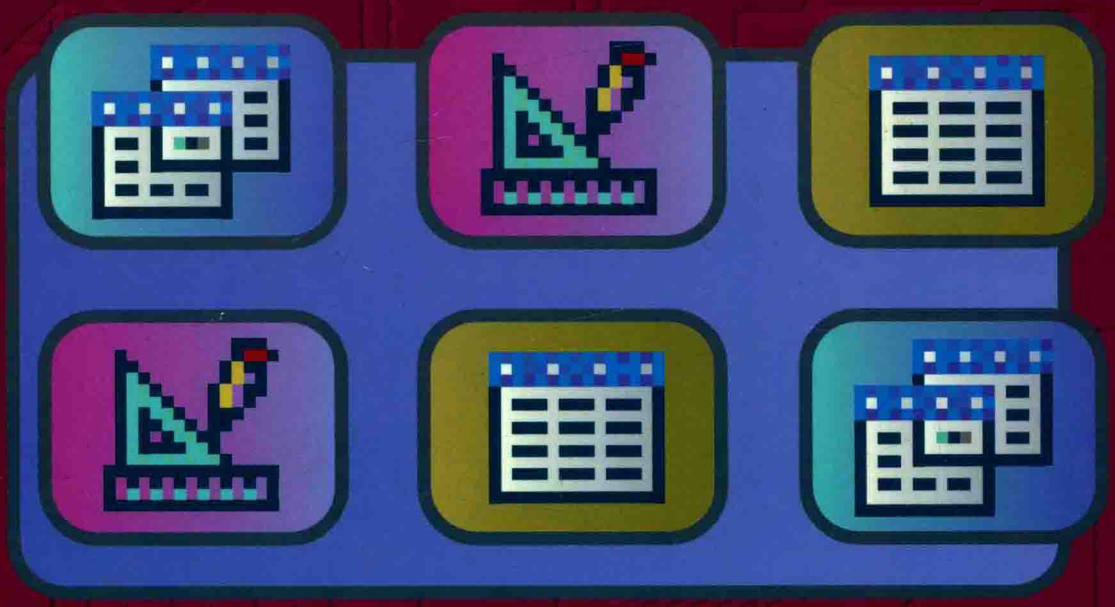
Microsoft Access 2.0 for Windows

Timothy J. O'Leary / Linda I. O'Leary



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OVERVIEW
Database

A word processor helps you enter and manipulate text. An electronic spreadsheet helps you enter and analyze numerical data. A computerized database helps you enter and manage information or data in record format.

Databases have been in existence for many years. Paper records organized in a filing cabinet by name or department are a database. The information in a telephone book, organized alphabetically, is a database. A school's records of teachers, classes, and students are collectively a database.

Before computers, most database records were kept on paper. With computers, the same data is entered and stored on a disk. The big difference is that an electronic database can manipulate—sort, analyze, and display—the data quickly and efficiently. What took hours of time to pull from the paper files can be extracted in a matter of seconds using a computerized database.

Definition of a Database

A *database* is an organized collection of related data that is stored in a file. The data is entered as a record that consists of several fields of data. Each record contains the same fields. For example, a school has a database of student records. Each record may contain the following fields of data: name, address, Social Security number, phone number, classes, and grades. All the records for each student in the school are stored in a file.

Some database programs only access and manipulate the data in a single file. Others allow the user to access and relate several files at one time. For example, the school may have a second database file containing data for each student's current class schedule. At the end of the semester the grades are posted in this file for each student. The data in one file can then be linked to the data in another file by using a common field, such as the student's name. The ability to link database files creates a relational database. Relational databases allow you to create smaller and more manageable database files, since you can combine and extract data between files.

The database program contains commands that allow the user to design the structure of the database records and enter the data for each record into the file. This is the physical storage of the data. How this data is retrieved, organized, and manipulated is the conceptual use of the data.

Advantages of Using a Database

A computerized database system does not save time by making the data quicker to enter. This, as in most programs, is a function of the typing speed of the user and his or her knowledge of the program.

One of the main advantages of using a computerized database system is the ability to quickly locate specific records. Once data is entered into the database file, you can quickly search the database to locate a specific record based on the data in a field. In a manual system, a record can usually be located by knowing one key piece of information. For example, if the records are stored in a file cabinet alphabetically by last name, to quickly find a record you must know the last name. In a computerized database, even if the records are sorted or organized by last name, you can still quickly locate a record using information in another field.

A computerized database also makes it easy to add and delete records from the file. Once a record is located, you can edit the contents of the fields to update the record or delete the record entirely from the file. You can also add new records to a file. When the record is entered, it is automatically placed in the correct organizational location within the file.

Another advantage of using a computerized database system is its ability to arrange the records in the file according to different fields of data. The records can be organized by name, department, pay, class, or whatever else is needed at a particular time. This ability to produce multiple file arrangements helps provide more meaningful information. The same records can provide information to different departments for different purposes.

A fourth advantage is the ability to perform calculations on different fields of data. Instead of pulling each record from a filing cabinet, recording the piece of data you want to use, and then calculating a record for the total field, you can simply have the database program sum all the values in the specified field. Additionally, you can instruct the program to select only certain records that meet specific conditions to be used in the calculations. Information that was once costly and time-consuming to get is now quickly and readily available.

Another advantage of database programs is the ability to quickly produce reports ranging from simple listings to complex, professional-looking reports. A simple report can be created by asking for a listing of specified fields of data and restricting the listing to records meeting specified conditions. A more complex professional report can be created using the same restrictions or conditions as the simple report. But the data can be displayed in different layout styles, and can display titles, headings, subtotals, and totals.

In manual systems, there are often several files containing some of the same data. A computerized database system can allow access by more than one department to the same data. Common updating of the data can be done by any department. The elimination of duplicate information saves both space and time.

Database Terminology

Delete: To remove a record from the database file.

Edit: To change or update the data in a field.

Field: A collection of related characters, such as last name.

File: A database of records.

Record: A collection of related fields, such as class time, class name, and grade.

Report: A listing of specified fields of data for specified records in the file.

Search: To locate a specific record in a file.

Sort: To arrange the records in a file in a specified order.

Case Study for Labs 1–4

As a recent college graduate, you have accepted your first job with The Sports Company, a chain of sporting goods stores located throughout the United States. The company has recently purchased Microsoft Access 2.0 for Windows and you have been assigned the job of updating their current recordkeeping system for employee records.

Lab 1 In the first lab you will learn how to design and create the structure for a computerized database and how to enter and edit records in the database. You will also print a simple report of the records you enter in the database file.

Lab 2 You will continue to build, modify, and use the employee database of records. You will learn how to sort the records in a database file to make it easier to locate records. Additionally, you will create a customized form to make it easier to enter and edit data in the database file.

Lab 3 In this lab you will learn how to query the database to locate specific information. Additionally, you will learn how to use and link multiple tables and calculated fields.

Lab 4 In this lab you will learn how to use Microsoft Access 2.0 for Windows to create weekly and monthly employee status reports. You will use multiple files to create several different reports. The reports will display selected fields of data for the records in the database. It will also include a report title, subgroupings of data, and descriptive text to clarify the meaning of the data in the report.

Before You Begin

The following assumptions have been made:

- Microsoft Access 2.0 for Windows has been properly installed on the hard disk of your computer system in the directory ACCESS, and the default program settings are in effect.
- The data disk contains the data files needed to complete the series of labs and practice exercises. These files should be on the root directory of your disk and are supplied by your instructor.
- The drive you are using for your data disk is drive A.
- You have completed the DOS and Windows labs or you are already familiar with basic DOS and Windows terminology and procedures.

This text uses the same instructional conventions as were used in the Windows manual.

Reminder: The command sequences you are to issue will appear on a single line following the word "Choose." Each command selection will be separated by a >. If the menu command can be selected by typing a letter of the command, the letter will appear bold and underlined. Anything you are to type will also appear in bold text. You can use either the keyboard or mouse to enter the commands. If there is a keyboard shortcut for the command, it will appear below the command preceded by a ➢ symbol. If there is a mouse alternative to the command, it will appear following the word "Click."

LAB

1 Creating a Database Using Access for Windows

CASE STUDY

As a recent college graduate, you have accepted your first job as a management trainee with The Sports Company. This company consists of a chain of sporting goods stores located in large metropolitan areas across the United States. The stores are warehouse oriented, discounting the retail price of most items 15%. They stock sporting goods products for all the major sports; basketball, football, tennis, aerobics, and so on.

Your training program emphasis is on computer applications related to retail management. You have been assigned to the Southwest regional office as an assistant to the Regional Manager. The company has recently purchased Microsoft Access version 2.0, a relational database system for Windows. Your primary responsibility is to use Access to update the current system of maintaining employee records.

In this lab you will learn how to design a database for the employee records and create the database table using Access for Windows.

Competencies

After completing this lab, you will know how to:

1. Load Access for Windows.
2. Plan and create a database.
3. Create and define a table.
4. Use Help.
5. Enter data.
6. Adjust column widths.
7. Use the data entry command.
8. Save and print a table.
9. Exit Access for Windows.

Loading Access for Windows

You must start Access for Windows from the Windows 3.1 (or higher) environment.

Start Windows. If necessary, refer to Lab 1 in your Windows tutorial for startup instructions or consult your instructor.

The Windows Program Manager should display the Microsoft Office or Microsoft Access program group icon.

Note: If your system is set up differently, your instructor will provide alternative instructions.

Double-click the Cue Card's control-menu box or press Alt + F4 to close the Cue Card window.

Open the Microsoft Office or Microsoft Access program group window. Choose the Microsoft Access application icon. Put your data disk in drive A (or the appropriate drive for your system).

An Access Cue Card entitled "Welcome to Microsoft Access 2.0" may be displayed while the computer loads the Access for Windows program into memory. Cue Cards provide help while you are using the program.

If necessary close the Cue Card.

Your screen should be similar to Figure 1-1.

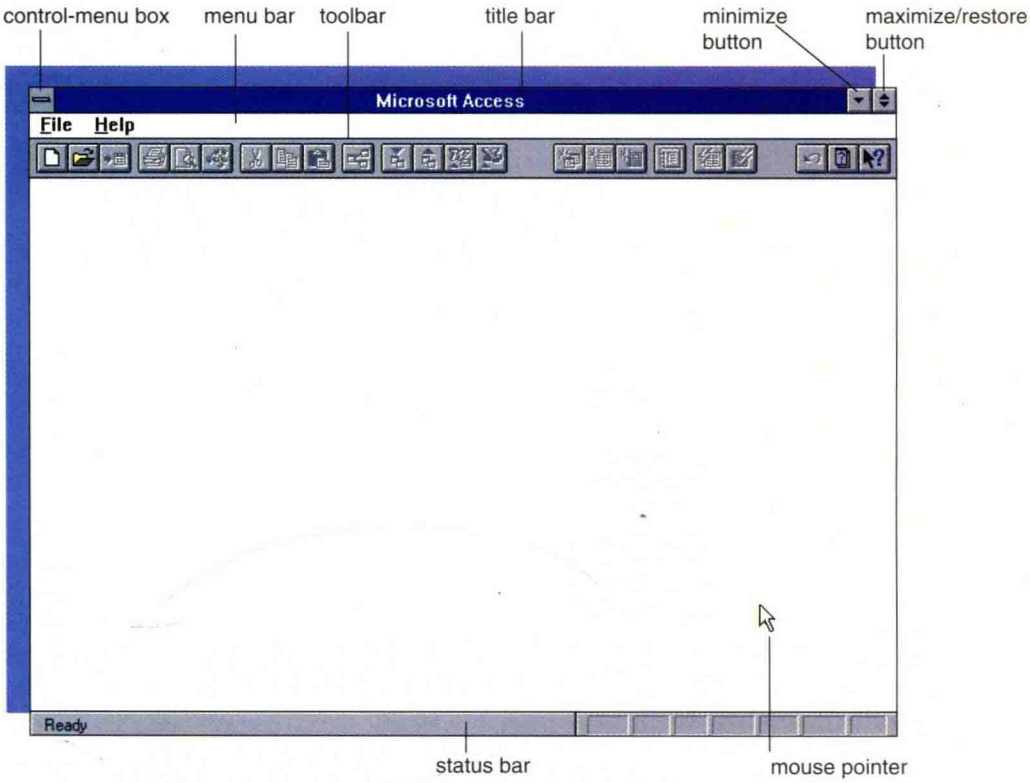

FIGURE 1-1

Exploring Access for Windows

Click the maximize button or choose Maximize from the control menu.

When you start the program, the Microsoft Access start-up window is displayed.

If necessary maximize the Access start-up window.

You start all tasks from this window. As you can see, many of the Access for Windows features are common to the Windows environment. Among those features are a title bar, menu bar, toolbar, control-menu boxes, minimize and maximize buttons, icons, and mouse compatibility. You can move and size Access windows, select commands, use Help, and switch between files and programs just like in Windows. Your knowledge of how to use Windows makes learning about and using Access for Windows much easier.

The **menu bar** contains only the menus that are available for this window. If a menu is not appropriate for a given task, it does not appear on the menu bar. Currently only two menus are available, File and Help.

In addition the window displays a **toolbar**. The toolbar contains buttons that represent common menu commands and faster methods for navigating through information in the database. The toolbar buttons can only be used if you have a mouse.

The center area of the window is where different Access windows will be displayed as you are using the program.

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The last line on the screen is the **status bar**. It provides information about the task you are working on and the current state of operation Access is using. Like the menu bar and toolbar, the information in the status bar changes as you work.

If you have a mouse attached to your computer, a mouse pointer (↖) is displayed on the screen.

If you do not have a mouse, skip to the next section, Planning a Database.

The mouse operates just as in Windows. Unless otherwise directed, you will always use the left mouse button when making selections.

Point to the first button in the toolbar.

In a few seconds, the button's name, "New Database," appears beneath the mouse pointer in a yellow box, and a brief description of that button's function is displayed in the status bar. The name and description are called a **Tool Tip**.

Drag the mouse slowly across the other toolbar buttons and read the description of each button. When you are done, move the mouse pointer to the center of the window.

Currently the toolbar displays many buttons, but only the first two, New Database and Open Database, and the last two, Cue Cards and Help, are currently available for use. All the other icons are dimmed, indicating they are unavailable.

The toolbar buttons can be used in place of many menu commands. You will learn about using the mouse specifically in Access for Windows throughout the labs.

If your mouse is set up for a left-handed user, the right mouse button is used.

Planning a Database

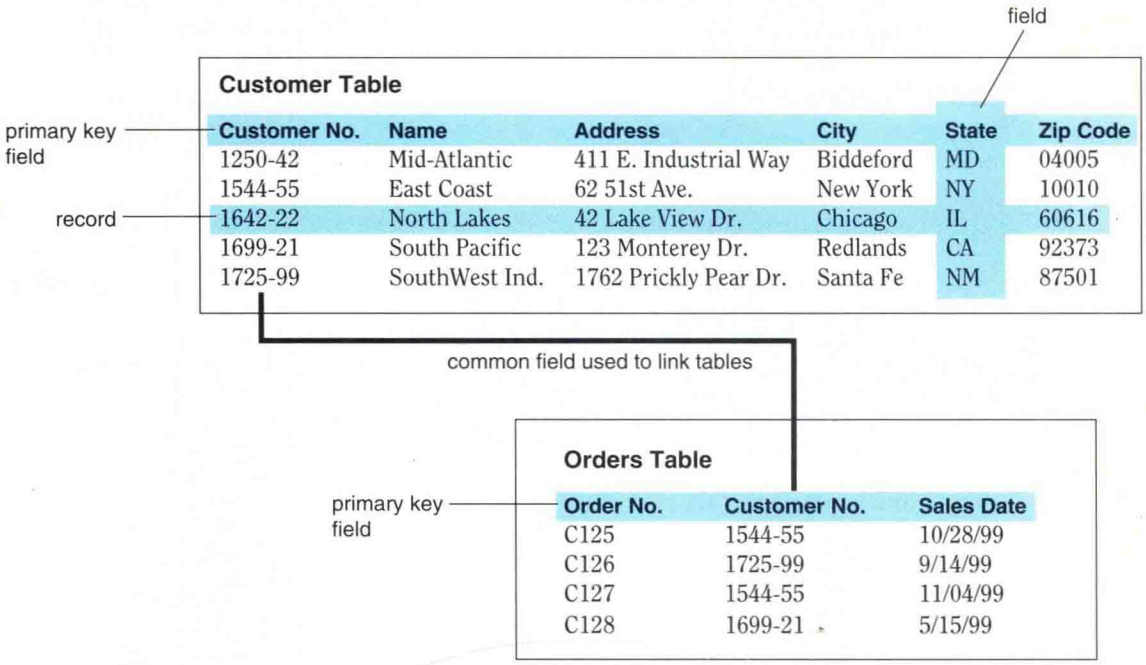
A **database** is an organized collection of information. For example, the information in your address book is a database. Access stores the information in tables. A **table** consists of vertical columns and horizontal rows of information. A row in a table contains data about an individual person, place, or thing. Each row is called a record. A **record** is a collection of related information, such as a person's name, address, and phone number.

Each piece of related information in a record is contained in a column. Each column is called a field. A **field** is a collection of related characters, such as a person's name. Most tables have at least one field that is selected as the **primary key** field. The data in the primary key field must be unique for each record and is used to control the order in which records are displayed in the table. For example, a table that contains the Social Security number for each employee could be selected as the primary key field because the data in that field is unique for each employee.

Access is a **relational database**. This means that you can define a relationship when you **join** tables. The relationship is created by having a common field in the tables. The common field lets you extract and combine data from multiple tables. You will learn more about relational databases in Lab 3.

A simple example of a database is shown on the next page. This database consists of two tables of data, a Customer table and an Orders table. The Customer table contains information about the customers, such as their names and addresses. It also contains a field called Customer No., which contains a number that uniquely

identifies each customer. This is the primary key field for this table. The Orders table contains data about the orders placed by each customer. The Order No. field in this table is the primary key field. The Customer No. field is the common field used to create a link between the two tables.



Customer No.	Name	Address	City	State	Zip Code
1250-42	Mid-Atlantic	411 E. Industrial Way	Biddeford	MD	04005
1544-55	East Coast	62 51st Ave.	New York	NY	10010
1642-22	North Lakes	42 Lake View Dr.	Chicago	IL	60616
1699-21	South Pacific	123 Monterey Dr.	Redlands	CA	92373
1725-99	SouthWest Ind.	1762 Prickly Pear Dr.	Santa Fe	NM	87501

Order No.	Customer No.	Sales Date
C125	1544-55	10/28/99
C126	1725-99	9/14/99
C127	1544-55	11/04/99
C128	1699-21	5/15/99

The Sports Company plans to use Access to maintain several different types of databases. The database you will create will contain information about each Sports Company employee. Other plans for using Access include keeping track of preferred customers and inventory. To keep the different types of files separated into different groups, a database for each group will be created.

Your first step is to plan the design of your database tables: how many tables, what data they will contain, and how they will be related. You need to decide what information each table in the employee database should contain and how it should be structured or laid out.

This information can be obtained by analyzing the current recordkeeping procedures used throughout the company. You need to understand the existing procedures so that your database tables reflect the information that is maintained by different departments. You should be aware of the forms that are the basis for the data entered into their records and of the information that is taken from their records to produce periodic reports. You also need to find out what information they would like to be able to obtain from the database that may be too difficult to generate using their current procedures.

After looking over the existing recordkeeping procedures and the reports that are created from the information, you decide to create several tables of data that have the employee number as the primary key field. Creating several smaller tables of related data rather than one large table makes it easier to use the tables and faster to process data. This is because you can join several tables together as needed.

You decide to include the data currently maintained in the personnel folder on each employee in one table. After having carefully considered the data currently maintained on each employee, you decide to include the following fields:

Employee #
Date Hired
Last Name
First Name
Street
City
State
Zip Code
Birth Date

Creating a Database

Now that you have decided on the fields of data you want to include in the table, you are ready to specify the characteristics of the table. The New Database command on the File menu is used to create a new database. As in Windows you choose commands by opening a menu and selecting commands from a pull-down menu.

If you have a mouse, simply click on the menu to open it and click on a command to choose it. If you are using the keyboard, press [Alt] or [F10] to activate the menu and then move the highlight to the command and press [↵Enter] or type the underlined letter of the menu or command to choose it.

Choose: File

The File pull-down menu consisting of 11 commands is displayed. A highlighted bar called the **menu pointer** appears over the first command in the pull-down menu and in the menu bar over the chosen menu name. The status bar displays a brief description of the New Database command, the highlighted command in the pull-down menu.

Many of the features in the pull-down menu should be familiar to you because they are the same as in Windows. They are:

ellipses (...)	Indicates that a dialog box will be displayed for you to specify additional information needed to carry out the command
dimmed command	Indicates that the command is not available for selection until certain other conditions are met
shortcut key	A key or key combination located to the right of many commands that can be used to execute a command without using the menu. For example, the New Database command on the File menu can be executed simply by pressing [Ctrl] + N.

The toolbar shortcut for the New Database command is New Database.

Since the File menu is already open, to create a new database,

Choose: New Database

Your screen should be similar to Figure 1-2.

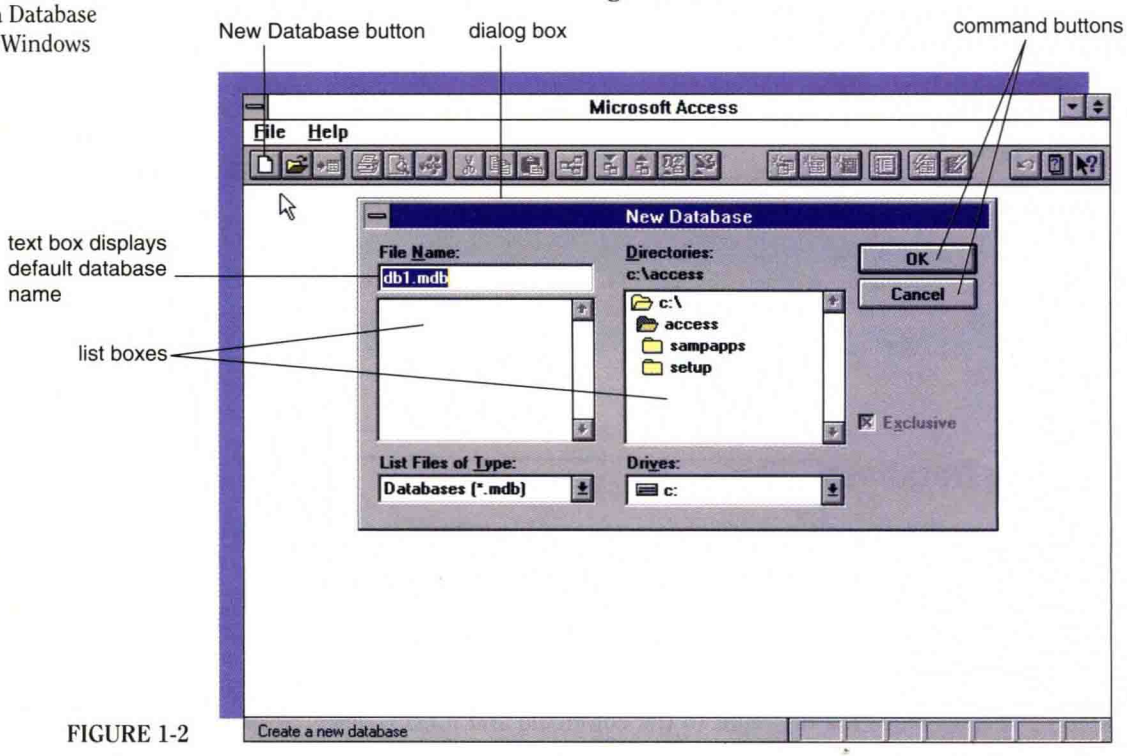


FIGURE 1-2

The New Database dialog box is displayed. As in Windows, dialog boxes are displayed whenever Access needs more information to complete the command. Dialog boxes consist of option buttons, check boxes, text boxes, list boxes, and command buttons and they operate in the same way. You can click on your choices with the mouse, press [Alt] and the appropriate underlined letter, or use [Tab] to move from one area to another and the arrow keys to move within an area to make a selection.

As you create the database, Access stores it to a disk. Therefore the first thing you need to do when creating a new database is to tell the program where you want the database stored and the name you want to assign the database. By default Access stores databases to the database DB1.MDB in a directory on the C drive. However, you want the program to store the table on your data disk in a database named EMPLOYEE.

The default database name "db1.mdb" is highlighted in the File Name text box. To give the database a name that is descriptive of the contents of the database,

The number in the default file name on your screen may be different.

The name can be entered in either uppercase or lowercase letters.

Type: **EMPLOYEE**

The default directory is displayed in the Directories text box. This is most likely the drive and path containing your Access program file (c:\access). You need to change it to the drive containing your data disk.

Note: The following command assumes the default drive is not A and that your data disk is in drive A. If your setup is different, substitute the appropriate drive and/or directory in the following directions.

To specify the default directory to be drive A,

Choose: Drives
Select: a:

Keyboard users press ↓ to display the Drives drop-down list.

The command buttons allow you to accept (OK) or reject (Cancel) the command. You can choose these buttons as you would any other dialog box features, or you can press ↵Enter to choose OK, or Esc to choose Cancel.

Choose: OK

Your screen should be similar to Figure 1-3.

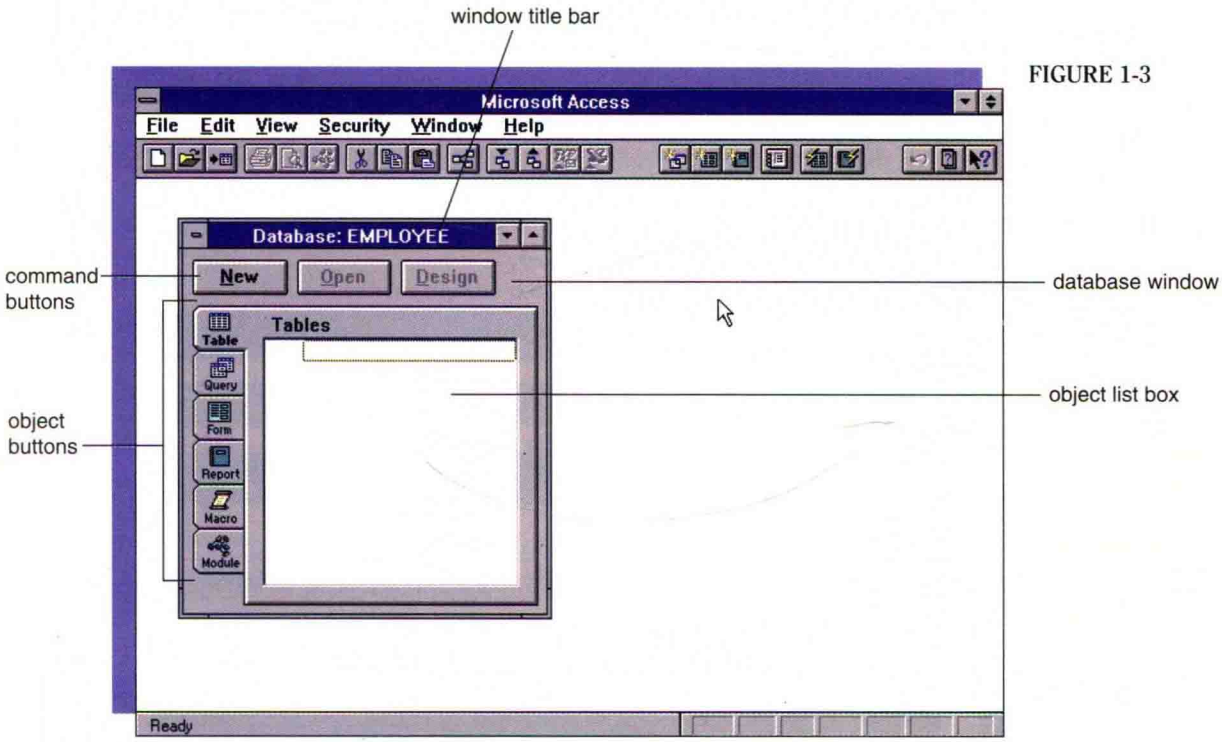


FIGURE 1-3

After a few seconds, the dialog box is cleared and the Database window is displayed. The name of the database, EMPLOYEE, is displayed in the window title bar.

The Database window is the command center. From this window you can create and use any database **object**. An object is an item such as a table, form, or report that you can select and manipulate as a unit. The **object buttons** on the left side of the window are used to select the type of object you want to use. The currently selected object button is Table. The object list box to the right of the object buttons normally displays a list of objects associated with the selected object button. The Tables object list box is empty because you have not created any tables for this database yet.

Creating a Table

Once the database is named, you are ready to design or arrange the fields in the database table. The only available command button in the Database window is New. This is because you cannot use any of the other buttons in this window until a database table has been created. To begin creation of the table,

Choose: New

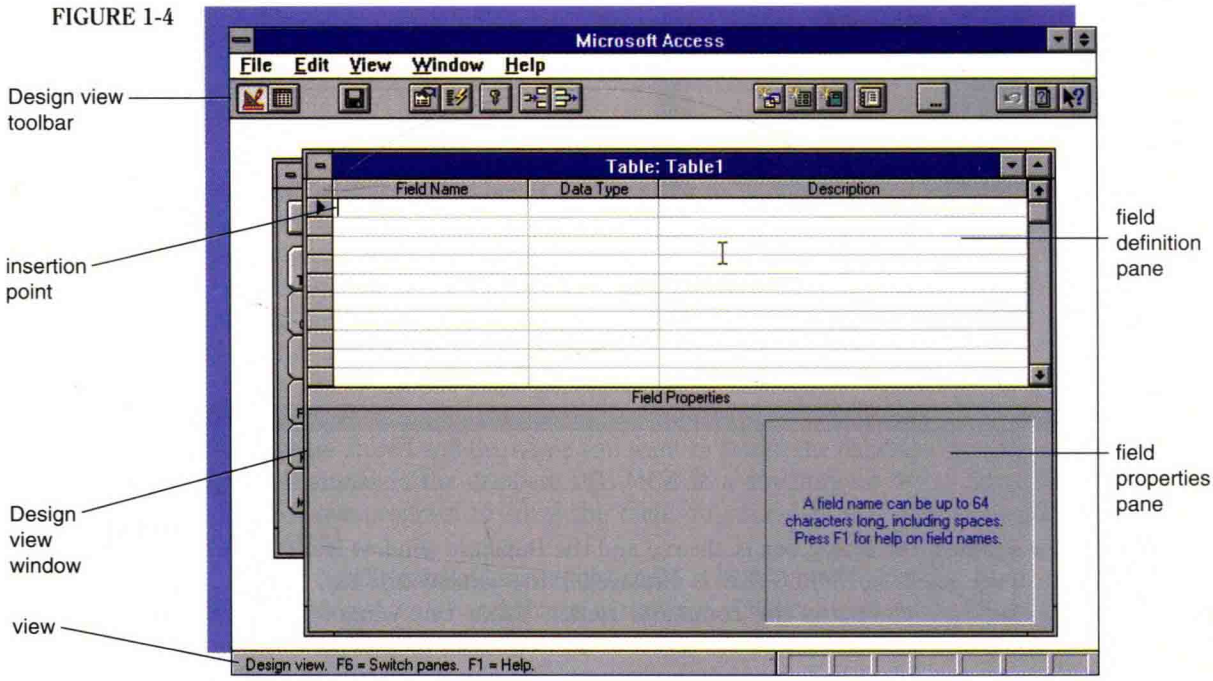
The New Table dialog box appears. This dialog box has three command buttons: Table Wizards, New Table, and Cancel. The Table Wizards button starts the Table Wizards feature. This feature lets you select from 40 different predesigned database tables and creates a table for you based upon your answers to specific questions. There are eight different Wizards available in Access that can be used to create different Access objects. You will learn about the Wizards later in the labs.

The second command button, New Table, will open the Design view window where you can create a new table from scratch. To use this method,

Choose: New Table

Your screen should be similar to Figure 1-4.

FIGURE 1-4



The status bar displays the name of the view you are using.

Design view in the Table window is displayed. Access has several different views that are used to work with the different objects. In Design view you can create and modify the structure of your table.

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