

DB-Access User Manual

Informix Dynamic Server, Version 7.3
Informix Dynamic Server with Advanced Decision Support and Extended Parallel Options, Version 8.2
Informix Dynamic Server with Universal Data Option, Version 9.1x
Informix Dynamic Server, Developer Edition, Version 7.3
Informix Dynamic Server, Workgroup Edition, Version 7.3

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Read this introduction for an overview of the information provided in this manual and for an understanding of the documentation conventions used.

About This Manual

This manual is a complete guide to the features that make up the Informix DB-Access relational database access utility. You can use DB-Access with any current version of an Informix database server.

This manual describes how to use the DB-Access utility to access, modify, and retrieve information from Informix database servers and how to access the demonstration database shipped with your Informix database server.

Types of Users

This manual is for the following users who need to use Structured Query Language (SQL) to create databases, run queries, test database applications, and verify database server status:

- Database users
- Database administrators
- Database server administrators
- Database-application programmers
- Performance engineers

This manual assumes that you have the following background:

- A working knowledge of your computer, your operating system, and the utilities that your operating system provides
- Some experience working with relational databases or exposure to database concepts
- Some experience with SQL

Software Dependencies

This manual assumes that you are using one of the following database servers:

- Informix Dynamic Server, Version 7.3
- Informix Dynamic Server with Advanced Decision Support and Extended Parallel Options, Version 8.2
- Informix Dynamic Server with Universal Data Option, Version 9.1x
- Informix Dynamic Server, Developer Edition, Version 7.3
- Informix Dynamic Server, Workgroup Edition, Version 7.3

Assumptions About Your Locale

Informix products can support many languages, cultures, and code sets. All culture-specific information is brought together in a single environment, called a GLS (Global Language Support) locale.

This manual assumes that you are using the default locale, **en_us.8859-1**. This locale supports U.S. English format conventions for dates, times, and currency. In addition, this locale supports the ISO 8859-1 code set, which includes the ASCII code set plus many 8-bit characters such as é, è, and ñ.

If you plan to use nondefault characters in your data or your SQL identifiers, or if you want to conform to the nondefault collation rules of character data, you need to specify the appropriate nondefault locale. For instructions on how to specify a nondefault locale, additional syntax, and other considerations related to GLS locales, see the [Informix Guide to GLS Functionality](#).

Demonstration Databases

The DB-Access utility, which is provided with your Informix database server products, includes one or more demonstration databases. All of these contain information about a fictitious wholesale sporting-goods distributor.

The demonstration databases illustrate how you can use the features of your database server. Many examples in Informix manuals are based on the demonstration databases.

For more information about the demonstration databases, including how to install them, refer to [Chapter 1](#) of this manual.

New Features

For a comprehensive list of new features, see the release notes for your database server.

Documentation Conventions

This section describes the conventions that this manual uses. These conventions make it easier to gather information from this and other Informix manuals.

The following conventions are covered:

- Typographical conventions
- Icon conventions
- Syntax conventions
- Command-line conventions
- Sample-code conventions

Typographical Conventions

This manual uses the following standard set of conventions to introduce new terms, illustrate screen displays, describe command syntax, and so forth.

Convention	Meaning
KEYWORD	All keywords appear in uppercase letters in a serif font.
<i>italics</i>	Within text, new terms and emphasized words appear in italics. Within syntax diagrams, values that you are to specify appear in italics.
boldface	Identifiers (names of classes, objects, constants, events, functions, program variables, forms, labels, and reports), environment variables, database names, filenames, table names, column names, icons, menu items, command names, and other similar terms appear in boldface.
monospace	Information that the product displays and information that you enter appear in a monospace typeface.
KEYSTROKE	Keys that you are to press appear in uppercase letters in a sans serif font.
◆	This symbol indicates the end of feature-, product-, platform-, or compliance-specific information within a table or section.
→	This symbol indicates a menu item. For example, “Choose Tools→Options ” means choose the Options item from the Tools menu.






Tip: When you are instructed to “enter” characters or to “execute” a command, immediately press RETURN after you type the indicated information on your keyboard. When you are instructed to “type” the text or to “press” other keys, you do not need to press RETURN.

Icon Conventions

Throughout the documentation, you will find text that is identified by several different types of icons. This section describes these icons.

Comment Icons

Comment icons identify warnings, important notes, or tips. This information is always displayed in italics.

Icon	Description
	The <i>warning</i> icon identifies vital instructions, cautions, or critical information.
	The <i>important</i> icon identifies significant information about the feature or operation that is being described.
	The <i>tip</i> icon identifies additional details or shortcuts for the functionality that is being described.

Feature, Product, and Platform Icons

Feature, product, and platform icons identify paragraphs that contain feature-specific, product-specific, or platform-specific information.

Icon	Description
AD/XP	Identifies information that is specific to Informix Dynamic Server with Advanced Decision Support and Extended Parallel Options.
D/B	Identifies information that is valid only for DB-Access.
GLS	Identifies information that relates to the Informix Global Language Support (GLS) feature.
IDS	Identifies information that is specific to Dynamic Server and its editions. However, in some cases, the identified section applies only to Informix Dynamic Server and not to Informix Dynamic Server, Workgroup and Developer Editions. Such information is clearly identified.
UD	Identifies information that is specific to Informix Dynamic Server with Universal Data Option.
UNIX	Identifies information that is specific to UNIX platforms.
W/D	Identifies information that is specific to Informix Dynamic Server, Workgroup and Developer Editions.
WIN NT	Identifies information that is specific to the Windows NT environment.

These icons can apply to a row in a table, one or more paragraphs, or an entire section. If an icon appears next to a section heading, the information that applies to the indicated feature, product, or platform ends at the next heading at the same or higher level. A ♦ symbol indicates the end of the feature-, product-, or platform-specific information that appear within a table or a set of paragraphs within a section.

Compliance Icons

Compliance icons indicate paragraphs that provide guidelines for complying with a standard.

Icon	Description
ANSI	Identifies information that is specific to an ANSI-compliant database.
X/O	Identifies functionality that conforms to X/Open.

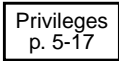




These icons can apply to a row in a table, one or more paragraphs, or an entire section. If an icon appears next to a section heading, the compliance information ends at the next heading at the same or higher level. A ♦ symbol indicates the end of compliance information that appears in a table row or a set of paragraphs within a section.

Command-Line Conventions

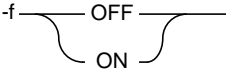
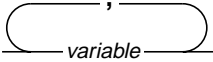
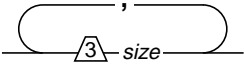
This section defines and illustrates the format of commands that are available in Informix products. These commands have their own conventions, which might include alternative forms of a command, required and optional parts of the command, and so forth.

Each diagram displays the sequences of required and optional elements that are valid in a command. A diagram begins at the upper-left corner with a command. It ends at the upper-right corner with a vertical line. Between these points, you can trace any path that does not stop or back up. Each path describes a valid form of the command. You must supply a value for words that are in italics.

You might encounter one or more of the following elements on a command-line path.

Element	Description
command	This required element is usually the product name or other short word that invokes the product or calls the compiler or preprocessor script for a compiled Informix product. It might appear alone or precede one or more options. You must spell a command exactly as shown and use lowercase letters.
<i>variable</i>	A word in italics represents a value that you must supply, such as a database, file, or program name. A table following the diagram explains the value.
-flag	A flag is usually an abbreviation for a function, menu, or option name or for a compiler or preprocessor argument. You must enter a flag exactly as shown, including the preceding hyphen.
.ext	A filename extension, such as .sql or .cob , might follow a variable that represents a filename. Type this extension exactly as shown, immediately after the name of the file. The extension might be optional in certain products.
(. , ; + * - /)	Punctuation and mathematical notations are literal symbols that you must enter exactly as shown.
' '	Single quotes are literal symbols that you must enter as shown.
 	A reference in a box represents a subdiagram. Imagine that the subdiagram is spliced into the main diagram at this point. When a page number is not specified, the subdiagram appears on the same page.
	A shaded option is the default action.
	Syntax within a pair of arrows indicates a subdiagram.
	The vertical line terminates the command.

(1 of 2)

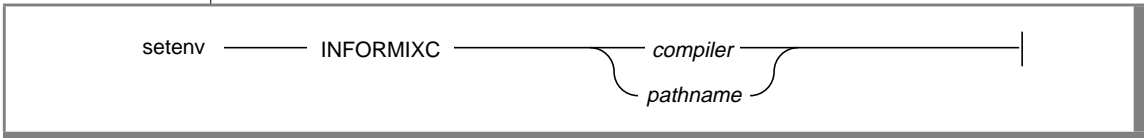
Element	Description
	A branch below the main path indicates an optional path. (Any term on the main path is required, unless a branch can circumvent it.)
	A loop indicates a path that you can repeat. Punctuation along the top of the loop indicates the separator symbol for list items.
	A gate ($\sqrt{3}$) on a path indicates that you can only use that path the indicated number of times, even if it is part of a larger loop. Here you can specify <i>size</i> no more than three times within this statement segment.

(2 of 2)

How to Read a Command-Line Diagram

Figure 1 shows a command-line diagram that uses some of the elements that are listed in the previous table.

Figure 1
Example of a Command-Line Diagram



To construct a command correctly, start at the top left with the command. Then follow the diagram to the right, including the elements that you want. The elements in the diagram are case sensitive.

Figure 1 diagrams the following steps:

1. Type the word `setenv`.
2. Type the word `INFORMIXC`.
3. Supply either a compiler name or pathname.
After you choose *compiler* or *pathname*, you come to the terminator. Your command is complete.
4. Press RETURN to execute the command.

Sample-Code Conventions

Examples of SQL code occur throughout this manual. Except where noted, the code is not specific to any single Informix application development tool. If only SQL statements are listed in the example, they are not delimited by semicolons. For instance, you might see the code in the following example:

```
CONNECT TO stores7
...

DELETE FROM customer
      WHERE customer_num = 121
...

COMMIT WORK
DISCONNECT CURRENT
```

To use this SQL code for a specific product, you must apply the syntax rules for that product. For example, if you are using the Query-language option of DB-Access, you must delimit multiple statements with semicolons. If you are using an SQL API, you must use EXEC SQL at the start of each statement and a semicolon (or other appropriate delimiter) at the end of the statement.



Tip: *Ellipsis points in a code example indicate that more code would be added in a full application, but it is not necessary to show it to describe the concept being discussed.*

For detailed directions on using SQL statements for a particular application development tool or SQL API, see the manual for your product.

Additional Documentation

For additional information, you might want to refer to the following types of documentation:

- On-line manuals
- Printed manuals
- On-line help
- Error message files
- Documentation notes, release notes, and machine notes
- Related reading

On-Line Manuals

An Answers OnLine CD that contains Informix manuals in electronic format is provided with your Informix products. You can install the documentation or access it directly from the CD. For information about how to install, read, and print on-line manuals, see the installation insert that accompanies Answers OnLine.

Printed Manuals

To order printed manuals, call 1-800-331-1763 or send email to moreinfo@informix.com. Please provide the following information when you place your order:

- The documentation that you need
- The quantity that you need
- Your name, address, and telephone number

On-Line Help

Informix provides Help screens with each interactive interface that display information about the interfaces and the functions that they perform. For more information about the on-line help that is available with DB-Access, refer to “Using the HELP Screen” in [Chapter 2](#) and to [Appendix A](#).

Error Message Files

Informix software products provide ASCII files that contain all of the Informix error messages and their corrective actions. For a detailed description of these error messages, refer to *Informix Error Messages* in Answers OnLine.

To read the error messages on UNIX, you can use the following commands.

UNIX

Command	Description
finderr	Displays error messages on line
rofferr	Formats error messages for printing



WIN NT

To read error messages and corrective actions on Windows NT, use the **Informix Find Error** utility. To display this utility, choose **Start→Programs→Informix** from the Task Bar. ◆

Documentation Notes, Release Notes, Machine Notes

In addition to printed documentation, the following sections describe the on-line files that supplement the information in this manual. Please examine these files before you begin using your database server. They contain vital information about application and performance issues.

UNIX

On UNIX platforms, the following on-line files appear in the `SINFORMIXDIR/release/en_us/0333` directory.

On-Line File	Purpose
<code>DBACCDOC_x.y</code>	The documentation-notes file describes features that are not covered in this manual or that have been modified since publication. Replace <code>x.y</code> in the filename with the version number of your database server to derive the name of the documentation-notes file for this manual.
<code>SERVERS_x.y</code>	The release-notes file describes feature differences from earlier versions of Informix products and how these differences might affect current products. This file also contains information about any known problems and their workarounds. Replace <code>x.y</code> in the filename with the version number of your database server to derive the name of the release-notes file.
<code>IDS_x.y</code>	The machine-notes file describes any special actions that are required to configure and use Informix products on your computer. Machine notes are named for the product described. Replace <code>x.y</code> in the filename with the version number of your database server to derive the name of the machine-notes file.

◆

WIN NT

The following items appear in the Informix folder. To display this folder, choose **Start→Programs→Informix** from the Task Bar.

Item	Description
Documentation Notes	This item includes additions or corrections to manuals, along with information about features that may not be covered in the manuals or that have been modified since publication.
Release Notes	This item describes feature differences from earlier versions of Informix products and how these differences might affect current products. This file also contains information about any known problems and their workarounds.

Machine notes do not apply to Windows NT platforms. ◆

Related Reading

The following publications provide additional information about the topics that are discussed in this manual. For a list of publications that provide an introduction to database servers and operating systems, refer to the [Getting Started](#) manual.

- The [Informix Guide to SQL: Tutorial](#)
- The [Informix Guide to SQL: Reference](#)
- The [Informix Guide to SQL: Syntax](#)
- The [Informix Guide to GLS Functionality](#)

Compliance with Industry Standards

The American National Standards Institute (ANSI) has established a set of industry standards for SQL. Informix SQL-based products are fully compliant with SQL-92 Entry Level (published as ANSI X3.135-1992), which is identical to ISO 9075:1992. In addition, many features of Informix database servers comply with the SQL-92 Intermediate and Full Level and X/Open SQL CAE (common applications environment) standards.

Informix Welcomes Your Comments

Please tell us what you like or dislike about our manuals. To help us with future versions of our manuals, we want to know about corrections or clarifications that you would find useful. Include the following information:

- The name and version of the manual that you are using
- Any comments that you have about the manual
- Your name, address, and phone number

Write to us at the following address:

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We appreciate your feedback.

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This chapter introduces a new user to DB-Access. It provides information about how to set up your DB-Access environment and the demonstration database.

This chapter discusses the following topics:

- What is DB-Access?
- Checking the DB-Access setup
- Creating the demonstration database
- Permissions you need to work DB-Access
- Invoking DB-Access

What Is DB-Access?

The DB-Access utility provides a user interface for typing, executing, and debugging Structured Query Language (SQL) statements and Stored Procedure Language (SPL) routines.

SQL and SPL allow you to perform data-definition tasks, such as specifying the number and type of data columns in a table, and data-management tasks, such as storing, viewing, and changing table data. As an Informix database user, the DB-Access interface allows you to apply powerful Informix extensions to SQL and SPL.

You can use DB-Access for different aspects of database processing, as the following list shows:

- Use DB-Access for ad hoc queries that you execute once or infrequently.
- Use DB-Access as a simple means to connect to one or more databases, to transfer data between the database and external text files, or to display information about a database.



- Use DB-Access to display system catalog tables and the Information Schema, which are explained in the [Informix Guide to SQL: Reference](#).
- Use DB-Access as a learning environment.
As you work your way through the material in the [Informix Guide to SQL: Tutorial](#) or the [Informix Guide to Database Design and Implementation](#), use the DB-Access utility to practice the statements and examples provided.
- Use DB-Access as a testing environment for applications that you intend to store for use in a production environment.

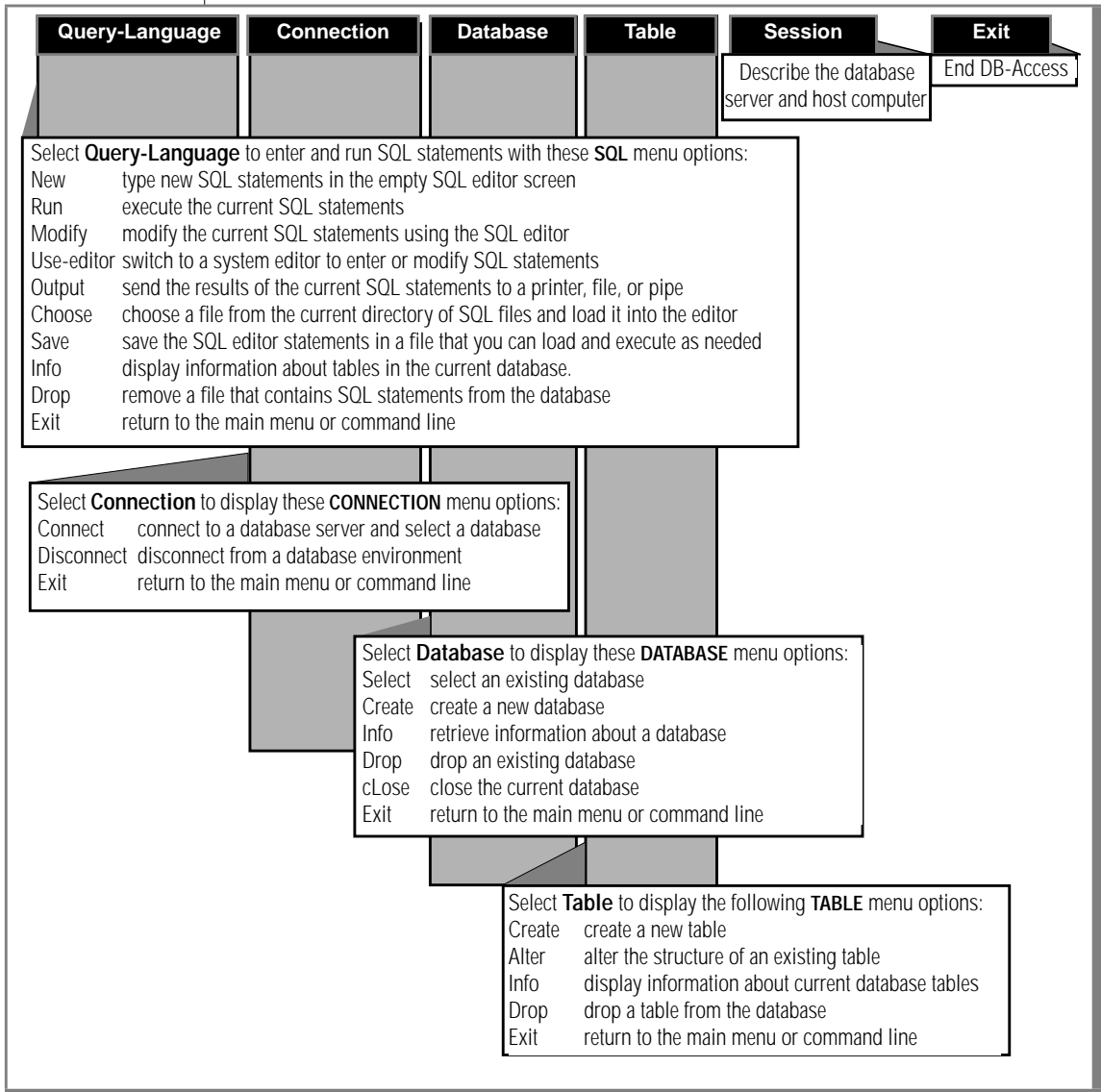
Important: Although you can use DB-Access to test the results of your applications, it is not intended as an application-development environment. You branch conditionally or loop through SQL statements when you run them from within DB-Access.

You can use DB-Access in the following ways:

- You can run statements interactively, discarding them after you achieve the desired results.
You can also type several statements in the DB-Access SQL editor and then save them in a file for repetitive execution.
- You can type statements directly in the DB-Access text-entry screen or your preferred text editor.
- You can start DB-Access in menu mode and then select options from the menus.
You can select DB-Access options directly when you invoke DB-Access at the command line.
- You can start DB-Access at the main menu if you prefer to select options from menus.
From there, you select other menus, or you can quickly enter and exit from a specific menu.

[Figure 1-1 on page 1-5](#) illustrates the top two levels of the DB-Access menu hierarchy. The view of available options summarizes the types of database tasks that you can accomplish with DB-Access.

Figure 1-1
The DB-Access Menu Hierarchy



For detailed submenu instructions, refer to the following chapters.

Option	Instructions
Query-Language	Chapter 3, “The Query-language Option”
Database	Chapter 4, “The Database Option”
Table	Chapter 5, “The Table Option”
Session	Chapter 6, “The Connection and Session Options”
Connection	Chapter 6, “The Connection and Session Options”

Checking the DB-Access Setup

This section reviews the procedure for setting up a DB-Access environment. DB-Access requires that you perform the following preparatory steps:

1. Install the database server and set environment variables.
2. Set up the Global Language Support (GLS) locale, where required for language localization. ♦
3. Put the database server on-line.
4. Optionally run the demonstration database initialization script.

Depending on your role within your organization, you participate in some or all of the preceding steps. After installation and setup, you can invoke the DB-Access program, as described in [“Invoking DB-Access” on page 1-14](#).

Related Manuals

For information on installing the database server, setting environment variables, and putting the database server on-line, refer to the manuals for your database server listed in [Figure 1-2 on page 1-7](#).

GLS

Figure 1-2
Related Manuals

Task or Feature	Topic	System	Manual
Database server installation		All	Your Installation Guide
Setting environment variables	.cshrc or .login	UNIX	Your Installation Guide The <i>Informix Guide to SQL:Reference</i>
Setting environment variables	Registry	Windows NT	Your Installation Guide The <i>Informix Guide to SQL:Reference</i>
Setting UNIX permissions	chmod	UNIX	Your UNIX documentation
Putting database server on-line	oninit	All	Your Administrator's Guide
Creating database spaces	onspaces	All	Your Administrator's Guide
Granting permissions on database objects	GRANT	All	The <i>Informix Guide to SQL:Reference</i>

Environment Variables for DB-Access

As part of the installation and setup process, the system or database administrator sets certain environment variables that enable Informix products to work within a particular operating-system environment. This section lists the environment variables that affect your ability to use DB-Access.

Important: You must have `$INFORMIXDIR/bin` in your path if you use DB-Access on a UNIX platform or `%INFORMIXDIR%\bin` in your path if you use DB-Access on a Windows NT platform. Your operating system uses the path to locate the initialization script and the `dbaccess` executable.

In a UNIX environment, the database server must have the appropriate terminal set up from among those listed in `INFORMIXTERM`. ♦



UNIX

You can set the following optional environment variables:

- **DELIMIT** causes DB-Access to interpret double quoted (") text as identifiers rather than strings.
- **DBFLTMASK** sets the default floating-point display precision.
The effect of this variable is limited to the DB-Access display size for numbers. For more information, refer to [Informix Guide to SQL: Reference](#).
- **DBEDIT** sets the default DB-Access text editor without changing the default text editor associated with the operating-system shell.
For more information on how DB-Access uses the text editor that you specify as default, see [“Entering a New SQL Statement”](#) on page 3-8.

Practicing with the Demonstration Database

You can practice using DB-Access with the demonstration database or databases provided with the database server. As you use the demonstration database, you can add, delete, or change the provided data and SQL scripts, then reinitialize the database to its original condition. This manual provides examples of SQL statements run against the demonstration data, with illustrations that show the results of these statements.

Which Demonstration Database to Use

All the Informix database servers include the **stores7** demonstration database. Additional demonstration schema and scripts are provided for database servers that are optimized for specialized data processing models. The various models are discussed in the [Informix Guide to Database Design and Implementation](#). In addition to data, each demonstration database provides sample SQL command scripts appropriate to the intended application model.

Figure 1-3 lists the databases available for each database server. To set up or reinitialize the demonstration database, run the corresponding initialization script that Figure 1-3 shows. The directory **\$INFORMIXDIR/bin** (on a UNIX platform) or **%INFORMIXDIR%\bin** (on the Windows NT platform) contains the demonstration setup scripts for your database server.

Figure 1-3
Demonstration Databases

Server Type	Database Name	Model	Initialization Script
All Informix database servers	stores7	Traditional relational database	dbaccessdemo7
Informix Dynamic Server Dynamic Server with AD and XP Options	sales_demo	Dimensional data warehouse	dbaccessdemo7 followed by SQL command files described in Appendix B
Dynamic Server with UD Option	superstores	Object-relational database	dbaccessdemo9

Demonstration Installation

Typically, you create a directory that contains SQL command files and then run the installation script from your new directory. Always initialize or run DB-Access from the directory in which you want to store SQL command files for the following reasons:

- The installation script prompts you to ask if you want a copy of the sample files provided with the demonstration database saved in the current directory each time you reinitialize the demonstration database.
- DB-Access lists only the files that end in the extension **.sql** in the current directory.

Follow these steps to create a working directory

1. Enter the following command for either UNIX or Windows:

```
mkdir dirname
```

For example, if you want to name the directory **demo_db**, enter the following command:

```
mkdir demo_db
```

You must have UNIX read and execute permissions for each directory in the pathname that you create. ♦

2. Add the new *dirname* to your **PATH** environment variable.

UNIX

3. Before you run the initialization script, change to the new directory by entering the following command:

```
cd dirname
```

4. Run the initialization script.

[Figure 1-3 on page 1-9](#) describes the various database models available for each database server version. The command-line diagrams that follow (in “[Command-Line Syntax](#)”) show the options you can use with the initialization script.

5. The initialization script displays a series of messages on the screen as each table in the database is created. The following final message requires a response:

```
Press Y to copy the command files into the directory
that you created or press N to specify that the command
files should not be copied.
```

Press Y to copy the sample files to the current directory.

Press N if you do not want to put the sample files in the current directory. For example, you press N if you do not want to replace any contents of the directory that have the same filenames as the sample command files.



Tip: If you make changes to your database that you want to discard, rerun the demonstration initialization script. When the script prompt message displays, press Y to replace the command files with the original versions.

Command-Line Syntax

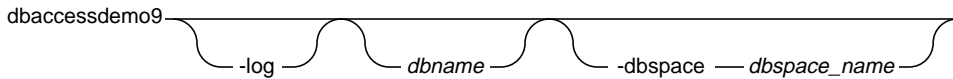
The illustrations in this section show how to run the initialization scripts. For assistance in reading the diagrams, refer to “[Command-Line Conventions](#)” in the Introduction to this manual.

To use stores7

```
dbaccessdemo7 -log dbname -dbspace dbspace_name
```

To use superstores

UD



To use sales_demo

The following diagram shows the script that you use to create the version of the **stores7** database on which you can then build the **sales_demo** database. This version has logging enabled and uses the default database name.



Important: The following diagram shows only part of the process. The dimensional database requires some additional SQL command files, which you run as an argument to the **dbaccess** command. Follow the example on [page 1-13](#).

For more information, see [Appendix B](#) and the [Informix Guide to Database Design and Implementation](#).

AD/XP

IDS



-log requests transaction logging for the demonstration database. You must use the **-log** option to initialize the **sales_demo** demonstration database.

-dbspace requests a particular dbspace location for the demonstration database.

- dbspace_name*** houses the demonstration database. If you do not specify a dbspace name, by default, the data for the database is put in the root dbspace. To create a dbspace, use the **onspaces** utility as described in your *Administrator's Guide*.
- dbname*** substitutes for the default database name. For object name guidelines, refer to the *Informix Guide to SQL: Syntax*.

The **-log** option has no effect with Dynamic Server with AD and XP Options, which perform logging automatically. ♦

Examples

- The following command creates a database named **stores7**:

```
dbaccessdemo7
```
- The following example creates an instance of the **stores7** database named **demo_db**:

```
dbaccessdemo7 demo_db
```
- The following command initializes the **stores7** demonstration database with a log to record all changes to the database:

```
dbaccessdemo7 -log
```
- The following command creates an instance of the **stores7** demonstration database named **demo_db** in **dbspace_2**:

```
dbaccessdemo7 demo_db -dbspace dbspace_2
```
- The following command creates an instance of the **stores7** database named **demo_db** that will log transactions and reside in **dbspace_2**:

```
dbaccessdemo7 -log demo_db -dbspace dbspace_2
```

UNIX

- Enter the following commands to create the **sales_demo** dimensional database on a UNIX platform:

```
cp $INFORMIXDIR/demo/dbaccess/add*.unl .
cp $INFORMIXDIR/demo/dbaccess/cost.unl .
cp $INFORMIXDIR/demo/dbaccess/time.unl .
cp $INFORMIXDIR/demo/dbaccess/creatdw.sql .
cp $INFORMIXDIR/demo/dbaccess/loaddw.sql .
dbaccessdemo7
dbaccess - createdw.sql
dbaccess - loaddw.sql
```



- ◆ Enter the following commands to create the **sales_demo** dimensional database on a Windows NT platform:

```
copy %INFORMIXDIR%\demo\dbaccess\add*.unl .
copy %INFORMIXDIR%\demo\dbaccess\cost.unl .
copy %INFORMIXDIR%\demo\dbaccess\time.unl .
copy %INFORMIXDIR%\demo\dbaccess\creatdw.sql .
copy %INFORMIXDIR%\demo\dbaccess\loaddw.sql .
dbaccessdemo7
dbaccess - createdw.sql
dbaccess - loaddw.sql
```



Privileges for the Demonstration Database

When you run the initialization script to create an instance of the demonstration database under your login name, the database server recognizes your login as the owner and database administrator (DBA) of that database. As DBA, you automatically accrue some exclusive privileges over objects in your database. You can extend those privileges to others with the **GRANT** statement, which is described in the *Informix Guide to SQL: Syntax*.

UNIX

Permissions for the Working Directory

Some operating systems require that you have execute permissions to run SQL command files, read permissions to display these files or their contents in DB-Access, or write permissions to save modified or new files.

Run the UNIX **chmod** command to enable execution of the SQL files that the initialization script installed. ♦

Invoking DB-Access

The command options, if any, that you use to start DB-Access depend on your purpose, as the following list illustrates:

- If you want all the menus available to you, start DB-Access at its main menu. For instructions, see [“Displaying the Main Menu” on page 1-15](#).
- You can start and exit from a specific DB-Access menu or screen. For instructions, see [“Displaying Other Menus or Options” on page 1-17](#).
- You can execute a file that contains SQL statements without displaying the DB-Access menus. For instructions, see [“Executing a Command File” on page 1-20](#).
- You can type DB-Access options directly on the command line, without the full-screen menu interface. For instructions, see [“Using DB-Access Interactively in Non-Menu Mode” on page 1-23](#).
- You can check the DB-Access version or transfer nonprintable characters in hexadecimal form. Refer to [“Activating the XLUF Feature for Nonprintable Characters” on page 1-22](#) for details.

WIN NT

You can set up the DB-Access program icon to perform any of the commands that this chapter shows. ♦

UNIX

If the **TERM**, **TERMCAP**, or **TERMINFO** environment variables do not enable DB-Access to recognize the type of terminal you use, the main menu does not display. Instead, a message similar to the following text appears:

```
Unknown terminal type.
```



WIN NT

If you use a Windows NT terminal to run DB-Access on a UNIX database server, the terminal-emulation window must emulate a terminal type that DB-Access can recognize or the database server displays an unknown terminal type message in the terminal-emulation window.

For more information about **INFORMIXTERM** and the appropriate terminal setup, refer to your [Installation Guide](#) or the [Informix Guide to SQL: Reference](#). ◆



Tip: If your operating system cannot find **dbaccess**, put the full path in front of the program name, as follows:

```
$INFORMIXDIR/bin/dbaccess
```

Starting the DB-Access Menu Interface

For information on how to read the diagrams in this section, see “Command-Line Conventions” in the Introduction. To familiarize yourself with the DB-Access menu structure, see [Figure 1-1 on page 1-5](#).

Displaying the Main Menu

Typically, you start DB-Access with the main menu as the top-level menu from which you reach submenus and their options.

UNIX

If you use a window interface, such as OpenWindows, on a UNIX terminal, issue the **dbaccess** command from a nonscrolling console window. ◆

If your path includes **\$INFORMIXDIR/bin**, the following command shows the simplest way to start DB-Access:

```
dbaccess
```

Without arguments, the single word **dbaccess** starts the main menu with no database selected and no options activated. Alternatively, you can specify the options shown in the following diagram:



- ansi** causes DB-Access to generate a warning whenever it encounters an Informix extension to ANSI-compliant syntax. For more information, refer to [“Checking for ANSI Compliance” on page 1-21](#).
- s** goes to the main menu and displays information about the current session. This includes database server name, database server type, the host computer, server capabilities, and other settings.
- database** specifies the name of the current database if you want DB-Access ready at startup to work with a specific database.

Specifying a Database on the Command Line

Assume the database server that you have on-line contains a database named **mystores**. To make the **mystores** database the current database, start DB-Access with the following command:

```
dbaccess mystores
```

You can specify a database on a database server that is not on-line. For example, either of the following commands selects the **newstores** database on the **xyz** database server:

```
dbaccess newstores@xyz
dbaccess //xyz/newstores
```


When DB-Access starts, the database and database server name that you specify appear on the fourth line, as Figure 1-4 shows.

```
DB-Access:  Query-language  Connection  Database  Table  Session  Exit
----- newstores@xyz -----Press CTRL-W for Help -----
```

Figure 1-4
The DB-Access Main Menu with Database and Database Server Name

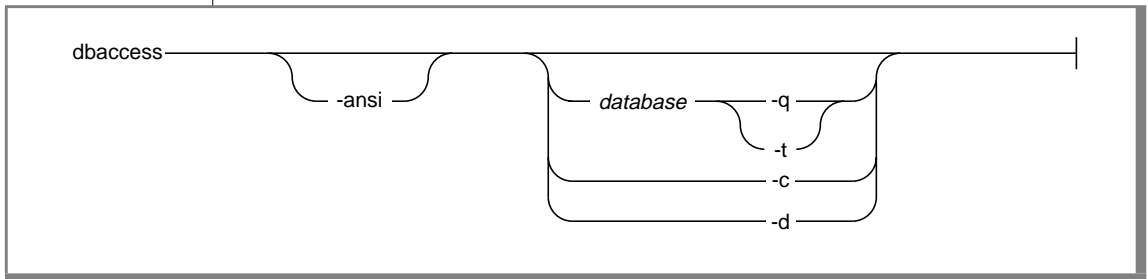
The following example shows how to display session information about a database named **mystores**:

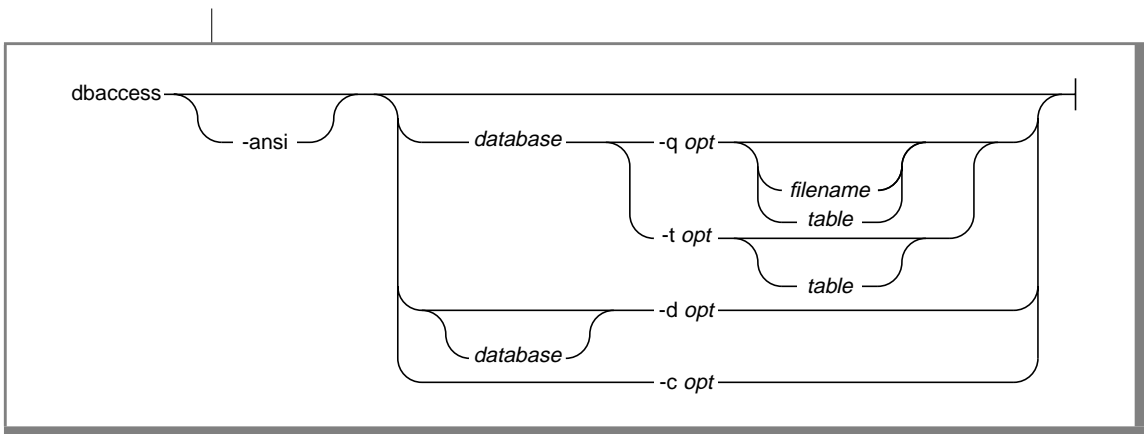
```
dbaccess mystores -s
```

If you start DB-Access with no further command-line options, you select submenus from the main menu.

Displaying Other Menus or Options

The command-line shortcuts enable you to display a specific DB-Access menu or even execute a specific menu option, as the following diagrams show. When you exit from a submenu or option that you specified from the command line, you do not go back to the next higher menu level. Instead, you exit directly to the operating-system command line.





- ansi** causes DB-Access to generate a warning whenever it encounters an Informix extension to ANSI-compliant syntax. For more information, see [“Checking for ANSI Compliance” on page 1-21](#).
- c** starts with the CONNECTION menu as the top-level menu.
- d** starts with the DATABASE menu as the top-level menu.
- q** starts at the SQL (query-language) menu as the top-level menu.
- t** starts at the TABLE menu as the top-level menu.
- opt** selects an option, or an option and suboption, on the specified menu. DB-Access accepts the first letters of each menu option. For examples, refer to [“Common Option Examples” on page 1-19](#).
- filename** names a command file to load with the SQL menu.
- database** specifies the name of a database.

You must either include a database name in front of a **-q** or **-t** menu option or choose a current database from the SELECT DATABASE screen. Then the requested menu appears.
- table** specifies a table in the database.

Common Option Examples

Option strings consist of the letters that you would use to select the same function from within the DB-Access menu system. The remainder of this section shows typical uses for directly using options when you invoke DB-Access.

The following sample command takes you to the Connect option on the CONNECTION menu, from which you can select a current database server and database:

```
dbaccess -cc
```

The following sample command takes you to the Drop option on the DATABASE menu, which lets you drop a database:

```
dbaccess -dd
```

The following sample command displays dbspaces information for the **mystores** database. The option letters invoke the DATABASE INFO menu dBspaces option.

```
dbaccess mystores -dib
```

The following sample command makes the **mystores** database current and chooses the **sel_order.sql** command file for viewing on the SQL menu screen. The **qc** option string corresponds to the SQL menu Choose option.

```
dbaccess mystores -qc sel_order
```

The following sample command requests fragmentation strategy information for the **customer** table in the **mystores** database. The Info menu in this example is a submenu of the SQL menu.

```
dbaccess mystores -qif customer
```

Important: You cannot directly invoke the SQL menu Run or Output options. To do so will result in an error message.

The following sample command takes you to the Create option on the TABLE menu where you can use the schema editor to create a table in the **mystores** database:

```
dbaccess mystores -tc
```



The following sample command takes you to the INFO submenu of the TABLE menu and displays the columns in the **customer** table in the **mystores** database:

```
dbaccess mystores -tic customer
```

Executing a Command File

When you invoke DB-Access from the command line, you can specify a database as current and execute a file that contains one or more SQL statements.

```
dbaccess _____ database _____ filename _____ |
           |-----| |-----| |-----|
           -e         -         -
```

-e echoes each line from the command file designated by *filename*. The **-e** option must precede all other options in the command line.

- indicates that you are not specifying a database in the command line because one is specified in a DATABASE statement in the command file.

database specifies the name of the current database. For database name syntax, see [“Specifying a Database on the Command Line” on page 1-16](#).

filename specifies the name of the command file or SQL script file that you want to execute. You can include the extension **.sql**, which is implied if omitted.

The following sample command executes the SQL statements in a file named **sel_stock.sql** on the **mystores** database:

```
dbaccess mystores sel_stock
```

The following sample command executes the SQL statements in the **sel_all.sql** file on the database specified in that file:

```
dbaccess - sel_all.sql
```

Viewing the Information Schema

Use DB-Access to execute the **xpg4_is.sql** file in the **SINFORMIXDIR/etc** directory. This SQL file creates the Information Schema and installs the views for a specified database. The following command creates the Information Schema for database **mystores**:

```
dbaccess mystores $INFORMIXDIR/etc/xpg4_is.sql
```

The Information Schema adds to the database four information-only views that conform to X/Open XPG4 with Informix extensions. After running **xpg4_is.sql**, use DB-Access to retrieve information about the tables, views, and columns that you have access to in the specified database. For more information on Information Schema views, see the [Informix Guide to SQL: Reference](#).



Tip: Informix does not recommend that you install these XPG4-compliant views on an ANSI database because their format differs considerably from that of the ANSI-compliant Information Schema views as defined by the SQL standards committee.

Checking for ANSI Compliance

To check your SQL statements for compliance with ANSI standards, include the **-ansi** parameter or set the **DBANSIWARN** environment variable. Use the **-ansi** option with other **dbaccess** options such as **-dc** (to create a database), **-tc** or **-ta** (to create or alter a table), or **-qc filename** (to choose a command file). The following command checks for ANSI compliance while DB-Access creates database **research**:

```
dbaccess -ansi -dc research
```

If **DBANSIWARN** is set, it is unnecessary to specify **-ansi** on the DB-Access command line.

DB-Access displays the SQLSTATE value with the warning under the following circumstances:

- You include the **-ansi** option or set the **DBANSIWARN** environment variable.
- You access or create an ANSI database.
- You run DB-Access in line mode or specify an **.sql** input file.
- Execution of a SQL statement generates a warning rather than an error.

For more information on ANSI-compliant databases, refer to the [Informix Guide to SQL: Reference](#) and the [Informix Guide to SQL: Tutorial](#). For more information on SQLSTATE values, see the GET DIAGNOSTICS statement in the [Informix Guide to SQL: Syntax](#). The [Informix Guide to SQL: Syntax](#) also provides information about ANSI compliance in Informix SQL syntax.

Displaying the Software Version Number

You can display the name, version number, and serial number for DB-Access without invoking the utility.

You cannot use any other **dbaccess** options with **-v** or **-V**.

DB-Access takes no further action after displaying this information on the screen. Enter other commands that this section describes to invoke and work with the utility.

Activating the XLUF Feature for Nonprintable Characters

You can activate the hexadecimal load/unload format (XLUF) feature in DB-Access at the command line, as the following example shows.

```
dbaccess _____ -X _____|
```

-X activates the hexadecimal format for LOAD and UNLOAD statements.



When you invoke DB-Access with the **-X** flag, the LOAD and UNLOAD SQL statements can format nonprintable ASCII signs in hexadecimal format. An **.unl** file that the UNLOAD statement produced contains the hexadecimal format changes.

Important: *The **.unl** files that contain data in a hexadecimal format are not compatible with Informix database servers prior to Version 6.0. However, **.unl** files generated without the XLUF functionality are fully compatible with Version 6.0 or later database servers.*

For more information, see the descriptions of the LOAD and UNLOAD statements in the [Informix Guide to SQL: Syntax](#). Also see the discussion of the various SQL utilities in the [Informix Migration Guide](#) and the data types information in the [Informix Guide to SQL: Reference](#).

Using DB-Access Interactively in Non-Menu Mode

If you do not want to use the menus and do not have a prepared SQL file, use your keyboard or standard input device to enter SQL statements.

Reading from the Keyboard or Standard Input Device

When you invoke DB-Access without a menu argument (such as **-q**) and with a hyphen as the final argument, DB-Access processes commands from the standard input device (on UNIX platforms) or the keyboard (on Windows NT platforms). DB-Access reads what you type until you indicate that the input is complete. Then DB-Access processes your input and writes the results to the standard output device (on UNIX platforms), or the command window (on Windows NT).

Interactive Input

DB-Access reads and executes SQL statements from the terminal keyboard interactively. While DB-Access runs interactively, the *greater than* (**>**) prompt marks the line where you type your next SQL statement.

When you type a semicolon (;) to end a single SQL statement, DB-Access processes that statement. When you press CTRL-D to end the interactive session, DB-Access stops running. The following example shows user input and results in an interactive session:

```
dbaccess - -
>database stores7;

Database selected.

>select count(*)from systables;

(count(*))

        21

1 row(s) retrieved.

>^D
```

UNIX

Batch Command Input on UNIX Platforms

You can supply one or more SQL statements through an in-line shell script. For example, you can use the UNIX C, Bourne, or Korn shell with in-line standard input files, as the following example shows:

```
dbaccess mystores- <<EOT!
select avg(customer_num) from customer
where fname matches '[A-G]*';
EOT!
```

You can supply SQL statements through a pipe, as the following example shows:

```
echo 'select count(*) from systables' | dbaccess mystores-
```


DB-Access interprets any line that begins with an exclamation mark (!) as a shell command. You can mix shell escape lines with SQL statements and put them in the middle of SQL statements, as the following example shows:

```
dbaccess mystores-
>select
!echo hello
>hello
count(*) from systables;
>
(count(*))

        21

1 row(s) retrieved.
>
```

Connecting to a Database Environment in Non-Menu Mode

You can use the CONNECT ... USER syntax in SQL statements issued in interactive mode. However, DB-Access does not support the USER clause of the CONNECT statement when you connect to a default database server.

Connecting in Interactive Non-Menu Mode

When you include the USER *'user identifier'* clause in a CONNECT statement in interactive mode, DB-Access prompts you to enter a password. You can either enter a user identifier or press the RETURN key. If you enter a password, it does not appear on the screen.

The following two command examples show how to connect to a database server in interactive mode. The first example uses the CONNECT statement without specifying a user identifier.

```
dbaccess - -
> connect to '@starfish';

Connected.
```

If you include the USER clause in a CONNECT statement, as the second example shows, DB-Access prompts you for a password using echo suppression:

```
> connect to '@starfish' user 'marae';  
ENTER PASSWORD:  
Connected.
```



Important: For security reasons, do not enter the password on the screen where it can be seen. Also, do not include the USING password clause in a CONNECT statement when you use DB-Access interactively. In interactive mode, DB-Access returns an error if you enter a password before it can prompt for one.

Connecting with a File or Shell File in Background Mode

You can execute the USER clause of a CONNECT statement in a DB-Access file that includes the USER clause. The following example uses a command file that contains a CONNECT statement with a USING clause to connect to a database server:

```
dbaccess - connfile.sql
```



Important: An SQL command file that contains the statement

```
CONNECT USER user_id USING password
```

should be protected from access by anyone other than the *user_id* identified in the USER clause.

The following example uses a shell file to connect to a database server. DB-Access prompts you for a password.

```
dbaccess - - <<\!  
connect to '@starfish' user 'marae';  
!  
ENTER PASSWORD:
```

◆

Using the Full-Screen Menu Interface

Related Manuals	2-3
Using the DB-Access User Interface	2-4
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This chapter provides introductory information about the following topics:

- Related manuals
- Using the DB-Access user interface
- Alternative approaches

If you are familiar with DB-Access, you might prefer to skip this introductory chapter.

Related Manuals

This manual explains how to use DB-Access. DB-Access provides a means to test programs or display information about databases. As you work with any of the following Informix companion documents, you might find reasons to use DB-Access:

- The *Informix Guide to Database Design and Implementation* introduces database-definition fundamentals for a variety of objectives, strategies, and Informix database servers.
- The *Informix Guide to SQL: Tutorial* introduces data-manipulation fundamentals and explains how to design SQL and other language applications to select, combine, report, and alter data.
- The INFORMIX-Client Software Developer's Kit contains programmer's guides for developers whose data resides on an Informix database server.

The following companion documents provide information about the tasks that you use DB-Access to accomplish:

- The *Informix Guide to SQL: Syntax* describes the syntax for all SQL and SPL statements available through DB-Access.
- The *Informix Guide to SQL: Reference* contains information about:
 - the Informix system catalog and Information Schema views.
 - the structure and contents of the demonstration database.
 - environment variables.
- The *Informix Guide to GLS Functionality* provides information on GLS features.

Using the DB-Access User Interface

The DB-Access user interface combines the following features:

- A hierarchy of menus
- Screens that prompt you for brief responses and selection lists
- Contextual HELP screens
- The Interactive Schema Editor, which helps you structure tables
- An SQL programmer environment, which includes the following features:
 - The built-in SQL Editor where you enter and modify SQL and SPL statements
 - An option to use another editor of your choice
 - The database server syntax checker and runtime debugger
 - Storage, retrieval, and execution of SQL and SPL routines
- A choice of output for database queries and reports

Nonprogrammers build their databases with the Interactive Schema Editor described in [Chapter 5, “The Table Option.”](#) Programmers use the SQL programmer environment described in [Chapter 3, “The Query-language Option.”](#)

The remainder of this chapter summarizes how to navigate through menus and screens.

Using the Keyboard with DB-Access

The terminal keyboard has special keys that you use to instruct DB-Access. Before you begin to use DB-Access, locate the following keys:

Arrows	<p>The arrow keys are usually found at the lower right of your keyboard.</p> <p>The up arrow [↑] key moves the cursor up one line. If your terminal does not have a [↑] key, type CTRL-K.</p> <p>The down arrow [↓] key moves the cursor down one line. If your terminal does not have a [↓] key, type CTRL-J.</p> <p>The left arrow [←] key moves the cursor back one position on the screen. If your terminal does not have a [←] key, type CTRL-H.</p> <p>The right arrow [→] key moves the cursor forward one position on the screen. If your terminal does not have a [→] key, use the CTRL-L key.</p>
BACKSPACE	<p>The BACKSPACE key might be marked with a left arrow. It is usually located at the top right of the keyboard.</p>
CONTROL	<p>The CONTROL key is often labeled CTRL or CNTRL and is usually located on the left side of the keyboard. This manual refers to the CONTROL key as CTRL. On some systems, type CTRL-C to cancel or abort a program or to leave a current menu and return to the menu one level above. This manual refers to CTRL-C as the Interrupt key.</p>
DELETE	<p>The DELETE key is sometimes labeled RUBOUT, CANCEL, or DEL.</p> <p>On most systems, use the DELETE key to cancel or abort a program or to leave a current menu and return to the menu one level above. This manual refers to the DELETE key as the DEL key or the Interrupt key.</p>

ESCAPE	The ESCAPE key might be labeled ESC. It is usually located on the upper left corner of your keyboard.
RETURN	The RETURN key might be labeled RETURN or NEWLINE, or it might be indicated with a bent left arrow. It is located on the right side of the keyboard.
SPACEBAR	The SPACEBAR is generally unlabeled.
Interrupt	Issue the command <code>stty -a</code> on the command line and check the “intr” setting to see if your terminal recognizes CTRL-C or DELETE (described earlier) or another key as the Interrupt key.

Using Menus

Menus appear at the top of each screen. Generally, the DB-Access main menu (Figure 2-1) is the top level of the menu hierarchy. You can select a submenu as the top level if you invoke DB-Access with a submenu option, such as those described in “[Displaying Other Menus or Options](#)” on page 1-17.



Figure 2-1
The DB-Access Main Menu

A *message* below the option menu briefly describes the function of the highlighted option. If you highlight another option, the description changes. To find out what an option does, simply highlight it and read the description.

The dashed line at the bottom of the header displays the name of the *current database*, if one is selected, and a reminder to press CTRL-W for Help.

Choosing a Menu Option

In Figure 2-1, the box, or highlight, indicates that Query-language is the current option. Press RETURN to choose the highlighted option or choose another option as follows:

- Use the SPACEBAR or the left and right arrow keys to move the highlight. Options are arranged in a ring. If you move the highlight to the right, past the end of the list, the first option becomes current again.

Press RETURN to choose the highlighted option.

- Type the shortcut letter shown in *uppercase* in the name of the option that you want to select. (You can type the shortcut letter in either uppercase or lowercase.)

Because some menus have multiple options that start with the same letter, the shortcut key is not always the first letter of an option name. For example, on the DATABASE menu (Figure 2-2), both **C**reate and **c**Lose start with the letter “c.” As indicated by the uppercase shortcut keys, press the **C** key to select the Create option and press the **L** key to select the cLose option..

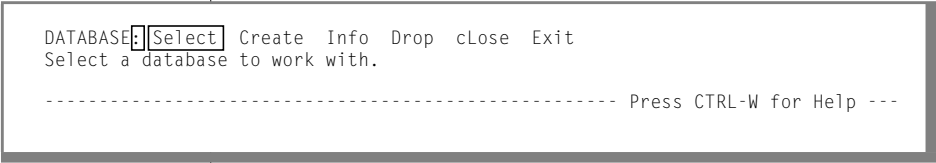


Figure 2-2
A Sample Menu Screen

DB-Access displays the screen for the menu option that you select.

Leaving a Menu Screen

If the menu has an Exit option, press the E key to exit the menu. If no Exit option exists, use the Interrupt key (usually DEL or CTRL-C) to exit the menu. You then return to the menu, screen, or command line from which you selected the exit menu.

Using Response Screens

Some screens, such as the SELECT DATABASE screen that Figure 2-3 shows, prompt you for a name or value.

Figure 2-3

A Sample Response Screen

```
SELECT DATABASE >> 
Select a database with the Arrow keys, or enter a name, then press Return.

----- Press CTRL-W for Help -----

mystores@dbserver1
sysmaster@dbserver1
```

GLS

If Global Language Support is enabled, the listed items are sorted according to the code-set collation order of the current locale. ♦

Reading the Screen Header

The top line of a response screen displays a prompt as the screen name followed by double angle brackets (>>) and the cursor. A message below the prompt gives brief instructions, such as `Press CTRL-W for Help`. The dashed line identifies the database that you select as current.

Selecting or Entering Values on the Screen

Where you enter your response depends on the operation, as the following two choices show:

- You might type a value in the header of a entry screen, after the double angle brackets (>>) at the top of the screen. For example, you could type a valid database name after `SELECT DATABASE>>`, as Figure 2-3 shows.

Press RETURN when you finish typing, and DB-Access displays the next screen or takes other appropriate action.

- Some screens have a list on the lower part of the screen from which you can choose an item instead of typing your selection in the header. For example, the SELECT DATABASE screen in Figure 2-3 lists the databases available on the current database server.

Use the arrow keys to highlight the item that you want and then press RETURN. DB-Access displays the next screen or takes other appropriate action.

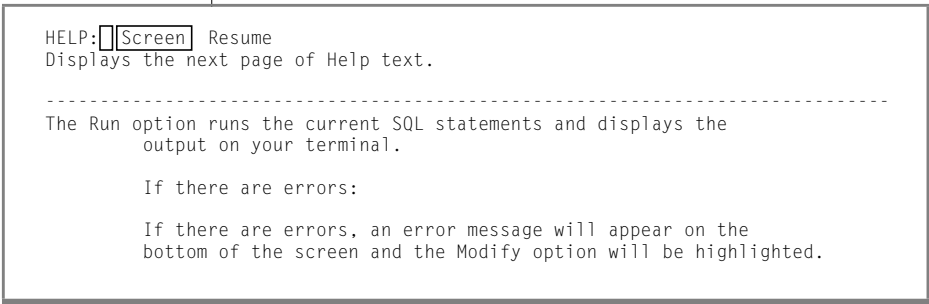
Leaving a Response Screen

Without a menu, a screen cannot have an Exit option. Press the Interrupt key (usually DEL or CTRL-C) to return to the previous menu or screen.

Using the HELP Screen

Press CTRL-W to display a HELP screen that provides information about the current menu option or screen function. Figure 2-4 shows some of the text that appears when you press CTRL-W for information about the Run option on the SQL menu.

Figure 2-4
*A Partial HELP
Screen with Text*



If the Help text is longer than one page, the Screen option is highlighted. Press RETURN to view the next screen. To select the Resume option, highlight it with the SPACEBAR or the right arrow key and then press RETURN or the R key.

If the Help text is only one page, the Resume option is highlighted, and you need only press RETURN.

For an illustration of how to read the syntax diagrams that appear when you request on-line Help for creating, modifying, or editing an SQL statement, see [Appendix A](#).

Using an Editor Screen

You need to use a text editor to prepare and modify SQL statements and command files when you select the Query-language option on the main menu. DB-Access provides two ways to edit the text of SQL statements and command files before you run them: the *SQL editor* and a *system editor*. Because you only use these screens with the Query-language option, refer to [Chapter 3, “The Query-language Option,”](#) for detailed instructions.

Alternative Approaches

This section illustrates some common database tasks and lists alternative procedures to use them. This section can help you determine your preferred method of using the DB-Access interface.

For each task listed in this section, the number in the last column indicates which chapter to consult for detailed instructions. You also need the companion documents listed in [“Related Manuals” on page 2-3](#).

Database-Level Tasks

The database you use is called the *current* database. To select an existing database as current, you can:

- Use the following command line syntax:

```
dbaccess dbname
```

For more information about using DB-Access from the command line, see [“Invoking DB-Access” on page 1-14](#).

- Use any method from within DB-Access that is described in the following list.

Menu Screen	Option or SQL Statement	Action	Chapter
CONNECTION	Connect	Prompts for database server, username, password, and database name. Connects you according to the choices you make.	6
SQL	CONNECT	Connect to a database. If you use a fully-qualified database name, you simultaneously connect to the database server.	3
DATABASE	Select	Choose a current database from a list of databases available on the current database server.	4
SQL	DATABASE	Choose a database as current.	3

To create your own database, use one of the following methods.

Menu Screen	Option or SQL Statement	Action	Chapter
DATABASE	Create	Prompts for a database name, dbspace, and log options and then creates the new database.	4
SQL	CREATE DATABASE	Creates the database you name in the statement with the appropriate setup for the keywords you use.	3

To drop a database, use one of the following methods.

Menu Screen	Option or SQL Statement	Action	Chapter
DATABASE	Drop	Lists available databases and drops the database you choose from the list.	4
SQL	DROP DATABASE	Drops the database named in the command.	3

To close a database, use one of the following methods.

Menu Screen	Option or SQL Statement	Action	Chapter
DATABASE	cLose	Close the current database.	4
SQL	CLOSE DATABASE	Close the current database.	3
CONNECTION	Disconnect	Close the current database and disconnect from a database server.	6
SQL	DISCONNECT CURRENT	Close the current database and disconnect from the current database server.	3

To display information about a database, such as the dbspaces that contain it, choose the Info option on the DATABASE menu.

Table-Level Tasks

To create a table, allocate storage, or apply fragmentation, use one of the following methods.

Menu Screen	Option or SQL Statement	Action	Chapter
TABLE	Create	Use the Schema Editor.	5
SQL	CREATE TABLE	Use the SQL Editor or System editor and SQL statements.	3

To make changes to the structure of a table, use one of the following methods.

Menu Screen	Option or SQL Statement	Action	Chapter
TABLE	Alter	Guides you, with menus, through the available choices for changing an existing table.	5
CREATE TABLE	Modify	Enables you to change a schema before you build the table.	5
SQL	ALTER TABLE	Changes an existing table according to the keywords you include with the statement.	3
SQL	ALTER FRAGMENT	<ul style="list-style-type: none"> ■ Changes an existing fragmentation strategy (for a table or index). ■ Creates the table fragments. 	3

To drop a table from a database, use one of the following methods.

Menu Screen	Option or SQL Statement	Action	Chapter
TABLE	Drop	Drops the current table.	4
SQL	DROP TABLE	Drops the table named in the command.	3

To display information about the structure and characteristics of a table, use one of the following methods.

Menu Screen	Option or SQL Statement	Action	Chapter
TABLE	Info	Provides a menu of available table information categories.	4
SQL	Info (option)	Prompts you to select from a list of available tables and then provides the same menu as the Info option on the TABLE screen.	3
SQL	INFO (SQL statement)	Provides the information specified in the keywords you include with the INFO statement.	3

To display the data stored in a table, run a SELECT statement from the SQL editor. Use the procedures described in [Chapter 3, “The Query-language Option.”](#)

Tip: Several command files are included with DB-Access that contain sample practice SELECT statements. [Appendix B](#) lists the demonstration files that are supplied with the **stores7** demonstration database.



The Query-language Option

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T

his chapter describes how to use the Query-language option on the DB-Access main menu. When you select the Query-language option, DB-Access displays the SQL menu. Use the various SQL menu options to enter, modify, save, retrieve, and run SQL statements.

Use the Query-language option for any of the following reasons:

- To learn SQL and SPL
For example, use the Query-language option to practice the examples in the *Informix Guide to SQL: Tutorial*.
- To create and alter table structures as an alternative to the DB-Access Schema Editor
- To select, display, add, update, and delete data
DB-Access has no menu options for data manipulation.

This chapter also describes support for SPL routines.

Overview of the SQL Menu

As you use the various SQL menu options, DB-Access retains the statements, if any, in the editor. These statements are called the *current* statements.

The following steps create and test SQL:

- To enter a new SQL statement or to enter multiple statements separated by semicolons, use the New option.
If you prefer to enter or modify a query with an editor of your choice, use the Use-editor option. This option provides an alternative to the New and Modify options.
- To execute your statements, use the Run option. Either a message displays or the data retrieved by a query displays with the number of rows retrieved.
To send the query results to an output file or printer instead of your terminal, use the Output option.
- If a syntax error occurs when you run the query, or if you want to change the query, use the Modify or Use-editor option to revise the text of the query. To re-execute the query, use the Run option.
- To save the text of the query in a command file, use the Save option.
To run or modify a query that you saved in a command file, use the Choose option to select the file.
- To delete a command file in which you saved a query, use the Drop option.

Related Manuals

The following companion manuals provide details for Informix implementation of SQL statements and SPL programming logic:

- For tutorial information on SQL statements and SPL routines, see the [Informix Guide to SQL: Tutorial](#).
- For reference information on the syntax and usage of SQL and SPL statements, see the [Informix Guide to SQL: Syntax](#).
- For reference information on SQL system catalog tables, data types, and environment variables, see the [Informix Guide to SQL: Reference](#).
- For additional information on extended data types and user-defined routines, see your *Extending INFORMIX-Universal Server: Data Types* and *Extending INFORMIX-Universal Server: User-Defined Routines* manuals. ♦

Using a System Editor

When you want to enter or modify a long SQL statement or series of statements, you might prefer the flexibility and familiarity of a system editor to the SQL editor. Select the Use-editor option from the SQL menu to use the system editor.

If you have not set the **DBEDIT** environment variable, you must select a text editor to use for the session. If you select Use-Editor, DB-Access prompts you to accept or override the default system editor once each session, as Figure 3-1 shows.

```
USE-EDITOR >>vi
Enter editor name. (RETURN only for default editor)

----- mystores@dbserver1 ----- Press CTRL-W for Help -----
```

Figure 3-1
Sample System Editor Screen for Entering and Modifying SQL Statements

UNIX

WIN NT

The default editor that DB-Access displays depends on the preference that you establish for your operating system:

- Common UNIX system editors are **vi** and **ex**. ♦
- If you use a text-formatting program, such as **Write** or **WordPad**, as the system default, you must save the **.sql** files as text. ♦

Press RETURN to select the default editor named after USE-EDITOR >>. To use a different editor, type the name of that editor and press RETURN.

The Query-language Option

To use SQL, select the Query-language option from the main menu. Press the Q key or highlight the Query-language option and press RETURN. The Query-language option displays the SQL menu, as Figure 3-2 shows.

```
SQL: [New] Run Modify Use-editor Output Choose Save Info Drop Exit
Enter new SQL statements using the SQL editor.

-----Press CTRL-W for Help -----
```

Figure 3-2
The SQL Menu

If you select the Query-language option on the main menu and have not specified a database with which to work, the SELECT DATABASE screen appears. Specify a current database at the prompt or press the Interrupt key to display the SQL menu. From the SQL menu, create or choose and run an SQL statement to specify the current database.

The SQL menu has the following options.

Option	Purpose	Instructions
New	Clears any current statements and positions the cursor in the built-in SQL editor so that you can create new statements.	See “Entering a New SQL Statement” on page 3-8.
Run	Executes the displayed (current) SQL statement or statements.	See “Running an SQL Statement” on page 3-11.
Modify	Modifies the displayed (current) SQL statement or statement in the SQL editor.	See “Modifying an SQL Statement” on page 3-18.
Use-editor	Invokes a system editor so that you can modify the current statements or create new statements. Use-editor is interchangeable with New and Modify.	See “Using a System Editor” on page 3-5.
Output	Redirects the Run-option output to a file, printer, or system pipe.	See “Redirecting Query Results” on page 3-20.
Choose	Lists the SQL command files so that you can choose a file to execute or modify.	See “Choosing an Existing SQL Statement” on page 3-22.
Save	Saves the displayed (current) SQL statements in a file for later use.	See “Saving the Current SQL Statement” on page 3-24.
Info	Displays table information, such as columns, indexes, privileges, constraints, triggers, status, and fragmentation strategy.	See “Displaying Table Information” on page 3-25.
Drop	Deletes a specified SQL command file.	See “Dropping an SQL Statement” on page 3-27.
Exit	Returns to the main menu.	No further instructions are needed.

Entering a New SQL Statement

When you are ready to enter an SQL statement, perform one of the following actions:

- Select the New option on the SQL menu. The NEW screen appears and indicates that you are using the SQL editor, as Figure 3-3 shows.

```
NEW:   ESC    = Done editing      CTRL-A = Typeover/Insert   CTRL-R = Redraw
       CTRL-X = Delete character  CTRL-D = Delete rest of line
```

```
----- mystores@dbserver1 ----- Press CTRL-W for Help -----
█
```

Figure 3-3
The NEW Screen for Entering New SQL Statements

- If you prefer to work with a different editor from the one that is installed on your system, select the Use-editor option. This option is described in [“Using a System Editor” on page 3-5](#).

As Figure 3-3 shows, the NEW screen starts with the cursor positioned below the header, which indicates where you enter text on the screen. Use the editor to enter statements and edit them before you run them. To string several SQL statements together, separate them with a semicolon.

Using the Editing Keys

The editing keys listed at the top of the SQL editor screen perform the following special functions when you enter SQL statements:

- CTRL-A switches between *insert mode* and *typeover mode*. You are automatically in typeover mode when you begin to use the SQL editor.
- In insert mode, the text beneath the cursor shifts to the right as you enter new characters.
 - In typeover mode, characters you enter replace the text beneath the cursor.
- CTRL-D deletes characters from the current cursor position through the end of the line.

- CTRL-R redraws the current screen. Use it when you receive an electronic message or some other interference that makes it difficult to read the SQL statement text that you enter.
- CTRL-X deletes a character beneath the cursor.
- ESC returns you to the SQL menu when you finish entering or editing the SQL statement. You can then run or modify the statement or select the system editor for more extensive editing.

For information about the use of arrow and cursor-positioning keys, refer to [“Using the Keyboard with DB-Access” on page 2-5](#).

Editing Restrictions

The SQL editor does not display more than 80 characters on a line and does not wrap lines, as the following two such restrictions show:

- If you choose an existing command file in which the characters in a line extend beyond the 80th column, DB-Access displays a percent sign (%) in the 80th column to indicate an overflow. You cannot see all the characters beyond the percent sign, but the statement should run correctly.
- If you type characters in a new command file so that a line extends beyond the 80th column, DB-Access overwrites all the characters in the 80th column. You cannot see the overflow, and the statement does not run correctly.

Although DB-Access might read and compile characters beyond the percent sign, it is difficult to work with text that is not visible. Press RETURN at a logical place in the first 80 characters of each line so that the full text appears on the screen. If you need to type a quoted character string that exceeds 80 characters, such as an insert into a long CHAR column, use a system editor instead of the SQL editor.

If you want to include comments in the text, the following forms are available. Use double dashes for ANSI-compliant databases. Preface each comment line with a double dash (--) comment indicator. The comment indicator spans the entire line. Use curly brackets ({}) for databases that are not ANSI-compliant. Enclose the entire comment indicator between the curly brackets.

When you use the SQL editor, you can enter as many lines of text as you need. You are not limited by the size of the screen, although you might be limited by the memory constraints of your system or the maximum SQL statement size of 64 kilobytes.

If you insert more lines than one screen can hold, the SQL editor scrolls down the page with the additional text. The beginning and ending line numbers of the current page are displayed on the fourth line of the text-entry screen, as Figure 3-4 shows.

```
NEW:  ESC   = Done editing      CTRL-A = Typeover/Insert   CTRL-R = Redraw
      CTRL-X = Delete character  CTRL-D = Delete rest of line

-- 3 to 20 of 20 ----- mystores@dbserver1 ----- Press CTRL-W for Help -----
```

Figure 3-4
*SQL Statement
Text-Entry Screen
with Scrolling*



When you finish entering a new SQL statement or statements, press ESC to return to the SQL menu.

Warning: *Unless you save the statements that you type with the Save option, you can use them only until you again select an option, such as New or Choose, that clears the SQL editor screen.*

Running an SQL Statement

After you exit the editor screen, the SQL menu reappears with the Run option highlighted and the statement text displayed in the bottom of the screen, as Figure 3-5 shows.

```
SQL: [ ] New [Run] Modify Use-editor Output Choose Save Info Drop Exit
Run the current SQL statements.

----- mystores@dbserver1 ----- Press CTRL-W for Help -----
-

CREATE TABLE mystock
(
  stock_num      SMALLINT,
  manu_code      CHAR(3),
  description    CHAR(15),
  unit_price     MONEY(6),
  unit           CHAR(4),
  unit_descr    CHAR(15),
  PRIMARY KEY (stock_num, manu_code) CONSTRAINT stock_man_primary,
  FOREIGN KEY (manu_code) REFERENCES manufact
)
```

Figure 3-5
The SQL Menu with
SQL Statement Text
Ready to Run

Press RETURN or the R key to select the Run option. DB-Access first checks each statement to ensure that it conforms to the SQL syntax and usage rules. If your statements contain no syntax mistakes, DB-Access processes them.

Tip: You can check your SQL statements for ANSI compatibility if you set the `DBANSIWARN` environment variable or invoke DB-Access with the `-ansi` option.



Statements That the Run Option Supports

Figure 3-6 lists the statements that you can execute with the Run option.

Figure 3-6
SQL Statements for Run Option

SQL Statement	AD/XP	IDS	W/D	UD
ALTER FRAGMENT	✓	✓		✓
ALTER INDEX		✓	✓	✓
ALTER TABLE	✓	✓	✓	✓
BEGIN WORK	✓	✓	✓	✓
CLOSE DATABASE	✓	✓	✓	✓
COMMIT WORK	✓	✓	✓	✓
CONNECT	✓	✓	✓	✓
CREATE CAST				✓
CREATE DATABASE	✓	✓	✓	✓
CREATE DISTINCT TYPE				✓
CREATE DOMAIN	✓	✓	✓	✓
CREATE FRAGMENT	✓	✓		✓
CREATE INDEX	✓	✓	✓	✓
CREATE OPAQUE TYPE				✓
CREATE OPCLASS				✓
CREATE FUNCTION				✓
CREATE PROCEDURE	✓	✓	✓	✓
CREATE ROLE		✓	✓	✓
CREATE ROW TYPE				✓
CREATE SCHEMA	✓	✓	✓	✓
CREATE SYNONYM	✓	✓	✓	✓

(1 of 4)

SQL Statement	AD/XP	IDS	W/D	UD
CREATE TABLE	✓	✓	✓	✓
CREATE TRIGGER		✓	✓	✓
CREATE VIEW	✓	✓	✓	✓
DATABASE	✓	✓	✓	✓
DELETE	✓	✓	✓	✓
DISCONNECT	✓	✓	✓	✓
DROP CAST				✓
DROP DATABASE	✓	✓	✓	✓
DROP DISTINCT TYPE				✓
DROP DOMAIN	✓	✓	✓	
DROP INDEX	✓	✓	✓	✓
DROP OPAQUE TYPE				✓
DROP OPCLASS				✓
DROP FUNCTION				✓
DROP PROCEDURE	✓	✓	✓	✓
DROP ROLE		✓	✓	✓
DROP ROW TYPE				✓
DROP SYNONYM	✓	✓	✓	✓
DROP TABLE	✓	✓	✓	✓
DROP TRIGGER		✓	✓	✓
DROP VIEW	✓	✓	✓	✓
EXECUTE PROCEDURE	✓	✓	✓	✓
EXECUTE FUNCTION				✓
GRANT	✓	✓	✓	✓

(2 of 4)

Statements That the Run Option Supports

SQL Statement	AD/XP	IDS	W/D	UD
GRANT FRAGMENT		✓		✓
INFO	✓	✓	✓	✓
INSERT	✓	✓	✓	✓
LOAD	✓	✓	✓	✓
LOCK TABLE	✓	✓	✓	✓
OUTPUT	✓	✓	✓	✓
RENAME COLUMN	✓	✓	✓	✓
RENAME DATABASE	✓	✓	✓	✓
RENAME TABLE	✓	✓	✓	✓
REVOKE	✓	✓	✓	✓
REVOKE FRAGMENT		✓		✓
ROLLBACK WORK	✓	✓	✓	✓
SELECT	✓	✓	✓	✓
SET	✓	✓	✓	✓
SET DATASKIP	✓	✓	✓	✓
SET DEBUG FILE TO	✓	✓	✓	✓
SET EXPLAIN	✓	✓	✓	✓
SET ISOLATION	✓	✓	✓	✓
SET LOCK MODE	✓	✓	✓	✓
SET LOG	✓	✓	✓	✓
SET OPTIMIZATION	✓	✓	✓	✓
SET PDQPRIORITY	✓	✓	✓	✓
SET OPTIMIZATION	✓	✓	✓	✓
SET TRANSACTION	✓	✓	✓	✓
START VIOLATIONS TABLE	✓	✓	✓	✓

(3 of 4)

SQL Statement	AD/XP	IDS	W/D	UD
STOP VIOLATIONS TABLE	✓	✓	✓	✓
UNLOAD	✓	✓	✓	✓
UNLOCK TABLE	✓	✓	✓	✓
UPDATE	✓	✓	✓	✓
UPDATE STATISTICS	✓	✓	✓	✓

(4 of 4)

For information about additional statements for Optical Subsystem, refer to the [Guide to the Optical Subsystem](#).

Tip: To execute statements that are not listed, use the SQL menu options *New (or Use-editor)* and *Save* to enter and save them and then run the saved file from the command line.



Viewing Successful Results

If a statement other than a query completes successfully, a message appears at the bottom of the screen. For the statement that Figure 3-5 shows, the following message appears:

```
Table created.
```

If you use the Run option with a SELECT statement and that SELECT statement runs correctly, DB-Access displays the requested results below the header. If your query retrieves more rows than can fit on a single screen, the results screen has a menu at the top, as [Figure 3-7 on page 3-16](#) shows.

Figure 3-7
The Menu for Displaying Additional Query Results

```
RUN: Next Restart Exit
Display the next page of query results.

----- mystores@dbserver1 ----- Press CTRL-W for Help -----

customer_num 106
call_dtime   1997-06-12 08:20
user_id      maryj
call_code    D
call_descr   Order was received, but two of the cans of ANZ tennis balls within
             the case were empty
res_dtime    1997-06-12 08:25
res_descr    Authorized credit for two cans to customer, issued apology. Called
             ANZ buyer to report the QA problem.

customer_num 110
call_dtime   1997-07-07 10:24
user_id      richc
call_code    L
call_descr   Order placed one month ago (6/7) not received.
res_dtime    1997-07-07 10:30
res_descr    Checked with shipping (Ed Smith). Order sent yesterday- we were
             waiting for goods from ANZ. Next time will call with delay if
             necessary.
```

Advance through the output as follows:

- With the **Next** option highlighted, press RETURN to advance the display through the selected rows. The last screen of data has a message at the bottom that indicates the number of rows that the query returned.
- Select **Restart** to return to the first screen of query output.
- Select **Exit** to exit the output display and return to the SQL menu. If you exit before you reach the last output screen, a message at the bottom of the screen indicates that you interrupted the query.

What Happens When There Are Errors

If you make any syntax or typing mistakes in an SQL statement, DB-Access does not process the statement. Instead, it continues to display the text of the statement with a message that describes the error. For example, if a syntax error occurs, the following message appears at the bottom of the screen:

```
201: A syntax error has occurred.
```

If an execution or runtime error occurs, DB-Access continues to process the statement and returns an error message. For example, if you try to create a table that was already created, the following message appears at the bottom of the screen:

```
310: Table (mavis.mystock) already exists in database.
```

If you try to execute a statement that contains more than one SQL statement, you might not see the error message immediately. If, for example, the first statement is a SELECT statement that runs correctly and the next statement contains a typing error, the data that the first statement retrieved appears on the screen before the error message appears for the second statement.

When DB-Access detects an error, it gives you an opportunity to edit the statement that caused the error. Processing stops when the Modify option on the SQL menu is highlighted. Select one of the following methods to correct the statement:

- Press RETURN to choose Modify, which returns you to the SQL editor.
- Select the Use-editor option to use the default editor of your choice.

Modifying an SQL Statement

When DB-Access finds an error in an SQL statement that you are trying to run, the **Modify** option is highlighted on the SQL menu, and the current statement text and error message are displayed, as Figure 3-8 shows.

Figure 3-8

The SQL Menu with SQL Statement Text to Be Modified

```
SQL: [ ] New Run [Modify] Use-editor Output Choose Save Info Drop Exit
Modify the current SQL statements using the SQL editor.

----- mystores@dbserver1 ----- Press CTRL-W for Help -----

CREATE TABLE mystock
(
  stock_num      SMALLINT,
  manu_code      CHAR(3),
  description     CHAR(15),
  unit_price     MONEY(6),
  unit           CHAR(4),
  unit_descr     CHAR(15),
  PRIMARY KEY (stock_num, manu_code) CONSTRAINT stock_man_primary,
  FOREIGN KEY (manu_code) REFERENCES manufact
)
```

```
[201: A syntax error has occurred.]
```

Press RETURN, and DB-Access calls the SQL editor and positions the cursor on the line with the first error. You can correct the error with the SQL editor, or you can press ESC to exit to the SQL menu and select the Use-editor option to edit the statement with your system editor. To exit, perform one of the following steps:

- If you use the SQL editor to make changes, press ESC when you finish editing the statement.
- If you use the system editor to make changes, exit the file according to the convention for that editor.

You then return to the SQL menu, where you can press RETURN to run the statement again.



Tip: For information on how to use the *finderr* script, see “Informix Error Messages.”

If the SQL statement is new, the screen is blank. If you want to change or call up this statement with the Choose option, the text of the SQL statement appears on the screen.

If an error occurs while you run an SQL statement, the edit screen contains the error message with a pointer to the likely cause. Figure 3-9 shows how an editor screen might look after a syntax error. The editor used in this example displays the name of the temporary file assigned to the SQL statement.

```
CREATE TABLE mystock
(
  stock_num      SMALLINT,
  manu_code      CHAR(3),
  description    CHAR(15)
  unit_price     MONEY(6),
  ^
#
#201:A syntax error has occurred
#
  unit           CHAR(4),
  unit_descr    CHAR(15),
  PRIMARY KEY (stock_num, manu_code) CONSTRAINT stock_man_primary,
  FOREIGN KEY (manu_code) REFERENCES manufact
)

“tmp/rsqa02775.err” 11 lines, 132 characters
```

Figure 3-9
A Temporary
Text-Editing File
with SQL Statement
Text to Be Corrected

Make your corrections to the text. When you finish entering or modifying your SQL statement or statements, exit the editor as you normally do. The SQL menu reappears with the Run option highlighted. The statement text appears in the bottom half of the screen.

Press RETURN to run the statement or select another menu option to save the statement in a command file or direct its output.

Redirecting Query Results

The output from a SELECT statement normally appears on the screen. You can, instead, use the Output option on the SQL menu to route query results to the printer, store them in a system file, or pipe them to a program. This option has the same purpose as the SQL statement OUTPUT.

The SELECT statement must be on the screen as the current statement. Then you can select the Output option from the SQL menu, which displays the OUTPUT menu, as Figure 3-10 shows.

```
OUTPUT: [Printer] New-file Append-file To-pipe Exit
Send query results to a printer.

----- mystores@dbserver1 ----- Press CTRL-W for Help -----

SELECT * FROM customer
```

Figure 3-10
*The OUTPUT Menu
for Redirecting
Query Results*

To return to the SQL menu without redirecting query results from an OUTPUT screen, press the Interrupt key.

Sending Output to a Printer

To send your query results directly to a printer, select the Printer option from the OUTPUT menu. DB-Access sends the results to your default printer and displays a message on the bottom of the screen that indicates how many rows were retrieved. The query results do not appear on the screen. You can set the DBPRINT environment variable to specify a default printer.

Sending Output to a File

You can write query results to a new file or append the results to an existing file. Then use your operating system programs to edit, copy, rename, or delete the file.

The New-file Option

To create a new file to store query results, select the New-file option on the OUTPUT menu. The OUTPUT NEW-FILE screen then appears, as Figure 3-11 shows.

Figure 3-11
The OUTPUT
NEW-FILE Screen

```
OUTPUT NEW-FILE >>
Enter the name you want to assign to the new file, then press Return.

----- mystores@dbserver1 ----- Press CTRL-W for Help -----

SELECT * FROM customer
```



Type a name for the file and press RETURN. DB-Access forwards the results of the query to that file and displays a message that indicates how many rows were retrieved. The query results do not appear on the screen.

Warning: If you enter the name of an existing file, this procedure overwrites the existing file with the query results.

The Append-file Option

To add your query results to the end of an existing file without replacing its contents, select the Append-file option on the OUTPUT menu. The OUTPUT APPEND-FILE screen then appears, as Figure 3-12 shows.

Figure 3-12
The OUTPUT
APPEND-FILE
Screen

```
OUTPUT APPEND-FILE >>
Enter the name of the file you want to append results to, then press Return.

----- mystores@dbserver1 ----- Press CTRL-W for Help -----

SELECT * FROM customer
```

Type the name of an existing file where you want to append the query results and press RETURN. DB-Access appends the query results to the end of that file and displays a message that indicates how many rows were retrieved. The query results do not appear on the screen.

Sending Output to a Pipe

If you want to send query results to a pipe, select the To-pipe option on the OUTPUT menu. The OUTPUT TO-PIPE screen then appears, as Figure 3-13 shows.

```
OUTPUT TO-PIPE >>
Enter the name of the pipe you want to send results to, then press Return.

----- mystores@dbserver1 ----- Press CTRL-W for Help -----

SELECT * FROM customer
```

Figure 3-13
The OUTPUT TO-PIPE Screen

Specify a target program, such as **more**, through which to pipe output. DB-Access sends the results to that pipe.

On a UNIX operating system, you must have permission to run the target program. ♦

UNIX

Choosing an Existing SQL Statement

When you save SQL statements in a command file, as described in “[Saving the Current SQL Statement](#)” on page 3-24, you can retrieve the command file and run or edit the SQL statements at any time.

Select the Choose option on the SQL menu to display the CHOOSE screen with a list of the command files that you can access. These files have the extension **.sql**, although the extension is not shown. For example, [Figure 3-14 on page 3-23](#) lists the command files that are included with the demonstration database.

Figure 3-14
The CHOOSE Screen
Listing Current
.sql Files

```

CHOOSE >>
Choose a command file with the Arrow Keys, or enter a name, then press Return.

----- mystores@dbserver1 ----- Press CTRL-W for Help -----
-

alt_cat          c_state         d_trig          sel_ojoin1
c_calls          c_stock         d_view          sel_ojoin2
c_cat            c_stores        del_stock       sel_ojoin3
c_custom         c_table         ins_table       sel_ojoin4
c_index          c_trig          opt_disk        sel_order
c_items          c_type          sel_agg         sel_sub
c_manuf          c_view1         sel_all         sel_union
c_orders         c_view2         sel_group       upd_table
    
```

If no current database exists, the list includes all the command files located in the current directory and in any directories that the **DBPATH** environment variable specifies.



Important: This list includes only those filenames that have the **.sql** extension. If you create a new SQL file outside of DB-Access and save it without the **.sql** extension, it will not appear in the list of files to choose. Add the **.sql** extension to the filename and then select Choose again.

DB-Access can only recognize files that are stored in the directory from which you started DB-Access. If the Choose command results in an empty list, and you know you have command files, exit DB-Access, change directories to the one that contains your **.sql** files and restart DB-Access.

To select a command file, use the arrow keys to highlight its name or type the name of the file at the prompt and then press RETURN.

The SQL menu reappears with the statements contained in the command file displayed on the screen as the current statements. To modify, run, edit, or output these statements, choose the appropriate menu option.

To leave the CHOOSE screen without selecting a command file, press the Interrupt key, which returns you to the SQL menu.

Saving the Current SQL Statement

When you enter and successfully run an SQL statement, you can save it in a file for later use. You might save the file to invoke it on the command line as described in “[Executing a Command File](#)” on page 1-20 or retrieve the saved statements with the Choose option on the SQL menu.

To save the current SQL statement or statements in a file, select the Save option on the SQL menu. DB-Access displays the SAVE screen and prompts you to enter a name for the command file, as Figure 3-15 shows.

```
SAVE >>
Enter the name you want to assign to the command file.

-----mystores@dbserver1 ----- Press CTRL-W for Help -----

select max (ship_charge), min (ship_charge)
from orders;
```

Figure 3-15
The SAVE Screen for Saving Statements in a File

UNIX

You assign the left portion of the filename. Use 1 to 10 characters. Start with a letter, then use any combination of letters, numbers, and underscores (_). Press RETURN to save the file.

You can use uppercase and lowercase letters in the name. However, remember that UNIX operating systems are case sensitive. The file **ords1** is not the same as **Ords1** or **ORDS1**. ♦

DB-Access appends the extension **.sql** to the name that you assign when it stores the statements in a file. For example, if you name your file **cust1**, DB-Access stores the file with the name **cust1.sql**. The CHOOSE screen still lists **cust1**, but the operating system identifies the same file as **cust1.sql** if you list the directory files from the command line.

To leave the SAVE screen without assigning a name to a command file, press the Interrupt key, and you return to the SQL menu.

Displaying Table Information

Use the Info option on the SQL menu to display information about the columns, indexes, access privileges, reference privileges, constraints (referential, primary-key, check, unique, and defaults), triggers, status, and fragmentation strategy of a table. The Info option has the same purpose as the SQL statement INFO.

The INFO menu displays the following options.

Option	Purpose	Instructions
Columns	Lists the columns in the specified table, shows the data type, and shows whether null values are allowed	See “Column Information” on page 5-46.
Indexes	Lists the name, owner, and type (unique or duplicate) of each index for a specified table. (The display also shows if the index is clustered, the access method used, and the names of the columns that are indexed.)	See “Displaying Index Information” on page 5-50.
Privileges	Lists the users who have table-level Select, Update, Insert, Delete, Index, and Alter privileges	See “Displaying Table-Level Privileges” on page 5-51.
References	Lists the users who have the table-level References privilege for the specified table and which columns they can reference	See “Displaying References Privileges” on page 5-52.
Status	Lists the table name, the table owner, the size of the row (in number of bytes), the number of rows in the table (as of the last UPDATE STATISTICS statement), the number of columns in a row, and the date the table was created	No further instructions needed.

(1 of 2)

Option	Purpose	Instructions
cOnstraints	Displays referential, primary-key, check, and unique constraints and default values for the columns in the specified table	See “Displaying Column Constraints and Defaults” on page 5-53.
triGgers	Displays header and body information for a specified trigger	See “Displaying Triggers” on page 5-55.
Table	Redisplays the INFO FOR TABLE menu so that you can select a new table to request information on the INFO menu	No further instructions needed.
Fragments	Displays fragmentation strategy for the selected table	See “Dropping a Table” on page 5-58.
Exit	Returns to the SQL menu	No further instructions needed.

(2 of 2)

The Table option on the main menu displays a TABLE menu, which in turn has an Info option. The Info option screens are the same for both the SQL menu and TABLE menu. For detailed information about using the Info option from both these menus, see [“Displaying Table Information”](#) beginning on page 5-43.

To leave the INFO FOR TABLE screen without requesting table information, press the Interrupt key.

Dropping an SQL Statement

Your current database directory stores files that contain SQL statements. You might have installed some of these files with the demonstration database. You might have created other files and put them in the directory with the Save option on the SQL menu. Additional files might have become available when you installed a language supplement with DB-Access.

To remove command files from the current database directory, select the Drop option on the SQL menu. The DROP COMMAND FILE screen appears with an alphabetical list of command files in the current database, as Figure 3-16 shows.

```

DROP COMMAND FILE >>
Enter the name of the sql command file you wish to drop from the database.

----- stores7@dbserver1 ----- Press CTRL-W for Help -----
alt_cat      c_state      d_trig       sel_ojoin1
c_calls      c_stock      d_view       sel_ojoin2
c_cat        c_stores     del_stock    sel_ojoin3
c_custom     c_table      ins_table    sel_ojoin4
c_index      c_trig       opt_disk     sel_order
c_items      c_type       sel_agg      sel_sub
c_manuf      c_view1      sel_all      sel_union
c_orders     c_view2      sel_group    upd_table
c_proc       d_proc       sel_join
    
```

Figure 3-16
The DROP
COMMAND FILE
Screen with
Sample Files

GLS

If Global Language Support is enabled, the order in which DB-Access lists the command file names might vary, depending on the locale you use. ♦

Type the name of the command file that you want to drop or highlight it with the arrow keys and press RETURN. DB-Access displays a special menu that asks for confirmation before it drops the command file, as Figure 3-17 shows.

```
CONFIRM:  No  Yes
No, I do not want to drop it.

----- stores7@dbserver1 ----- Press CTRL-W for Help -----

alt_cat      c_state      d_trig      sel_ojoin1
c_calls      c_stock      d_view      sel_ojoin2
c_cat        c_stores     del_stock   sel_ojoin3
c_custom     c_table      ins_table   sel_ojoin4
c_index      c_trig       opt_disk    sel_order
c_items      c_type       sel_agg     sel_sub
c_manuf      c_view1     sel_all     sel_union
c_orders     c_view2     sel_group   upd_table
c_proc       d_proc       sel_join
```

Figure 3-17
The DROP
COMMAND FILE
Confirmation Menu

The default is No to help prevent you from deleting a command file by mistake. To drop the highlighted command file, press the Y key or use the right arrow key to highlight Yes and press RETURN. DB-Access drops the command file and returns you to the SQL menu.

To leave the DROP COMMAND FILE screen without dropping a command file, press the N key, RETURN, or the Interrupt key. You then return to the SQL menu.

Support for SPL Routines

You can create and execute routines written in SPL from the SQL menu.

You can store the SPL routine in a separate command file and then call it from an application or execute it as a stand-alone program. After you create the SPL routine, you can execute it within DB-Access with the appropriate SQL statement. The following example details the steps.

To create and execute an SQL routine

1. To formulate the text of the routine, type directly onto the NEW screen or the Use-editor option. Enter the SPL and SQL statements for your routine in the statement block of a CREATE PROCEDURE statement.

UD

If you use Dynamic Server with UD Option, use the CREATE FUNCTION if the routine returns values. ♦

2. Use the Run option to create the routine and register it in the **sysprocedures** system catalog table.
3. Use the NEW screen to enter an EXECUTE PROCEDURE statement that names the routine that you want to run.

UD

If you use Dynamic Server with UD Option and created your routine with the CREATE FUNCTION statement, enter an EXECUTE FUNCTION statement to run the function. ♦

4. Use the Run option to execute the routine and display the results.

Figure 3-18 shows the text of the routine in the **c_proc.sql** command file supplied with the demonstration database. To try this routine, use the Choose option and then select **c_proc**.

UD

If you use Dynamic Server with UD Option, change the word *procedure* in **c_proc.sql** to *function* because the routine returns a value. ♦

To register the routine in the database, select the Run option, as Figure 3-18 shows.

Figure 3-18
Displaying the Text of an SPL Routine on the SQL Menu

```
SQL:  New Run  Modify  Use-editor  Output  Choose  Save  Info  Drop  Exit
Run the current SQL statements.
----- mydata@mynewdb ----- Press CTRL-W for Help -----
create procedure read_address (lastname char(15))

    returning char(15), char(15), char(20), char(15),char(2), char(5);
define p_fname, p_city char(15);
define p_add char(20);
define p_state char(2);
define p_zip char(5);
select fname, address1, city, state, zipcode
    into p_fname, p_add, p_city, p_state, p_zip
    from customer
    where lname = lastname;

return p_fname, lastname, p_add, p_city, p_state, p_zip;

end procedure;
```

DB-Access displays a message to indicate that the database server created the routine. To execute the routine, select New from the SQL menu and then enter the appropriate EXECUTE statement. In the following example, the user requests the address of a customer whose last name is Pauli:

```
EXECUTE PROCEDURE read_address ("Pauli")
```

If you use Dynamic Server with UD Option, enter:

```
EXECUTE FUNCTION read_address("Pauli")
```

◆

UD

After you enter the EXECUTE PROCEDURE or EXECUTE FUNCTION statement on the NEW screen, press ESC to return to the SQL menu. Select Run from the SQL menu to execute the routine. Figure 3-19 shows the result of executing the routine.

Figure 3-19

Result of Executing an SPL Routine on the SQL Menu

```
SQL:  New Run Modify Use-editor Output Choose Save Info Drop Exit
Run the current SQL statements.
----- mydata@mynewdb ----- Press CTRL-W for Help -----

Ludwig
Pauli
213 Erstwild Court
Sunnyvale
CA
94086
```



Tip: SPL routines are stored in the system catalog tables in executable format. Use the Routines option on the DATABASEINFO menu to display a list of the routines in the current database or to display the text of a specified routine.

The Database Option

Related Manuals	4-4
Selecting a Database Menu Option	4-4
Selecting a Database	4-6
List of Available Databases	4-6
Specifying a Database	4-7
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The CREATE DATABASE Menu	4-8
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Specifying Logging	4-9
Exiting the CREATE DATABASE Menu	4-10
Displaying Database Information	4-10
Retrieving Information on Dbspaces	4-12
Retrieving NonDefault Locale Information	4-12
Retrieving Information on Routines.	4-14
Selecting a Different Database.	4-15
Dropping a Database	4-16
The DROP DATABASE Screen	4-16
Confirming Your Decision to Drop a Database	4-17
Closing a Database	4-17

This chapter describes how to use the Database option. To perform any of the following actions, select the Database option from the main menu.

- Create a database or select a database.
The database you work with is called the *current* database.
- Drop an existing database or close the current database.
- Retrieve and display information about a database, such as available dbspaces and the text of routines.
- Commit or rollback transactions.

You can only access databases that reside on the current database server. To select a database server as current, you can specify a database server when you invoke DB-Access, you can use the Connection menu, or you can run a CONNECT statement from the SQL menu. If you do not explicitly select a database server, DB-Access uses the default database server that the **SINFORMIXSERVER** environment variable specifies as the current database.

GLS

Related Manuals

The following manuals contain information pertinent to database connection and creation:

- For information about the syntax for naming a database and for specifying a database server with a database name, refer to the [Informix Guide to SQL: Syntax](#).
- For information about environment variables, refer to the [Informix Guide to SQL: Reference](#).
- For information about the GLS considerations that apply to opening or connecting to a database on a different database server, see the [Informix Guide to GLS Functionality](#).

The database server examines the client locale information that a client (such as DB-Access) passes, verifies the database locale, and determines the server-processing locale for transferring data between the client and the database. ♦

Selecting a Database Menu Option

Figure 4-1 shows the DATABASE menu. To reach the DATABASE menu from the main menu, press the D key or highlight the Database option and press RETURN.

```
DATABASE: [ Select ] Create Info Drop cLose Exit
Select a database to work with.

----- Press CTRL-W for Help -----
```

Figure 4-1
The
DATABASE
Menu

The DATABASE menu displays the following options.

Option	Purpose	Instructions
Select	Makes a database the current database.	See Figure 4-5 on page 4-9 .
Create	Builds a new database and makes that database the current database.	See “Creating a Database” on page 4-8 .
Info	Displays information about the current database.	See “Displaying Database Information” on page 4-10 .
Drop	Removes a database from the system.	See “Dropping a Database” on page 4-16 .
cLose	Closes the current database.	See “Closing a Database” on page 4-17 .
Exit	Exits the DATABASE menu and returns you to the main menu.	No further instructions needed.

If you select or create a database when another database is already open, DB-Access closes that database before it makes your selection the current or new database. The TRANSACTION menu ([Figure 4-18 on page 4-18](#)) appears if you attempt to open a new database without first terminating a transaction.

If you enter the name of a nonexistent database or a database that DB-Access cannot locate, DB-Access displays an error message.

Selecting a Database

To work with an existing database, choose the Select option from the DATABASE menu. The SELECT DATABASE screen appears, as Figure 4-2 shows.

```
SELECT DATABASE >>
Select a database with the Arrow Keys, or enter a name, then press Return.

----- Press CTRL-W for Help -----
demodb@dbserver1
mydata@dbserver1
productn@factory
```

Figure 4-2
*The
SELECT DATABASE
Screen*

The SELECT DATABASE screen also appears whenever you need to specify a database, such as when you choose the Table or Query-language option without specifying a database on the DBACCESS command line.

To leave the SELECT DATABASE screen and return to the DATABASE menu without selecting a database, press the Interrupt key.

List of Available Databases

When the SELECT DATABASE screen appears, the first database in the list of available databases is highlighted accompanied by the names of database servers. The list is organized alphabetically by database server and then by database for each database server. You can display a maximum of 512 database names on the SELECT DATABASE screen.

The list of available databases that is displayed on the SELECT DATABASE screen depends on the settings of certain environment variables. For example:

- DB-Access displays the names of all databases on the current database server and in your **DBPATH** setting.
- If you use multiple database servers, the **ONCONFIG** environment variable determines the current database server.

The list of available databases displayed on the SELECT DATABASE screen also depends on the current connection. For example:

- If no current connection exists or the current connection is an implicit default connection, all databases in the **DBPATH** appear.
- If a current explicit connection exists, all databases in the **DBPATH** setting that pertain to the current database server appear.

Specifying a Database

You can select a database name on the SELECT DATABASE screen in any of the following ways:

- To select the first database on the list, which is already highlighted, press RETURN.
- Use the arrow keys to highlight the name of the database and press RETURN.
- Type the database name and press RETURN.

For example, to select the **demodb** database on the current database server, type **demodb** or highlight **demodb@dbserver1** and press RETURN.

To specify a database on another database server, include the database server with the database name. For example, to select the **productn** database on the **factory** database server, enter or highlight **productn@factory** and press RETURN.

The name of the database that you select appears on the dashed line below the screen header.

Creating a Database

To create a new database instead of selecting an existing one, select the Create option from the DATABASE menu. The CREATE DATABASE screen appears, as Figure 4-3 shows.

```
CREATE DATABASE >>  
Enter the name you want to assign to the new database, then press Return.  
----- Press CTRL-W for Help -----
```

Figure 4-3
The
CREATE DATABASE
Screen

Enter a name for the database that you want to create and press RETURN.

You can assign any name to your database as long as you follow the syntax described in the Database Name segment in the [Informix Guide to SQL: Syntax](#).

To create a database on another database server, specify the server name with the database name. Follow the syntax described in the [Informix Guide to SQL: Syntax](#).

The CREATE DATABASE Menu

After you name the new database, the CREATE DATABASE menu appears, as Figure 4-4 shows.

```
CREATE DATABASE : [dbspace] Log Exit  
Select a dbspace for storing the database's data.  
----- Press CTRL-W for Help -----
```

Figure 4-4
The
CREATE DATABASE
Menu

You can specify that a database be stored in a non-root dbspace or create a database with or without buffered transaction logging or create an ANSI-compliant database.

Specifying a Dbspace

Select the Dbspace option and the SELECT DBSPACE screen appears, as Figure 4-5 shows.

```
SELECT DBSPACE >>
Select a dbspace with the Arrow Keys, or enter a name, then press Return.
----- Press CTRL-W for Help -----
rootdbs
pers_dbs
empl_dbs
```

Figure 4-5
The SELECT DBSPACE Screen

From the list of dbspaces, select an available dbspace in which to store database data. The default is **rootdbs** or a dbspace that you create as the default. You then return to the CREATE DATABASE menu.

Specifying Logging

To specify the type of transaction logging, select the Log option. The LOG menu (Figure 4-6) appears.

```
LOG : None Log Buffered_log log_Mode_ansi Exit
Do not activate transaction logging.
----- Press CTRL-W for Help -----
```

Figure 4-6
The LOG Menu

The LOG menu displays the following options.

Option	Purpose
None	Is the default and does not activate transaction logging.
Log	Specifies unbuffered transaction logging.
Buffered_log	Specifies buffered transaction logging.
log_Mode_ansi	Creates an ANSI-compliant database with unbuffered transaction logging.
Exit	Exits the LOG menu and returns you to the CREATE DATABASE menu.

Exiting the CREATE DATABASE Menu

When you exit the CREATE DATABASE menu, you must confirm or discard the new database, as Figure 4-7 shows.

```
EXIT :  Create-new-database  Discard-new-database
Create new database

----- Press CTRL-W for Help -----
```

Figure 4-7
The CREATE DATABASE Confirmation Screen

The default is Create-new-database. Press RETURN to create a database with the specified parameters, make it the current database, and return to the DATABASE menu. If you do not want to create the new database, press the **D** key or use the right arrow key to move the cursor to the Discard-new-database option and press RETURN. DB-Access does not create a new database.

If you exit without specifying a value for dbspace or logging, the default(s) apply to the database.

Displaying Database Information

Use the Info option on the DATABASE menu to display information about dbspaces and nondefault locale settings and to read the body of routines in the current database.



Tip: This menu option provides information about the database that the SQL statement INFO does not display.

When you select the Info option on the DATABASE menu, DB-Access displays the SELECT DATABASE screen, as [Figure 4-2 on page 4-6](#) shows.

After you select a database, the DATABASE INFO menu appears, with the database you selected identified in the dashed line.

AD/XP

Figure 4-8 shows the DATABASE INFO menu for Dynamic Server with AD and XP Options and Informix Dynamic Server.

```

DATABASE INFO: [dBspace] Nls Procedures Databases Exit
Display DBSPACE information for a database.L

----- demodb@dbserver1 ----- Press CTRL-W for Help -----
    
```

Figure 4-8
The
DATABASE INFO
Menu

UD

Figure 4-9 shows the DATABASE INFO menu for Dynamic Server with UD Option.

```

DATABASE INFO: [dBspace] Nls Routines Databases Exit
Display DBSPACE information for a database.

----- demodb@dbserver1 ----- Press CTRL-W for Help -----
--
    
```

Figure 4-9
The
DATABASE INFO
Menu

The DATABASE INFO menu displays the following options.

Option	Purpose	Instructions
dBspace	Retrieves information about the dbspaces in the current database.	See “Retrieving Information on Dbspaces” on page 4-12.
Nls	Displays NLS settings for a database that supports NLS. This option is provided for compatibility with legacy database versions that support NLS.	See “Retrieving NonDefault Locale Information” on page 4-12.
Procedures	Lists the procedures in the current database. Select a procedure name to see the statements in the body of that procedure.	See “Retrieving Information on Routines” on page 4-14.

(1 of 2)

NLS

UD

Option	Purpose	Instructions
Routines	Lists the procedures and functions in the current database. Select a routine name to see the body of that routine as text.	See “Retrieving Information on Routines” on page 4-14.
Databases	Selects a different database about which to retrieve information.	See “Selecting a Different Database” on page 4-15.
Exit	Leaves the DATABASE INFO menu and returns you to the DATABASE menu.	No further instructions.

(2 of 2)

To leave the DATABASE INFO menu without displaying information about the current database, press the Interrupt key to return to the DATABASE menu.

Retrieving Information on Dbspaces

To retrieve information about the dbspaces in the current database, select the dBspace option from the DATABASE INFO menu as Figure 4-10 shows.

```

DATABASE INFO: [dBspace] Nls Routines Databases Exit
Display DBSPACE information for a database.

----- demodb@dbserver1 ----- Press CTRL-W for Help -----

  Id      Name          Number ofWhen
  -----  -----
  3      dbspace2      104/28/94 N
    
```

Figure 4-10
The
DATABASE INFO
Menu
with Dbspaces
Information
Displayed

Retrieving NonDefault Locale Information

Global Language Support (GLS) and Native Language Support (NLS) affect the order in which lists appear in DB-Access. GLS enables the display and appropriate ordering of non-English data. Legacy database server versions used NLS for this purpose.

NLS

If the current database supports NLS, you can select the Nls option on the DATABASE INFO menu to display information about collating sequence and C CType (character classification type), as Figure 4-11 shows.

```

DATABASE INFO - stores7:[] dBspace [Nls] Routines Databases Exit
Display NLS information for a database.

----- demodb@dbserver1 ----- Press CTRL-W for Help -----

fr_FR.88591 Collating Sequence
C CType

```

Figure 4-11
The
DATABASE INFO
Menu with
Nls Information
Displayed

An error message displays if the database does not support NLS or the environment variables for NLS are not properly set. ♦

GLS

DB-Access does not provide an option on the DATABASE INFO menu for displaying the GLS collating sequence and character classification type. To obtain information about the GLS locale enabled for your database server, enter the following query with the SQL editor that is described in [Chapter 3](#):

```

SELECT tabname, site FROM systables
WHERE tabid = 90 OR tabid = 91

```

The row with tabid 90 stores the COLLATION category of the database locale. The row with tabid 91 stores the CTYPE category of the database locale. Figure 4-12 shows the result of the preceding query for the default U.S. English locale.

Figure 4-12
Retrieving GLS Information

```

SQL:  New [Run] Modify Use-editor Output Choose Save Info Drop Exit
Run the current SQL statements.

----- mydata@mynewdb ----- Press CTRL-W for Help -----

tabname          site
GL_COLLATE       en_US.819
GL_CTYPE         en_US.819

2 row(s) retrieved

```

For further information on the COLLATION and CTYPE categories in a GLS locale file, see the [Informix Guide to GLS Functionality](#). ♦

Retrieving Information on Routines

Depending on the database server product that you use, select either the Procedures or Routines option on the DATABASE INFO menu to display the text from a selected routine. The SELECT PROCEDURE or SELECT ROUTINE screen appears and shows a list of SPL routines in the current database.

Figure 4-13 shows the SELECT ROUTINE screen that displays if you use Dynamic Server with UD Option. The SELECT PROCEDURE screen looks the same although the prompt uses different wording for an SPL routine.

UD

```
SELECT ROUTINE >>
Select a routine with the Arrow Keys, or enter a name, then press Return.
----- demodb@dbserver1 ----- Press CTRL-W for Help -----
read_address
```

Figure 4-13
The
SELECT ROUTINE
Screen

♦
If the routine exists in the system catalog and it fits on the DATABASE INFO menu, the text appears on the screen, as Figure 4-14 shows.

```
DATABASE INFO: read_address: dBspace Nls Routines Databases Exit
Display routine text for a selected routine.
----- demodb@dbserver1 ----- Press CTRL-W for Help -----

create procedure read_address (lastname char(15))
  returning char(15), char(15), char(20), char(15), char(2), char(5);
define p_fname, p_city char(15);
define p_add char(20);
define p_state char(2);
define p_zip char(5);
select fname, address1, city, state, zipcode
into p_fname, p_add, p_city, p_state, p_zip
from customer
where lname = lastname;

return p_fname, lastname, p_add, p_city, p_state, p_zip;

end procedure
```

Figure 4-14
The
DATABASE INFO
Menu with Text of
Selected Routine
Displayed

If the routine text does not fit on one screen, the DISPLAY menu appears with partial text, as Figure 4-15 shows.

```

DISPLAY:  Next Restart Exit
Display the next page of results.

----- demodb@dbserver1 ----- Press CTRL-W for Help -----

create procedure read_address (lastname char(15))
  returning char(15), char(15), char(20), char(15),char(2), char(5);
  define p_fname, p_city char(15);
  define p_add char(20);
  define p_state char(2);
  define p_zip char(5);
    
```

Figure 4-15
The DISPLAY Menu
with Partial Routine
Text Displayed

To display the next page of text, select the Next option. To display text from the beginning, select the Restart option.

Selecting a Different Database

To display information about a different database, select the Database option on the DATABASE INFO menu. The SELECT DATABASE screen appears and you can select a database, as described in [“Selecting a Database” on page 4-6](#). You can then use the other options of the DATABASE INFO menu, as this chapter describes.

Dropping a Database

To drop an existing database on a specified database server, select the Drop option from the DATABASE menu. The DROP DATABASE screen appears, as Figure 4-16 shows.

```
DROP DATABASE >> 
Enter the name of the database you wish to drop.

----- demodb@dbserver1----- Press CTRL-W for Help -----

mydata@dbserver1
demodb@dbserver1
personnel@mynewdb
```

Figure 4-16
*The
DROP DATABASE
Screen*

You cannot drop the current database. The current database is the database whose name is displayed in the dashed line below the header of the display.

The DROP DATABASE Screen

To drop a database, use the DROP DATABASE screen in either of the following ways:

- Type the database name and press RETURN.
- Use the arrow keys to highlight the name of the database that you want to drop and press RETURN.

For example, to drop the **mydata** database, type **mydata** or highlight **mydata@dbserver1** with an arrow key and press RETURN.

To leave the DROP DATABASE screen without dropping a database, press the Interrupt key. You return to the DATABASE menu.

Confirming Your Decision to Drop a Database

When you drop a database, DB-Access displays a special menu that asks for confirmation before it drops the database, as Figure 4-17 shows.

Figure 4-17
*The
DROP DATABASE
Confirmation Menu*

```
CONFIRM:  No  Yes
No, I do not want to drop it.

----- demodb@dbserver1 ----- Press CTRL-W for Help -----
mydata@dbserver1
demodb@dbserver1
personnel@mynewdb
```

The default is No, which helps prevent dropping a database by mistake. If you want to drop the highlighted database, press the Y key or use the right arrow key to highlight Yes, and press RETURN. DB-Access drops the database, and all data in the database is deleted. Be absolutely sure that you choose the correct database to drop.

Closing a Database

To close the current database, choose the cLose option from the DATABASE menu by pressing the L key or highlight the option and press RETURN. The message Database Closed appears at the bottom of the screen, which indicates that the current database is closed. The database name disappears from the Help line, but the database server name remains.

If you select the cLose option when no database name is on the Help line, DB-Access displays an error message.

If you try to close a database with transactions and begin a transaction but do not commit it or roll it back, the TRANSACTION menu appears, as Figure 4-18 shows.

```
TRANSACTION:  Commit  Rollback
Commit the current transaction.
----- demodb@dbserver1 ----- Press CTRL-W for Help -----
```

Figure 4-18
The TRANSACTION Menu for Databases with Transactions

The TRANSACTION menu ensures that you either commit or roll back an active transaction before you close the current database. The following list shows the two menu options:

- The default option is Commit.
Press the Y key or RETURN and DB-Access commits the transaction(s) and closes the database.
- If you want to roll back the transaction(s), use an arrow key to move the highlight to the Rollback option.
Press RETURN, and DB-Access rolls back the transaction(s) and closes the database.



Warning: *Select an option carefully. You might commit transactions you do not want if you select Commit, and you will lose any new transactions if you select Rollback.*

If you press the Interrupt key, DB-Access displays the DATABASE menu without committing or rolling back the transaction(s).

The TRANSACTION menu also appears whenever you attempt to open a new database or try to leave the DB-Access menu system without first terminating a transaction. These instances are the only times when you can access the TRANSACTION menu from DB-Access.

The Table Option

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T

his chapter describes how to use the features of the Table option on the main menu. Select this option if you want to perform any of the following table-management tasks without SQL programming:

- Create a new table
- Define fragmentation strategy for a new or existing table
- Alter, drop, or display information about an existing table

Related Manuals

Have the following manuals available while you create or alter a table schema or structure:

- For information about naming a table or a column, see the [Informix Guide to SQL: Syntax](#).
- For information about data types, refer to the [Informix Guide to SQL: Reference](#).
- For information about fragmentation and storage space allocation, see your [Administrator's Guide](#).
- For recommendations concerning fragmentation, indexes, and extent size, see your [Performance Guide](#).
- For information about nondefault locale names and character data types (CHAR, VARCHAR, NCHAR, NVARCHAR, and TEXT), see the [Informix Guide to GLS Functionality](#).

The TABLE Menu

When you press the T key or select the Table option from the main menu, the TABLE menu (Figure 5-1) appears.

Figure 5-1
The
TABLE Menu

```
TABLE: [ ] Create Alter Info Drop Exit
Create a new table.

-----mydata@mydbserv-----Press CTRL-W for Help -----
```

If no current database exists when you select the Table option, the SELECT DATABASE screen appears. Select from a list of databases defined for the current database server or press the Interrupt key to display the main menu.

Use the TABLE menu options as the following table shows.

Option	Purpose	Instructions
Create	Enables you to define the structure of a new table	See “Creating or Altering a Table” on page 5-4.
Alter	Enables you to alter the structure of an existing table	See “Creating or Altering a Table” on page 5-4.
Info	Displays information about the structure of a table	See “Displaying Table Information” on page 5-43.
Drop	Deletes a table from the database	See “Dropping a Table” on page 5-58.
Exit	Returns to the DB-Access main menu	No further instructions are needed.

Creating or Altering a Table

The Create option on the TABLE menu provides a menus that guide you through the functions of a CREATE TABLE statement. The Alter option provides menus that guide you through the functions of an ALTER TABLE or ALTER FRAGMENT statement.

The CREATE TABLE Screen

When you select the Create option on the TABLE menu, DB-Access displays the CREATE TABLE screen that Figure 5-2 shows.

```
CREATE TABLE >>
Enter the table name you wish to create with the schema editor.

----- mydata@mydbserv ----- Press CTRL-W for Help -----
```

Figure 5-2
The
CREATE TABLE
Screen

At the prompt, type the name of the new table and press RETURN. You can assign any name, as long as you adhere to the [Informix Guide to SQL: Syntax](#) guidelines for object names.

After you enter the new table name, DB-Access displays the CREATE TABLE menu that Figure 5-3 shows.

```
CREATE TABLE clients: [Add] Modify Drop Screen Table_options Constraints Exit
Adds columns to the table above the line with the highlight.

---- Page 1 of 1 ---- mydata@mydbserv ----- Press CTRL-W for Help -----

Column Name          Type          Length  Index Nulls
-----
```

Figure 5-3
The CREATE TABLE Menu

The ALTER TABLE Screen

When you select the Alter option on the TABLE menu, DB-Access displays the ALTER TABLE prompt and a list of the tables defined in the current database, as Figure 5-4 shows.

Figure 5-4
The
ALTER TABLE
Prompt

```
ALTER TABLE >>
Enter the table name you wish to alter with the schema editor.

----- mydata@mydbserv ----- Press CTRL-W for Help -----

customer
items
orders
```

Enter the name of the table that you want to alter after the prompt or use the arrow keys to highlight the table name in the list. After you press RETURN, DB-Access displays the ALTER TABLE menu and the table schema, as Figure 5-5 shows.

Figure 5-5
The
ALTER TABLE
Menu

```
ALTER TABLE clients: Add Modify Drop Screen Table_options Constraints Exit
Adds columns to the table above the line with the highlight.

---- Page 1 of 1 ---- mydata@mydbserv ----- Press CTRL-W for Help -----

Column Name          Type          Length  Index  Nulls
-----
customer_num         Serial        101     Unique No
fname                Char          15      Yes
lname                Char          15      Yes
company              Char          20      Yes
```



Important: You must have Alter privilege to successfully alter a table. Without the privilege, you can use the menus from the ALTER TABLE screen, but an error results when you attempt to select Build-new-table from the EXIT screen. For references explaining the Alter privilege and other table-level privileges, refer to [page 5-3](#).

Using the Schema Editor

Both the CREATE TABLE and ALTER TABLE menus have the same options, which are described in the following list.

Option	Purpose	Instructions
Add	Displays the schema editor from which you can add a new column to the table	See “ Adding Columns to a Table (Add Option) ” on page 5-8.
Modify	Displays the columns that you defined with the Add option so that you can modify the column structure before building the table	See “ Modifying Columns (Modify Option) ” on page 5-16.
Drop	Drops an existing column from the table	See “ Deleting Columns (Drop Option) ” on page 5-17.
Screen	Displays the next screen of column definitions in the schema editor	No further instructions are needed.
Table_ options	Displays and enables you to select storage spaces for a new table	See “ Arranging Storage and Locking (Table_options) ” on page 5-17.
	Displays choices from which you set a fragmentation strategy for a new table	
	Enables you to set extent sizes and lock mode for a new table	
	Adds or drops rowids for an existing fragmented table	

(1 of 2)

Option	Purpose	Instructions
Constraints	Enables you to define primary-key, foreign-key, check, and unique constraints	See “Defining Constraints” on page 5-32.
	Enables you to set default column values	See “Defining Default Values” on page 5-39.
Exit	Builds, rebuilds, or discards the schema and structure that you described with the other options and then returns to the TABLE menu	See “Building the Table (Exit Option)” on page 5-15.

(2 of 2)



Important: You must use the SPACEBAR to move between menu options because the arrow keys control cursor movement in the schema editor.

To leave the CREATE TABLE menu or ALTER TABLE menu and you return to the TABLE menu without building or altering a table, press the Interrupt key.

Adding Columns to a Table (Add Option)

To add a new column to a table, you define a new line in the schema editor that appears below the dashed line. When you create or alter the columns of a table, the schema editor issues prompts to assist you.



Important: Before you use the Add option from the ALTER TABLE menu, you must position the highlight in the schema editor to indicate where you want to insert the new column or columns. To move the highlight within the displayed columns, use the up and down arrow keys. To scroll more of the column list onto the screen, use the Screen option on the menu. When you select the Add option, the highlighted line moves down to make an empty line for the new column.

The schema editor progresses from left to right, completing one horizontal line of description for each column, with the name of the column at the left. Use the right arrow key to move the highlight to each field. To accept the default entry for each field, press RETURN or an arrow key.

As you finish one column, the cursor moves to the next line down, so that you can enter another column name. Thus, the columns that make up the table are listed vertically.

You can change or bypass any field entry in a line before you move to the next line in either of the following ways:

- Use the left arrow key to move back to a field that you passed on the current line.
- Press the Interrupt key to cancel a prompt without inserting a value into the current (highlighted) field.

After you move the highlight to another line, you must use the Modify option on the CREATE TABLE menu to change your entry, as described in “[Modifying Columns \(Modify Option\)](#)” on page 5-16.

Column Name

The Add option on the CREATE TABLE (or ALTER TABLE) menu places the cursor on an empty line and displays the ADD COLUMN NAME prompt. Type the name of the column after the ADD COLUMN NAME prompt and press RETURN. You can assign any name, as long as you adhere to the [Informix Guide to SQL: Syntax](#) guidelines for identifier syntax.

DB-Access enters the specified name under Column Name, as Figure 5-6 shows.

```

ADD COLUMN NAME >>
Enter column name. RETURN adds it. INTERRUPT returns to CREATE/ALTER menu.

---- Page 1 of 1 ---- mydata@mydbserv ----- Press CTRL-W for Help ----

Column Name                Type                Length  Index Nulls
-----
customer_num
    
```

Figure 5-6
The ADD COLUMN NAME Screen with Column Name Entered

Column Data Type

The ADD TYPE menu displays various data types, as Figure 5-7 shows.

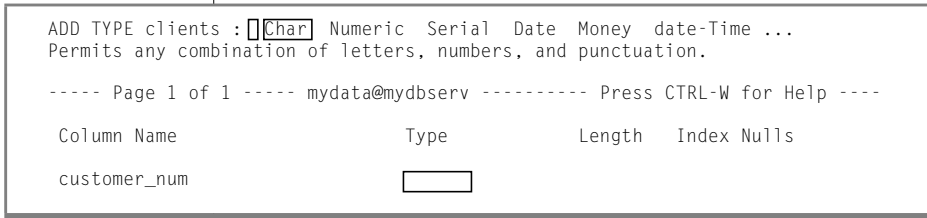


Figure 5-7
The ADD TYPE
Menu for Defining
Column Data Types



UD

To select the data type for the column, type the first capitalized letter of the data type, using either uppercase or lowercase letters or the SPACEBAR to highlight it and then press RETURN.

Important: Do not use the arrow keys to move to your choice. The arrow keys control cursor movement in the lower part of the screen.

The CREATE TABLE menu provides options for built-in data types. To define a column with one of the extended data types, such as smart large objects, user-defined (opaque) data types, or a collection data type, use the SQL menu to enter and run a CREATE TABLE statement. ♦

If you select one of the following data type categories from the ADD TYPE menu, DB-Access displays one or two submenus for that category.

ADD TYPE Category	Data Type Submenu	Additional Submenu
Numeric	Integer	
	Smallint	
	Decimal	
	Float	Smallfloat or Float
Char	Char (press C to select)	
	Nchar (press N to select).	

(1 of 2)

ADD TYPE Category	Data Type Submenu	Additional Submenu
Numeric	Integer	
	Smallint	
	Decimal	
	Float	Smallfloat or Float
Variable-length	Varchar	Varchar (press V to select)
		Nvarchar (press N to select)
	Text or Byte	Table
		Blobspace

(2 of 2)

Locale Character Data

If you use character data in a default locale, select Char for fixed-length data or Varchar if the table will have varying length entries in that column.

If you use a nondefault locale, select Nchar for fixed length or Nvarchar for varying length. ♦

GLS

Large Object Storage Location

If you select VARIABLE-LENGTH TEXT or BYTE data type, perform one of the following actions to indicate where that large object data should reside:

- Select Table to store the full data directly in the column.
Always select Table for databases that reside on Dynamic Server with AD and XP Options. ♦
- Select Blobspace to store the actual TEXT or BYTE data in a large object space (blobspace). The table column then holds the blobspace location.

DB-Access displays the SELECT BLOBSPACE screen (Figure 5-8). Use the arrow keys to choose a blobspace from the alphabetical list or type the blobspace name at the top of the screen.

AD/XP

```
SELECT BLOBSPACE >>
Select a blobspace with the Arrow Keys, or enter a name, then press Return

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----
```

cust_blob

Figure 5-8
The SELECT BLOBSPACE Screen for Storing Variable-Length Data

Data Length or Range

If you select any of the following data types for the column, a new ADD screen appears. Enter the appropriate information in the Length field.

Data Type	Length or Range
Char	Specify a length (the default is 20).
Nchar	Specify a length (the default is 20).
Numeric	For the fixed-point form of the DECIMAL type, enter the precision and scale (the default is 16,2). For the floating-point form of the DECIMAL type, enter the precision only.
Serial	Enter the starting number (the default is 1).
Money	Specify a length (the default is 16, 2).

(1 of 2)

Datetime	Specify first to last datetime qualifiers.
Interval	Specify first to last interval qualifiers.
Varchar	Specify a maximum length (from 1 to 255 bytes) and a minimum space (from 0 to 255 bytes).
Nvarchar	Specify a maximum length (from 1 to 255 bytes) and a minimum space (from 0 to 255 bytes).

(2 of 2)

Column Index

Indicate whether you want a *nonclustered, ascending* index on the column with the ADD INDEX menu, as Figure 5-9 shows.

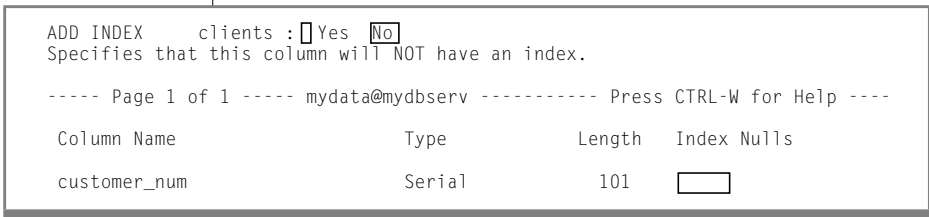


Figure 5-9
The
ADD INDEX
Menu

DB-Access can construct only a non-clustered, ascending B-tree index. You can indicate whether or not you want to add an index, as follows:

- Select Yes to create an index of the available type on the column. DB-Access displays an ADD DUPLICATES screen. Press RETURN or the Y key to allow duplicate values, and the word Dups appears in the Index field. Press the N key to prevent duplicate values. The word Unique appears in the Index field. DB-Access displays the ADD FILL FACTOR PERCENTAGE screen that Figure 5-10 shows.
- Select No if you do not want to index the values in this column or if you want any other type of index. For example, you would select No if you want an R-tree index, which you must create directly with SQL.

Column Index Fill Factor

Use the ADD FILL FACTOR PERCENTAGE screen, as Figure 5-10 shows, to set the fill-factor percentage when you create an index on a single column. The index column has fill factor and unique or dups abbreviated to U or D.

Figure 5-10

The
ADD FILL FACTOR
PERCENTAGE
Screen

```

ADD FILL FACTOR PERCENTAGE >>
Enter the fill factor percentage. RETURN adds it.

----- Page 1 of 1 -----personnel ----- Press CTRL-W for Help -----

Column Name          Type          Length  Index  Nulls
emp1_num              Integer
last_name            Char          20      D 90%  No
insurance             Integer       Dups    Yes
ss_num                Integer       Unique  No
    
```



Important: You can only set a fill-factor value when you create a new index. You can modify the fill factor through the Modify option on the CREATE TABLE menu. However, you cannot alter it through the ALTER TABLE menu after the table for the index is created.

Enter any positive value to a maximum of 100. A value less than 1 or greater than 100 results in an error.

If you press RETURN without entering a value, the index will have the fill-factor percentage set in the database server ONCONFIG file. If ONCONFIG has no fill-factor setting, the index will have the default fill-factor value of 90 percent.

Null Value Permission

Specify whether the column allows null values on the ADD NULLS menu, as Figure 5-11 shows.

Figure 5-11

The ADD NULLS
Menu

```

ADD NULLS      clients :  Yes  No
Permits null values in this column.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----

Column Name          Type          Length  Index Nulls
customer_num         Serial        101     Unique 
    
```


Select **Yes** to allow null values in the column or **No** to force the column to always have a non-null value.

To add another column definition to the table or return to the CREATE TABLE menu, press **Interrupt**, an arrow key, or **RETURN**.

Building the Table (Exit Option)

When you complete the schema for the new (or modified) table, select the **Exit** option on the CREATE TABLE (or ALTER TABLE) menu. DB-Access displays the menu that Figure 5-12 shows.

Figure 5-12
The
CREATE TABLE
Menu

```
CREATE TABLE clients: [Build-new-table] Discard-new-table
Builds a new table and returns to the Table Menu.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----

Column Name                Type                Length  Index  Nulls
customer_num               Serial             101     Unique No
fname                      Char               15      Yes
lname                      Char               15      Yes
company                    Char               20      Yes
address1                   Char               20      Yes
address2                   Char               20      Yes
city                       Char               15      Yes
state                      Char                2      Yes
zipcode                    Char                5      Dups  Yes
phone                      Char               18      Yes
```

To create the table that contains the displayed columns and return to the TABLE menu, select **Build-new-table**. To return to the TABLE menu without saving the new or modified table definition, select **Discard-new-table**.

Modifying Columns (Modify Option)

To modify an existing column, perform the following steps:

1. Use the arrow keys to highlight the column definition that you want to modify.
2. If necessary, select Screen from the CREATE TABLE menu to display the next screen of column definitions in the schema editor.
3. Select the Modify option on the CREATE TABLE (or ALTER TABLE) menu and press RETURN.
4. Move the highlight to the field you want to modify.

DB-Access prompts appropriately for the field where the highlight is located. Each of these prompt screens works like the corresponding ADD screen.

For instructions, see the following list.

Prompt	Instructions
MODIFY COLUMN NAME	"Column Name" on page 5-9
MODIFY TYPE	"Column Data Type" on page 5-10
MODIFY LENGTH	"Data Length or Range" on page 5-12
MODIFY INDEX	"Column Index" on page 5-13
MODIFY NULLS	"Null Value Permission" on page 5-14

5. Move the highlight to the next field as needed and repeat the process.
6. Select Exit to leave the screen after electing to build the table or discard the schema ([Figure 5-12 on page 5-15](#)).

To leave a Modify screen or menu without making any changes, press the Interrupt key at any time.

Deleting Columns (Drop Option)

To delete a column from a table schema, perform the following steps:

1. Position the highlight anywhere on the column that you want to drop.
2. Select the Drop option on the CREATE TABLE (or ALTER TABLE) menu.

Some or all of that column line is then highlighted on the screen.

DB-Access displays the DROP menu that prompts you to verify your decision, as shown in Figure 5-13.

Figure 5-13
The DROP Menu

```

DROP clients :  Yes  No
Deletes the highlighted column from the table.

---- Page 1 of 1 ---- mydata@mydbserv ----- Press CONTROL-W for Help ----

Column Name                Type                Length  Index Nulls
-----
customer_num                Serial              101     Unique No
fname                       Char                15      Yes
lname                       Char                15      Yes
company                     Char                20      Yes
    
```

Select Yes from the DROP screen to delete the line currently highlighted in the schema editor; select No to keep the line.

Arranging Storage and Locking (Table_options)

To display the TABLE_OPTIONS menu that Figure 5-14 shows, select Table_options from the CREATE TABLE menu (or ALTER TABLE menu). You can then specify storage-management parameters, such as location and distribution of data on the storage media.

Figure 5-14
The TABLE_OPTIONS Menu

```

TABLE_OPTIONS clients:  Storage  eXtent_size Next_size Lock_mode Exit
Define dbspace or fragmentation strategy for table storage.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----

Column Name                Type                Length  Index Nulls
-----

    
```

The TABLE_OPTIONS menu contains the following options.

Option	Purpose	Instructions
Storage	Displays dbspaces and enables you to assign a dspace to the current table	See “ Selecting Dbspaces ”.
	Enables you to define a fragmentation strategy for the current table	See “ Fragmenting a New Table ” on page 5-19.
eXtent_size	Enables you to specify the initial extent size of the table	See “ Setting the Extent Size ” on page 5-29.
Next_size	Enables you to specify the next extent size	See “ Setting the Extent Size ” on page 5-29.
Lock_mode	Enables you to select either Page or Row as the lock mode	See “ Determining the Lock Mode ” on page 5-30.
Exit	Returns to the previous menu	No further instructions are needed.

For assistance in setting Table_options values such as dbspaces, fragmentation strategy, extent sizes, and lock mode, refer to your [Administrator’s Guide](#) and [Performance Guide](#).

Selecting Dbspaces

To display the STORAGE menu that Figure 5-15 shows, select the Storage option from the TABLE_OPTIONS menu.

```
STORAGE new_acct:  Fragment Exit
Select a dspace in which to store the table.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----
```

Figure 5-15
The STORAGE Menu for Storing Table Data and Defining Fragmentation Strategy

To display the SELECT DBSPACE screen that Figure 5-16 shows, select Dbspace from the STORAGE menu. Use the arrow keys to highlight a dbspace from the list of dbspaces in the current database and then press RETURN.

```
SELECT DBSPACE >>
Select a dbspace with the Arrow Keys, or enter a name, then press Return.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----

rootdbs
pers_dbs
empl_dbs
```

Figure 5-16
The SELECT DBSPACE Screen for Specifying Table Storage

W/D

Select Fragment to set up fragmentation strategy in a series of additional menus. For instructions, refer to “[Fragmenting a New Table](#)” or “[Altering Fragmentation for an Existing Table](#)” on page 5-23.

Dynamic Server, Workgroup and Developer Editions does not support fragmentation. ♦

Fragmenting a New Table

To arrange fragmentation for a new table, display the FRAGMENT menu that Figure 5-17 shows. You reach this menu through the following steps:

1. On the main menu, select Table.
2. On the TABLE menu, select Create.
3. On the CREATE TABLE, select Table_options.
4. On the TABLE_OPTIONS menu, select Storage.
5. On the STORAGE menu, select Fragment.

```
FRAGMENT new_acct: Round_robin eXpression r0wids Exit
Select and define a round robin fragmentation strategy.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----
```

Figure 5-17
The FRAGMENT Menu for Defining Fragmentation Strategy

Select the strategy that you want from the FRAGMENT menu, as the following list shows.

Option	Purpose	Instructions
Round_robin	Selects a round-robin strategy for fragmentation	See “Round-Robin Setup.”
eXpression	Selects an expression strategy for fragmentation	See “Expression Strategy Setup” on page 5-21.
rOwids	Adds a column that contains rowids to a fragmented table (The database server does not automatically assign rowids when you insert rows in a fragmented table.)	Press the letter o to explicitly enable access by rowid.
Exit	Exits the FRAGMENT menu and returns to the STORAGE menu	See Figure 5-15 on page 5-18.

DB-Access has no FRAGMENT menu option for Hash or Hybrid fragmentation. If you want this type of strategy, use the SQL menu to enter and run the CREATE TABLE or ALTER TABLE statement.

AD/XP

Dynamic Server with AD and XP Options does not support rowids for fragmented tables. ♦

Round-Robin Setup

To display the ROUND_ROBIN menu that Figure 5-18 shows, select the Round_robin option on the FRAGMENT menu.

```

ROUND_ROBIN new_acct:  Modify Drop Screen Exit
Add a dbspace to the fragmentation strategy above the line with the highlight.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----

Dbspace Name

dbspace2
    
```

Figure 5-18
The ROUND_ROBIN Menu for Selecting Fragment Storage Spaces

The ROUND_ROBIN menu has the following options.

Option	Purpose
Add	Displays dbspaces so that you can add a new dbspace to the round-robin fragment space assigned to the current table
Modify	Enables you to redefine the fragmentation strategy for the highlighted dbspace
Drop	Deletes the highlighted dbspace from the existing strategy, but does <i>not</i> drop the dbspace from the database server
Screen	Scrolls the screen to display more of the available dbspaces.
Exit	Returns to the FRAGMENT menu.

Use the arrow keys to highlight a dbspace from the list on the SELECT DBSPACE screen (Figure 5-16 on page 5-19) and press RETURN. If you try to add a dbspace that is already part of another strategy, an error message displays.

When you return to the ROUND_ROBIN menu, the screen displays all dbspaces currently chosen for the strategy.

Expression Strategy Setup

To display the EXPRESSION menu that Figure 5-19 shows, select the eXpression option on the FRAGMENT menu.

```

EXPRESSION new_acct:  Modify Drop Screen Exit
Add a strategy definition.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----

Dbspace Name      Expression
-----
 field1 <100
dbspace2          field1 >=100 and field1 <200
dbspace3          remainder
    
```

Figure 5-19
The EXPRESSION Menu for Defining Expression Fragmentation Strategy

The EXPRESSION menu has the following options.

Option	Purpose
Add	Adds a new dbspace to those that will contain fragments of this table, according to the expression fragmentation strategy.
Modify	Modifies the dbspace or expression associated with that dbspace
Drop	Deletes the highlighted dbspace and expression from the existing strategy, but does <i>not</i> drop the dbspace from the database server.
Screen	Scrolls the screen to display more of the available dbspaces
Exit	Returns to the FRAGMENT menu



Important: *DB-Access does not perform data validation on the expression of the strategy.*

The Add option on the EXPRESSION menu displays the SELECT DBSPACE screen that [Figure 5-16 on page 5-19](#) shows. Use the arrow keys to highlight a dbspace from the list and press RETURN. If you try to add a dbspace that is already part of another strategy, an error message displays.

After you select a dbspace, the EDIT EXPRESSION menu appears. [Figure 5-20](#) shows this menu, from which you enter an expression that determines whether a particular record belongs in the highlighted dbspace.

```

EDIT EXPRESSION new_acct:  Modify Use-editor Exit
Enter a new expression which will determine where a record will be stored.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----

Dbspace Name      Expression
-----
dbspace1          field1<100
dbspace2          field1>=100 and field1<200
dbspace3          remainder
    
```

Figure 5-20
The
EDIT EXPRESSION
Menu for Defining
and Editing
Expressions

The EDIT EXPRESSION menu has the following options.

Option	Purpose
New	Displays the blank SQL editor screen so that you can enter a new expression
Modify	Displays the current expression on the SQL editor screen so that you can modify the expression
Use-editor	Displays the current expression in the system editor so that you can modify the expression
Exit	Returns to the EXPRESSION menu

After you exit the editor, DB-Access displays the CONFIRM CHANGES menu that Figure 5-21 shows.

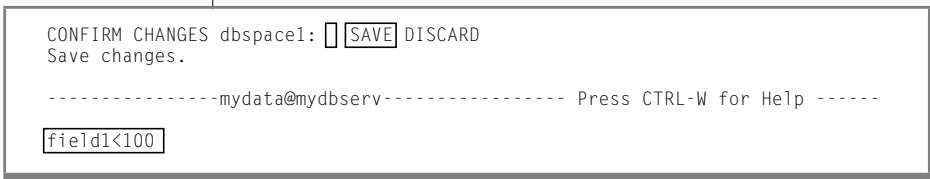


Figure 5-21
The CONFIRM CHANGES Menu

To save the edits to the expression, press RETURN. To discard the edits to the expression, select DISCARD. You return to the EXPRESSION menu.

Altering Fragmentation for an Existing Table

If you are altering a table, you arrange or remove fragmentation with the ALTER FRAGMENT menu. You reach this menu with the following steps:

1. On the main menu, select Table.
2. On the TABLE menu, select Alter.
3. Select the Table_options option from the ALTER TABLE menu.
4. Select the Storage option from the TABLE_OPTIONS menu.
5. Select the Fragment option from the STORAGE menu.

Figure 5-22 shows how the ALTER FRAGMENT menu displays a table with a round-robin fragmentation strategy. Figure 5-23 shows how the ALTER FRAGMENT menu displays a table with an expression-based fragmentation strategy.

```
ALTER FRAGMENT - new_acct: Add Drop Screen Init aTtach detaCh Exit
Add one new dbspace to the end of the list.

----- Page 1 of 1 ----- newstores@mydbserv ----- Press CTRL-W for Help ----

Dbspace Name

dbspace1
dbspace2
dbspace3

```

Figure 5-22
The ALTER FRAGMENT Menu for Round-Robin Fragmentation Strategy

```
ALTER FRAGMENT - new_acct: Add Modify Drop Screen Init aTtach detaCh Exit
Add an expression to the fragmentation strategy above the line with the highlight

----- Page 1 of 1 ----- newstores@mydbserv ----- Press CTRL-W for Help ----

Dbspace Name Expression

dbspace1 field1 <100
dbspace2 field1 >=100 and field1 <200
dbspace3 remainder

```

Figure 5-23
The ALTER FRAGMENT Menu for Expression Fragmentation Strategy

The ALTER FRAGMENT menu has the following options.

Option	Purpose	Instructions
Add	Adds a dbspace to the round-robin scheme	See “ Round-Robin Setup ” on page 5-20 or “ Expression Strategy Setup ” on page 5-21, depending on the fragmentation type of the current table.
Drop	Drops one dbspace from those used for fragments of the current table	
Screen	Scrolls more dbspaces onto the screen	No further instructions are needed.

(1 of 2)

Option	Purpose	Instructions
Init	Describes the fragmentation scheme (if any) of an existing table and enables you to change the strategy, attach fragments, detach fragments, or remove fragmentation	See “ Fragmenting an Existing Table ” on page 5-28.
aTtach	Attaches one or more tables to the current table, modifies or drops a selected attachment	See “ Attaching a Dbspace ”.
detach	Detaches records from the current table from a specific dbspace and creates a new table with those records	See “ Detaching a Dbspace ” on page 5-27.
Exit	Returns to the TABLE_OPTIONS menu	No further instructions are needed.

(2 of 2)



Important: You can execute only one menu option in an ALTER FRAGMENT menu, and it can be applied to the current strategy only once. For example, you can add only one dbspace to a round-robin strategy, and you cannot delete a dbspace during the same ALTER TABLE session.

Attaching a Dbspace

Select the aTtach option on the ALTER FRAGMENT expression strategy menu, and the ATTACH TABLES menu appears. Figure 5-24 shows the ATTACH TABLES menu for a table that has expression fragmentation. The round-robin version of this screen shows only the table name for each fragment.

```

ATTACH TABLES new_acct: [Add] Modify Drop Screen Exit
Add one new table to the fragmentation strategy.

----- Page 1 of 1 ----- newstores@mydbserv ----- Press CTRL-W for Help -----

Table Name      Expression      Position      Dbspace
-----
acct            field1 <100    BEFORE      dbspace1
cur_acct       field1 >=100
    
```

Figure 5-24
The
ATTACH TABLES
Menu for
Expression
Fragmentation
Strategy

Select Add on the ATTACH TABLES menu to begin attaching a fragment. On the SELECT ATTACHING TABLE screen, highlight or type in the table name you want and press RETURN, as Figure 5-25 shows.

```
SELECT ATTACHING TABLE >>
Select a table with the Arrow Keys, or enter the name, then press Return.
----- Page 1 of 1 ----- newstores@mydbserv ----- Press CTRL-W for Help -----
acct
cur_acct
myacct
```

Figure 5-25
The SELECT ATTACHING TABLE Screen

If the table uses round-robin strategy, the resulting new fragment or fragments will be positioned at the end of the fragmentation strategy and the ALTER FRAGMENT menu returns.

If the table uses expression strategy, complete the following steps:

1. After you select a table, the EDIT EXPRESSION menu appears. Refer to [Figure 5-20 on page 5-22](#).
2. When you exit the EDIT EXPRESSION menu, the ADD DEFINE ATTACH POSITION menu appears. Figure 5-26 shows this menu.

```
ADD DEFINE ATTACH POSITION acct: [Before] After None
Define a position for an attaching fragment before a dbspace.
----- Page 1 of 1 ----- newstores@mydbserv ----- Press CTRL-W for Help -----
```

Figure 5-26
The ADD DEFINE ATTACH POSITION Menu

- ❑ Select Before to attach the new fragment *before* a dbspace that you select in the next step.
- ❑ Select After to attach the new fragment *after* the dbspace that you select in the next step.
- ❑ Select None to attach the new fragment in the default position.

3. If you select Before or After as the attach position, the SELECT DBSPACE screen (Figure 5-27) displays, listing the dbspaces that the strategy encompasses prior to attaching the new one.

```
SELECT DBSPACE >>
Select a dbspace with the Arrow Keys, or enter a name, then press Return.

----- Page 1 of 1 ----- newstores@mydbserv ----- Press CTRL-W for Help -----

dbspace1
dbspace2
dbspace3
```

Figure 5-27
The
SELECT DBSPACE
Screen Listing
Fragmented
Dbspaces

Select the dbspace before or after which you want to attach the added fragment.

The ATTACH TABLES menu reappears (Figure 5-24 on page 5-25) and shows values for the Position and Dbspace fields.

Detaching a Dbspace

The detaCh option from the ALTER FRAGMENT menu displays the DETACH DBSPACE screen that Figure 5-28 shows.

```
SELECT DBSPACE >>
Select a dbspace with the Arrow Keys, or enter a name, then press Return.

----- Page 1 of 1 ----- newstores@mydbserv ----- Press CTRL-W for Help -----

dbspace1
dbspace2
dbspace3
```

Figure 5-28
The
DETACH DBSPACE
Screen for
Removing
Fragmentation

Select the dbspace from which you want the records copied into a new, unfragmented table. You can select a dbspace from the list or type in a dbspace name. If you enter an invalid dbspace name, an error message appears.

After you correctly enter a dbspace on the DETACH DBSPACE screen, the NEW TABLE screen appears that Figure 5-29 shows.

```
NEW TABLE >>   
Enter the name you want assigned to the new table, then press Return.  
----- Page 1 of 1 ----- newstores@mydbserv ----- Press CTRL-W for Help -----
```

Figure 5-29
*The NEW TABLE
Screen for Naming a
Detached dbspace*

Enter the name you want assigned to the new, unfragmented table. This table stores the records from the dbspace you previously selected through the DETACH DBSPACE screen. The display returns to the ALTER FRAGMENT menu.

Fragmenting an Existing Table

If a table has no fragmentation strategy when you select the Fragment option on the STORAGE menu, the ALTER FRAGMENT menu appears, as Figure 5-30 shows.

```
ALTER FRAGMENT - new_acct:  Attach Exit  
Define a fragmentation strategy.  
----- Page 1 of 1 ----- newstores@mydbserv ----- Press CTRL-W for Help -----
```

Figure 5-30
*The
ALTER FRAGMENT
Menu for No
Fragmentation
Strategy*

The ALTER FRAGMENT menu has the following options.

Option	Purpose	Instructions
Init	Provides the following options: <ul style="list-style-type: none"> ■ fragment a previously unfragmented table ■ remove fragmentation from a table ■ change the fragmentation strategy for a table 	The ALTER FRAGMENT-INIT menu has the same options as the FRAGMENT menu under CREATE TABLE. For instructions, refer to “Fragmenting a New Table” on page 5-19.
Attach	Enables you to define a fragmentation strategy and select the tables to fragment with the new strategy. This option has the same effect as the following statement: <pre>ALTER FRAGMENT ON TABLE table1... ATTACH table1, table2</pre>	The ALTER FRAGMENT-ATTACH menu offers Round-robin and eXpression fragmentation. For instructions on both types of strategy, refer to “Fragmenting a New Table” on page 5-19.
Exit	Returns to the TABLE_OPTIONS menu	No further instructions are needed.



Important: You can perform only one operation during an ALTER FRAGMENT session.

Setting the Extent Size

When you create a table, you can specify how much initial disk space, or *initial extent size*, to reserve for the table. You can also specify the size of additional extents, or *next extent spaces*, the database server adds if the initial extent becomes full.

To specify an initial extent size, select the eXtent_size option on the TABLE_OPTIONS menu. DB-Access displays the Extent Size screen (Figure 5-31). After you set initial extent size, select the Next_size option from the TABLE_OPTIONS menu to display the Next Size screen (Figure 5-32).

```
Extent Size >> 
Specify initial extent size in kilobytes.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----

Column Name          Type          Length  Index Nulls

```

Figure 5-31
The (Initial) Extent Size Screen

```
Next Size >> 
Specify next extent size in kilobytes.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----

Column Name          Type          Length  Index Nulls

```

Figure 5-32
The Next (Extent) Size Screen

To select extent size on either screen, perform one of the following actions:

- Press RETURN to accept the default size of 8 kilobytes.
- Type a number (representing kilobyte units) and press RETURN. The minimum extent size is 4 kilobytes.

Determining the Lock Mode

When you select the Lock_mode option on the TABLE_OPTIONS menu, DB-Access displays the LOCK_MODE menu (Figure 5-33).

```
LOCK_MODE clients:  Page Row Exit
Locking is at page level. This is the default.

----- Page 1 of 1 ----- mydata@mydbserv ----- Press CTRL-W for Help -----

Column Name          Type          Length  Index Nulls

```

Figure 5-33
The LOCK_MODE Menu

The LOCK_MODE menu lets you choose the mode to use when the database locks the rows in a table. The LOCK_MODE menu has the following options.

Option	Purpose
Page	Locks the entire page on which a row resides
Row	Locks a selected row individually
Exit	Exits to the TABLE_OPTIONS menu.

One row of a table is the smallest object that you can lock. A disk page contains one or more rows of a table. See your *Performance Guide* to determine if you will enhance performance by locking a disk page rather than individual rows on the page. Unless you specify row-level locking before you exit, the default (Page) is used.

Adding or Dropping Rowids

You can add or drop rowids only when altering an existing table. To reach the ALTER ROWID menu:

1. Select Table_options from the ALTER TABLE menu.
2. Select Rowids from the TABLE OPTIONS menu.

The ALTER ROWID menu has the following options.

Option	Purpose
Add	Adds a column with rowids to the fragmented table
Drop	Discards the rowid column previously added
None	Cancels the selection you made on this screen so that you can exit without altering the table
Exit	Exits to the TABLE_OPTIONS menu.

If you select Add or Drop, another menu prompts you to verify your selection. Select Yes to execute the Add or Drop; select No to cancel the Add or Drop.

Defining Constraints

You can use the DB-Access schema editor to define constraints for columns in a specified table. You can define primary-key, foreign-key, column-level and table-level check, and unique constraints as well as add and modify column default values.

Select the Constraints option from the CREATE TABLE menu, and the CONSTRAINTS menu (Figure 5-34) appears.



```
CONSTRAINTS - mytab: [Primary] Foreign Check Unique Defaults Exit
Define a primary key constraint.
-----mydata@mydserv----- Press CTRL-W for Help -----
```

Figure 5-34
The
CONSTRAINTS
Menu

The CONSTRAINTS menu has the following options.

Option	Purpose
Primary	Lists the columns that make up the table so that you can choose the column or columns that comprise the primary key
Foreign	Asserts a foreign-key relationship for a column
Check	Enables you to specify valid values for a column and forces the validation of data entry in that column
Unique	Declares that a column must contain a unique value
Defaults	Enables you to set a default value for a column
Exit	Returns you to the CREATE TABLE menu

Defining Primary-Key Constraints

To add, modify, or drop primary-key constraints for the current table, select the Primary option on the CONSTRAINTS menu. The PRIMARY KEY menu (Figure 5-35 on page 5-33) appears.

```

PRIMARY KEY mytab: █ Add Modify Drop Screen Exit
Add a constraint name or column name.

-----Page 1 of 1 -----mydata@mydbserv----- Press CTRL-W for Help -----

Constraint Name      Column Name
constraint1          column1

```

Figure 5-35
The
PRIMARY KEY
Menu

When you enter a primary constraint, DB-Access validates your entry by verifying the following information:

- The column name is not repeated.
- No more than 16 column names appear in one constraint.
- The column is not assigned the BYTE or TEXT data type.

Use the menu options as follows:

- Use the Screen option to scroll to any additional constraint descriptions so that you can select one to modify or drop.
- If you select the Add option to add a primary-key referential constraint, the schema editor inserts and highlights a new line at the top of the constraint list. If you move your cursor to an existing constraint line and select the Modify option, you can change the contents of the line.
 1. At the ADD (or MODIFY) CONSTRAINT NAME prompt, enter a constraint name and press RETURN.
 If you press RETURN in this field without entering a constraint name, the database server assigns a temporary constraint name, such as **unassigned1**, **unassigned2**, and so on. This temporary constraint name exists until you modify it or the table is built or discarded. The database server assigns a permanent constraint name at the time that you create the table.
 2. At the ADD (or MODIFY) COLUMN NAME prompt, enter a column name and press RETURN.
- Select Drop to eliminate the constraint that the highlight indicates. If the highlighted field is Constraint Name, then all columns associated with that constraint are dropped. The line(s) are removed and any gaps are closed in the display.

Defining Foreign-Key Constraints

To create, modify, or drop foreign-key constraints for the current table, select the Foreign option on the CONSTRAINTS menu. The FOREIGN KEY menu (Figure 5-36) appears.

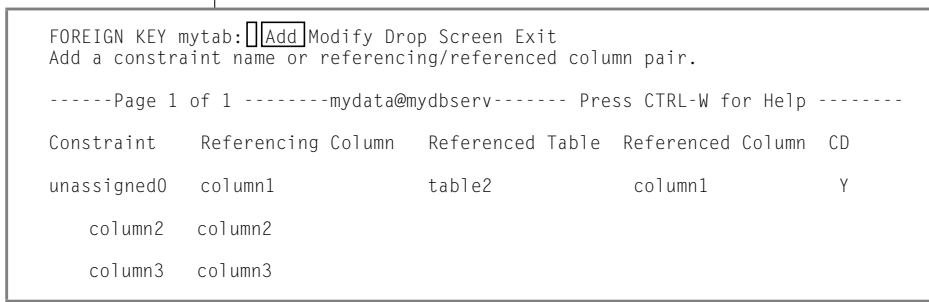


Figure 5-36
The FOREIGN KEY Menu

Use the menu options as the following list shows:

- Use the Screen option to scroll any additional constraint descriptions onto the screen so that you can select one to modify or drop.
- Select the Add option to specify the constraint name, referenced table, and cascading deletes, or to add one or more referencing and referenced column pairs to the constraint.
 1. At the ADD CONSTRAINT NAME prompt, enter a constraint name and press RETURN. If you press RETURN in this field without entering a constraint name, DB-Access assigns a temporary constraint name. The database server assigns a permanent name to the constraint when the constraint is created.
 2. At the ADD COLUMN NAME prompt, enter the name of the *referencing* column and press RETURN to add it.
 3. At the ADD REFERENCED TABLE prompt, enter the name of the *referenced table* and press RETURN.
 4. At the second ADD COLUMN NAME prompt, enter the name of the *referenced column* and press RETURN.
 5. When the CD (Cascading Deletes) field is the current field, the ADD ENABLE CASCADING DELETES menu ([Figure 5-37 on page 5-35](#)) appears.

```

ADD ENABLE CASCADING DELETES mytab3:  No  Yes
No, I do not want cascading deletes.

----- Page 1 of 1 -----mydata@mydbserv----- Press CTRL-W for Help -----

Constraint Referencing Column Referenced Table Referenced Column CD
cons1      col1                yourtab          col6                N

```

Figure 5-37
The
ADD ENABLE
CASCADING
DELETES
Menu

Select **Yes** to enable cascading deletes. The deletion of a referenced (parent) record also deletes all corresponding referencing (child) records. (Option **Yes** is equivalent to the **ON DELETE CASCADE** option of the **REFERENCES** clause in the **CREATE TABLE** statement.)

Select **No** to prevent cascading deletes. A referenced (parent) column cannot be deleted if referencing (child) records exist.

For a detailed description of referential integrity and cascading deletes, see the **CREATE TABLE** statement in the [Informix Guide to SQL: Syntax](#).

When you complete the Cascading Deletes entry, the cursor returns to the Constraint field. Enter another constraint or press the Interrupt key to return to the top line of the FOREIGN KEY menu.

- Move your cursor to an existing constraint line and select the Modify option to change the contents of the line. You can modify Constraint, Referencing Column, and Referenced Table information.

Change the entry for the field and press RETURN to modify it or press the Interrupt key if you do not want to modify a foreign constraint.

- The Drop option displays a list of foreign-key constraints and prompts you to select one to drop.

If the current (highlighted) field is Constraint, then the *entire* constraint is deleted. If any other field is highlighted, then only that referenced and referencing pair is dropped.

The default is **Yes**. Press RETURN to drop the highlighted constraint. Move the cursor to highlight **No** if you do not want to drop that constraint. You return to the FOREIGN KEY menu.

Defining Check Constraints

The CHECK CONSTRAINTS menu lets you add, modify, or drop a check constraint for the current table. Select the Check option on the CONSTRAINTS menu to access the CHECK CONSTRAINTS menu (Figure 5-38).

```

CHECK CONSTRAINTS mytab: Add Modify Drop Screen Exit
Add a check constraint.

-----mydata@mydbserv----- Press CTRL-W for Help -----

Constraint Name      Value
-----
cons2                (column1 > (c ...
cons3                column2 < col ...
cons4                column3 > 100
    
```

Figure 5-38
The CHECK
CONSTRAINTS
Menu

The CHECK CONSTRAINTS menu displays any previously added check constraints. The first 36 characters of the check value appear on the CHECK CONSTRAINTS menu. Use the CHECK CONSTRAINTS menu options as follows:

- The Drop option lets you drop the current check constraint. The default is Yes. Press RETURN to drop the highlighted constraint. Move the cursor to highlight No and then press RETURN if you do not want to drop that constraint. You return to the CHECK CONSTRAINTS menu.
- Select the Add option to add a check constraint for the table and enter the name and value of the constraint.
 1. At the ADD (or MODIFY) CONSTRAINT NAME prompt, enter a name or press RETURN. If you press RETURN in this field without specifying a value, a temporary constraint name is assigned, and it exists until the table is built or discarded.
 2. From the ADD (or MODIFY) CHECK VALUE menu that [Figure 5-39 on page 5-37](#) shows, select the SQL editor or specify another editor to enter the check-constraint value.

```
ADD CHECK VALUE cons99: [New] Modify Use-editor Exit
Enter a new check value using the SQL editor.
```

```
-----mydata@mydbserv----- Press CTRL-W for Help -----
```

Figure 5-39
The ADD CHECK
VALUE Menu

The ADD CHECK VALUE menu has the following options.

Option	Purpose
New	Displays the blank SQL editor screen so that you can enter a new check value
Modify	Displays the current check value on the SQL editor screen so that you can modify the value
Use-editor	Displays the current check value in the system editor so that you can modify the value
Exit	Returns to the CHECK CONSTRAINTS menu

If you break from the ADD CHECK VALUE menu or exit without defining the check value, you return to the CHECK CONSTRAINTS menu. If you defined the check value, you remain in add mode, a new line is inserted, the Constraint Name is the current field, and the ADD CONSTRAINT NAME prompt appears.

Defining Unique Constraints

The UNIQUE CONSTRAINTS menu shown in Figure 5-40 lets you add, modify, or drop a unique constraint for the current table. To access the UNIQUE CONSTRAINTS menu, select the Unique option on the CONSTRAINTS menu.

```

UNIQUE CONSTRAINTS mytab:  Add  Modify  Drop  Screen  Exit
Add a unique constraint.

-----mydata@mydbserv----- Press CTRL-W for Help -----

Constraint Name  Column Name
cons2           column1
                column2
                column3
cons3           column4
    
```

Figure 5-40
The UNIQUE
CONSTRAINTS
Menu

Use the UNIQUE CONSTRAINTS menu options as follows:

- Select Screen to display the next screen of unique constraints.
- If you select the Add option, the schema editor adds a new line.
 1. At the ADD CONSTRAINT NAME prompt, enter a constraint name. If you press RETURN in this field without entering a name, a temporary constraint name is assigned, which exists until the table is built or discarded.
 2. At the ADD COLUMN NAME prompt, enter the name of the column that should have a unique value. Press RETURN. A new line is added, and the Column Name is still the current field.
- The Modify option lets you modify either the Constraint Name or Column Name field. If you modify the Constraint Name field, the MODIFY CONSTRAINT NAME prompt appears. If you modify the Column Name field, the MODIFY COLUMN NAME prompt appears.
- Select the Drop option to drop the constraint or column name where the highlight is located.

If you drop a constraint name, all column names associated with that constraint name are also dropped.



Important: You cannot modify unique constraints after you create them. To identify the unique constraints listed on the `UNIQUE CONSTRAINTS` menu, use an asterisk (*) before the constraint name. If you try to modify a unique constraint using the `Modify` option in the `UNIQUE CONSTRAINTS` menu, an error occurs.

Data Validation

When you enter a unique constraint, DB-Access validates your entry by verifying the following information:

- The column name exists.
- The column name is not repeated.
- No more than 16 column names are present in one constraint.
- The column is not assigned the `BYTE` or `TEXT` data type.

Defining Default Values

Use the `DEFAULTS` menu shown in Figure 5-41 to define default values for columns in a table. To access the `DEFAULTS` menu, select the `Defaults` option on the `CONSTRAINTS` menu.

```

DEFAULTS mytab: [Add] Modify Drop Screen Exit
Add a column default.

-----Page 1 of 1 -----mydata@mydbserv----- Press CTRL-W for Help -----

Column Name  Type   Value
column1      User
column3      Null
column5      Today
column6      Current (Fraction to Fraction (5))
column7      Literal
column8      Literal 1200

```

Figure 5-41
The
`DEFAULTS`
Menu

The DEFAULTS menu has the following options.

Option	Purpose
Add	Adds a column default value of the appropriate data type
Modify	Lists an existing default name, data type, and value so that you can change the default attributes
Drop	Deletes a column default
Screen	Displays the next screen of defaults
Exit	Returns to the CONSTRAINTS menu

You can see the first 28 characters of the value.

To add a column default

1. Select the Add option.
The schema editor inserts a new line at the top of the list and makes the Column Name the current field.
2. At the ADD COLUMN NAME prompt, enter a value for the column name.
3. From the ADD DEFAULT TYPE menu shown in Figure 5-42, define the default value of a column in the current table.

Figure 5-42
The ADD DEFAULT TYPE Menu

```
ADD DEFAULT TYPE mytab: [Literal] User Current Null Today Db-server-name Site-name
Assign a literal value using either the SQL editor or a system editor.
-----mydata@mydbserv----- Press CTRL-W for Help -----
```

The ADD DEFAULT TYPE menu has the following options that let you assign default values to the column.

Option	Default Value Assigned
Literal	A literal default value entered either in the SQL editor or a user-specified system editor
User	The login name of the current user
Current	The current system clock time of day
Null	Null
Today	The current system date
Db-server-name	The current database server name
Site-name	The current site name

- If you select User, Null, Today, Db-server-name, or Site-name, the system assigns that value to the default type and returns you to the DEFAULTS menu in add mode.
- If you select Current as the default value, the qualifier is taken from the column definition.
- If you enter a default value and the type is DATETIME or INTERVAL, enter only the value. The qualifier comes from the column definition.
- If you select Literal as the default type, the ADD DEFAULT VALUE menu appears, which lets you assign a literal as the default value.

The ADD DEFAULT VALUE menu lets you add or modify the default value for a column in the current table with either the SQL editor or a system editor, as Figure 5-43 shows.

```

ADD DEFAULT VALUE column7: [New] Modify Use-editor Exit
Enter a new default value using the SQL editor.

-----mydata@mydbserv----- Press CTRL-W for Help -----
    
```

Figure 5-43
The ADD DEFAULT VALUE Menu

The ADD DEFAULT VALUE menu displays the following options.

Option	Purpose
New	Displays the blank SQL editor screen so that you can enter a new value
Modify	Displays the current default on the SQL editor screen so that you can modify the default value
Use-editor	Displays the current default in the system editor so that you can modify the current value
Exit	Returns to the ADD DEFAULT VALUE menu

To modify the column name, type, or value field

1. Select the Modify option to modify the Column Name, Type, or Value field where the highlight is located.
2. If you highlight a value, the MODIFY DEFAULT VALUE menu prompts you to invoke the SQL editor or the system editor so that you can type over or modify the existing default value.

Data Validation

When you enter a default value, DB-Access validates your entry. The database server validates the literal value and checks the following information:

- The column name must exist.
- The column type cannot be SERIAL.
- If the column does not allow nulls, you cannot specify the default type as Null.
- You can use the default type Current only with a DATETIME column type.
- You can use the default type Db-server-name only with a column type of CHAR, NCHAR, VARCHAR, or NVARCHAR, which has a minimum length of 18 characters.

- You can use the default type Site-name only with a column type of CHAR, NCHAR, VARCHAR, or NVARCHAR, which has a minimum length of 18 characters.
- You can use the default type Today only with a column type of DATE.
- You can use the default type User only with a column type of CHAR, NCHAR, VARCHAR, or NVARCHAR, which has a minimum length of 8 characters.

Displaying Table Information

Use the Info option on the TABLE menu to display information about columns, indexes, access privileges, reference privileges, constraints (referential, check, or unique), column default values, triggers, status, and fragmentation strategy of a table.

Select the Info option on the TABLE menu, and DB-Access displays the INFO FOR TABLE screen, as Figure 5-44 shows.

```
INFO FOR TABLE >>
Choose a table with the Arrow Keys, or enter a name, then press Return.
----- mydata@mydbserv ----- Press CTRL-W for Help -----
clients
customer
orders
```

Figure 5-44
The
INFO FOR TABLE
Screen

GLS

This screen lists the names of tables that exist in the current database. Note the following items:

- If you are not the owner of a table, the table name is prefixed by the owner name, as in **'june'.clients**.
- If the list of tables does not fit on one screen, the last entry is an ellipsis (...). Use the arrow keys to highlight the ellipsis, and the next page of table names appears.
- If Global Language Support is enabled, the list of table names is sorted according to the database collation rules defined when the database was created. Thus, different users using different collating sequences for DB-Access see the table names in the database listed in the same order. ♦

To request information about tables on a different database server, use the format `database@server:table` or `database@server:owner.table` at the prompt. The following example requests information on the **customer** table that **dba** created in the **accounts** database on the database server **topend**:

```
INFO FOR TABLE >> accounts@topend:dba.customer
```

To leave the INFO FOR TABLE screen without requesting table information, press the Interrupt key. You return to the TABLE menu.

You can select a table in one of the following ways:

- Type the table name and press RETURN.
You must use this method and include the full pathname if you want information on a table that is not in the current database.
- Use the arrow keys to highlight the table name that you want and press RETURN.

For example, for the **customer** table, type **customer** or highlight it with an arrow key and press RETURN. The INFO menu appears, with **customer** in the top line, as Figure 5-45 and Figure 5-46 show.

```
INFO - customer: Columns Indexes Privileges References Status ...
Display column names and data types for a table.

----- mydata@mydbserv ----- Press CTRL-W for Help -----
```

Figure 5-45
The INFO Menu for
Displaying Table
Information
(First Screen)

```
INFO - customer:[] ... cOnstraints triGgers Table Fragments Exit
Reference menu and primary, unique, check and defaults options.

----- mydata@mydbserv ----- Press CTRL-W for Help -----
```

Figure 5-46
The INFO Menu for
Displaying Table
Information
(Second Screen)

The INFO menu has the following options.

Option	Purpose	Instructions
Columns	Lists data type by column name and indicates which columns can contain a null value	See “Column Information” on page 5-46.
Indexes	Describes each index defined for a specified table	See “Displaying Index Information” on page 5-50.
Privileges	Lists the users who have Select, Update, Insert, Delete, Index, or Alter privileges for the specified table	See “Displaying Table-Level Privileges” on page 5-51.
References	Lists the users who have the table-level References privilege for the specified table and the names of the columns they can reference	See “Displaying References Privileges” on page 5-52.
Status	Lists the current table’s name and owner, row size, number of rows and columns, and creation date	No further instructions are needed.
cOnstraints	Displays the referential, primary, unique, and check constraints, as well as the default values for the columns in the specified table	See “Displaying Column Constraints and Defaults” on page 5-53.
triGgers	Displays header and body information for a specified trigger	See “Displaying Triggers” on page 5-55.

(1 of 2)

Option	Purpose	Instructions
Table	Redisplays the INFO FOR TABLE menu so that you can select a different table for examination.	No further instructions are needed.
Fragments	Lists fragmented dbspaces assigned to the table and, for expression-based fragmentation, displays the expression assigned to each dbspace	See “Displaying Fragmentation Information” on page 5-57.
Exit	Returns to the TABLE menu	No further instructions are needed.

(2 of 2)



Tip: From the CREATE TABLE menu, use Table-options to view extent and lock mode information or issue a SELECT statement to list the table description in the **sytables** system catalog table.

Column Information

Use the Columns option on the INFO menu to display the following information for each column of the specified table: the name of the column, the data type of the column, and whether null values are allowed in the column.

Figure 5-47 shows the kind of information that you see when you select the Columns option for the **cust_calls** table.

Column name	Type	Nulls
customer_num	INTEGER	no
call_dtime	DATETIME YEAR TO MINUTE	yes
user_id	CHAR(18)	yes
call_code	CHAR(1)	yes
call_descr	CHAR(240)	yes
res_dtime	DATETIME YEAR TO MINUTE	yes
res_descr	CHAR(240)	yes

Figure 5-47
Displaying Column Information for the **cust_calls** Table

DB-Access Data Types

The columns in Figure 5-47 show that the **cust_calls** table consists of all built-in (standard) data types. The data types available through the CREATE TABLE menu hierarchy are built-in types.

The built-in types that the Columns option can display are BOOLEAN, BYTE, CHAR, CHARACTER VARYING, DATE, DATETIME, DECIMAL, FLOAT, INT8, INTEGER, INTERVAL, MONEY, NCHAR, NVARCHAR, SERIAL, SERIAL8, SMALL-FLOAT, SMALLINT, TEXT, VARCHAR, and user-defined types.

For descriptions of these data types, see the [Informix Guide to SQL: Reference](#).

Figure 5-48 shows the display of column information for a table that has BOOLEAN, INT8, and SERIAL8 columns as well as other built-in data types.

Column name	Type	Nulls
id_num	integer	yes
yes_or_no	boolean	yes
int8col	int8	yes
serial8col	serial8	yes
text_descr	char(20)	yes

Figure 5-48
Displaying Column
Information for a
Table with Several
Built-in Types

Large Objects

Large objects are built-in data types that store a large amount of data in a single column. Within a table, large-object data type columns actually contain pointers to the *physical* storage spaces where the database server places the large data objects.

DB-Access can display any of the following large-object data types:

- TEXT, BYTE
- CLOB, BLOB ♦

UD

The Columns option displays (in lowercase characters) the specific data type for any column that contains pointers to large objects. Figure 5-49 shows the display of column information for a table that has a BYTE column.

Column name	Type	Nulls
id	integer	yes
binary_col	byte	yes

Figure 5-49
Displaying Column Information for a BLOB Column

UD

Extended Data Types on Dynamic Server with UD Option

This section shows how DB-Access displays user-defined and complex data types for Dynamic Server with UD Option.

Opaque Data Types

An opaque data type characterizes data that cannot be represented by any of the built-in types that belong to the database server. DB-Access can identify and display opaque data types.

For example, suppose you assign an opaque data type called **circle_t** to a column named **circle_col**. The Columns option displays the opaque data type name in the **Type** column, as Figure 5-50 shows.

Column name	Type	Nulls
id	integer	yes
circle_col	circle_t	yes

Figure 5-50
Displaying Information for a Column with an Opaque Data Type

Collection Types

A collection type contains zero or more elements and is more specifically defined with one of the following data type names.

Data Type	Characteristics
SET	An unordered collection of elements in which duplicates are not allowed
MULTISET	An unordered collection of elements in which duplicates are allowed
LIST	An ordered collection of elements in which duplicates are allowed

DB-Access displays the specific kind of collection type in the **Type** column. For example, Figure 5-51 shows the display of a SET data type column named **siblings**.

Column name	Type	Nulls
id	integer	yes
siblings	set	yes

Figure 5-51
Displaying
Information for a
Column with a
Collection
Data Type

Row Types

The Columns option for a table that includes a column with a row type displays the string `Row` in the **Type** column. DB-Access displays this string whether the column has a named or unnamed row type. Assume you define row type **rectangle_t** and assign it to column **rect**. Figure 5-52 shows that the Columns display for **rect** returns `row` rather than the specific row-type name **rectangle_t** as the data type.

Column name	Type	Nulls
id	integer	yes
rect	row	yes

Figure 5-52
Column
Information for a
Row Data Type

Displaying Index Information

Figure 5-53 shows the kind of information that you see when you select the **Indexes** option for the **cust_calls** table. The **c_num_dt_ix** index is a B-tree index defined on two columns of the **cust_calls** table. The **c_num_cus_ix** index is a B-tree index defined on a single column of the **cust_calls** table.

Figure 5-53
Display of Index Information

Index name	Owner	Type/Clstr	Access Method	Columns
c_num_dt_ix	velma	unique/No	B-Tree	customer_num call_dtime
c_num_cus_ix	velma	dupls/No	B-Tree	customer_num

The following table shows the meaning of each column in the display.

Display Column	Description
Index Name	The name of the index
Owner	The owner of the index
Type	The index type (unique or duplicate)
Clstr	Indicates whether the index is clustered. (A clustered index causes the table to be physically reordered in the same sequence as the index.)
Access Method	The index access method (such as B-tree or functional)
Columns	The column or columns on which the index is defined

For further information about the types of indexes available on your database server, see your [Performance Guide](#).

UD

You can display information for non-B-tree indexes, including indexes based on user-defined secondary access methods that Dynamic Server with UD Option permits. For example, the index that Figure 5-54 shows is based on a `Fulltext` access method that a DataBlade module provides.

*Figure 5-54
Display of Information for a DataBlade Module Index*

Index name	Owner	Type/Clstr	Access Method	Columns
text_idx	wilma	dupls/No	Fulltext	zone_descr

For information about user-defined access methods, refer to your DataBlade documentation or the documentation for the access method. ♦

Displaying Table-Level Privileges

Figure 5-55 shows the kind of table-level access-privileges information that you see when you select the Privileges option for the `cust_calls` table.

User	Select	Update	Insert	Delete	Index	Alter
public	All	All	Yes	Yes	Yes	No

*Figure 5-55
Display of Privileges
Information*

Unless your login is listed separately, you have the privileges given for **public** (a general category for all users).

If you want information about database-level privileges, use a `SELECT` statement to access the `sysusers` system catalog table.

Displaying References Privileges

Figure 5-56 shows the kind of information that you see when you select the References option for a table that has referential integrity.

User	Column References
betty	col1
	col2
	col3
wilma	All
public	None

Figure 5-56
*Display of
References
Information*

This display indicates the following table-level references privileges:

- The user **betty** can reference columns col1, col2, and col3 of the specified table.
- The user **wilma** can reference all the columns in the table.
- Users covered only by privileges granted to **public** cannot access any columns in the table.

Displaying Column Constraints and Defaults

When you select the cOnstraints option from the INFO menu, the CONSTRAINTS menu appears, as Figure 5-57 shows.

```
CONSTRAINTS - mytab: [Reference] Primary Check Unique Defaults Exit
Referenced and referencing options.

-----mydata@mydbserv----- Press CTRL-W for Help -----
```

Figure 5-57
The
CONSTRAINTS
Menu

You can select from the following options on the CONSTRAINTS menu.

Option	Purpose	Instructions
Reference	Shows referential (foreign-key) constraints associated with the specified table	See “ Displaying Referential Constraints. ”
Primary	Shows primary-key columns in the specified table	See Figure 5-61.
Check	Shows check constraints on columns in the specified table	See Figure 5-62.
Unique	Lists columns that must contain unique data	No further instructions are needed.
Defaults	Lists columns for which default values are defined and the default value	No further instructions are needed.
Exit	Returns to the INFO menu	No further instructions are needed.

Displaying Referential Constraints

When you select the Reference option from the CONSTRAINTS menu, the REFERENCE menu appears, as Figure 5-58 shows.

Figure 5-58
The REFERENCE Menu

```
REFERENCE - mytab: [Referencing] referenceD Exit
Display foreign key constraints.

-----mydata@mydbserv----- Press CTRL-W for Help -----
```

The REFERENCE menu lets you display the foreign-key (referencing) constraints and columns of the current table as well as whether cascading deletes are enabled. It also displays the referenced columns in which columns of another table reference columns in the current tables as foreign keys.

Select the Referencing option on the REFERENCE menu to display the foreign-key constraints in the current table, as Figure 5-59 shows.

Figure 5-59
The REFERENCE Menu with Referencing Information

```
REFERENCE - myacct: [Referenc] referenceD Exit
Display referential constraints.

-----sub_accounts -----Press CTRL-W for Help -----

Constraint Name   Referencing Column   Referenced Table   Referenced Column   CD
r107_13           ref_num              sub_accounts       acc_num              Y
                  ref_type                                acc_type
```

Select the referenceD option on the REFERENCE menu to display tables and their columns, which have foreign keys that reference the current table, as Figure 5-60 shows.

Figure 5-60
The REFERENCE Menu with Referenced Information

```
REFERENCE - myacct: [Referenc] [referenceD] Exit
Display columns which have foreign keys which reference this table.

-----accounts -----Press CTRL-W for Help -----

Constraint Name   Referenced Column   Referencing Table   Referencing Column   CD
r107_13           acc_num              sub_accounts       ref_acc              Y
                  acc_type                                ref_type
```

Select Exit to return to the CONSTRAINTS menu.

Sample Primary and Check Constraint Displays

Figure 5-61 shows the columns that form a primary key. This display results from selecting Primary from the CONSTRAINTS menu.

```

CONSTRAINTS - mytab:  References  Primary  Check  Unique  Defaults  Exit
Primary key constraints

-----mydata@mydbserv----- Press CTRL-W for Help -----

Constraint Name Column Name
constraint1      assembly
                  partnum
    
```

Figure 5-61
The
CONSTRAINTS
Menu with
Primary-Key
Constraint
Information

Select the Check option on the CONSTRAINTS menu to display the check constraints placed on columns of the current table, as Figure 5-62 shows.

```

CONSTRAINTS - mytab:  Reference  Primary  Check  Unique  Defaults  Exit
Display check constraints.

-----mydata@mydbserv----- Press CTRL-W for Help -----

Constraint name      Value
cons2                (column1 > (column2 * 100 - 1000 + column1 / 2 -
                    column2/20 + 40 * 3 - 55 * column2 + 77 * column1))
cons3                column2 > column3
cons4                column3 > 100
    
```

Figure 5-62
The
CONSTRAINTS
Menu with
Check-Constraint
Information

Displaying Triggers

When you select the triGgers option from the INFO menu, the INFO FOR TRIGGER screen appears, as Figure 5-63 shows.

```

INFO FOR TRIGGER>>
Choose a trigger with the Arrow Keys, or enter a name, then press Return.

-----mydata@mydbserv----- Press CTRL-W for Help -----


    
```

Figure 5-63
The
INFO FOR TRIGGER
Screen

Choose a trigger from the list of trigger names in the current table. If you do not want to choose a trigger, press the Interrupt key, and you return to the TABLE INFO menu.

If the header and body information for the selected trigger fit on one screen, the INFO menu reappears, displaying the trigger information, as Figure 5-64 shows.

```
INFO - updrec_t: [ ].... [trIGgers] Status Table Exit
Display header and body information for a trigger.

----- mystores@dbserver1 ----- Press CTRL-W for Help -----

create trigger updrec_t
      unit_price on stock
      referencing old as pre_upd
      new as post_upd

(insert into log_record values (stock_num, CURRENT,
pre_upd.unit_price, post_upd.unit_price)) for each row;
```

Figure 5-64
Display of Trigger Information on the INFO Menu

As Figure 5-64 shows, the header information for a trigger consists of the CREATE TRIGGER statement and trigger name, the SQL statement that triggers an event, and the referencing clause. The body of a trigger is the triggered action. In Figure 5-64, the triggered action is the INSERT statement.

If the trigger does not fit on a single INFO menu screen, use the menu at the top of the screen as follows:

- Press N, or if the Next option is highlighted, press RETURN to advance to the next screen of trigger information. Continue to press N or RETURN as needed to page through the information.
- Select Restart at any time to display the trigger information from the beginning.
- Select Exit to return to the TABLE menu.

AD/XP

Dynamic Server with AD and XP Options does not support triggers. ♦

Displaying Fragmentation Information

Figure 5-65 shows the kind of information that you see when you select the Fragments option for an indexed table created with a round-robin fragmentation strategy.

Figure 5-65
Fragmentation Information where Round-Robin Strategy Applies to Both Table and Index

Idx/Tbl Name	DbSPACE	Type	Expression
cust	dbSPACE1	T	
cust	dbSPACE2	T	
cust	rootDBS	T	
cust	dbSPACE1	I	
cust	dbSPACE2	I	
cust	rootDBS	I	

UD

Idx/Tbl Name shows the object that was explicitly fragmented.

If you use Dynamic Server with UD Option, the display includes a **Type** column to indicate whether the fragment on the line is part of an index or the table data. In Figure 5-65, the **cust** table was created with round-robin strategy, but the index was created without specifying a strategy. In this case, the indexes are located in default dbSPACES. ♦

Suppose the following statement is used to apply a fragmentation strategy while creating an index:

```
create index idx on cust(custnum) fragment by expression
  custnum < 200 in dbSPACE1,
  custnum > 200 in dbSPACE2,
  remainder in rootDBS;
```

In this case, the fragmentation display looks like [Figure 5-66 on page 5-58](#).

Dropping a Table

Idx/Tbl Name	Dbpace	Type	Expression
cust	dbspace1	T	
cust	dbspace2	T	
cust	rootdbs	T	
idx	dbspace1	I	(custnum < 200)
idx	dbspace2	I	(custnum > 200)
idx	rootdbs	I	remainder

Figure 5-66
*Fragmentation
Information Where
Table and Index
Have Different
Strategies*

Idx/Tbl Name shows the index name because the fragmentation was explicitly applied to the index.

Dropping a Table

Use the Drop option on the TABLE menu to drop an existing table schema from the database. Press the D key, or highlight Drop and press RETURN. DB-Access displays the DROP TABLE screen, as Figure 5-67 shows.

```
DROP TABLE >> 
Enter the table name you wish to drop from the database.
----- mydata@mydbserv ----- Press CTRL-W for Help -----

customer
orders
```

Figure 5-67
*The
DROP TABLE
Screen*

This screen lists the names of tables that exist in the current database. You can drop a table in one of the following ways:

- Type the table name and press RETURN. You must use this method and include the full pathname if you want to drop a table that is not in the current database.
- Use the arrow keys to highlight the name of the table that you want to drop from the database and press RETURN.

To leave the DROP TABLE screen without dropping a table, press the Interrupt key. You return to the TABLE menu.

Warning: When you drop a table, all data in the table is deleted.

After you select a table to drop, DB-Access displays the CONFIRM menu, which asks for confirmation before it drops the table, as Figure 5-68 shows.

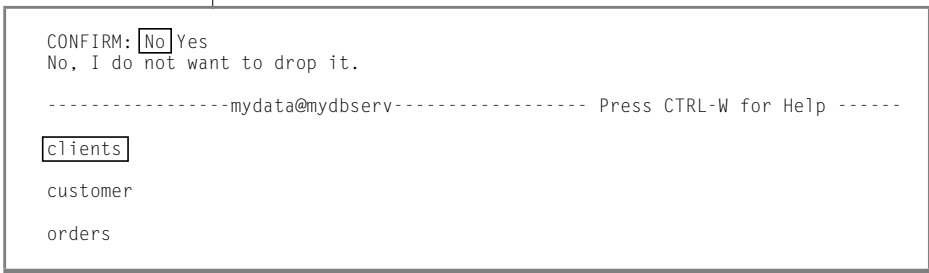


Figure 5-68
The
CONFIRM
Menu

The default is No to prevent you from dropping a table. You must explicitly drop a table. Thus, if you want to drop the highlighted table, press the Y key or use the right arrow key to highlight Yes and press RETURN. DB-Access drops the table.

The Connection and Session Options

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Implicit Closures	6-7
Disconnecting from a Database Environment	6-8
Choosing the Session Option	6-9

GLS

This chapter describes the Connection and Session options on the main menu.

Use the Connection option if you want to connect to a specific database server and database or explicitly disconnect from the current database environment. Use the Session option to display information about the current DB-Access session.

For the GLS considerations that apply to establishing a connection between a client application, such as DB-Access, and a database, see the *Informix Guide to GLS Functionality*. The database server examines the client locale information passed by the client, verifies the database locale, and determines the server-processing locale for transferring data between the client and the database. ♦

Choosing the Connection Option

From the main menu, press the C key (or highlight the Connection option and press RETURN) to display the CONNECTION menu (Figure 6-1).

```
CONNECTION: [C]onnect Disconnect Exit
Connect to a database environment.
----- Press CTRL-W for Help -----
```

Figure 6-1
The
CONNECTION
Menu

The CONNECTION menu displays the following options.

Option	Purpose	Instructions
Connect	Connects to a database environment	See “ Connecting to a Database Environment ”.
Disconnect	Disconnects from the current database environment	See “ Disconnecting from a Database Environment ” on page 6-8.
Exit	Returns to the DB-Access main menu	No additional instructions needed.

Connecting to a Database Environment

To connect to an existing database server, choose the Connect option from the CONNECTION menu. DB-Access displays a list of available database servers and prompts you to make a selection. Select a database server and DB-Access prompts you to enter a user name, as Figure 6-2 shows.

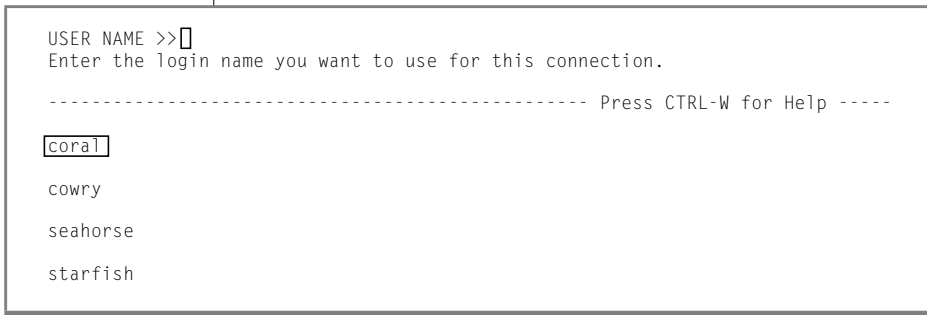


Figure 6-2
The USER NAME Prompt Screen

If you do not specify a user identifier on the USER NAME screen and press RETURN, you see the standard SELECT DATABASE screen listing databases on the chosen database server.

If you enter the login name that you want DB-Access to use when connecting to the target database server, DB-Access displays the PASSWORD screen (Figure 6-3).

```
PASSWORD >>
Enter the password associated with the user identifier.

----- Press CTRL-W for Help -----

coral
cowry
seahorse
starfish
```

Figure 6-3
The
PASSWORD
Prompt Screen

From the PASSWORD screen, enter a password associated with the user identifier or press RETURN if you do not want to enter a password. For security reasons, the password that you enter on the screen is not displayed.



Tip: If you press CTRL-C on the USER NAME screen, DB-Access might try to connect to the specified database server rather than interrupt the session. This situation occurs because pressing CTRL-C on this screen is the equivalent of using the current user name.

If the user identifier and password combination are valid, you connect to the target database server. You can then select a database from that database server. The SELECT DATABASE SERVER screen appears, as Figure 6-4 shows.

```
SELECT DATABASE SERVER>>
Select a server with the Arrow Keys, or enter a name, then press Return.

----- Press CTRL-W for Help -----

coral
cowry
seahorse
starfish
```

Figure 6-4
The SELECT
DATABASE SERVER
Screen

The SELECT DATABASE SERVER screen shows an alphabetical list of database servers, from the `$INFORMIXDIR/etc/sqlhosts` file on UNIX or the `sqlhosts` entry in the registry on Windows NT. The first entry is highlighted. Press RETURN to select that database server or select a different database server. If entries span more than one page, use the arrow keys to move the cursor to highlight the ellipses (...), and the next page of database servers appears.

Permissions Needed

To access a specific database, you must have permission. If you do not have permission to connect to the specified database server, an error message displays. Select a different database server for which you have permission or ask your database server administrator for permission to connect to the database server.

If you have the correct permissions for the specified database server, you are prompted to specify a database to use on that database server

When the SELECT DATABASE screen appears, the name of the specified database server is highlighted, as Figure 6-5 shows.

```
SELECT DATABASE >>
Select a database with the Arrow Keys, or enter a name, then press Return.
----- @coral ----- Press CTRL-W for Help -----
borabora@coral
huahine@coral
moorea@coral
```

Figure 6-5
The
SELECT DATABASE
Screen

The SELECT DATABASE screen alphabetically lists all available databases on the specified database server. The database list on the SELECT DATABASE screen depends on the current connection. For example:

- If no current connection exists or the current connection is an implicit default connection, all the databases listed in the `DBPATH` environment variable setting are displayed.
- If a current explicit connection exists, all the databases in the `DBPATH` that pertain to the current server are displayed.

For information on setting the **DBPATH** environment variable, see the [Informix Guide to SQL: Reference](#).

To select a database, type the database name or use the arrow keys to highlight the name of a database, then press RETURN.

If you enter the CONNECT menu with a current connection, and the new connection succeeds, DB-Access disconnects from the previous environment and closes any databases that belong to that environment. Refer to “[Implicit Closures](#).”

If you enter the name of a nonexistent database or a database that DB-Access cannot locate, DB-Access displays an error message.

To leave the SELECT DATABASE screen without selecting a database, press the Interrupt key. You return to the CONNECTION menu, but your database server connection is not severed.

Implicit Closures

DB-Access closes any open connections or databases when you connect to a new environment, under the following situations:

- When you connect to a new database environment without explicitly disconnecting from the current one, DB-Access performs an implicit disconnect and the database closes.
- When you connect to a database@server and then close the database, the database server remains connected.
- When you connect to a database server, open a database, and then close the database, the database server remains connected.
- If you open a database and then try to connect to a database server, DB-Access performs an implicit disconnect and closes the database. (Only one connection is allowed. You must disconnect from the database server associated with the open database or close the database before you can connect to another database server.)

If DB-Access needs to close a database that still has outstanding transactions, it prompts you to commit or rollback those transactions, as described in “[Transaction Processing](#)” on page 6-8.

Disconnecting from a Database Environment

To disconnect from the current database server and close the current database, choose the Disconnect option from the CONNECTION menu. The DISCONNECT confirmation menu appears, as Figure 6-6 shows.

```
DISCONNECT:  Yes No
Disconnect from the current database environment.
----- moorea@cora1 ----- Press CTRL-W for Help -----
```

Figure 6-6
The
DISCONNECT
Confirmation Menu

When you select the Disconnect option from the CONNECTION menu, you must confirm your decision on the DISCONNECT confirmation screen. The following two options are available:

- To confirm that you want to disconnect, press RETURN with the default Yes option highlighted. DB-Access disconnects from the database server and closes the database.
- If you do not want to disconnect, press the N key or use the right arrow key to highlight No, and press RETURN. DB-Access returns to the CONNECTION menu.

Transaction Processing

A database that has transaction logging prompts you to confirm or roll back any transactions when you explicitly disconnect from the current database environment or when you connect to another environment, which forces DB-Access to close an open database. The TRANSACTION menu appears, as Figure 6-7 shows.

```
TRANSACTION:  Commit Rollback
Commit the current transaction.
----- moorea@cora1 ----- Press CTRL-W for Help -----
```

Figure 6-7
The TRANSACTION
Menu for Databases
with Transactions

The TRANSACTION menu ensures that you either commit or roll back an active transaction before you close the current database. You have the following menu options:

- The default is Commit. Press RETURN, and DB-Access commits the transaction(s) and closes the database.
- If you want to roll back the transaction(s), use an arrow key to move the highlight to the Rollback option. Press RETURN and DB-Access rolls back the transaction(s) and closes the database.



Warning: Select an option carefully. You might commit transactions that you do not want if you select Commit. You will lose any new transactions if you select Rollback.

If you press the Interrupt key, DB-Access displays the DATABASE menu without committing or rolling back the transaction(s).

Choosing the Session Option

From the main menu, press the S key or highlight the Session option and press RETURN. The DB-Access main menu remains on the screen and information about the current DB-Access session appears. For example, Figure 6-8 shows the following information:

- The name of the database server for this session is **coral**.
- The database server type is Dynamic Server. This server type refers to all Informix database servers that are based on dynamic scalable architecture. For example, you would see Dynamic Server if you use Dynamic Server with UD Option.
- The server is connected to a host named **carrots**.
- The server is a multithreaded server.

```
DB-Access: [Query-language Connection Database Table] [Session] Exit
Retrieve information about the current DB-Access session.

----- @coral ----- Press CTRL-W for Help -----

Server
  coral
  OnLine
  Connected to host carrots
  Multi-threaded
```

Figure 6-8
Main Menu with Sample Session Information for a Dynamic Server with UD Option Instance

NLS

If you are running a legacy database that supports Native Language Support, the Session option shows the collating sequence and character type. ♦

GLS

The Session option does not display Global Language Support attributes, but you can use the method shown in [“Retrieving NonDefault Locale Information” on page 4-12](#) to obtain these settings. ♦

To exit from the Session information screen, select another option on the main menu.

How to Read On-Line Help for SQL Statements

This appendix shows the conventions that are used to represent the syntax of SQL statements in DB-Access on-line Help screens. You can request on-line help for SQL statements in either of the following ways:

- Highlight the New, Modify, or Use-editor options on the SQL menu and press CTRL-W.
- Press CTRL-W while you are on the NEW or MODIFY screens of the SQL menu.

The form of the syntax diagrams that appear when you request on-line Help for SQL statements in DB-Access is different from the syntax diagrams in the *Informix Guide to SQL: Syntax*.

The conventions and rules governing SQL statement syntax in DB-Access on-line Help screens are described in the following list.

ABC Any term in an SQL statement displayed in uppercase letters is a keyword. Type keywords exactly, disregarding case, as shown in the following example:

```
CREATE SYNONYM synonym-name
```

This syntax means you must enter the keywords `CREATE SYNONYM` or `create synonym` without adding or deleting spaces or letters.

abc Substitute a value for any term that appears in lowercase letters. In the previous example, you should substitute a value for *synonym-name*.

() Enter any parentheses as shown. They are part of the syntax of an SQL statement and are not special symbols.

[] Do not enter brackets as part of a statement. They surround any part of a statement that is optional. For example:

```
CREATE [TEMP] TABLE
```

This syntax indicates that you can enter either `CREATE TABLE` or `CREATE TEMP TABLE`.

| **The vertical bar indicates a choice among several options. For example:**

`[VANILLA | CHOCOLATE [MINT] | STRAWBERRY]`

This syntax means that you can enter either VANILLA, CHOCOLATE, or STRAWBERRY and that, if you enter CHOCOLATE, you can also enter MINT.

{ } **When you must choose only one of several options, the options are enclosed in braces and are separated by vertical bars. For example:**

`{GUAVA | MANGO | PASSIONFRUIT}`

This syntax means that you must enter either GUAVA, MANGO, or PASSIONFRUIT, but you cannot enter more than one choice.

... **An ellipsis indicates that you can enter an indefinite number of additional items, such as the one immediately preceding the ellipsis. For example:**

`old-column-name
...`

This syntax means that you can enter a series of existing column names after the first one.

The *[Informix Guide to SQL: Syntax](#)* contains more detailed syntax diagrams, as well as instructions for interpreting the diagram format used in that book.

For a general explanation of how to use on-line Help in DB-Access, see [“Using the HELP Screen” on page 2-9](#).

Demonstration SQL

This appendix shows the contents of the various command files that are available with DB-Access. These command files all have the extension **.sql** when displayed from the command line but appear without the extension on the SQL CHOOSE menu.

Keywords in these command files are shown in uppercase letters to make the SQL statements easier to read. Keywords in the actual command files are lowercase.



Important: *Although the command files are listed alphabetically in this appendix, you cannot execute the command files that create tables in that order without causing errors. The order in which the tables are created is very important because of the referential constraints that link those tables.*

When you select the Choose option on the SQL menu, the CHOOSE screen appears. It displays a list of the command files that you can access, similar to the display that [Figure B-1 on page B-2](#) shows.

Figure B-1
Command Files Listed on the CHOOSE Screen

```
CHOOSE >>
Choose a command file with the Arrow Keys, or enter a name, then press Return.

----- stores7@dbserver1 ----- Press CTRL-W for Help -----

alt_cat      c_state      d_trig       sel_ojoin1
c_calls      c_stock      d_view       sel_ojoin2
c_cat        c_stores     del_stock    sel_ojoin3
c_custom     c_table     ins_table    sel_ojoin4
c_index      c_trig       opt_disk     sel_order
c_items      c_type       sel_agg      sel_sub
c_manuf      c_view1     sel_all      sel_union
c_orders     c_view2     sel_group    upd_table
c_proc       d_proc       sel_join
```

If you do not see the command files included with your demonstration database, check the following:

1. Did you copy the demonstration SQL command files to your current directory when you ran the demonstration database initialization script? If not, you can rerun the initialization script to copy them.
2. Did you start DB-Access from the directory in which you installed the demonstration SQL command files? If not, exit DB-Access, change to the appropriate directory and start DB-Access again.

For instructions in running the initialization script, copying command files, and starting DB-Access, refer to [Chapter 1, “Getting Started with DB-Access.”](#)

Use these command files with DB-Access for practice with SQL and the demonstration database. You can rerun the demonstration database initialization script whenever you want to refresh the database tables and SQL files.

AD/XP

UD

SQL Files for the Relational Database Model

The SQL files described in this section are included with the **stores7** demonstration database and conform to the **stores7** schema. For more information about the **stores7** schema, refer to the [Informix Guide to SQL: Reference](#).

Dynamic Server with AD and XP Options and Dynamic Server with UD Option each include a demonstration database that has SQL files specifically designed to demonstrate the features unique to each product. You will still have some of the **stores7** files described in this section. The product-specific SQL command files are described in other sections of this appendix. ♦

alt_cat.sql

The following command file alters the **catalog** table. It drops the existing constraint **aa** on the **catalog** table and adds a new constraint, **ab**, which specifies cascading deletes. You can use this command file and then the **del_stock.sql** command file for practice with cascading deletes on a database with logging.

```
ALTER TABLE catalog DROP CONSTRAINT aa;

ALTER TABLE catalog ADD CONSTRAINT
(FOREIGN KEY (stock_num, manu_code) REFERENCES stock
ON DELETE CASCADE CONSTRAINT ab);
```

c_calls.sql

The following command file creates the **cust_calls** table:

```
CREATE TABLE cust_calls
(
  customer_num      INTEGER,
  call_dtime        DATETIME YEAR TO MINUTE,
  user_id           CHAR(18) DEFAULT USER,
  call_code         CHAR(1),
  call_descr        CHAR(240),
  res_dtime         DATETIME YEAR TO MINUTE,
  res_descr         CHAR(240),
  PRIMARY KEY(customer_num, call_dtime),
  FOREIGN KEY(customer_num) REFERENCES customer(customer_num),
  FOREIGN KEY(call_code) REFERENCES call_type(call_code)
);
```

c_cat.sql

The following command file creates the **catalog** table. It contains a constraint, **aa**, which allows you to practice with cascading deletes by running the SQL statements in the **alt_cat.sql** and **del_stock.sql** command files on a database with logging.

```
CREATE TABLE catalog
(
  catalog_num          SERIAL(10001),
  stock_num           SMALLINT NOT NULL,
  manu_code            CHAR(3) NOT NULL,
  cat_descr            TEXT,
  cat_picture          BYTE,
  cat_advert           VARCHAR(255, 65),
  PRIMARY KEY (catalog_num),
  FOREIGN KEY (stock_num, manu_code) REFERENCES stock
  CONSTRAINT aa
);
```

c_custom.sql

The following command file creates the **customer** table:

```
CREATE TABLE customer
(
  customer_num         SERIAL(101),
  fname                CHAR(15),
  lname                CHAR(15),
  company              CHAR(20),
  address1             CHAR(20),
  address2             CHAR(20),
  city                 CHAR(15),
  state                CHAR(2),
  zipcode              CHAR(5),
  phone                CHAR(18),
  PRIMARY KEY (customer_num)
);
```

c_index.sql

The following command file creates an index on the **zipcode** column of the **customer** table:

```
CREATE INDEX zip_ix ON customer (zipcode);
```


c_items.sql

The following command file creates the **items** table:

```
CREATE TABLE items
(
  item_num          SMALLINT,
  order_num         INTEGER,
  stock_num         SMALLINT NOT NULL,
  manu_code         CHAR(3) NOT NULL,
  quantity          SMALLINT CHECK (quantity >= 1),
  total_price       MONEY(8),
  PRIMARY KEY (item_num, order_num),
  FOREIGN KEY (order_num) REFERENCES orders (order_num),
  FOREIGN KEY (stock_num, manu_code) REFERENCES stock
    (stock_num, manu_code)
);
```

c_manuf.sql

The following command file creates the **manufact** table:

```
CREATE TABLE manufact
(
  manu_code         CHAR(3),
  manu_name         CHAR(15),
  lead_time         INTERVAL DAY(3) TO DAY,
  PRIMARY KEY (manu_code)
);
```

c_orders.sql

The following command file creates the **orders** table:

```
CREATE TABLE orders
(
  order_num         SERIAL(1001),
  order_date        DATE,
  customer_num      INTEGER NOT NULL,
  ship_instruct     CHAR(40),
  backlog           CHAR(1),
  po_num            CHAR(10),
  ship_date         DATE,
  ship_weight       DECIMAL(8,2),
  ship_charge       MONEY(6),
  paid_date         DATE,
  PRIMARY KEY (order_num),
  FOREIGN KEY (customer_num) REFERENCES customer (customer_num)
);
```

c_proc.sql

The following command file creates an SPL routine. It reads the full name and address of a customer and takes a last name as its only argument.

This routine shows the legacy use of CREATE PROCEDURE. To conform with the SQL standard preferred with Dynamic Server with UD Option, define a *function* if you want to return values from a routine. ♦

```
CREATE PROCEDURE read_address (lastname CHAR(15))
  RETURNING CHAR(15),CHAR(15),CHAR(20),CHAR(15),CHAR(2),CHAR(5);
DEFINE p_fname, p_city CHAR(15);
DEFINE p_add CHAR(20);
DEFINE p_state CHAR(2);
DEFINE p_zip CHAR(5);
SELECT fname, address1, city, state, zipcode
  INTO p_fname, p_add, p_city, p_state, p_zip
  FROM customer
  WHERE lname = lastname;

RETURN p_fname, lastname, p_add, p_city, p_state, p_zip;

END PROCEDURE;
```

c_state.sql

The following command file creates the **state** table:

```
CREATE TABLE state
(
  code          CHAR(2),
  sname        CHAR(15),
  PRIMARY KEY (code)
);
```

c_stock.sql

The following command file creates the **stock** table:

```
CREATE TABLE stock
(
  stock_num          SMALLINT,
  manu_code          CHAR(3),
  description         CHAR(15),
  unit_price         MONEY(6),
  unit               CHAR(4),
  unit_descr         CHAR(15),
  PRIMARY KEY (stock_num, manu_code),
  FOREIGN KEY (manu_code) REFERENCES manufact
);
```

c_stores.sql

The following command file creates the **stores7** database:

```
CREATE DATABASE stores7;
```

c_table.sql

The following command file creates a database named **restock** and then creates a custom table named **sports** in that database:

```
CREATE DATABASE restock;

CREATE TABLE sports
(
  catalog_no        SERIAL UNIQUE,
  stock_no          SMALLINT,
  mfg_code           CHAR(5),
  mfg_name           CHAR(20),
  phone              CHAR(18),
  descript           VARCHAR(255)
);
```

c_trig.sql

The following command file creates a table named **log_record** and then creates a trigger named **upqty_i**, which updates it:

```
CREATE TABLE log_record
  (item_num      SMALLINT,
   ord_num       INTEGER,
   username      CHARACTER(8),
   update_time   DATETIME YEAR TO MINUTE,
   old_qty       SMALLINT,
   new_qty       SMALLINT);

CREATE TRIGGER upqty_i
  UPDATE OF quantity ON items
  REFERENCING OLD AS pre_upd
              NEW AS post_upd
  FOR EACH ROW(INSERT INTO log_record
    VALUES (pre_upd.item_num, pre_upd.order_num, USER,
    CURRENT,
            pre_upd.quantity, post_upd.quantity));
```

AD/XP

Dynamic Server with AD and XP Options does not support triggers. ♦

c_type.sql

The following command file creates the **call_type** table:

```
CREATE TABLE call_type
  (
   call_code      CHAR(1),
   code_descr    CHAR(30),
   PRIMARY KEY (call_code)
  );
```

c_view1.sql

The following command file creates a view called **custview** on a single table and grants privileges on the view to **public**. It includes the **WITH CHECK OPTION** keywords to verify that any changes made to underlying tables through the view do not violate the definition of the view.

```
CREATE VIEW custview (firstname, lastname, company, city) AS
  SELECT fname, lname, company, city
     FROM customer
     WHERE city = 'Redwood City'
     WITH CHECK OPTION;

GRANT DELETE, INSERT, SELECT, UPDATE
  ON custview
  TO public;
```

c_view2.sql

The following command file creates a view on the **orders** and **items** tables:

```
CREATE VIEW someorders (custnum, ocustnum, newprice) AS
  SELECT orders.order_num, items.order_num,
         items.total_price*1.5
     FROM orders, items
     WHERE orders.order_num = items.order_num
     AND items.total_price > 100.00;
```

d_proc.sql

The following command file drops the SPL routine that the **c_proc.sql** command file created:

```
DROP PROCEDURE read_address;
```

d_trig.sql

The following command file drops the trigger that the **c_trig.sql** command file created:

```
DROP TRIGGER upqty_i;
```

d_view.sql

The following command file drops the view named **custview** that the **c_view1.sql** command file created:

```
DROP VIEW custview;
```

del_stock.sql

The following command file deletes rows from the **stock** table where the stock number is 102. This delete will cascade to the **catalog** table (although the related manufacturer codes will remain in the **manufact** table). The **del_stock.sql** command file can be used following the **alt_cat.sql** command file for practice with cascading deletes on a database with logging.

```
DELETE FROM stock WHERE stock_num = 102;
```

After running the SQL statements in the **alt_cat.sql** and **del_stock.sql** command files, issue the following query on the **catalog** table to verify that the rows were deleted:

```
SELECT * FROM catalog WHERE stock_num = 102;
```

The **stores7** database has been changed. You might want to rerun the **dbaccessdemo7** script to rebuild the original database.

ins_table.sql

The following command file inserts one row into the **sports** table that the **c_table.sql** command file created:

```
INSERT INTO sports
VALUES (0,18,'PARKR', 'Parker Products', '503-555-1212',
'Heavy-weight cotton canvas gi, designed for aikido or
judo but suitable for karate. Quilted top with side ties,
drawstring waist on pants. White with white belt.
Pre-washed for minimum shrinkage. Sizes 3-6.');
```

opt_disk.sql

The following command file provides an example of a SELECT statement on an optical-disc subsystem. It includes the read-only **family()** and **volume()** operators that support optical storage. (This is available only with Optical Subsystem.)

The query generates a list of the volumes that contain pictures of bicycle helmets. One row of output (family, volume) is generated for each data row that contains a picture of a bicycle helmet. The **family()** operator returns the name of the optical family where an optical blob column is stored, and **volume()** returns the number of the volume where an optical blob column is stored. These functions are valid only for data stored on optical media.

```
SELECT family(cat_picture), volume(cat_picture)
FROM catalog
WHERE stock_num = 110;
```

sel_agg.sql

The SELECT statement in the following command file queries on table data using aggregate functions. It combines the aggregate functions MAX and MIN in a single statement.

```
SELECT MAX (ship_charge), MIN (ship_charge)
FROM orders;
```

sel_all.sql

The following example command file contains all seven SELECT statement clauses that you can use in the Informix implementation of interactive SQL. This SELECT statement joins the **orders** and **items** tables. It also uses display labels, table aliases, and integers as column indicators; groups and orders the data; and puts the results into a temporary table.

```
SELECT o.order_num, SUM (i.total_price) price,  
       paid_date - order_date span  
FROM orders o, items i  
WHERE o.order_date > '01/01/90'  
      AND o.customer_num > 110  
      AND o.order_num = i.order_num  
GROUP BY 1, 3  
HAVING COUNT (*) < 5  
ORDER BY 3  
INTO TEMP temptabl;
```

sel_group.sql

The following example command file includes the GROUP BY and HAVING clauses. The HAVING clause usually complements a GROUP BY clause by applying one or more qualifying conditions to groups after they are formed, which is similar to the way the WHERE clause qualifies individual rows. (One advantage to using a HAVING clause is that you can include aggregates in the search condition; you cannot include aggregates in the search condition of a WHERE clause.)

Each HAVING clause compares one column or aggregate expression of the group with another aggregate expression of the group or with a constant. You can use the HAVING clause to place conditions on both column values and aggregate values in the group list.

```
SELECT order_num, COUNT(*) number, AVG (total_price) average  
FROM items  
GROUP BY order_num  
HAVING COUNT(*) > 2;
```


sel_join.sql

The following example command file uses a simple join on the **customer** and **cust_calls** tables. This query returns only those rows that show the customer has made a call to customer service.

```
SELECT c.customer_num, c.lname, c.company,
       c.phone, u.call_dtime, u.call_descr
FROM customer c, cust_calls u
WHERE c.customer_num = u.customer_num;
```

sel_ojoin1.sql

The following example command file uses a simple outer join on two tables. The use of the keyword **OUTER** in front of the **cust_calls** table makes it the subservient table. An outer join causes the query to return information on *all* customers, even if they do not make calls to customer service. All rows from the dominant **customer** table are retrieved, and null values are assigned to corresponding rows from the subservient **cust_calls** table.

```
SELECT c.customer_num, c.lname, c.company,
       c.phone, u.call_dtime, u.call_descr
FROM customer c, OUTER cust_calls u
WHERE c.customer_num = u.customer_num;
```

sel_ojoin2.sql

The following example command file creates an outer join, which is the result of a simple join to a third table. This second type of outer join is called a *nested simple join*.

This query first performs a simple join on the **orders** and **items** tables, retrieving information on all orders for items with a **manu_code** of **KAR** or **SHM**. It then performs an outer join, which combines this information with data from the dominant **customer** table. An optional **ORDER BY** clause reorganizes the data.

```
SELECT c.customer_num, c.lname, o.order_num,
       i.stock_num, i.manu_code, i.quantity
FROM customer c, OUTER (orders o, items i)
WHERE c.customer_num = o.customer_num
      AND o.order_num = i.order_num
      AND manu_code IN ('KAR', 'SHM')
ORDER BY lname;
```

sel_ojoin3.sql

The following example SELECT statement is the third type of outer join, known as a *nested outer join*. It queries on table data by creating an outer join, which is the result of an outer join to a third table.

This query first performs an outer join on the **orders** and **items** tables, retrieving information on all orders for items with a **manu_code** of KAR or SHM. It then performs an outer join, which combines this information with data from the dominant **customer** table. This query preserves order numbers that the previous example eliminated, returning rows for orders that do not contain items with either manufacturer code. An optional ORDER BY clause reorganizes the data.

```
SELECT c.customer_num, lname, o.order_num,
       stock_num, manu_code, quantity
FROM customer c, OUTER (orders o, OUTER items i)
WHERE c.customer_num = o.customer_num
      AND o.order_num = i.order_num
      AND manu_code IN ('KAR', 'SHM')
ORDER BY lname;
```

sel_ojoin4.sql

The following example queries on table data using the fourth type of outer join. This query shows an outer join, which is the result of an outer join of each of two tables to a third table. In this type of outer join, join relationships are possible *only* between the dominant table and subservient tables.

This query individually joins the subservient tables **orders** and **cust_calls** to the dominant **customer** table but does not join the two subservient tables. (An INTO TEMP clause selects the results into a temporary table.)

```
SELECT c.customer_num, lname, o.order_num,
       order_date, call_dtime
FROM customer c, OUTER orders o, OUTER cust_calls x
WHERE c.customer_num = o.customer_num
      AND c.customer_num = x.customer_num
INTO temp service;
```

sel_order.sql

The following example uses the ORDER BY and WHERE clauses to query. In this SELECT statement, the comparison 'bicycle%' (LIKE condition, or 'bicycle*' for a MATCHES condition) specifies the letters bicycle followed by any sequence of zero or more characters. It narrows the search further by adding another comparison condition that excludes a **manu_code** of PRC.

```
SELECT * FROM stock
      WHERE description LIKE 'bicycle%'
             AND manu_code NOT LIKE 'PRC'
      ORDER BY description, manu_code;
```

sel_sub.sql

The following example uses a subquery to query. This self-join uses a correlated subquery to retrieve and list the 10 highest-priced items ordered.

```
SELECT order_num, total_price
      FROM items a
      WHERE 10 >
             (SELECT COUNT (*)
              FROM items b
              WHERE b.total_price < a.total_price)
      ORDER BY total_price;
```

sel_union.sql

The following example uses the UNION clause to query on data in two tables. The compound query performs a union on the **stock_num** and **manu_code** columns in the **stock** and **items** tables. The statement selects items that have a unit price of less than \$25.00 or that have been ordered in quantities greater than three, and it lists their **stock_num** and **manu_code**.

```
SELECT DISTINCT stock_num, manu_code
      FROM stock
      WHERE unit_price < 25.00

UNION

SELECT stock_num, manu_code
      FROM items
      WHERE quantity > 3;
```

upd_table.sql

The following example updates the **sports** table that the **c_table.sql** command file created:

```
UPDATE sports
  SET phone = '808-555-1212'
  WHERE mfg_code = 'PARKR';
```

SQL Files for the Dimensional Database Model

The **sales_demo** database illustrates a dimensional schema for data-warehousing applications. This database model alters the **stores7** schema and data. The success of the files in this section requires two prerequisites:

- You must first create a **stores7** database with the following command:

```
dbaccessdemo7 -log
```
- The **createdw.sql** and **loaddw.sql** files must be in the same directory as the files with extension **.unl** that the **loaddw.sql** uses.

createdw.sql

This file creates the new **sales_demo** database with logging and then creates tables within that database. It contains the following statements:

```
create database sales_demo with log;

create table geography (
  district_code serial,
  district_name char(15),
  state_code char(2),
  state_name char(18),
  region smallint);
```

```
create table product (  
    product_code integer,  
    product_name char(31),  
    vendor_code char(3),  
    vendor_name char(15),  
    product_line_code smallint,  
    product_line_name char(15));  
  
create table customer (  
    customer_code integer,  
    customer_name char(31),  
    company_name char(20));  
  
create table sales (  
    customer_code integer,  
    district_code smallint,  
    time_code integer,  
    product_code integer,  
    units_sold smallint,  
    revenue money (8,2),  
    cost money (8,2),  
    net_profit money(8,2));  
  
create table time  
(  
    time_code int,  
    order_date date,  
    month_code smallint,  
    month_name char(10),  
    quarter_code smallint,  
    quarter_name char(10),  
    year integer  
);  
  
create table cost (  
    product_code integer,  
    manu_code char(3),  
    cost money(8,2));
```

loaddw.sql

This file contains the commands necessary to load data from two sources:

- The files with the extension **.unl** in your demonstration directory
- Data selected from the **stores7** database

These SQL statements in **loaddw.sql** accomplish these actions:

```
connect to "stores7";
load from 'add_orders.unl'
    insert into stores7:orders;
load from 'add_items.unl'
    insert into stores7:items;
```

```
connect to "sales_demo";
load from 'costs.unl'
    insert into cost;
load from 'time.unl'
    insert into time;
```

```
insert into geography(district_name, state_code, state_name)
    select distinct c.city, s.code, s.sname
from stores7:customer c, stores7:state s
    where c.state = s.code;
update geography-- converts state_code values to region
values
    set region = 1
    where state_code = "CA";
update geography
    set region = 2
    where state_code <> "CA";
```

```
insert into customer (customer_code, customer_name,
company_name)
    select c.customer_num, trim(c.fname) || " " || c.lname,
c.company
    from stores7:customer c;
```

```
insert into product (product_code, product_name, vendor_code,
                    vendor_name, product_line_code, product_line_name)
select a.catalog_num,
       trim(m.manu_name) || " " || s.description,
       m.manu_code, m.manu_name, s.stock_num, s.description
from stores7:catalog a, stores7:manufact m,
     stores7:stock s
where a.stock_num = s.stock_num and
      a.manu_code = s.manu_code and
      s.manu_code = m.manu_code;
```

```
insert into sales (customer_code, district_code,
                  time_code, product_code,
                  units_sold, revenue, cost, net_profit)
select c.customer_num, g.district_code, t.time_code,
       p.product_code,
       SUM(i.quantity), SUM(i.total_price),
       SUM(i.quantity * x.cost),
       SUM(i.total_price) - SUM(i.quantity * x.cost)
from stores7:customer c, geography g, time t, product p,
     stores7:items i, stores7:orders o, cost x
where c.customer_num = o.customer_num and
      o.order_num = i.order_num and
      p.product_line_code = i.stock_num and
      p.vendor_code = i.manu_code and
      t.order_date = o.order_date and
      p.product_code = x.product_code and
      c.city = g.district_name
GROUP BY 1,2,3,4;
```

User-Defined Routines for the Object-Relational Database Model

The **superstores** database does not replace the **stores7** database. Both databases are available. The **superstores** database schema is not backward compatible with **stores7**. In many cases, you cannot use test queries developed for **stores7** against the tables of **superstores** because the tables differ.

No SQL command files are associated specifically with **superstores**. However, there are user-defined routines that you can use with the screens described in [Chapter 3, “The Query-language Option.”](#)

The **superstores** database includes examples of the following new features:

- Collection types: SET, LIST
- Named row types: location_t, loc_us_t, loc_non_us_t
- Unnamed Row types
- Type and table inheritance
- Built-in data types: BOOLEAN, SERIAL8, INT8
- Distinct data type: percent
- Smart large objects: BLOB and CLOB

The **superstores** database has row types and tables to support the following table-inheritance hierarchies:

- customer/retail_customer
- customer/whlsale_customer
- location/location_us
- location/location_non_us

The following user-defined routines replace the INSERT statement as a means to update the **customer**, **location**, **retail_customer**, and **whlsale_customer** tables in an SQL command or SPL routine:

- new_non_us
- new_us
- new_retail
- new_wholesale

For a complete description of the **superstores** tables and inheritance hierarchies, refer to the documentation note file **DBACCD0C_9.1**.

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