 111
 final text 120, 222
 formatting options 126, 225
 line spacing 126, 225
 maximum width 111
 naming 100
 omitting columns 111
 options 106
 outlining 126
 page footing 6, 117, 221
 page heading 6, 117, 219
 printing the definition 131
 producing a report 135, 225
 renaming 132
 replacing 100
 run options 36, 136
 running 133, 135
 sample report 9, 36, 64, 138
 saving 100
 separators 126
 sequence of columns 6, 111
 spacing between columns 111
 summary data 6, 120, 122, 222
 testing 109, 225
 variables 117, 120, 122, 220, 223
 work with display 15, 106
restricting SQL statements 42, 48, 49
retrieve (F9) function key 23, 28
retrieve previous (F6) function key 25
right (F20) function key 73, 140, 167
RIGHT edit command 71
ROLLBACK statement 49, 51, 146, 179
rows 2
 adding 149, 155, 188
 changing 157, 160, 196
 copying 163, 192
 deleting 157, 161, 201
 displaying 162, 190
 displaying the definition 157, 188
 finding 158, 196
 finding all rows 157, 158, 190
 printing 168
rules
 system name generation 19
 table name generation 20

- run options 36, 136
 - displaying query output 140
 - file for output 139
 - i5/OS output queue 139
 - output destination 139
 - printer for output 139
 - query 139
 - report form 139
 - run query mode 138
 - run sample only 138
 - table for output 139
 - use active data 139
- run query display 136
- run query mode
 - batch 35, 138
 - changing the mode 35, 138
 - interactive 35, 138
- run report (F5) function key 23, 55, 64, 107, 109, 129, 135
- run sample (F6) function key 23, 55, 64, 135
- RUN statement 10, 35, 65, 135, 251
- running query against
 - non-i5/OS 142
 - remote databases 142
- runtime defaults 111
- runtime prompts 66
- RUW
 - remote unit of work 173

S

- sample active data 8
- sample queries 64, 138
 - allow run 36
 - number of rows 9, 36
- sample reports 23, 64, 138
 - allow run 36
 - displaying 109
 - number of rows 9, 36
- SAVE DATA AS statement 253
- SAVE FORM AS statement 100, 254
- SAVE QUERY AS statement 77, 100, 256
- saving a query definition 100
- saving a report form definition 100
- searching for table rows 158
 - AND, OR, (,) 158, 196
 - changing conditions 161, 162
 - grouping conditions 158, 196
 - if no rows are found 160
 - lowercase letters 158
 - null values 158
 - selecting all rows 158, 190
 - specifying conditions 158, 196
 - test conditions 158, 196
- security administrator
 - *OBJMGM rights 17, 31, 45
 - *READ rights 17, 31, 45
 - *SECADM authority 17, 31, 45
 - tasks 31, 45, 145, 259
- select all (F21) function key 23, 55, 78, 107, 129, 217
- SELECT statement 4, 8, 63, 74, 78, 105, 111
- selecting allowed SQL statements 42, 48, 49, 259

- selecting columns in a prompted query 87, 207
- selecting rows for a prompted query 89, 208
- selecting summary functions for a prompted query 95
- selection
 - record 262
- selection prompt 14
- Selection prompt 17
- sequencing columns in a prompted query 87, 207
- sequencing columns in a report form 6, 111
- SET CONNECTION statement 257
 - examples 258
- SET TRANSACTION
 - considerations 179
- shift-out/shift-in characters 156
- show query sort sequence options 41
- SMALLINT data type 152
- sort row data 6
- sort sequence
 - examples 261
 - show options 41
 - usages 261
- sort sequence (F18) function key 73
- sorting 261
- sorting columns in a prompted query 94, 210
- specify sort sequence 98
- specifying duplicate rows in a prompted query 97
- specifying join conditions for a prompted query 82
- specifying report formatting for a prompted query 99
- specifying tables for a prompted query 80, 206
- split (F21) function key 140, 167
- split line (F15) function key. 23
- SQL 10, 51
- SQL queries 4, 41, 51, 63, 68
- SQL query editor
 - allowed SQL statements 76
 - changing a query 102
 - checking syntax 64, 73
 - columns displayed 71
 - comments 68
 - defining a report form 77
 - edit commands 71
 - function keys 73
 - line commands 72
 - QM statements 77
 - running the query 64
 - saving the query 100
 - SQL prompting 74
 - testing the query 64
- SQL statement 68
- square brackets [] 155, 188
- starting DB2 Query Manager 13
- STRQM command 13, 45
- subqueries 63, 74, 77
- SUM column usage 111
- SUM summary function 95
- summary functions in a prompted query 95

- syntax checking 64
- syntax diagram
 - CONNECT 237
 - DISCONNECT 238
 - DISPLAY 239
 - DRAW 241
 - ERASE 242
 - example 235, 236
 - EXPORT 243
 - IMPORT 246
 - PRINT FORM 249
 - PRINT REPORT 249
 - RELEASE 251
 - RUN 252
 - SAVE DATA AS 254
 - SAVE FORM AS 255
 - SAVE QUERY AS 256
 - SET CONNECTION 257
- system column names displayed 42
- system command (F21) function key 23, 28
- system commands 28
- system name generation
 - rules 19
- system-column-name 19

T

- table identifiers in a prompted query 80
- table name generation
 - rules 20
- table to use for output 39, 139
- tables
 - adding data 149, 155, 188
 - changing data 157, 160, 196, 201
 - changing the collection 146, 148
 - changing the definition 163, 194
 - changing the library 146, 148
 - column names 149
 - columns 149, 151
 - copying 163, 192
 - created outside Query Manager 145
 - creating 149, 182, 186
 - data types 152
 - definition 2, 145
 - deleting 166, 203
 - deleting data 157, 161, 201
 - denied access 14, 16, 41, 145
 - displaying a report 167, 190
 - displaying data 162
 - displaying table rows 167
 - displaying the definition 155, 157, 170, 188, 202
 - finding data 158, 196
 - options 146
 - printing rows 168
 - remote database connection 146
 - renaming 169
 - saving 149
 - saving changes to data 161
 - saving data 155
 - security of information 145
 - work with display 16, 146
- test operators for specifying rows in a prompted query 92
- TIME data type 111, 152
 - format considerations 102, 141

TIME data type (*continued*)
 separator 111
TIMESTAMP data type 111, 152
TOP edit command 71

U

UCS2-graphic data
 VARCHAR function 87
 VARGRAPHIC function 87
unit of work
 distributed 173
 remote 173
usage
 sort sequence 261
user access level
 all 32, 35, 44
 basic 33, 35, 43
using Query Manager displays 17

V

VARCHAR data type 152, 154, 156
VARCHAR function 87
VARGRAPHIC data type 152, 156
VARGRAPHIC function
 UCS2-graphic data 87
variable prompting with CL 66
variables in report forms 117, 120, 122
variables in SQL queries 60, 66, 68, 141

W

WHERE clause 89, 102, 208
window, display entire name 26
work with displays 18
 creating a new object 18
 specifying multiple options 20
 specifying multiple tasks 202
 specifying one option 18
 work with QM profiles 17, 45
 work with queries 14, 52
 work with report forms 15, 106
 work with tables 16, 146

Readers' Comments — We'd Like to Hear from You

System i
Query Manager Use
Version 6 Release 1

Publication No. SC41-5212-07

We appreciate your comments about this publication. Please comment on specific errors or omissions, accuracy, organization, subject matter, or completeness of this book. The comments you send should pertain to only the information in this manual or product and the way in which the information is presented.

For technical questions and information about products and prices, please contact your IBM branch office, your IBM business partner, or your authorized remarketer.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you. IBM or any other organizations will only use the personal information that you supply to contact you about the issues that you state on this form.

Comments:

Thank you for your support.

Submit your comments using one of these channels:

- Send your comments to the address on the reverse side of this form.
- Send a fax to the following number: United States and Canada: 1-800-937-3430
Other countries: 1-507-253-5192
- Send your comments via e-mail to: RCHCLERK@us.ibm.com

If you would like a response from IBM, please fill in the following information:

Name

Address

Company or Organization

Phone No.

E-mail address



Fold and Tape

Please do not staple

Fold and Tape



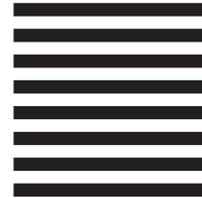
NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

IBM CORPORATION
ATTN DEPT 542 IDCLERK
3605 HWY 52 N
ROCHESTER MN 55901-7829



Fold and Tape

Please do not staple

Fold and Tape



Printed in USA

SC41-5212-07

