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Step by Step

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Joyce Cox and Joan Lambert



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Part 1

Simple Database Techniques

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Chapter at a Glance

Explore tables,
page 17

A screenshot of the Microsoft Access database interface showing the 'Categories' table. The table has columns for Product ID, Product Name, Latin Name, Supplier, and Quantity. The data is filtered to show products in the 'Bulbs' category. The first few rows are:

Product ID	Product Name	Latin Name	Supplier	Quantity
1	Magic Lily	Lycoris squamigera	The Bulb Basket	One dozen
2	Autumn crocus	Colchicum	The Bulb Basket	One dozen
69	Anemone	Anemone coronaria	The Bulb Basket	One dozen
71	Lily-of-the-Field	Sternbergia lutea	The Bulb Basket	One dozen
160	Siberian Iris	Iris Siberica	The Bulb Basket	6 per pkg.
161	Daffodil	Ismene calathina	The Bulb Basket	6 per pkg.
162	Peony	Paeonia	The Bulb Basket	6 per pkg.
163	Lilies	Lilium Hybrid	The Bulb Basket	6 per pkg.
164	Begonias	Begonia	The Bulb Basket	6 per pkg.
190	Bulb planter		The Bulb Basket	1 ea.

Explore forms,
page 24

A screenshot of the 'Categories' form in Microsoft Access. The form has fields for Category ID (value: 1), Name (value: Bulbs), and Description (value: Spring, summer and fall, forced). Below the form is a data grid showing the 'Magic Lily' product with various quantities and prices.

Product Name	Quantity Per Unit	Unit Price	Units In Stock
Magic Lily	One dozen	\$48.40	40
	One dozen	\$22.69	37
	One dozen	\$33.88	26
	One dozen	\$45.98	34
	6 per pkg.	\$15.67	30
	6 per pkg.	\$15.67	24
	6 per pkg.	\$24.14	20
	6 per pkg.	\$12.71	18
	6 per pkg.	\$22.93	12

Explore queries,
page 29

A screenshot of the 'Products By Category' query in Microsoft Access. The query is based on the 'Categories' and 'Products' tables. The design grid shows the following fields and criteria:

Field:	Table:	Product Name	Quantity Per Unit	Units In Stock	Discontinued
CategoryName	Categories				
Product Name	Products	Ascending			
Quantity Per Unit	Products		Ascending		
Units In Stock	Products			Ascending	
Discontinued	Products				Ascending

Explore reports,
page 33

A screenshot of the 'Sales By Category' report in Microsoft Access. The report is titled 'Wetland plants' and shows a list of products with their unit prices. The total sales amount is \$48.00.

Product	Unit Price
Anacharis	\$8.75
Fragrant Water Lily	\$18.80
Pickereelweed	\$9.95
Water Snowflakes	\$10.50
Total	\$48.00

1 Explore an Access 2010 Database

In this chapter, you will learn how to

- ✓ Work in Access 2010.
 - ✓ Understand database concepts.
 - ✓ Explore tables.
 - ✓ Explore forms.
 - ✓ Explore queries.
 - ✓ Explore reports.
 - ✓ Preview and print Access objects.
-

Microsoft Access 2010 is part of Microsoft Office 2010, so the basic interface—such as the Quick Access Toolbar, the ribbon, the Backstage view, and dialog boxes—should be familiar if you have used other Office 2010 programs. However, Access has more dimensions than many of those programs, so it might seem more complex until you become familiar with it.

Tip If you are upgrading from an earlier version of Access, you should review “Introducing Microsoft Access 2010” at the beginning of this book to learn about differences between earlier versions and Access 2010.

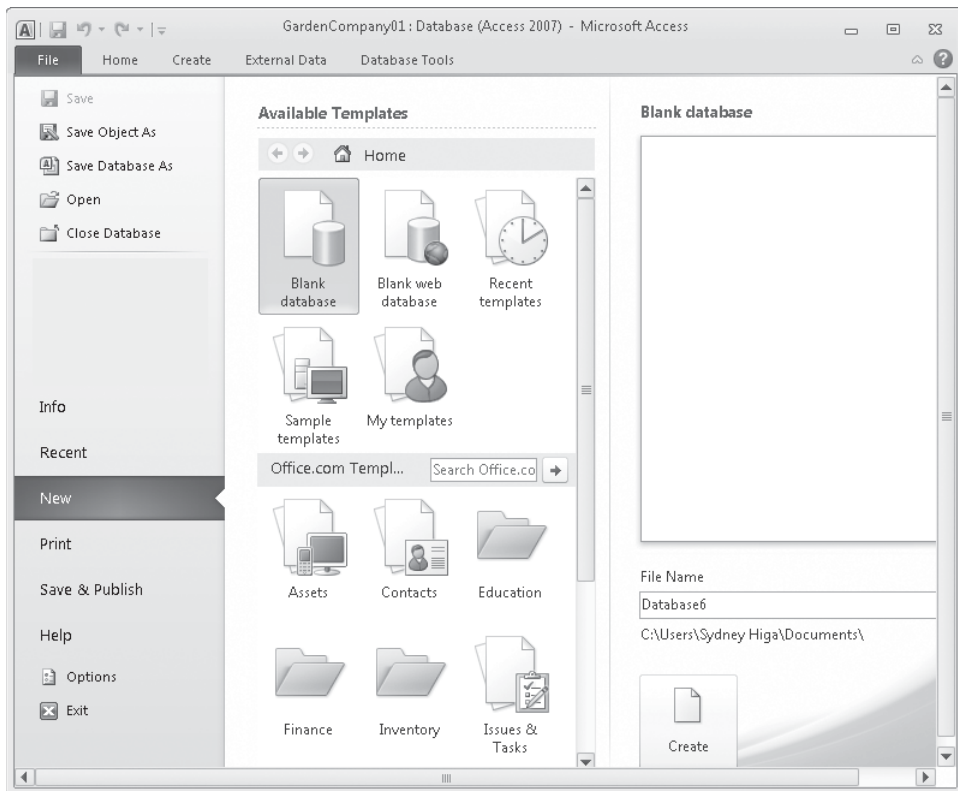
Throughout this book, you’ll be working with databases that contain information about the employees, products, suppliers, and customers of a fictional company. As you complete the exercises in this book, you will develop an assortment of tables, forms, queries, and reports, which are called *database objects*. These objects can be used to enter, edit, and manipulate the information in a database in many ways.

In this chapter, you’ll explore the Access program window and learn about the concepts and structure of data storage in Access, including types of databases, types of database objects, and relationships between objects. You’ll look at objects in a working database, learning about interesting features of Access as well as functionality that you’ll explore in more depth in later chapters.

Practice Files Before you can complete the exercises in this chapter, you need to copy the book's practice files to your computer. The practice file you'll use to complete the exercises in this chapter is in the Chapter01 practice file folder. A complete list of practice files is provided in "Using the Practice Files" at the beginning of this book.

Working in Access 2010

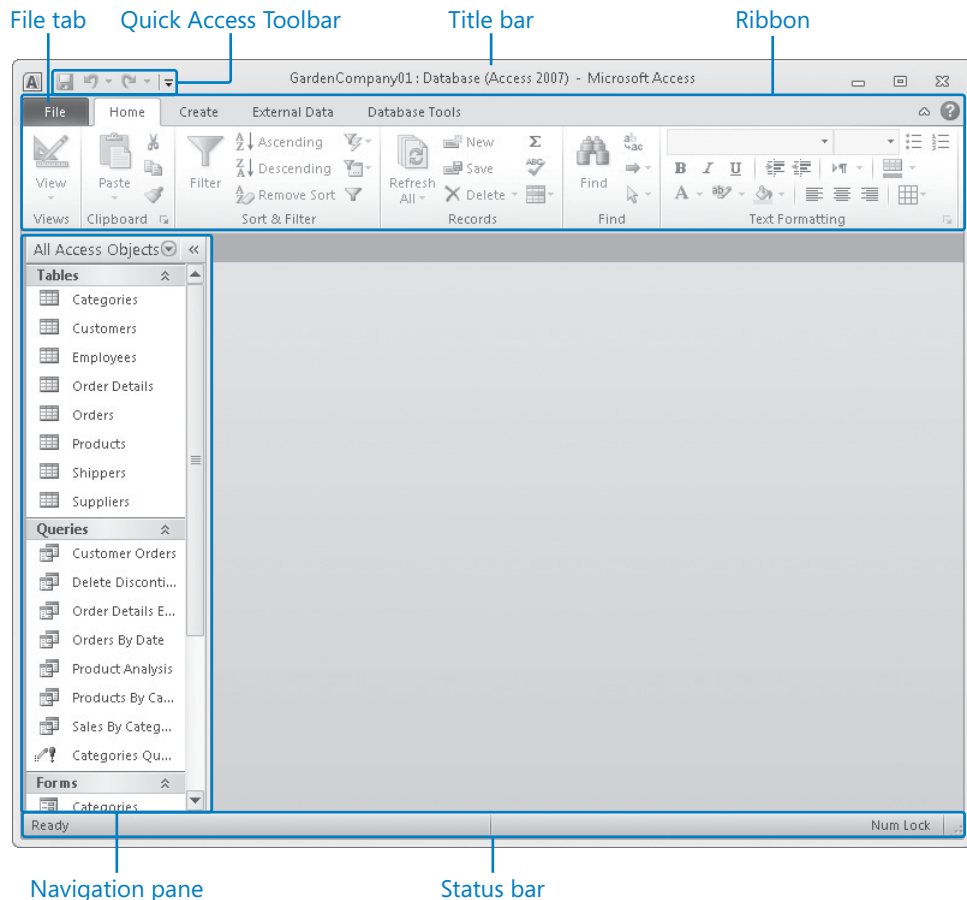
As with all programs in Office 2010, the most common way to start Access is from the Start menu displayed when you click the Start button at the left end of the Windows Taskbar. When you start Access without opening a database, the program window opens in the Backstage view, with the New page active. In the Backstage view, commands related to managing Access and Access databases (rather than their objects) are organized as buttons and pages, which you display by clicking the page tabs in the left pane. You can display the Backstage view at any time by clicking the colored File tab in the upper-left corner of the program window.



Clicking the File tab displays the Backstage view, where you can manage database files and customize the program.

From the New page of the Backstage view, you can create a blank database; or you can create a new database based on a template that comes with Access, on a template downloaded from the Office.com Web site, or on a custom template saved on your computer or on your network. From the Backstage view, you can also open a database you worked in recently, or navigate to any database on your computer and open it.

When you create or open a database, it is displayed in the program window.



An Access database in the program window

Troubleshooting The appearance of buttons and groups on the ribbon changes depending on the width of the program window. For information about changing the appearance of the ribbon to match our screen images, see “Modifying the Display of the Ribbon” at the beginning of this book.

The database interface is designed to closely reflect the way people generally work with a database or database object. For those of you who are not familiar with this interface, which was first introduced with Microsoft Office Access 2007, here is a quick survey of the program window elements:



- The title bar displays the name of the active database. The designation (*Access 2007*) after the database name indicates that the database is in the .accdb format introduced with Access 2007. At the left end of the title bar is the Access icon, which you click to display commands to move, size, and close the program window. The Minimize, Restore Down/Maximize, and Close buttons at the right end of the title bar serve the same functions as in all Windows programs.

See Also [Windows 7 introduced many fun and efficient new window-management techniques. For information about ways to work with the Access program window on a Windows 7 computer, refer to *Windows 7 Step by Step*, by Joan Lambert Preppernau and Joyce Cox \(Microsoft Press, 2009\).](#)

- By default, the Quick Access Toolbar appears to the right of the Access icon at the left end of the title bar, and displays the Save, Undo, and Redo buttons. You can change the location of the Quick Access Toolbar and customize it to include any command that you use frequently.

Tip [If you create and work with complicated databases, you might achieve greater efficiency if you add the commands you use frequently to the Quick Access Toolbar and display it below the ribbon, directly above the workspace. For information, see “Customizing the Quick Access Toolbar” in Chapter 13, “Customize Access.”](#)

- Below the title bar is the ribbon. All the commands for working with your Access database content are available from this central location so that you can work efficiently with the program.
- Across the top of the ribbon is a set of tabs. Clicking the File tab displays the Backstage view. Clicking any other tab displays a set of related commands represented by buttons and lists. The Home tab is active by default.

Tip [Don't be alarmed if your ribbon has tabs not shown in our screens. You might have installed programs that add their own tabs to the Access ribbon.](#)

- On each tab, commands are organized into named groups. Depending on your screen resolution and the size of the program window, the commands in a group might be displayed as labeled buttons, as unlabeled icons, or as one or more large buttons that you click to display the commands within the group.

- If a button label isn't visible, you can display the command name and its keyboard shortcut (if it has one) in a ScreenTip by pointing to the button.

See Also For more information about keyboard shortcuts, see “Keyboard Shortcuts” at the end of this book.

Tip To control the display of ScreenTips, display the Backstage view, click Options to open the Access Options dialog box, and change settings in the User Interface Options area of the General page. You can also change the language of ScreenTip content on the Language page. For more information, see “Changing Default Program Options” in Chapter 13, “Customize Access.”

- Some buttons include an integrated or separate arrow. If a button and its arrow are integrated, clicking the button will display options for refining the action of the button. If the button and its arrow are separate, clicking the button will carry out the default action indicated by the button's current icon. You can change the default action by clicking the arrow and then clicking the action you want.
- Related but less common commands are not represented as buttons in a group. Instead they are available in a dialog box or task pane, which you display by clicking the dialog box launcher located in the lower-right corner of the group.
- To the right of the ribbon tab names, below the Minimize/Maximize/Close buttons, is the Minimize The Ribbon button. Clicking this button hides the commands but leaves the tab names visible. You can then click any tab name to temporarily display its commands. Clicking anywhere other than the ribbon hides the commands again. When the full ribbon is temporarily visible, you can click the button at its right end, shaped like a pushpin, to make the display permanent. When the full ribbon is hidden, you can click the Expand The Ribbon button to permanently redisplay it.



Keyboard Shortcut Press **Ctrl+F1** to minimize or expand the ribbon.

- Clicking the Access Help button at the right end of the ribbon displays the Access Help window, in which you can use standard techniques to find information.

Keyboard Shortcut Press **F1** to display the Access Help window.

See Also For information about the Access Help system, see “Getting Help” at the beginning of this book.

- On the left side of the program window, the Navigation pane displays lists of database objects. By default, it displays all the objects in the database by type of object, but you can filter the list by clicking the pane's title bar and then clicking the category or group of objects you want to display. You can collapse and expand the



groups in the list by clicking the chevrons in the section bars. If the Navigation pane is in your way, you can click the Shutter Bar Open/Close button in its upper-right corner to minimize it. To redisplay the Navigation pane, click the Shutter Bar Open/Close button again. You can drag the right border of the pane to the left or right to make it wider or narrower.

Keyboard Shortcut Press **F11** to display or hide the Navigation pane.

- Across the bottom of the program window, the status bar displays information about the current database and provides access to certain program functions. You can control the contents of the status bar by right-clicking it to display the Customize Status Bar menu, on which you can click any item to display or hide it.
- At the right end of the status bar, the View Shortcuts toolbar provides buttons for quickly switching the view of the active database object.

The goal of all these interface features is to make working with a database as intuitive as possible. Commands for tasks you perform often are readily available, and even those you might use infrequently are easy to find.

In this exercise, you'll take a tour of the command structure in the Access 2010 program window.



SET UP You need the **GardenCompany01_start** database located in your **Chapter01 practice file folder** to complete this exercise, but don't open it yet. Just follow the steps.

1. On the **Start** menu, click **All Programs**, click **Microsoft Office**, and then click **Microsoft Access 2010**.

Access starts and displays the program window in the Backstage view. From this view, you manage your Access database files, but you don't work with the content of databases. For example, you can create a database, but not a database object. We'll talk about the tasks you can perform in the Backstage view in other chapters of this book.

2. In the left pane of the Backstage view, click **Open**. Then in the **Open** dialog box, navigate to your **Chapter01** practice file folder, and double-click the **GardenCompany01_start** database.

The database opens in the program window. A security warning appears below the ribbon.

3. In the security warning bar, click **Enable Content**.

Important Be sure to read the sidebar “Enabling Macros and Other Database Content” later in this chapter to learn about Access security options.

Let’s save the database so that you can explore it without fear of overwriting the original practice file.

4. Click the **File** tab to display the Backstage view, click **Save Database As**, and then in the **Save As** dialog box, save the database in your **Chapter01** practice file folder with the name **GardenCompany01**.

Tip In this book, we assume you will save files in your practice file folders, but you can save them wherever you want. When we refer to your practice file folders in the instructions, simply substitute the save location you chose.

In the program window, the title bar tells you that you can work with this database in Access 2007 as well as Access 2010. On the left, the Navigation pane displays a list of all the objects in this database. Spanning the top of the window, the ribbon includes five tabs: File, Home, Create, External Data, and Database Tools. The Home tab is active by default. Because no database object is currently open, none of the buttons on the Home tab are available.

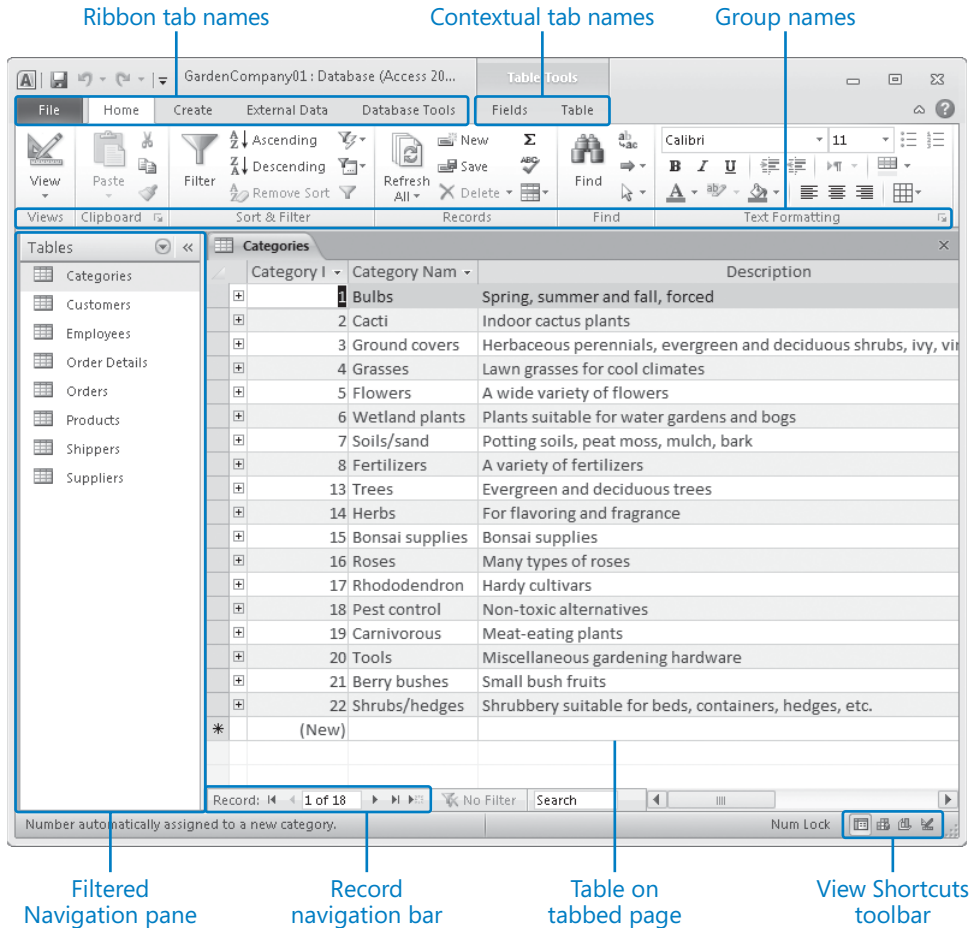
Tip Databases created with Access 2010 use the file storage format introduced with Access 2007, and their files have the .accdb extension. You can open database files created in earlier versions of Access (which have an .mdb extension) in Access 2010. You can then either work with and save them in the old format or work with and save them in the new format. If you convert them, you can no longer open them in versions prior to Access 2007. For more information about the ACCDB format, search for accdb in Access Help.

5. In the **Navigation** pane title bar, click **All Access Objects**, and then under **Filter By Group** in the menu, click **Tables**.

The Navigation pane now lists only the tables in the database.

6. In the **Navigation** pane, under **Tables**, double-click **Categories**.

The Categories table opens on a tabbed page. Because a table is displayed, two Table Tools contextual tabs (Fields and Table) appear on the ribbon. These contextual tabs are displayed only when you are working with a table.



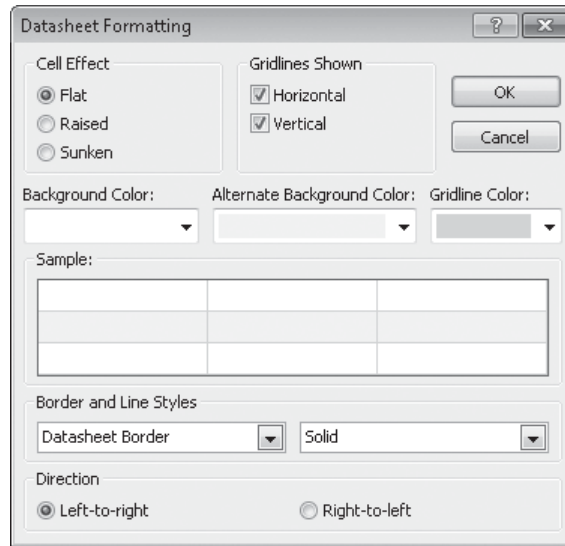
The record navigation bar at the bottom of the table page tells you how many records the table contains and which one is active, and enables you to move among records.

Buttons representing commands related to working with database content are organized on the Home tab in six groups: Views, Clipboard, Sort & Filter, Records, Find, and Text Formatting. Only the buttons for commands that can be performed on the currently selected database object—in this case, a table—are active.



7. On the **Home** tab, click the **Text Formatting** dialog box launcher.

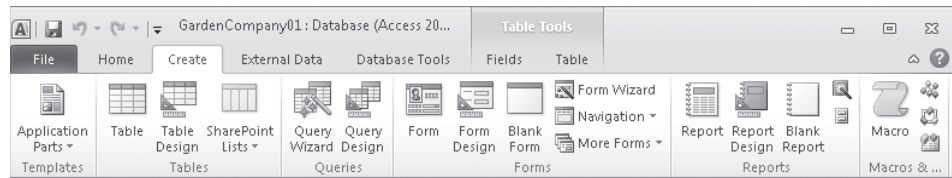
The Datasheet Formatting dialog box opens.



From this dialog box, you can access settings not available as buttons in the Text Formatting group, such as Gridline Color and Border And Line Styles.

8. In the **Datasheet Formatting** dialog box, click **Cancel**.
9. Click the **Create** tab.

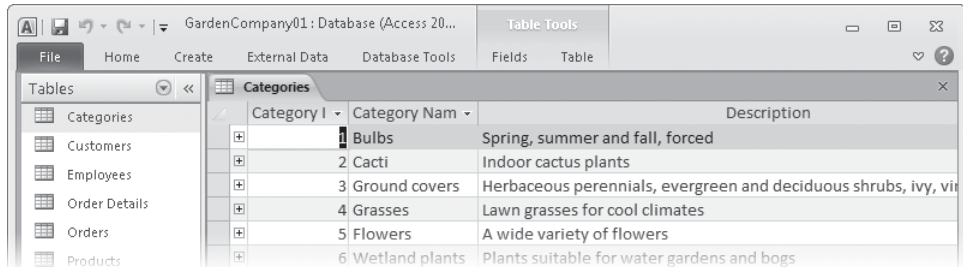
Buttons representing commands related to creating database objects are organized on this tab in six groups: Templates, Tables, Queries, Forms, Reports, and Macros & Code.



The Create tab.

10. Double-click the **Create** tab.

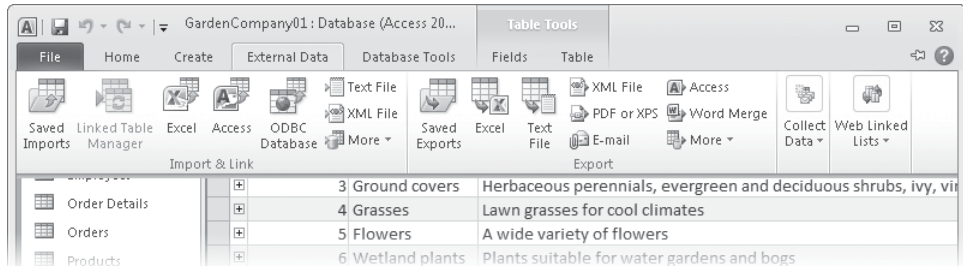
Double-clicking the active tab hides the ribbon and provides more space for the current database object.



The ribbon is hidden.

11. Click the **External Data** tab.

The ribbon temporarily drops down, with the External Data tab active. Buttons representing commands related to moving information between a database and other sources are organized on this tab in four groups: Import & Link, Export, Collect Data, and Web Linked Lists.



Clicking any tab—in this case, the External Data tab—displays the ribbon temporarily.

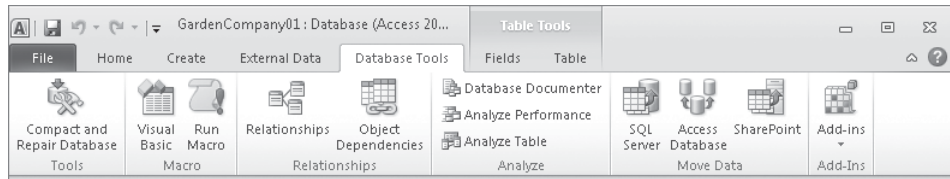
Tip To make the graphics in this book readable, we are working in a program window that is smaller than full-screen. As a result, the Collect Data and Web Linked Lists groups are represented in this graphic as buttons. For more information, see “Modifying the Display of the Ribbon” at the beginning of this book.

12. Click anywhere in the open table.

The ribbon disappears again.

13. Double-click the **Database Tools** tab.

Double-clicking a tab permanently displays the ribbon and activates that tab. Buttons representing commands related to managing, analyzing, and ensuring data reliability are organized on the Database Tools tab in six groups: Tools, Macro, Relationships, Analyze, Move Data, and Add-Ins.



The Database Tools tab.



14. To the right of the **Categories** table page tab, click the **Close** button to close the table without closing the database.

Clicking this button closes the active object.

15. Click the **File** tab to display the Backstage view, and then click **Close Database**.

When you close a database without exiting Access, the New page of the Backstage view is displayed so that you can open another database or create a new one.

Note that if you don't close the active database before opening another one, Access prompts you to save your changes and closes the active database for you. You cannot have two databases open simultaneously in a single instance of Access. If you want to have two databases open at the same time, you must start a new instance of Access.

Tip You can close Access entirely by clicking the Close button in the upper-right corner of the program window, or by clicking Exit in the Backstage view.

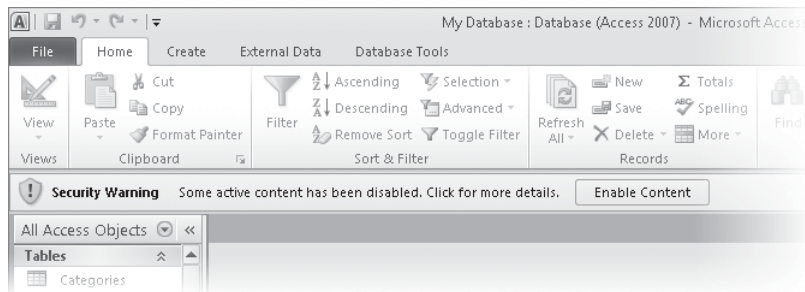


CLEAN UP Retain the GardenCompany01 database for use in later exercises.

Enabling Macros and Other Database Content

Some databases contain Microsoft Visual Basic for Applications (VBA) macros that can run code on your computer. In most cases, the code is there to perform a database-related task, but hackers can also use macros to spread a virus to your computer.

When you open a database that is not stored in a trusted location or signed by a trusted publisher, Access displays a security warning below the ribbon.



The security warning.

While the security warning is displayed, the macros in the database are disabled. You can enable macros in three ways:

- By enabling the macros in the database for use in the current database session.
- By adding the database publisher to the list of trusted publishers. This option is available only if the publisher's digital signature is attached to the database. Access will then automatically enable macro content in any database that is also signed by that publisher.
- By placing the database in a trusted location. Access automatically enables macro content in any database saved in that location. The trusted locations you specify within Access are not also trusted by other Office programs.

To enable macros for the current database session only:

- In the Security Warning area, click Enable Content.

To add the publisher of a digitally signed database to the trusted publishers list:

1. In the Security Warning area, click Some Active Content Has Been Disabled. Click For More Details.

2. On the Information About <Database Name> page, click the Enable Content button, and then click Advanced Options.
3. In the Microsoft Office Security Options dialog box, click Trust All From Publisher, and then click OK.

Note that the Trust All From Publisher option is available only if the database is digitally signed.

To add the location of a database to the trusted locations list:

1. Display the Backstage view, and then click Options.
2. In the left pane of the Access Options dialog box, click Trust Center, and then click Trust Center Settings.
3. In the left pane of the Trust Center, click Trusted Locations.
4. On the Trusted Locations page, click Add New Location.
5. In the Microsoft Office Trusted Location dialog box, click Browse.
6. In the Browse dialog box, browse to the folder containing the current database, and then click OK.
7. In the Microsoft Office Trusted Location dialog box, select the Subfolders Of This Location Are Also Trusted check box if you want to do so, and then click OK in each of the open dialog boxes.

If you prefer, you can change the way Access handles macros in all databases:

1. Display the Trust Center, and then in the left pane, click Macro Settings.
2. Select the option for the way you want Access to handle macros:
 - **Disable All Macros Without Notification** If a database contains macros, Access disables them and doesn't display the security warning to give you the option of enabling them.
 - **Disable All Macros With Notification** Access disables all macros and displays the security warning.
 - **Disable All Macros Except Digitally Signed Macros** Access automatically enables digitally signed macros.
 - **Enable All Macros** Access enables all macros (not recommended).
3. Click OK to close the Trust Center, and then click OK to close the Access Options dialog box.

Understanding Database Concepts

Simple database programs, such as the Database component of Microsoft Works, can store information in only one table. These simple databases are often called *flat file databases*, or just *flat databases*. More complex database programs, such as Access, can store information in multiple related tables, thereby creating what are referred to as *relational databases*. If the information in a relational database is organized correctly, you can treat these multiple tables as a single storage area and pull information electronically from different tables in whatever order meets your needs.

A table is just one of the object types you work with in Access. Other object types include forms, queries, reports, macros, and modules.

Of all these object types, only one—the table—is used to store information. The rest are used to enter, manage, manipulate, analyze, retrieve, or display the information stored in a table—in other words, to make the information as accessible and therefore as useful as possible.

Over the years, Microsoft has put a lot of effort into making Access not only one of the most powerful consumer database programs available, but also one of the easiest to learn and use. Because Access is part of Office 2010, you can use many of the same techniques you use with Microsoft Word and Microsoft Excel. For example, you can use familiar commands, buttons, and keyboard shortcuts to open and edit the information in Access tables. And you can easily share information between Access and Word, Excel, or other Office programs.

In its most basic form, a database is the electronic equivalent of an organized list of information. Typically, this information has a common subject or purpose, such as the list of employees shown in the following table.

ID	Last name	First name	Title	Hire date
1	Anderson	Nancy	Sales Rep	May 1, 2003
2	Carpenter	Chase	Sales Manager	Aug 14, 2001
3	Emanuel	Michael	Sales Rep	Apr 1, 1999
4	Furse	Karen	Buyer	May 3, 2004

This list is arranged in a table of columns and rows. Each column represents a field—a specific type of information about an employee: last name, first name, hire date, and so on. Each row represents a record—all the information about a specific employee.

If a database did nothing more than store information in a table, it would be no more useful than a paper list. But because the database stores information in an electronic format, you can manipulate the information in powerful ways to extend its utility.

For example, suppose you want to find the phone number of a person who lives in your city. You can look up this information in the telephone book, because its information is organized for this purpose. If you want to find the phone number of someone who lives further away, you can go to the public library, which probably has a telephone book for each major city in the country. However, if you want to find the phone numbers of all the people in the country with your last name, or if you want to find the phone number of your grandmother's neighbor, these printed phone books won't do you much good, because they aren't organized in a way that makes that information easy to find.

When the information published in a phone book is stored in a database, it takes up far less space, it costs less to reproduce and distribute, and, if the database is designed correctly, the information can be retrieved in many ways. The real power of a database isn't in its ability to store information; it is in your ability to quickly retrieve exactly the information you want from the database.

Exploring Tables

Tables are the core database objects. Their purpose is to store information. The purpose of every other database object is to interact in some manner with one or more tables. An Access database can contain thousands of tables, and the number of records each table can contain is limited more by the space available on your hard disk than by anything else.

Tip For detailed information about Access specifications, such as the maximum size of a database or the maximum number of records in a table, search for "Access 2010 specifications" (including the quotation marks) in Access help.

Every Access object has two or more views. For tables, the two most common views are Datasheet view, in which you can see and modify the table's data, and Design view, in which you can see and modify the table's structure. To open a table in Datasheet view, either double-click its name in the Navigation pane, or right-click its name and then click Open. To open a table in Design view, right-click its name and then click Design View. When a table is open in Datasheet view, clicking the View button in the Views group on the Home tab switches to Design view; when it is open in Design view, clicking the button switches to Datasheet view. To switch to either of the two remaining table views (PivotTable view or PivotChart view), you click the View arrow and then click the view you want in the list. You can also switch the view by clicking one of the buttons on the View Shortcuts toolbar in the lower-right corner of the program window.

When you view a table in Datasheet view, you see the table's data in columns (fields) and rows (records). The first row contains column headings (field names). In this format, the table is often simply referred to as a *datasheet*.

Category ID	Category Name	Description
1	Bulbs	Spring, summer and fall, forced
2	Cacti	Indoor cactus plants
3	Ground covers	Herbaceous perennials, evergreen and deciduous shrubs
4	Grasses	Lawn grasses for cool climates
5	Flowers	A wide variety of flowers
6	Wetland plants	Plants suitable for water gardens and bogs
7	Soils/sand	Potting soils, peat moss, mulch, bark
8	Fertilizers	A variety of fertilizers
13	Trees	Evergreen and deciduous trees
14	Herbs	For flavoring and fragrance
15	Bonsai supplies	Bonsai supplies
16	Roses	Many types of roses
17	Rhododendron	Hardy cultivars
18	Pest control	Non-toxic alternatives
19	Carnivorous	Meat-eating plants
20	Tools	Miscellaneous gardening hardware
21	Berry bushes	Small bush fruits

Field names, fields, and records in a table.

If two tables have one or more field names in common, you can embed the datasheet from one table in another. By using an embedded datasheet, called a *subdatasheet*, you can see the information in more than one table at the same time. For example, you might want to embed an Orders datasheet in a Customers table so that you can see the orders each customer has placed.

In this exercise, you'll open existing database tables and explore the table structure in different views.



SET UP You need the GardenCompany01 database you worked with in the preceding exercise to complete this exercise. Open the GardenCompany01 database, ensure that tables are listed in the Navigation pane, and then follow the steps.

1. In the **Navigation** pane, double-click **Products**. Then at the right end of the **Navigation** pane title bar, click the **Shutter Bar Close** button so that you can see more of the table's fields.



The Products table is displayed in Datasheet view.

Product ID	Product Name	Latin Name	Supplier	Category	Quantity
1	Magic Lily	Lycoris squamigera	The Bulb Basket	Bulbs	One doz
2	Autumn crocus	Colchicum	The Bulb Basket	Bulbs	One doz
3	Compost bin		Garden Hardware Mfg.	Tools	1 - 12 ft
4	Cactus sand potting m		Soil and Sand Supplier	Soils/sand	5 lb. bag
5	Weeping Forsythia	Forsythia suspensa	The Shrub Club	Shrubs/hedges	1 ea.
6	Bat box		NoTox Pest Control	Pest control	1 box pe
7	Electronic insect killer		NoTox Pest Control	Pest control	1 per bo
8	Beneficial nematodes	Neoplectana carp	NoTox Pest Control	Pest control	1 pt
9	Crown Vetch	Coronilla varia	Cover Up Stuff	Ground covers	3 - 3 inch
10	English Ivy	Hedera helix	Cover Up Stuff	Ground covers	5 ea. Ro
11	Austrian Copper	R. foetida bicolor	Rosie's Roses	Roses	Per plan
12	Persian Yellow Rose	R. foetida 'Persiana	Rosie's Roses	Roses	Per plan
13	Indoor Magic potting s		Soil and Sand Supplier	Soils/sand	5 lb. bag
14	GrowGood potting soi		Soil and Sand Supplier	Soils/sand	10 lb. ba
15	Sterilized soil		Soil and Sand Supplier	Soils/sand	5 lb. bag
16	Winterberry	Ilex verticillata	The Shrub Club	Shrubs/hedges	1 ea.
17	Anise	Pimpinella anisum	The Herb House	Herbs	6 - 2" po
18	Crushed rock		Wholesale Rock & Gra	Soils/sand	Per yard
19	Chamomile	Anthemis nobilis	The Herb House	Herbs	6 - 2" po

Each row in this table contains information about a product and each column contains one field from each record.

- In the row of field names at the top of the table, point to the right border of the **Product Name** field name, and when the pointer changes to a double-headed arrow, double-click the border.

Access adjusts the width of the field to accommodate its longest entry. Notice that Product 1, Magic Lily, and Product 2, Autumn crocus, are assigned to the Bulbs category.

- Double-click the right border of the **Category** field name to adjust that field's width.

Tip You can also resize a table column by pointing to the border and dragging it to the left or right.



- In the **Navigation** pane, click the **Shutter Bar Open** button, and then double-click **Categories**.

Tip From now on, open the **Navigation** pane whenever you need to work with a different object, but feel free to close it if you want to see more of the data.

The Categories table opens on a new tabbed page in Datasheet view. The Categories page is active, but the Products page is still open and available if you need it.



- At the left end of the record for the **Bulbs** category, click the **Expand** button.

The Bulbs category expands to reveal a subdatasheet containing all the records from the Products table that are assigned to the Bulbs category. This is possible because a relationship has been established between the two tables.

Subdatasheet

Category ID	Category Name	Description
1	Bulbs	Spring, summer and fall, forced
2	Cacti	Indoor cactus plants
3	Ground covers	Herbaceous perennials, evergreen and deciduous shrubs, ivy,
4	Grasses	Lawn grasses for cool climates
5	Flowers	A wide variety of flowers

Product ID	Product Name	Latin Name	Supplier	Quantity
1	Magic Lily	Lycoris squamigera	The Bulb Basket	One dozen
2	Autumn crocus	Colchicum	The Bulb Basket	One dozen
69	Anemone	Anemone coronaria	The Bulb Basket	One dozen
71	Lily-of-the-Field	Sternbergia lutea	The Bulb Basket	One dozen
160	Siberian Iris	Iris Siberica	The Bulb Basket	6 per pkg.
161	Daffodil	Ismene calathina	The Bulb Basket	6 per pkg.
162	Peony	Paeonia	The Bulb Basket	6 per pkg.
163	Lilies	Lilium Hybrid	The Bulb Basket	6 per pkg.
164	Begonias	Begonia	The Bulb Basket	6 per pkg.
190	Bulb planter		The Bulb Basket	1 ea.
*	(New)			

You can display records from two related tables simultaneously.

See Also For information about relationships, see “Creating Relationships Between Tables” in Chapter 2, “Create Databases and Simple Tables.”



- To the left of the record for the **Bulbs** category, click the **Collapse** button to hide the subdatasheet.



- Click the **Close** button at the right end of the tab bar (not the Close button in the upper-right corner of the program window) to close the **Categories** table.
- Close the **Products** table, and when Access asks whether you want to save your changes to this table, click **Yes**.

In steps 2 and 3, you changed the look of the table by changing the widths of columns. If you want those changes to be in effect the next time you open the table, you must save them.

9. In the **Navigation** pane, double-click the **Orders** table.

This table contains order-fulfillment information.

OrderID	CustomerID	AccountRep	OrderDate	ShippedDate	ShippedBy
11079	LANER	Carpenter	1/5/2010	1/7/2010	Big Things Freij
11080	ACKPI	Carpenter	1/5/2010	1/6/2010	EZ Does It
11081	BROKE	Anderson	1/6/2010	1/7/2010	EZ Does It
11082	KHAKA	Anderson	1/6/2010	1/8/2010	Triple P Delive
11083	KOCRE	Carpenter	1/8/2010	1/9/2010	Triple P Delive
11084	COXBR	Anderson	1/12/2010	1/14/2010	Triple P Delive
11085	RAMLU	Emanuel	1/12/2010	1/13/2010	EZ Does It
11086	OVESC	DeGrasse	1/12/2010	1/13/2010	Triple P Delive
11087	THIRA	Carpenter	1/12/2010	1/13/2010	Big Things Freij
11088	MILFR	Emanuel	1/13/2010	1/14/2010	Triple P Delive
11089	ESTMO	Anderson	1/14/2010	1/16/2010	EZ Does It
11090	HOFRO	Emanuel	1/14/2010	1/16/2010	Big Things Freij
11091	HOLMI	Carpenter	1/15/2010	1/19/2010	EZ Does It
11092	ASHCH	Emanuel	1/16/2010	1/19/2010	Triple P Delive
11093	BENPA	Anderson	1/19/2010	1/21/2010	Big Things Freij
11094	BANMA	Carpenter	1/22/2010	1/23/2010	Fast Freddie's I
11095	GANJO	Emanuel	1/22/2010	1/24/2010	Big Things Freij

The record navigation bar at the bottom of the window indicates that this table contains 87 records, and that the active record is number 1 of 87.



10. On the record navigation bar, click the **Next Record** button several times.

The selection moves down the OrderID field, because that field is active.

Keyboard Shortcut Press the **Up Arrow** or **Down Arrow** key to move the selection one record at a time. Press the **Page Up** or **Page Down** key to move one screen at a time. Press **Ctrl+Home** or **Ctrl+End** move the selection to the first or last field in the table.

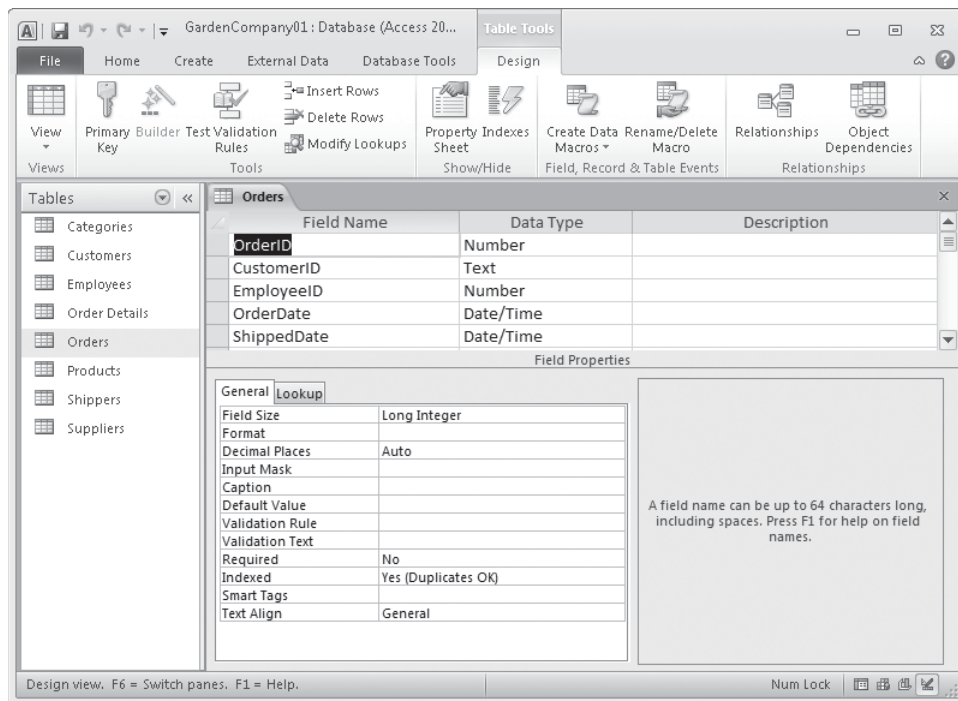
11. Click the record navigation bar, select the current record number, type **40**, and then press the Enter key.

The selection moves directly to record 40.



12. On the **View Shortcuts** toolbar, click the **Design View** button.

The Orders table structure is displayed in Design view, and the Table Tools Design contextual tab appears on the ribbon.



Datasheet view displays the data stored in the table, whereas Design view displays the underlying table structure.

See Also For information about table structure, see “Refining Table Structure” in Chapter 2, “Create Databases and Simple Tables.”

CLEAN UP Close the Orders table. Retain the GardenCompany01 database for use in later exercises.

Tabbed Pages vs. Overlapping Windows

By default, Access 2010 displays database objects on tabbed pages in the program window. If you prefer to display each object in a separate window rather than on a separate page, you can do so.

To switch to overlapping windows:

1. Click the File tab to display the Backstage view, and then click Options.
The Access Options dialog box opens.

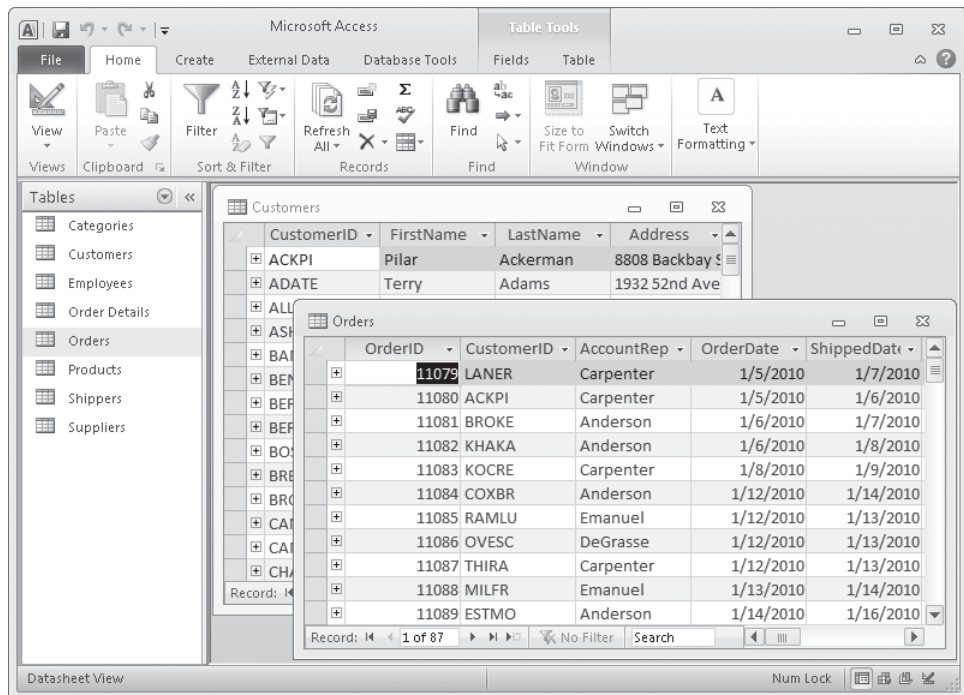
2. Display the Current Database page, and then in the Application Options area, under Document Window Options, click Overlapping Windows.

3. Click OK.

A message tells you that you must close and reopen the current database to put this change into effect.

4. Click OK. Then close and reopen the database.

When database objects are displayed on tabbed pages, a Close button appears at the right end of the tab bar. When objects are displayed in overlapping windows, the window of each object has its own set of Minimize, Restore Down/Maximize, and Close buttons at the right end of its title bar.



Two forms displayed in overlapping windows.

You can move object windows by dragging their title bars, and you can size them by dragging their frames. You can also arrange windows by using the options available when you click the Switch Windows button in the Window group. (This group is added to the Home tab when you select Overlapping Windows in the Access Options dialog box.)

Exploring Forms

Access tables are dense lists of raw information. Working directly with tables in a database you create for your own use might be quite simple for you, but it might be overwhelming for people who don't know much about databases. To make it easier to enter, display, and print information, you can design forms.

A form acts as a friendly interface for a table. Through a form, you can display and edit the records of the underlying table, or create new records. Most forms provide an interface to only one table, but if you want to use one form to interact with multiple tables that are related through one or more common fields, you can embed subforms within a main form.

Forms are essentially collections of controls that either accept information or display information. You can create forms by using a wizard, or you can create them from scratch by manually selecting and placing the controls. Access provides the types of controls that are standard in Windows dialog boxes, such as labels, text boxes, option buttons, and check boxes. With a little ingenuity, you can create forms that look and work much like the dialog boxes in all Windows programs.

As with tables, you can display forms in several views. The following are the three most common views:

- **Form** A view in which you display and enter data.
- **Layout** A view in which you can work with the elements of the form to refine the way it looks and behaves while also being able to see the data from the underlying table.
- **Design** A view that gives you more precise control over the look, placement, and behavior of elements of the form but that hides the underlying data.

See Also For more information about forms, see Chapter 3, "Create Simple Forms," and Chapter 7, "Create Custom Forms."

In this exercise, you'll explore forms, subforms, and the available form controls.



SET UP You need the **GardenCompany01** database you worked with in the preceding exercise to complete this exercise. Open the **GardenCompany01** database, and then follow the steps.

1. In the **Navigation** pane, click the title bar to display the category list, and then under **Filter By Group**, click **Forms**.

This group includes all the forms that have been saved as part of this database.

2. In the **Navigation** pane, double-click **Products**.

The Products form opens on a tabbed page.

The screenshot shows a window titled "Products" with a sub-header "Products" and a bell icon. The form contains the following fields:

- Product ID: 1
- Product Name: Magic Lily
- Latin Name: Lycoris squamigera
- Supplier: The Bulb Basket (dropdown menu)
- Category: Bulbs (dropdown menu)
- Quantity Per Unit: One dozen
- Unit Price: \$48.40
- Units In Stock: 40
- Units On Order: 0
- Reorder Level: 10
- Discontinued:

At the bottom, there is a record navigation bar showing "Record: 1 of 189", a "No Filter" button, and a search field.

This form is the interface for the Products table.

3. Click the arrow adjacent to the **Supplier** box.

Access displays a list of all the company's suppliers.

The screenshot shows the same "Products" window, but the "Supplier" dropdown menu is open, displaying a list of suppliers:

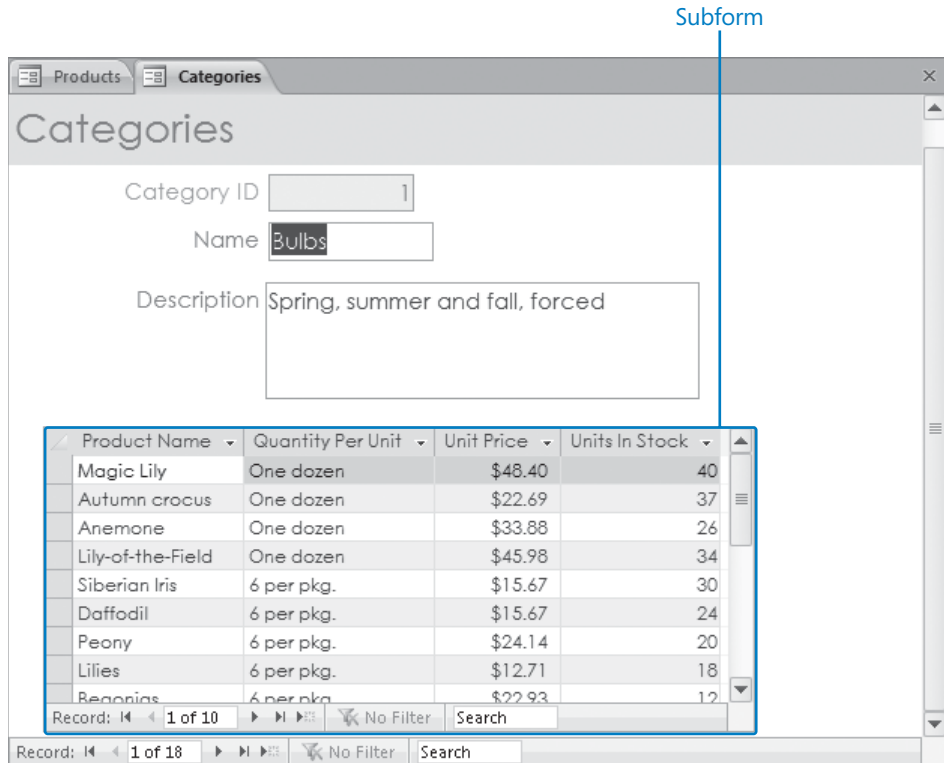
- The Bulb Basket (highlighted)
- The Bulb Basket
- The Carnivorous Connection
- The Complete Garden Supplier
- The Grass Factory
- The Herb House
- The Shrub Club
- The Tree Farm
- Wholesale Rock & Gravel

The other fields in the form remain the same as in the previous screenshot.

This is an example of a list box control.

4. In the **Navigation** pane, double-click **Categories**.

The Categories form opens on its own tabbed page. This form includes a main form and a subform. The main form displays information from the Categories table, and the subform, which looks like a datasheet, displays information for the current record from the Products table.



This form is the interface for the Categories and Products tables.



5. On the record navigation bar, click the **Next Record** button a few times to display the next few records.

Notice that the subform changes with each click to display the products in each category.

6. In the **Navigation** pane, double-click **Customers**.

The Customers form opens in Form view.

The screenshot shows the Microsoft Access interface for the 'Garden Company Customers' form. The form is displayed in Form view. The title bar includes tabs for 'Products', 'Categories', and 'Customers'. The form header features a small image of a flower and the text 'Garden Company Customers'. The main body of the form contains several text boxes for data entry: 'CustomerID' with the value 'ACKP', 'Name' with 'Pilar Ackerman', 'Phone' with '(425) 555-0194', 'Address' with '8808 Backbay St.', 'City/State/ZIP' with 'Bellevue WA 88004', and 'Country' with 'USA'. At the bottom of the form, there is a status bar showing 'Record: 1 of 110', 'Unfiltered', and a search box.

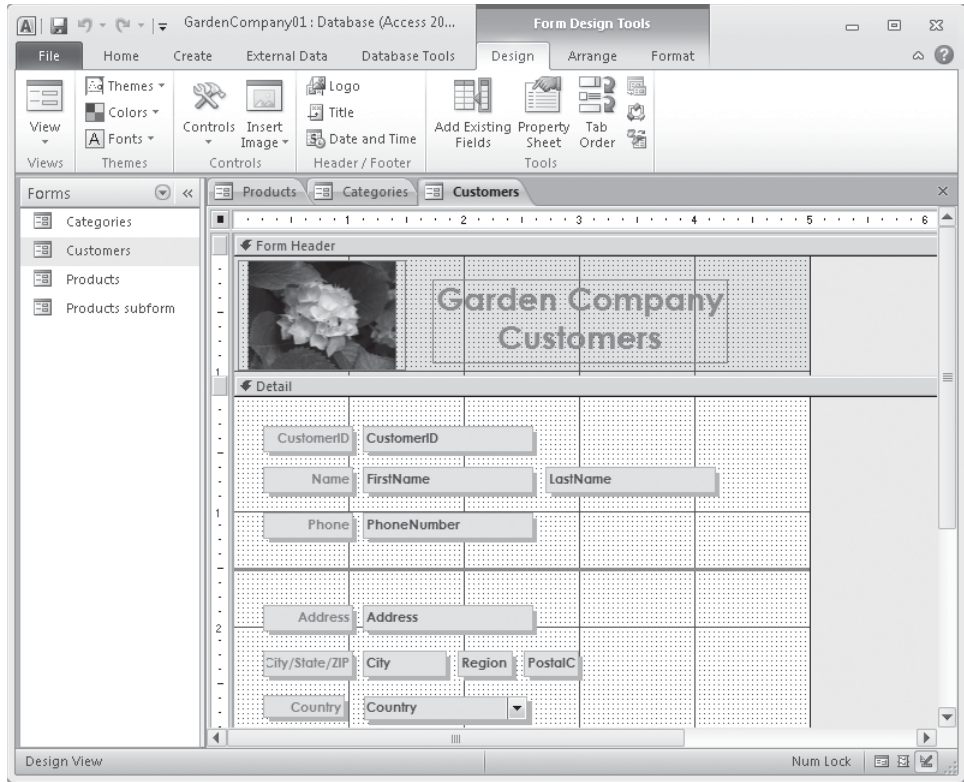
The purpose of this form is to edit or create customer records.

7. On the **Home** tab, in the **Views** group, click the **View** button.

For forms, clicking the View button switches between Form view and Layout view.

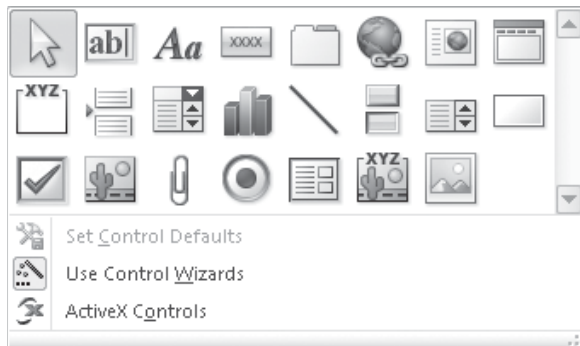
8. In the **Views** group, click the **View** arrow, and then click **Design View**.

Access displays the Customers form in Design view, and adds three Form Design Tools contextual tabs (Design, Arrange, and Format) to the ribbon. The contextual tabs are available only when you are working on the design of the form in either Layout view or Design view.



In this view, you can add controls to a form.

9. Switch between Form view, Layout view, and Design view, noticing the differences in the program window.
10. On the **Design** contextual tab, in the **Controls** group, display the **Controls** gallery. Depending on the size of your program window, you might have to click the Controls button or the More button to display this gallery.



You can use these controls to assemble custom forms for your database.

See Also For information about form controls, see “Adding Controls” in Chapter 7, “Create Custom Forms.”

11. Click away from the gallery to close it.
12. Right-click the tab of the **Customers** form, and then click **Close All**.

All the open database objects close.

 **CLEAN UP** Retain the GardenCompany01 database for use in later exercises.

Exploring Queries

You can locate specific information stored in a table, or in multiple tables, by creating a query that specifies the criteria you want to match. Queries can be quite simple. For example, you might want a list of all products in a specific category that cost less than \$10. Queries can also be quite complex. For example, you might want to locate all out-of-state customers who have purchased gloves within the last three months. For the first example, you might be able to sort and filter the data in the Products table fairly quickly to come up with a list. For the second example, sorting and filtering would be very tedious. It would be far simpler to create a query that extracts all records in the Customers table with billing addresses that are not in your state and whose customer IDs map to records that appear in the Orders table within the last three months and that include item IDs mapping to records classified as gloves in the Products table.

You can create queries by using a Query wizard, and you can also create them from scratch. The most common type is the select query, which extracts matching records from one or more tables. Less common are queries that perform specific types of actions.

Processing a query, commonly referred to as *running a query* or *querying the database*, displays a datasheet containing the records that match your search criteria. You can use the query results as the basis for further analysis, create other Access objects (such as reports) from the results, or export the results in another format, such as an Excel spreadsheet.

If you create a query that you are likely to want to run more than once, you can save it. It then becomes part of the database and appears in the list when you display the Queries group in the Navigation pane. To run the query at any time, you simply double-click it in the Navigation pane. Each time you run the query, Access evaluates the records in the specified table or tables and displays the current subset of records that match the criteria defined in the query.

Don't worry if this all sounds a bit complicated at the moment. When you approach queries logically, they soon begin to make perfect sense.

See Also For more information about queries, see Chapter 8, "Create Queries."

In this exercise, you'll explore two existing queries.



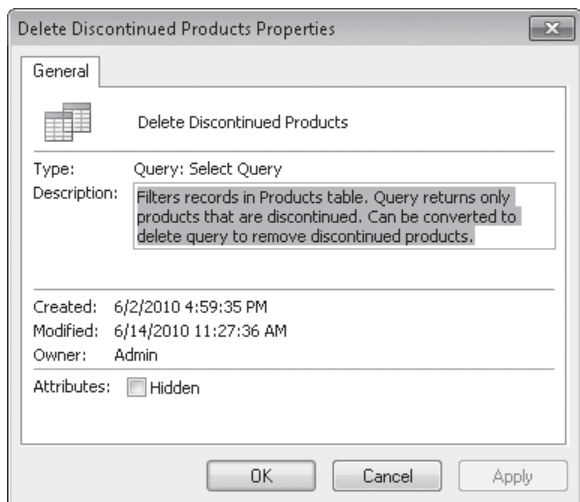
SET UP You need the **GardenCompany01** database you worked with in the preceding exercise to complete this exercise. Open the **GardenCompany01** database, and then follow the steps.

1. In the **Navigation** pane, display the **Queries** group.

The group includes all the queries that have been saved as part of this database.

2. In the **Navigation** pane, right-click the **Delete Discontinued Products** query, and then click **Object Properties**.

Access displays the properties of the query, including a description of its purpose.



The icon at the top of the General tab indicates that this is a select query.

3. In the **Delete Discontinued Products Properties** dialog box, click **Cancel**.
4. Right-click the **Products By Category** query, and then click **Open**.

Access runs the query.

Category Name	Product Name	Quantity Per Unit	Units In Stock	Discontinued
Berry bushes	Blackberries	8 starts per pkg	18	<input type="checkbox"/>
Berry bushes	Currant	3 1/2 inch pot	18	<input type="checkbox"/>
Berry bushes	Gooseberries	3 1/2 inch pot	10	<input type="checkbox"/>
Berry bushes	Red Raspberries	fieldgrown bareroot	20	<input type="checkbox"/>
Berry bushes	Strawberries	fieldgrown bareroot	6	<input type="checkbox"/>
Bonsai supplies	Bonsai toolkit	1 ea.	3	<input type="checkbox"/>
Bonsai supplies	Dwarf Ficus Benjamin	1 ea.	3	<input type="checkbox"/>
Bonsai supplies	Dwarf Jack Pine	1 ea.	2	<input type="checkbox"/>
Bonsai supplies	Dwarf Juniper	1 ea.	3	<input type="checkbox"/>
Bonsai supplies	Dwarf Mugo Pine	1 ea.	1	<input type="checkbox"/>
Bonsai supplies	Green Mound Juniper	1 ea.	2	<input type="checkbox"/>
Bulbs	Anemone	One dozen	26	<input type="checkbox"/>
Bulbs	Autumn crocus	One dozen	37	<input type="checkbox"/>
Bulbs	Begonias	6 per pkg.	12	<input type="checkbox"/>
Bulbs	Bulb planter	1 ea.	6	<input type="checkbox"/>
Bulbs	Daffodil	6 per pkg.	24	<input type="checkbox"/>
Bulbs	Lilies	6 per pkg.	18	<input type="checkbox"/>

Record: 1 of 171 No Filter Search

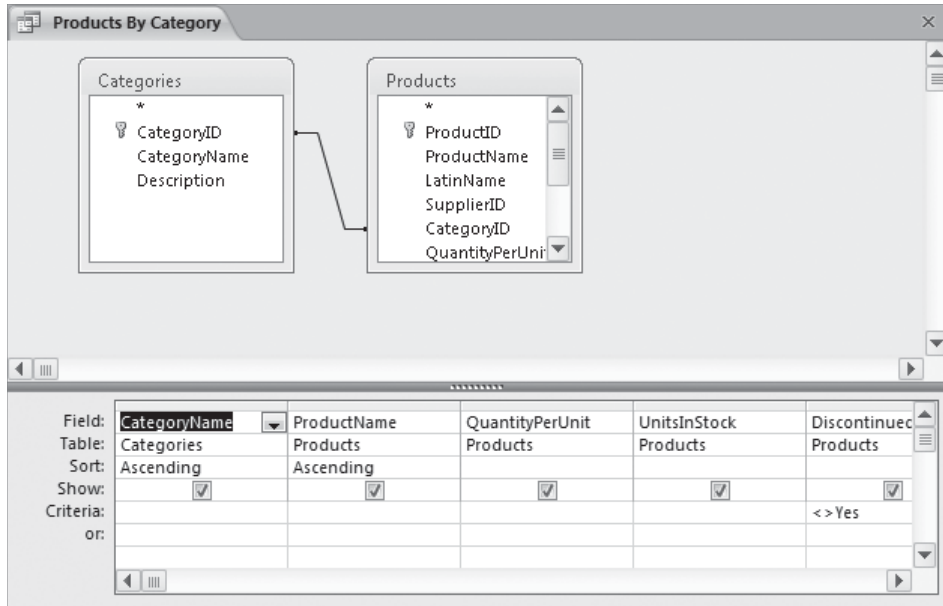
This datasheet displays the results of running the Products By Category query.

The record navigation bar indicates that 171 records are displayed; the Products table actually contains 189 records. To find out why 18 of the records are missing, you need to look at this query in Design view.



5. On the **View Shortcuts** toolbar, click the **Design View** button.

Access displays the query in the Query Designer, and the Query Tools Design contextual tab appears on the ribbon.



The Query Designer.

Two boxes in the top pane of the Query Designer list the fields in the tables this query is designed to work with. The line between the boxes indicates that before the query was created, a relationship was established between the two tables based on the fact that the CategoryID field is present in both of them. The relationship enables this query to draw information from both tables.

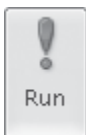
See Also For more information about relationships, see “Creating Relationships Between Tables” in Chapter 2, “Create Databases and Simple Tables.”

The query is defined in the design grid in the bottom pane of the Query Designer. Each column of the grid refers to one field from one of the tables above. Notice that <> Yes (not equal to Yes) is entered in the Criteria row for the Discontinued field. This query finds all the records that don’t have a value of Yes in that field (in other words, all the records that have not been discontinued).

- As an experiment, in the **Criteria** row of the **Discontinued** field, replace <> with =. Then on the **Design** contextual tab, in the **Results** group, click the **Run** button.

Tip You can also run a query by switching to Datasheet view.

This time, the query finds all the records that have been discontinued. The 18 discontinued products account for the difference between the number of records in the Products table and the number of records displayed by the original query.



Category Name	Product Name	Quantity Per Unit	Units In Stock	Discontinued
Bonsai supplies	Bonsai mixed garden	1 ea.	0	<input checked="" type="checkbox"/>
Bonsai supplies	Bonsai scissors	1 ea.	0	<input checked="" type="checkbox"/>
Fertilizers	Guano	5 lb. bag	0	<input checked="" type="checkbox"/>
Fertilizers	Muriate of potash	10 lb. bag	0	<input checked="" type="checkbox"/>
Grasses	Decorator moss	1 tray	0	<input checked="" type="checkbox"/>
Shrubs/hedges	Hedge shears 10"	1 ea.	0	<input checked="" type="checkbox"/>
Soils/sand	Buckwheat hulls	5 lb bag	0	<input checked="" type="checkbox"/>
Soils/sand	Oyster shells	5 lb bag	0	<input checked="" type="checkbox"/>
Soils/sand	Peanut hull meal	5 lb bag	0	<input checked="" type="checkbox"/>
Soils/sand	Terrarium soil	5 lb bag	0	<input checked="" type="checkbox"/>
Tools	Manure fork	1 ea.	0	<input checked="" type="checkbox"/>
Tools	Optional grass catcher	1 ea.	0	<input checked="" type="checkbox"/>
Tools	Posthole digger	1 ea.	0	<input checked="" type="checkbox"/>
Tools	Push reel lawn mower	1 ea.	0	<input checked="" type="checkbox"/>
Tools	Revolving sprinkler	1 ea.	0	<input checked="" type="checkbox"/>
Tools	Root waterer	1 ea.	0	<input checked="" type="checkbox"/>
Tools	Shade fencing 6'	50' roll	0	<input checked="" type="checkbox"/>

Record: 1 of 18 | No Filter | Search

The new query results.

- Close the **Products By Category** query. When a message asks whether you want to save your changes to the query, click **No**.

CLEAN UP Retain the GardenCompany01 database for use in later exercises.

Exploring Reports

You can display the information recorded in your tables in nicely formatted, easily accessible reports, either on your computer screen or on paper. A report can include items of information selected from multiple tables and queries, values calculated from information in the database, and formatting elements such as headers, footers, titles, and headings.

You can look at reports in four views:

- **Report view** In this view, you can scroll through the information in the report without being distracted by the page breaks that will be inserted when it is printed.
- **Print Preview** In this view, you see your report exactly as it will look when printed.
- **Layout view** This view displays the data in the report (similar to Print Preview) but enables you to edit the layout.
- **Design view** In this view, you can manipulate the design of a report in the same way that you manipulate a form.

See Also For more information about reports, see Chapter 5, “Create Simple Reports,” and Chapter 9, “Create Custom Reports.”

In this exercise, you’ll preview a report as it will appear when printed. You’ll also examine another report in Design view.



SET UP You need the GardenCompany01 database you worked with in the preceding exercise to complete this exercise. Open the GardenCompany01 database, and then follow the steps.

1. In the **Navigation** pane, display the **Reports** group.

The group includes all the reports that have been created and saved as part of this database.

2. In the **Navigation** pane, right-click **Customer Labels**, and then click **Print Preview**.

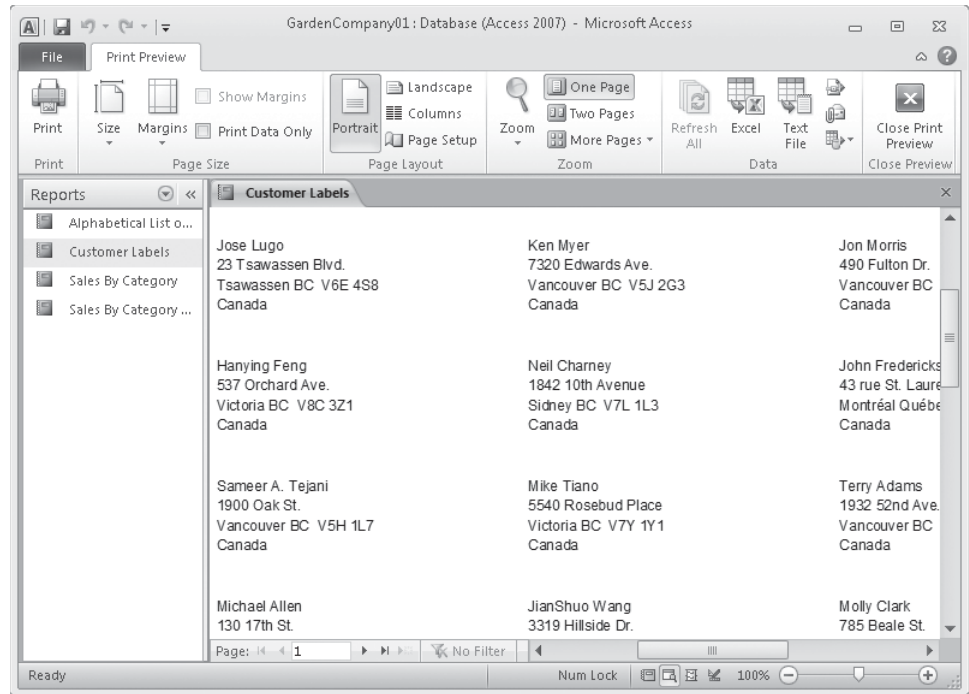
Troubleshooting If a message tells you that some data may not be displayed because of column widths and spacing, for the purposes of this exercise, simply press OK to continue.

The Customer Labels report opens, displaying a full page of labels in a view that is much like Print Preview in other Office programs. The ribbon now displays only the Print Preview tab.

Tip Access provides a wizard that can help you create a mailing label report. You can also create labels like these by using the Customers table as a data source for the Word 2010 mail merge tool.

3. Move the pointer over the report, where it changes to a magnifying glass. Then with the pointer over the middle label at the top of the report, click the mouse button.

The zoom percentage changes to 100%, as indicated on the Zoom Level button in the lower-right corner of the window. You can click this button to switch back and forth between the current and previous zoom levels.



This report prints customer names and addresses in a mailing label format.

If the report is too small to read in Print Preview, you can adjust the zoom percentage by clicking the Zoom In button (the plus sign) at the right end of the Zoom slider in the lower-right corner of the window, or by dragging the Zoom slider. You can also click the Zoom arrow in the Zoom group on the Print Preview tab and then click a specific percentage.

4. In the **Navigation** pane, right-click the **Sales By Category** report, and then click **Print Preview**.



5. Use any method to zoom the page to 100 percent.
6. On the page navigation bar in the lower-left corner of the page, click the **Last Page** button.

This report generates nine pages of information by combining data from the Categories table and the Products table.

Wetland plants	
Product:	
Anacharis	\$8.75
Fragrant Water Lily	\$18.80
Pickerelweed	\$9.95
Water Snowflakes	\$10.50
Total	\$48.00

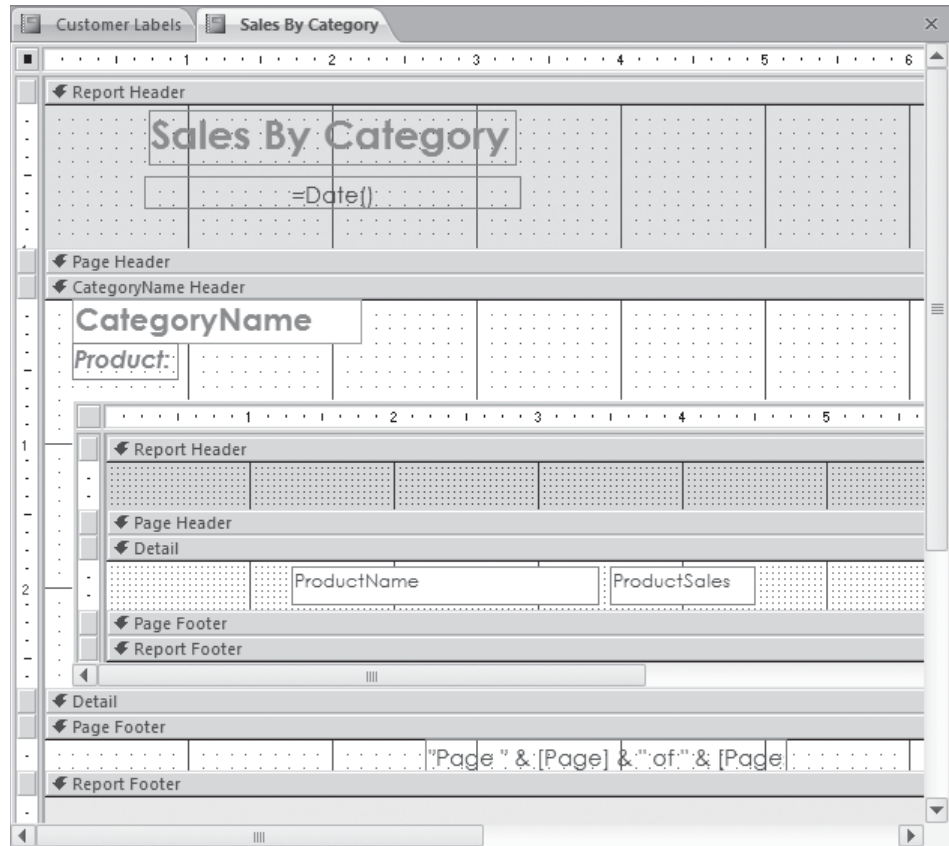
The magnified Sales By Category report.



7. Click the **Previous Page** button a few times to view a few more pages of the report.
8. On the **View Shortcuts** toolbar, click the **Design View** button.



Access switches to Design view and displays four Report Design Tools contextual tabs (Design, Arrange, Format, and Page Setup) on the ribbon. In this view, the report looks similar to a form.



You create reports by using the same techniques you use to create forms.

✘ CLEAN UP Close the open reports. Retain the GardenCompany01 database for use in the last exercise.

Previewing and Printing Access Objects

Because Access is a Windows application, it interacts with your printer through standard Windows dialog boxes and drivers. This means that any printer that you can use from other programs can be used from Access, and any special features of that printer, such as color printing or duplex printing, are available in Access.

The commands for printing database objects are available from the Print page of the Backstage view. From this page, you can do the following:

- Print the active object with the default settings.
- Display the Print dialog box, where you can select the printer you want to use, as well as adjust various other settings appropriate to the active object and the current view.
- Display the active object in Print Preview.

In this exercise, you'll explore the printing options for a table and a form.



SET UP You need the **GardenCompany01** database you worked with in the preceding exercise to complete this exercise. Open the **GardenCompany01** database, and then follow the steps.

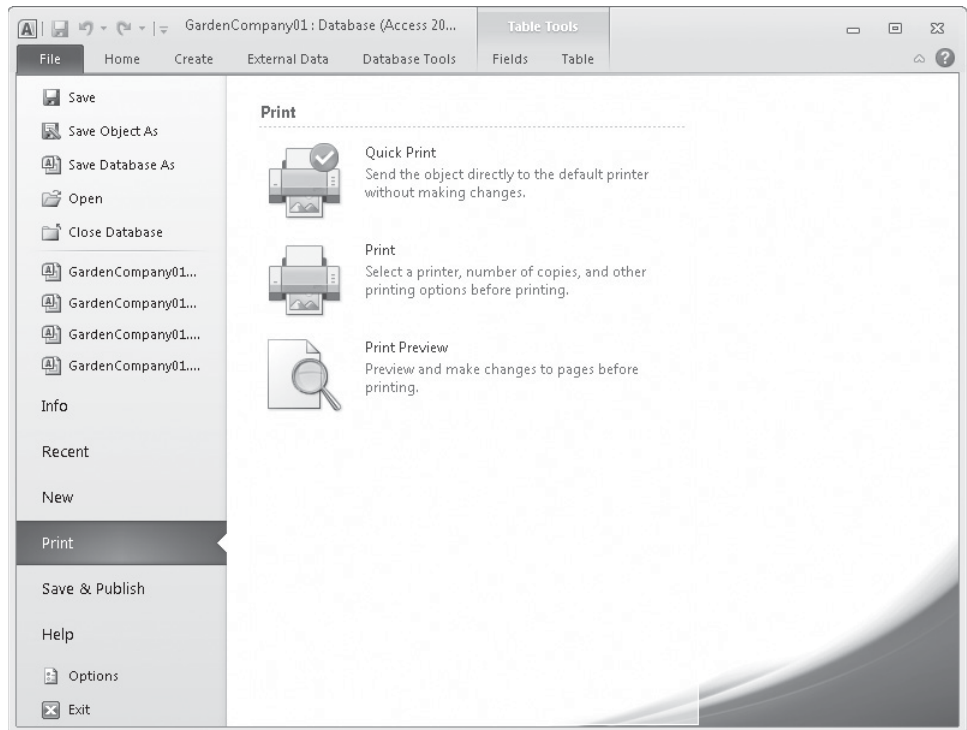
1. In the **Navigation** pane, display the **All Access Objects** category.
2. In the **Tables** group, double-click the **Employees** table to open it in Datasheet view.

This table contains information about nine employees. Some of the columns are too narrow to display all their data, and even with the program window maximized, depending on your screen resolution, some of the fields might not fit on the screen.

3. Adjust the widths of all the columns so that all the values in the fields are visible. Access will not print data that is not visible.
4. Click the File tab to display the Backstage view.

- In the left pane, click **Print**.

The Print page displays the available print options.

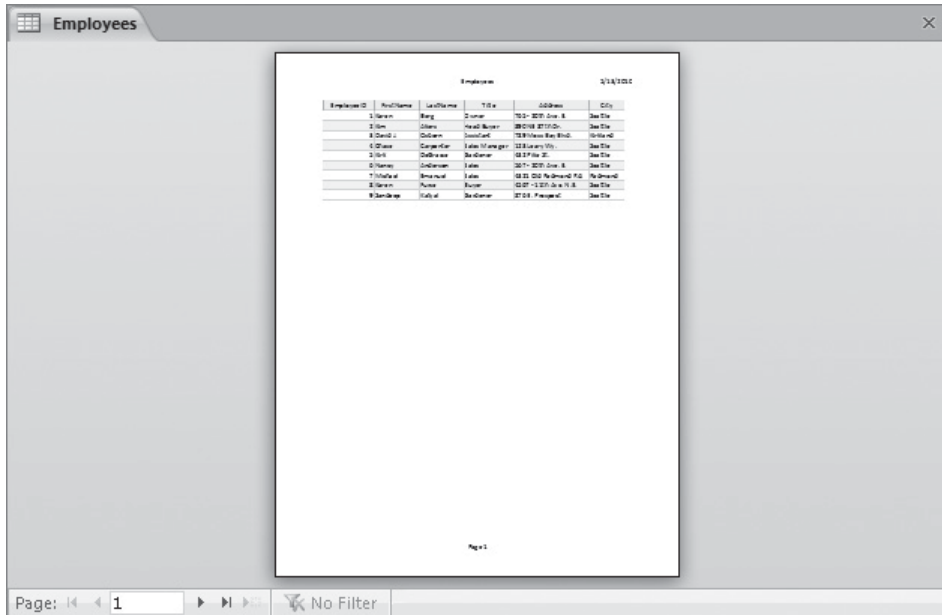


The Print page of the Backstage view.

- In the right pane, click **Print Preview**.

The first page of the Employees table is displayed in Print Preview.

Tip This is the only way to preview a table, a query results datasheet, or a form. There is no Print Preview command available when you right-click one of these objects, and there is no Print Preview button on the View Shortcuts toolbar or in the View button list, as there is for reports.

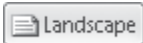


The *Employees* table in the default Portrait orientation.



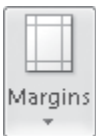
7. On the navigation bar at the bottom of the window, click the **Next Page** button. Then click the **First Page** button to move back to page 1.

If you print this datasheet with the current settings, it will print as two short, vertically oriented pages.



8. On the **Print Preview** tab, in the **Page Layout** group, click the **Landscape** button. Then click the **Next Page** button.

In Landscape orientation, the datasheet still fits on two pages, with only one field on the second page.



9. In the **Page Size** group, click the **Margins** button, and then click **Narrow**.

On the page navigation bar, the buttons are now gray, indicating that the Employee list fits on one page.

Tip You can set custom margins by clicking the **Page Setup** button in the **Page Layout** group and then adjusting the **Top**, **Bottom**, **Left**, and **Right** settings on the **Print Options** page of the **Page Setup** dialog box.

EmpId	FirstName	LastName	Title	Address	City	State	PostalCode	HomePhone	BirthDate	DateHired
1	Marion	Borg	Driver	765 - 2009 Ave. E.	Seattle	WA	98102	(206) 555-0100	12/8/1966	8/1/2002
2	Kim	Albon	Head Buyer	8810 148 97th Dr.	Seattle	WA	98115	(206) 555-0101	2/19/1963	6/1/2009
3	David L.	Chobem	Assistant	789 Moss Bay Blvd.	Kirkland	WA	98033	(425) 555-0102	8/20/1968	11/2/2008
4	Oliver	Capricorn	Sales Manager	113 Looney Wy.	Seattle	WA	98117	(206) 555-0103	9/19/1966	8/14/2003
5	Mark	DeNesso	Director	432 Pike St.	Seattle	WA	98119	(206) 555-0104	5/4/1953	10/17/2005
6	Nancy	Anderson	Sales	587 - 2009 Ave. E.	Seattle	WA	98102	(206) 555-0105	7/2/1974	5/1/2005
7	Michael	Emanuel	Sales	4321 Old Redmond Rd.	Redmond	WA	98052	(425) 555-0106	5/29/1967	4/1/2009
8	Marion	Puraz	Buyer	4887 - 110th Ave. N.E.	Seattle	WA	98133	(206) 555-0107	1/9/1980	8/9/2004
9	Sanjiv	Kalyal	Director	876 E. Prospect	Seattle	WA	98105	(206) 555-0108	7/2/1967	11/15/2009

The Employees table in Landscape orientation with narrow margins.



10. In the **Print** group, click the **Print** button.

The Print dialog box opens.

Print ? X

Printer

Name: hp psc 1310 series Properties

Status: Ready

Type: hp psc 1310 series

Where: USB001

Comment: Print to File

Print Range

All

Pages From: To:

Selected Record(s)

Copies

Number of Copies: 1

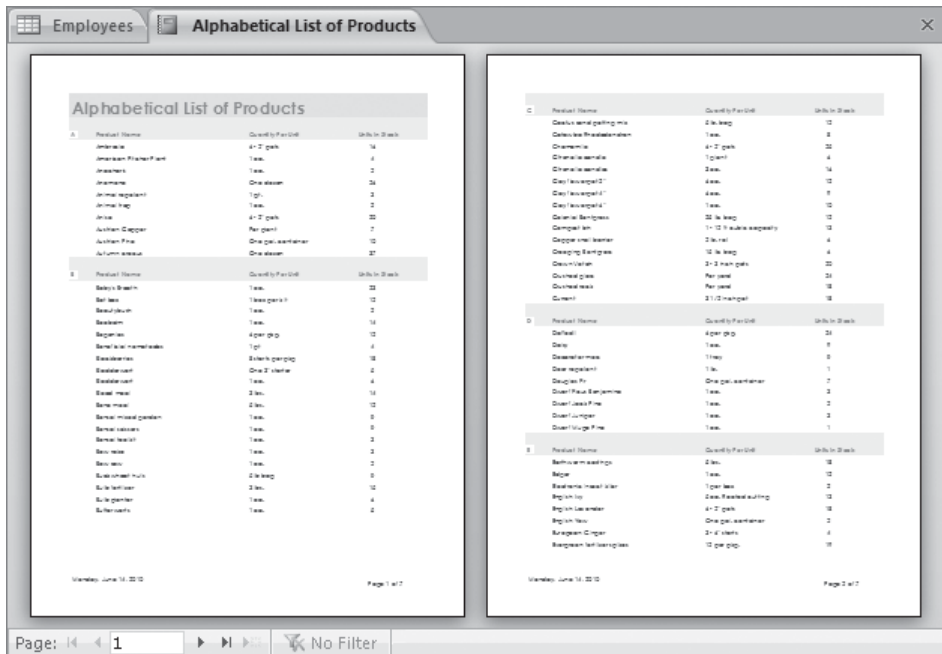
Collate

Setup...
OK
Cancel

In this dialog box, you can select the printer and set print options such as the pages or records to print, and the number of copies.



11. Click **Cancel** to close the **Print** dialog box, and then in the **Close Preview** group, click the **Close Print Preview** button.
12. In the **Navigation** pane, under **Reports**, double-click **Alphabetical List of Products**.
The report opens in Report view.
13. Display the Backstage view, click **Print**, and then click **Print Preview**.
Access displays a preview of the information that will be printed.
14. On the **Print Preview** tab, in the **Zoom** group, click the **Two Pages** button.
Access displays the first two pages in the report side by side.



You can preview more than one page at a time.



15. On the **View Shortcuts** toolbar, click the **Report View** button to return to that view.



CLEAN UP Save your changes to the **Employees** table, and close both the table and the report. Then close the **GardenCompany01** database.

Key Points

- The basic Access interface objects work much the same as in other Office or Windows programs.
- A database is the computer equivalent of an organized list of information.
- Tables are the core database objects. Access data is organized in tables made up of columns and rows, called *fields* and *records*.
- In a relational database, tables can be related based on common fields, enabling the retrieval of information from more than one table at the same time.
- The purpose of the other database objects—forms, reports, queries, macros, and modules—is to interact with one or more tables.
- Every Access object has two or more views. For example, you view data in a table in Datasheet view and define how the data is structured in Design view.
- If you want to print a database object, be sure the information you need is visible on the screen before you print.

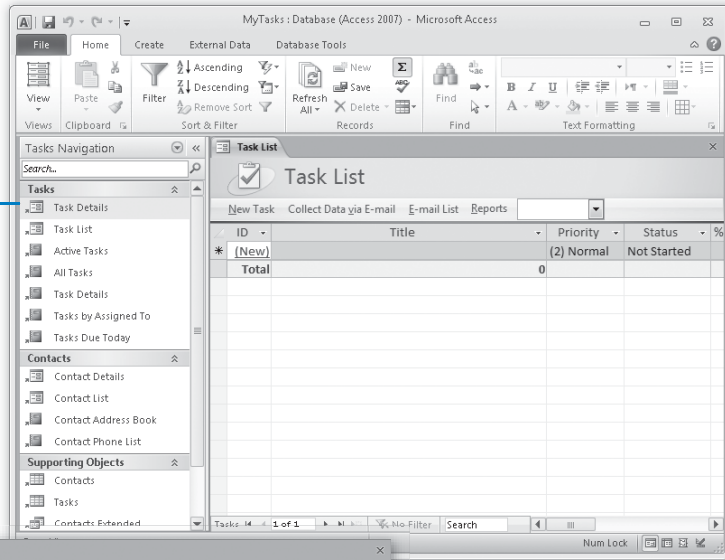
Chapter at a Glance

Create databases from templates, page 46

Create databases and tables manually, page 52

Refine table structure, page 64

Create relationships between tables, page 68



CustomerID	FirstName	LastName	Street	City	State	ZIP	Country	Phone
1	Scott	Gode	612 E. 2nd	Pocatello	ID	73204	USA	208 555-0161
*	(New)							

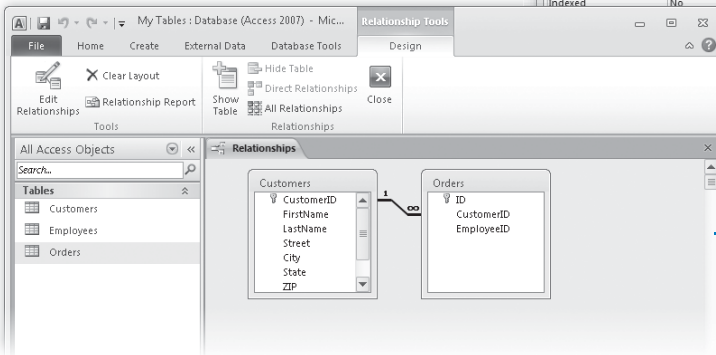
Field Name	Data Type	Description
City	Text	
State	Text	
PostalCode	Text	
Phone	Text	
Birthdate	Date/Time	

Field Properties

General Lookup

Field Size	20
Format	
Input Mask	
Caption	State or Region
Default Value	
Validation Rule	
Validation Text	
Required	No
Allow Zero Length	Yes
Indexed	No

The label for the field when used on a form. If you don't enter a caption, the field name is used as the label. Press F1 for help on captions.



2 Create Databases and Simple Tables

In this chapter, you will learn how to

- ✓ Create databases from templates.
 - ✓ Create databases and tables manually.
 - ✓ Manipulate table columns and rows.
 - ✓ Refine table structure.
 - ✓ Create relationships between tables.
-

Creating the container for a database is easy. But an empty database is no more useful than an empty document or worksheet. It is only when you fill a database with data in tables (known as populating a database) that it starts to serve a purpose. As you add forms, queries, and reports, it becomes a useful tool. If you customize it by adding a startup page and organizing the various objects into categories and groups, it moves into the realm of being a database application.

Not every database has to be refined to the point that it can be classified as an application. Databases that only you or a few experienced database users will work with can remain fairly simple. But if you expect someone without database knowledge to enter data or generate their own reports, spending a little extra time in the beginning to create a solid foundation will save a lot of work later. Otherwise, you'll find yourself continually repairing damaged files or walking people through seemingly easy tasks.

Microsoft Access 2010 takes a lot of the difficult and mundane work out of creating and customizing a database by providing database applications in the form of templates that you modify and populate with your own information. Access 2010 also provides templates for common elements that you might want to plug into a database. These application parts consist of sets of objects—a table and related forms, queries, or reports—that together provide a complete, functioning part of a database. All you have to do is fill in your data. If none of the templates meet your needs, you can create tables manually.

In this chapter, you'll create a database from a template and create a table manually. Then you'll adjust the display of a data table to fit your needs. By the end of this chapter, you'll have a database containing a few tables and you'll understand a bit about how the tables in the databases you will use for the exercises in the remaining chapters of the book were created.

Practice Files You don't need any practice files to complete the exercises in this chapter. For more information about practice file requirements, see "Using the Practice Files" at the beginning of this book.

Creating Databases from Templates

A few years ago (the distant past, in computer time), creating a database structure involved first analyzing your needs and then laying out the database design on paper. You would decide what information you needed to track and how to store it in the database. Creating the database structure could be a lot of work, and after you created it and entered data, making changes could be difficult. Templates have changed this process, and committing yourself to a particular database structure is no longer the big decision it once was.

A template is a pattern that you use to create a specific type of database. Access 2010 comes with templates for several databases typically used in business and education, and when you are connected to the Internet, many more are available from the Microsoft Office Online Web site at office.microsoft.com. By using pre-packaged templates, you can create a database application in far less time than it used to take to sketch the design on paper, because someone has already done the design work for you.

Using an Access template might not produce exactly the database application you want, but it can quickly create something that you can customize to fit your needs. However, you can customize a database only if you know how to manipulate its basic building blocks: tables, forms, queries, and reports. Due to the complexity of these templates, you probably shouldn't try to modify them until you're comfortable working with database objects in Design view and Layout view. By the time you finish this book, you will know enough to be able to confidently work with the sophisticated pre-packaged application templates that come with Access.

In this exercise, you'll create a database application based on the Tasks template. This template is typical of those provided with Microsoft Access 2010, in that it looks nice and demonstrates a lot of the neat things you can do in a database.



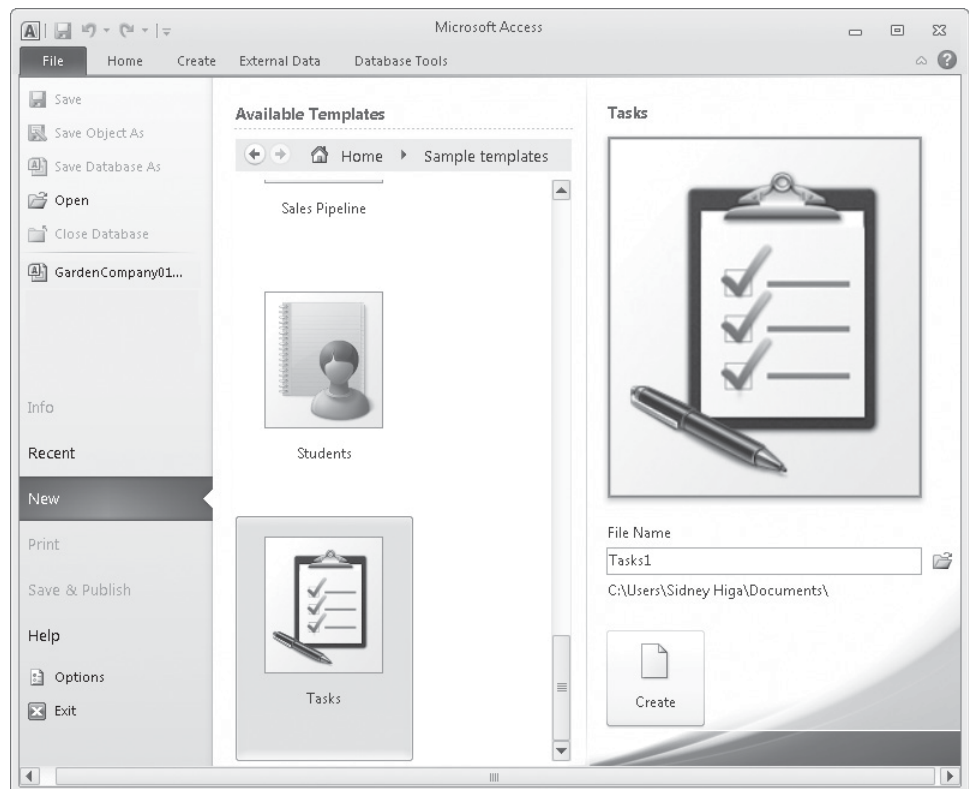
SET UP You don't need any practice files to complete this exercise. Close any open databases, and then with the New page of the Backstage view displayed, follow the steps.

1. In the **Available Templates** area, click **Sample Templates**.

Access displays a list of the templates that shipped with the program and are installed on your computer.

2. Click the **Tasks** template icon.

In the right pane, you can assign a name to the database and browse to the location where you want to store the database.



The Tasks template is supplied with Access.

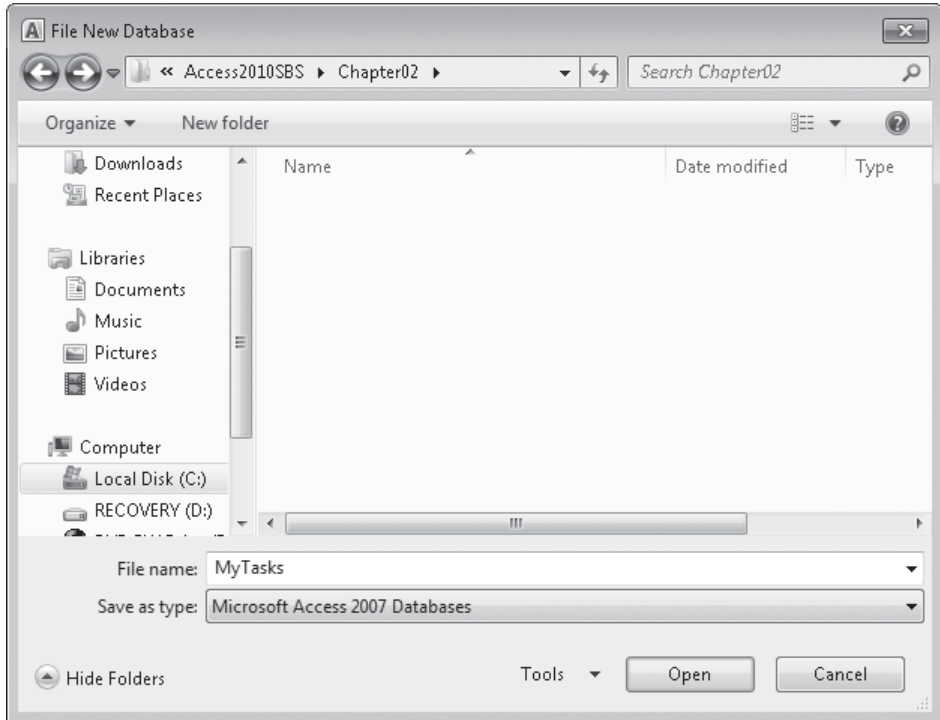
3. In the **File Name** box, type **MyTasks**.

Tip Naming conventions for Access database files follow those for Windows files. File names cannot contain the following characters: \ / : * ? " < > |. By default, file name extensions are hidden, and you shouldn't type the extension in the File Name box. (The extension for an Access 2010 database file is .accdb. For information about this file format, which was introduced with Access 2007, search for *accdb* in Access Help.)



4. Click the adjacent **Browse** button, and then in the **File New Database** dialog box, navigate to your **Chapter02** practice file folder.

You use the same navigational techniques in this dialog box that you would use in any Open or Save dialog box.



The File New Database dialog box.

5. With **Microsoft Access 2007 Databases** selected in the **Save as type** box, click **OK**.

The path to the specified folder is displayed below the File Name box.

Tip By default, Access creates new databases in your Documents folder. You can change the location when you create each database, as you did here, or you can change the default save folder. To specify a different default folder, click the File tab to display the Backstage view, click Options, and then on the General page of the Access Options dialog box, under Creating Databases, click the Browse button to the right of Default Database Folder. In the Default Database Path dialog box, browse to the folder you want to be the default, and then click OK in each of the open dialog boxes.

6. Click the **Create** button.

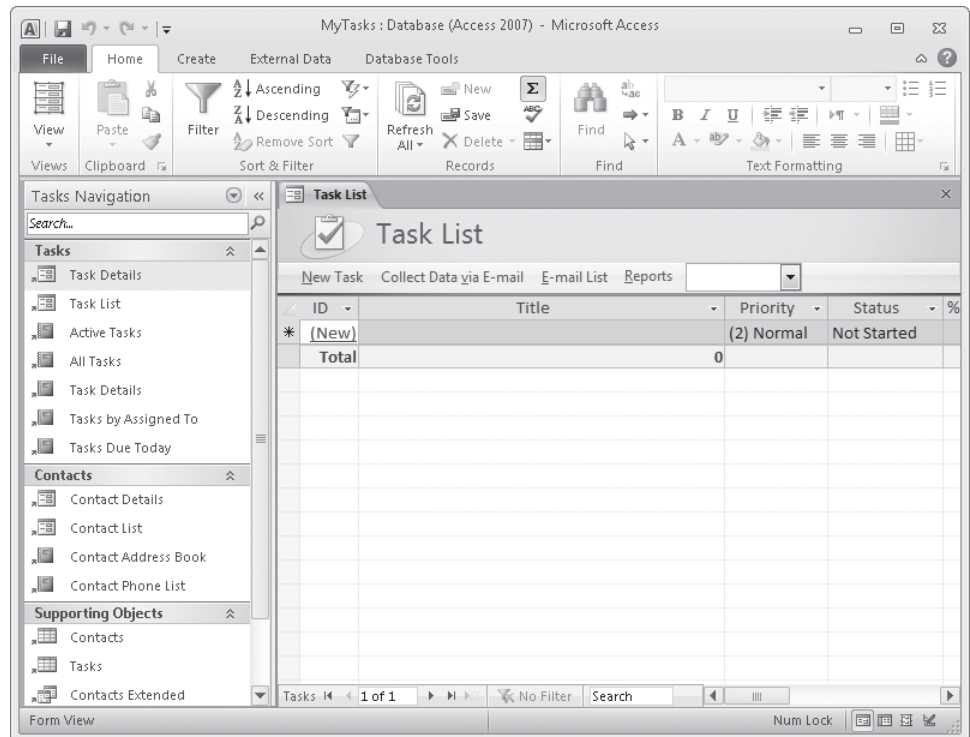
Access briefly displays a progress bar, and then the new database opens, with the Task List form displayed in Layout view.

Tip Below the form name is a toolbar with commands created by embedded macros. These commands are an example of what makes this a database application rather than a simple database. The topic of macros is beyond the scope of this book. For information, search for *macros* in Access Help.



7. If the **Navigation** pane is closed, click the **Shutter Bar Open** button at the right end of its title bar to open it. Then if any of the groups are collapsed, click their chevrons to open them.

The Navigation pane displays a custom Tasks Navigation category.



The custom category has custom Tasks, Contacts, and Supporting Objects groups.

Troubleshooting The appearance of buttons and groups on the ribbon changes depending on the width of the program window. For information about changing the appearance of the ribbon to match our screen images, see “Modifying the Display of the Ribbon” at the beginning of this book.

8. In the **Navigation** pane, click the **Tasks Navigation** title bar, and then in the category and group list, click **Object Type** to list all the objects in this database.

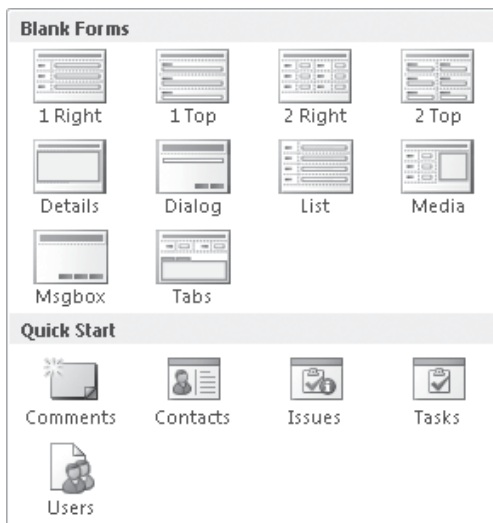
9. In the **Tables** group, double-click **Contacts**.

The empty Contacts table is displayed. You could now start entering data in this table.

10. Right-click the **Contacts** tab, and click **Close All**.

11. On the **Create** tab of the ribbon, in the **Templates** group, click the **Application Parts** button.

The Application Parts gallery appears.



The Application Parts gallery.

You can add various types of forms and several sets of related tables and other database objects to this or any other database. These ready-made objects give you a jump start on creating a fully functional database application.

12. Click away from the gallery to close it.

13. Continue exploring the objects that are part of the **MyTasks** database on your own.

✘ CLEAN UP Close the MyTasks database.

Web Databases

Several of the templates in the Sample Templates gallery and many of the templates available from the Microsoft Office Online Web site are designated as Web databases. A Web database is one that is compatible with the new Web publishing capabilities of Access 2010.

If Access Services are installed on your organization's Microsoft SharePoint server, you can now publish a database to Access Services. Publishing converts tables to SharePoint lists stored on the server and makes it possible to work with the database either in Access or in a Web browser.

You can create a Web database based on a Web template or build a new one from scratch by choosing Blank Web Database on the New page of the Backstage view. You can also publish a regular database as a Web database, although the tables in the database must conform to Web database requirements for publication to be successful. Because of these requirements, if you work for an organization where future deployment of Access Services is a possibility, you might want to consider creating a Web database to ensure that your database can be published to Access Services in the future.

In a Web database, you can create two kinds of objects:

- **Web objects** These can be created and viewed in either a Web browser or Access.
- **Non-Web objects** These can be created and viewed only in Access.

When you are working with a Web database from a browser, you are working with the database on the server. When you are working with it from Access, you are working with a local copy of the database that is synchronized with the database on the server. For both types of objects, you can make design changes only in Access and only when connected to the server.

These days, more and more companies have employees and clients in different geographic locations, and more and more people are working away from company offices. Web databases make it possible for people to access company databases from wherever they are and from any computer, whether or not it has Access installed.

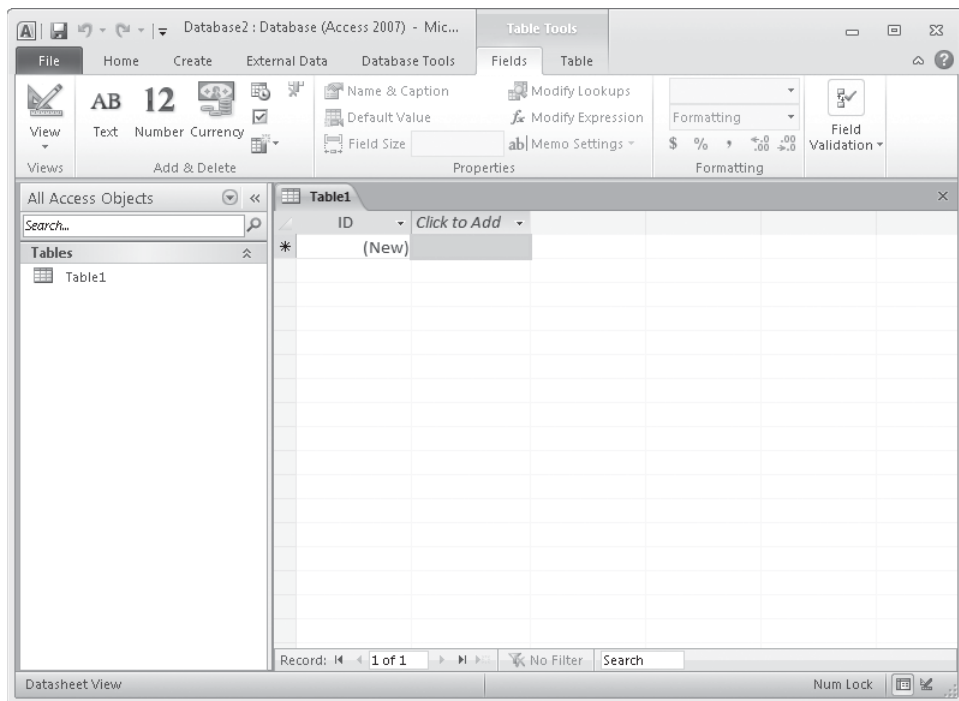
Creating Databases and Tables Manually

Suppose you need to store different types of information for different types of people. For example, you might want to maintain information about employees, customers, and suppliers. In addition to the standard information—such as names, addresses, and phone numbers—you might want to track these other kinds of information:

- Employee identification numbers, hire dates, marital status, deductions, and pay rates
- Customer orders and account status
- Supplier contacts, current order status, and discounts

You could start with a template, add fields for all the different items of information to a single Contacts table, and then fill in only the relevant fields for each type of contact. However, cramming all this information into one table would soon get pretty messy. It's better to create a new database based on the Blank Database template and then manually create separate tables for each type of contact: employee, customer, and supplier.

When you create a new blank database or insert a new table into an existing database, the table is displayed on a tabbed page in Datasheet view with one empty row that is ready to receive data. Because the active object is a table, Access adds the Table Tools contextual tabs to the ribbon so that you can work with the table.

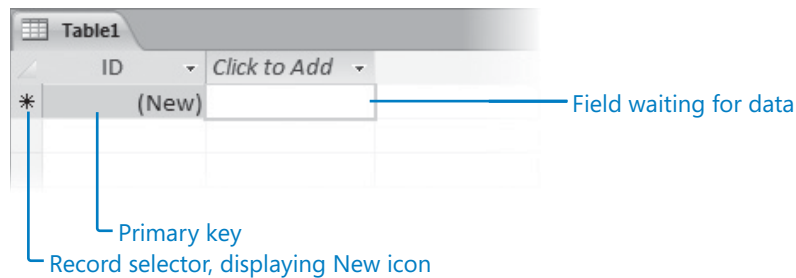


A new table in a new database.

If you close the table at this point, it will disappear, because it contains no data and it has no structure. The simplest way to make the table part of the database is to create at least one record by entering data, which simultaneously defines the table's structure.

Tip You can also define the structure of the table without entering data. For information about table structure, see “Refining Table Structure” later in this chapter. For information about adding new blank fields to a table, see “Restricting the Type of Data” in Chapter 6, “Maintain Data Integrity.”

Obviously, to create a record, you need to know how to enter information in Datasheet view.



The first record in a new table, before data is entered.

Every table has an empty row that is ready to receive a new record, as indicated by the New icon (the asterisk) in the record selector at the left end of the row. By default, the first field in each new table is an ID field designed to contain an entry that will uniquely identify the record. Also by default, this field is designated as the table's *primary key*. No two records in this table can have the same value in this primary key field. Behind the scenes, the data type of this field is set to AutoNumber, so Access will enter a sequential number in this field for you.

Tip As you'll see in a later exercise, the primary key field does not have to be the default AutoNumber type. If you need to you create your own primary key field, then anything meaningful and unique will work.

See Also For information about data types, see “Refining Table Structure” later in this chapter.

The first field you need to be concerned about is the active field labeled *Click To Add*. You enter the first item of information for the new record in the first cell in this field, and then press the Tab or Enter key to move to the first cell in the field to the right. Access then assigns the value 1 to the ID field, assigns the name Field1 to the second field, and moves the Click To Add label to the third field. The icon in the record selector at the left end of the record changes to two dots and a pencil to indicate that this record has not yet been saved, and the New icon moves to the record selector of the next row.

ID	Field1	Click to Add
1	Sidney	
*	(New)	

The first record in a new table, after data has been entered in the first field.

When creating a new table in Datasheet view, you need to save the first record after entering the first item of data. If you don't, Access increments the ID value for each field you add to that record. For example, if you add seven fields, Access assigns the value 7 to the ID field of the first record. To avoid this problem, you simply click the icon in the record selector after you enter your first value in the first record. This saves the record with the value 1 assigned to the ID field, and subsequent records will be numbered sequentially.

Having entered the first item of data and saved the record, you continue entering items of information in consecutive cells and pressing Tab or Enter. When you finish entering the last item for the first record, you click anywhere in the row below to tell Access that the record is complete.

After you complete the first record of a new table, you will probably want to change the default field names to something more meaningful. To rename a field, you simply double-click its field name and then type the name you want.

At any time while you are entering data in a new table, you can save the table by clicking the Save button on the Quick Access Toolbar and naming the table. If you try to close the table without explicitly saving it, Access prompts you to save the table. If you click No, Access discards the table and any data you have entered.

After you have saved the table for the first time, Access automatically saves each record when you move away from it. You don't have to worry about losing your changes, but you do have to remember that most data entries can be undone only by editing the record.

Databases almost always contain more than one table. You can create additional empty tables by clicking the Table button in the Tables group on the Create tab of the ribbon. If you need to create a table that is similar in structure to an existing one, you can copy and paste the existing table to create a new one. When you paste the table, Access gives you the option of naming the table and of specifying whether you want the new table to have the existing table's structure or both its structure and its data.

For some kinds of tables, Access provides Quick Start fields that you can use to add common sets of fields or kinds of fields to a table. The Quick Start options take the work out of defining these fields and can be very useful when you know exactly what type of field you need.

In this exercise, you'll create a blank database, enter information into the first record of its default table, assign field names, add another record, and save and close the table. Then you'll copy that table to create a second one. Finally, you'll create a new table and experiment with Quick Start fields.



SET UP You don't need any practice files to complete this exercise. Close any open databases, and then with the **New** page of the Backstage view displayed, follow the steps.

1. In the center pane of the **New** page, in the **Available Templates** area, click **Blank Database**.
2. In the right pane, click the **File Name** box, and type **MyTables**. Then click the **Browse** button, navigate to your **Chapter02** practice file folder, and click **OK**.



Tip You can't create a blank database without saving it. If you don't provide a file name and location, Access saves the file with the name *Database* followed by a sequential number in the default location (your Documents folder, unless you have changed it).

3. In the right pane, click the **Create** button.

Access creates the blank database in the specified location, opens the database, and displays a new blank table named *Table1*.

4. With the empty field below **Click to Add** selected, type **Scott**, and then press Tab to move to the next field.

The icon in the record selector changes to indicate that this record has not yet been saved. The value 1 appears in the ID field, the name of the second column changes to *Field1*, and the Click To Add label moves to the third column.

5. Click the icon in the record selector to save the record before you move on.

Tip Clicking the record selector is necessary only after you enter the first value in a new table. This action sets the ID field value to 1.

6. Click the cell under **Click to Add**, and type the following information into the next seven cells, pressing Tab after each entry:

Gode
612 E. 2nd
Pocatello
ID
73204
USA
208 555-0161

As the cursor moves to the next cell, the name of the field in which you just entered data changes to *Field* followed by a sequential number.

ID	Field1	Field2	Field3	Field4	Field5	Field6	Field7	Field8
1	Scott	Gode	612 E. 2nd	Pocatello	ID	73204 USA		208 555-0161
*	(New)							

The first complete record.

Tip Don't be concerned if your screen does not look exactly like ours. In this graphic, we've scrolled the page and adjusted the widths of the columns so that you can see all the fields. For information about adjusting columns, see "Manipulating Table Columns and Rows" later in this chapter.

7. Double-click the **ID** field name (not the ID value in Field5), and then type **CustomerID** to rename it.

Tip Field names can include spaces, but the spaces can affect how queries have to be constructed, so it is best not to include them. For readability, capitalize each word and then remove the spaces, or use underscores instead of spaces.

8. Repeat step 7 for the other fields, changing the field names to the following:

Field1 **FirstName** **Field4** **City** **Field7** **Country**
Field2 **LastName** **Field5** **State** **Field8** **Phone**
Field3 **Street** **Field6** **ZIP**

The table now has intuitive field names.

CustomerID	FirstName	LastName	Street	City	State	ZIP	Country	Phone
1	Scott	Gode	612 E. 2nd	Pocatello	ID	73204	USA	208 555-0161
*	(New)							

The renamed fields.

Tip Again, don't worry if your screen doesn't look exactly like this graphic, because we've made adjustments so that you can see all the fields.

9. Add another record containing the following field values to the table, pressing Tab to move from field to field:

FirstName John **City** Montreal **Country** Canada
LastName Frederickson **State** Quebec **Phone** 514 555-0167
Street 43 rue St. Laurent **ZIP** (press Tab to skip this field)



10. At the right end of the tab bar, click the **Close** button.
11. When Access asks whether you want to save the design of the table, click **Yes**.

Important Clicking No will delete the new table and its data from the database.

Access displays the Save As dialog box.

Save As

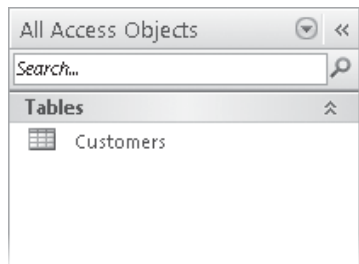
Table Name:

OK Cancel

You must save the table before closing it.

12. In the **Table Name** box, type **Customers**, and then click **OK**.

Access closes the table, which is now listed in the Tables group on the Navigation bar.



The database now contains one table.

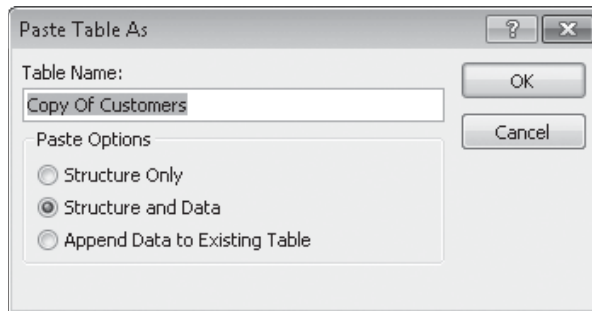
Tip You can rename a table by right-clicking it in the Navigation pane and then clicking **Rename**. You can delete a table by right-clicking it, clicking **Delete**, and then confirming the deletion in the message box that appears. (You can also delete a table by selecting it in the Navigation bar and then clicking the **Delete** button in the **Records** group on the **Home** tab or pressing the **Delete** key.)

13. In the **Navigation** pane, click the **Customers** table to select it.
14. On the **Home** tab, in the **Clipboard** group, click the **Copy** button. Then click the **Paste** button.

Keyboard Shortcut Press **Ctrl+C** to copy data. Press **Ctrl+V** to paste data.

See Also For more information about keyboard shortcuts, see “[Keyboard Shortcuts](#)” at the end of this book.

The Paste Table As dialog box opens.



If you need to create a table that is similar to an existing table, it is sometimes easier to customize a copy than to create it from scratch.

15. In the **Table Name** box, type **Employees**. In the **Paste Options** area, click **Structure Only** to capture the fields from the **Customers** table but none of the customer information. Then click **OK**.

The new **Employees** table appears in the Navigation pane.

Tip You can also use the **Copy** and **Paste** commands to append the information in the selected table to another existing table. In that case, in the **Paste Table As** dialog box, type the name of the destination table in the **Table Name** box, click **Append Data To Existing Table**, and then click **OK**.

16. Double-click **Employees** to open it in Datasheet view so that you can view its fields. Then close the table again.





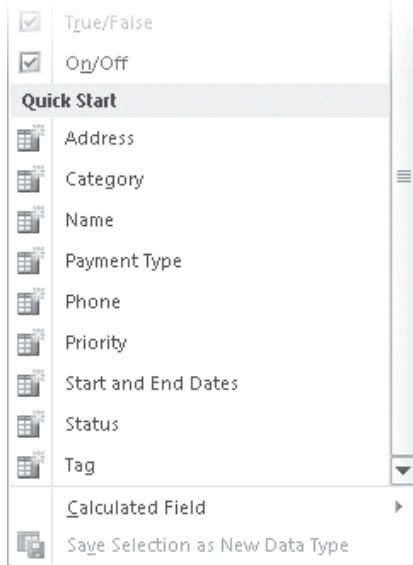
17. On the **Create** tab, in the **Tables** group, click the **Table** button.

Access creates a new table containing an ID field and a Click To Add field placeholder.



18. With the **Click to Add** field active, on the **Fields** contextual tab, in the **Add & Delete** group, click the **More Fields** button.

The More Fields gallery appears.



The Quick Start fields are at the bottom of the More Fields gallery.

19. If necessary scroll to the bottom of the gallery, and then under **Quick Start**, click **Name**.

Access inserts ready-made LastName and FirstName fields.

20. Repeat steps 18 and 19 to add the **Address** fields from the **Quick Start** list.

Access inserts ready-made Address, City, State Province, ZIP Postal, and Country Region fields.

21. Close the table, saving it with the name **Shippers** when prompted.



CLEAN UP Retain the MyTables database for use in later exercises.

Database Design

In a well-designed database, each item of data is stored only once. If you're capturing the same information in multiple places, that is a sure sign that you need to analyze the data and figure out a way to put the duplicated information in a separate table.

For example, an Orders table should not include information about the customer placing each order, for two significant reasons. First, if the same customer orders more than once, all his or her information has to be repeated for each order, which inflates the size of the table and the database. Second, if the customer moves, his or her address will need to be updated in the record for every order placed.

The way to avoid this type of problem is to put customer information in a Customers table and assign each customer a unique identifier, such as a sequential number or unique string of letters, in the primary key field. Then in the Orders table, you can identify the customer by the unique ID. If you need to know the name and address of the customer who placed a particular order, you can have Access use the unique ID to look up that information in the Customers table.

The process of ensuring that a set of information is stored in only one place is called *normalization*. This process tests a database for compliance with a set of normalization rules that ask questions such as "If I know the information in the primary key field of a record, can I retrieve information from one and only one record?" For example, knowing that a customer's ID is 1002 means you can pull the customer's name and address from the Customers table, whereas knowing that a customer's last name is Jones does not mean that you can pull the customer's name and address from the table, because more than one customer might have the last name Jones.

The topic of normalization is beyond the scope of this book. If you need to design a database that will contain several tables, you should search for *Database design basics* in Access Help to learn more about the normalization process.

Manipulating Table Columns and Rows

In Chapter 1, “Explore an Access 2010 Database,” we showed you how to quickly adjust the width of table columns to efficiently display their data. In addition to adjusting column width, sometimes you might want to rearrange a table’s fields to get a better view of the data. For example, if you want to look up a phone number but the names and phone numbers are several fields apart, you will have to scroll the page to get the information you need. You might want to rearrange or hide a few fields to be able to simultaneously see the ones you are interested in.

You can manipulate the columns and rows of an Access table without affecting the underlying data in any way. You can size rows and size, hide, move, and freeze columns. You can save your table formatting so that the table will look the same the next time you open it, or you can discard your changes without saving them.

In this exercise, you’ll open a table and manipulate its columns and rows.



SET UP You need the **MyTables** database you worked with in the preceding exercise to complete this exercise. Open the **MyTables** database, and then follow the steps.

1. In the **Navigation** pane, double-click the **Customers** table to open it in Datasheet view.
2. In the field name row, point to the right border of the **Street** field name, and when the pointer changes to a double-headed arrow, drag to the right until you can see all of the street addresses.
3. Double-click the right border of any column that seems too wide or too narrow to adjust the column to fit its contents.

This technique is particularly useful in a large table where you can’t easily determine the length of a field’s longest entry.

4. Point to the border between any two record selectors, and drag downward. When you release the mouse button, Access increases the height of all rows in the table.

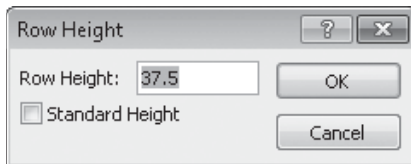
CustomerID	FirstName	LastName	Street	City	State	ZIP	Country	Phone
1	Scott	Gode	612 E. 2nd	Pocatello	ID	73204	USA	208 555-0161
2	John	Frederickson	43 rue St. Laurent	Montreal	Quebec		Canada	514 555-0167
*	(New)							

You cannot adjust the height of a single row.



- On the **Home** tab, in the **Records** group, click the **More** button, and then click **Row Height**.

The Row Height dialog box opens.



You can set the rows to the precise height you want.

- In the **Row Height** dialog box, select the **Standard Height** check box, and then click **OK**.

Access resets the height of the rows to the default setting.

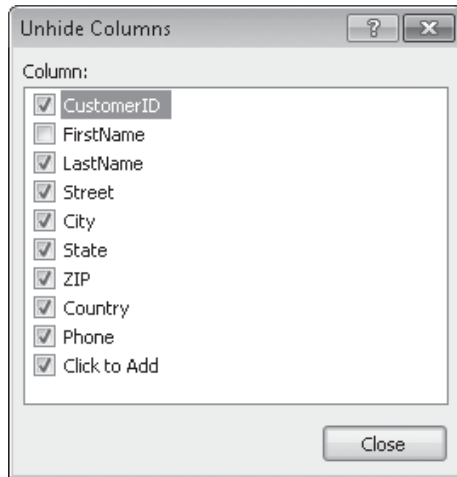
- Click anywhere in the **FirstName** field. Then in the **Records** group, click the **More** button, and click **Hide Fields**.

The FirstName field disappears, and the fields to its right shift to the left.

Tip If you select several fields before clicking **Hide Fields**, they all disappear. You can select adjacent fields by clicking the field name of the first one, holding down the Shift key, and then clicking the field name of the last one. The two fields and any fields in between are selected.

- To restore the hidden field, in the **Records** group, click the **More** button, and then click **Unhide Fields**.

The Unhide Columns dialog box opens.



You can select and clear check boxes to control which fields are visible.

Tip If you want to hide several columns that are not adjacent, you can display the **Unhide Columns** dialog box and clear their checkboxes.

9. In the **Unhide Columns** dialog box, select the **FirstName** check box, and then click **Close**.

Access redisplay the **FirstName** field.

10. If you can see all of the fields in the table, for the purposes of this exercise, adjust the size of the program window until some of the fields are no longer visible.
11. Point to the **CustomerID** field name, hold down the mouse button, and drag through the **FirstName** and **LastName** field names. With the three columns selected, click the **More** button in the **Records** group, and then click **Freeze Fields**.
12. Scroll the page to the right until the **Phone** field is adjacent to the **LastName** field. The first three columns remain in view as you scroll.
13. In the **Records** group, click **More**, and then click **Unfreeze All Fields** to restore the fields to their normal condition.

Tip The commands to hide, unhide, freeze, and unfreeze columns are also available from the shortcut menu that appears when you right-click a field name.

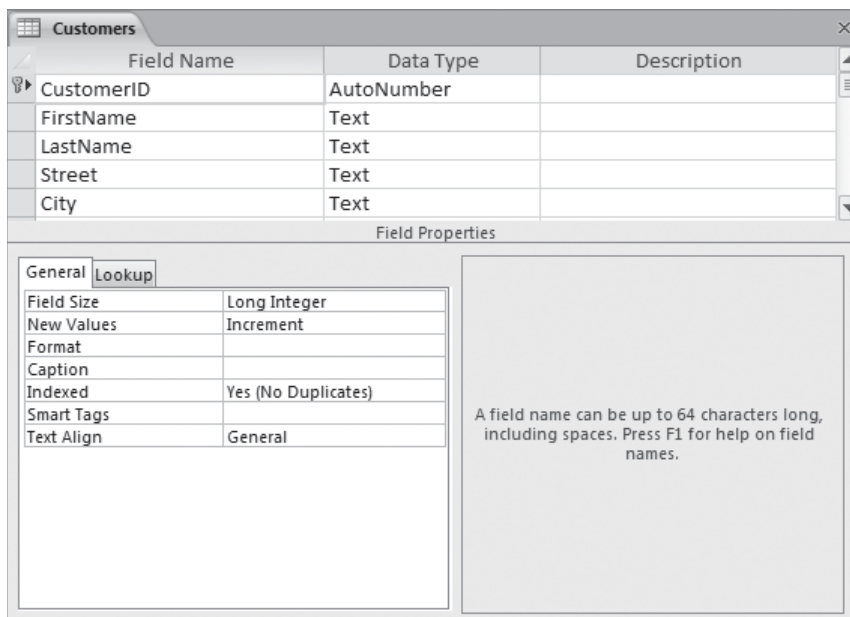
14. Click the **Phone** field name to select that field. Then drag the field to the left, releasing the mouse button when the thick black line appears to the right of the **LastName** field.
15. Close the **Customers** table, clicking **Yes** to save the changes you have made to the column widths and order. If you see a warning that this action will clear the Clipboard, click **Yes**.

✘ CLEAN UP Retain the MyTables database for use in later exercises.

Refining Table Structure

Although you can create the structure of a database in Datasheet view, some structural refinements can be carried out only in Design view. When you are familiar with tables, you might even want to create your tables from scratch in Design view, where you have more control over the fields. You can open a new table in Design view by clicking the Table Design button in the Tables group on the Create tab.

When you open an existing table in Design view, the tabbed page shows the underlying structure of the table.



The table design page.

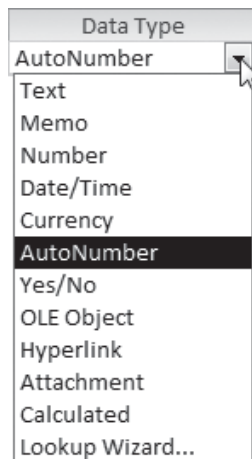
This page has two parts. The top part consists of the following:

- **Selector** You can click the shaded box at the left end of a row to select the entire field. You can then insert a row above the selected one, delete the row (thereby deleting the field), or drag the row up or down to reposition its field in the table.

The selector also identifies the primary key field of the table by displaying the Primary Key icon (a key with a right-pointing arrow).

Tip If you don't want a table to have a primary key (for example, if none of the fields will contain a unique value for every record), select the field designated as the primary key, and on the Design contextual tab, in the Tools group, click the Primary Key button to toggle it off. If you want to designate a different field as the primary key, select the new field, and click the Primary Key button to toggle it on. (You don't have to remove the primary key from the current field first; it will happen automatically.)

- **Field Name column** This column contains the names you specified when you created the table. You can edit the names by using regular text-editing techniques. You can add a new field by typing its name in the first empty cell in this column.
- **Data Type column** This column specifies the type of data that the field can contain. By default, the ID field in a new table is assigned the AutoNumber data type, and all other fields are assigned the Text data type. With the exception of fields with the OLE Object and Attachment data types, you can change the type of any field by clicking its Data Type entry, clicking the arrow that appears, and clicking a new data type in the list.



The list of data types.

See also For more information about data types, see “Restricting the Type of Data” in Chapter 6, “Maintain Data Integrity.”

- **Description column** This column contains an optional description of the field.

The Field Properties area at the bottom of the design page displays the properties of the field selected in the top part. Different properties are associated with different data types. They can determine such things as the number of characters allowed in a field, the value inserted if the user doesn't type an entry, and whether an entry is required. Properties can also assess whether an entry is valid and can force the user to select from a list of values rather than typing them (with the risk of errors).

All fields, no matter what their data type, can be assigned a Caption property that will appear in the place of the field name in tables or in other database objects. For example, you might want to use captions to display the names of fields with spaces, such as First Name for the FirstName field.

See Also For information about using properties to control the accuracy of data entry, see Chapter 6, "Maintain Data Integrity." For a comprehensive list of data types and properties, search on *data types* in Access Help.

In this exercise, you'll open a table in Design view, add and delete fields, change a data type, set field sizes, and add a caption.



SET UP You need the MyTables database you worked with in the preceding exercise to complete this exercise. Open the MyTables database, and then follow the steps.

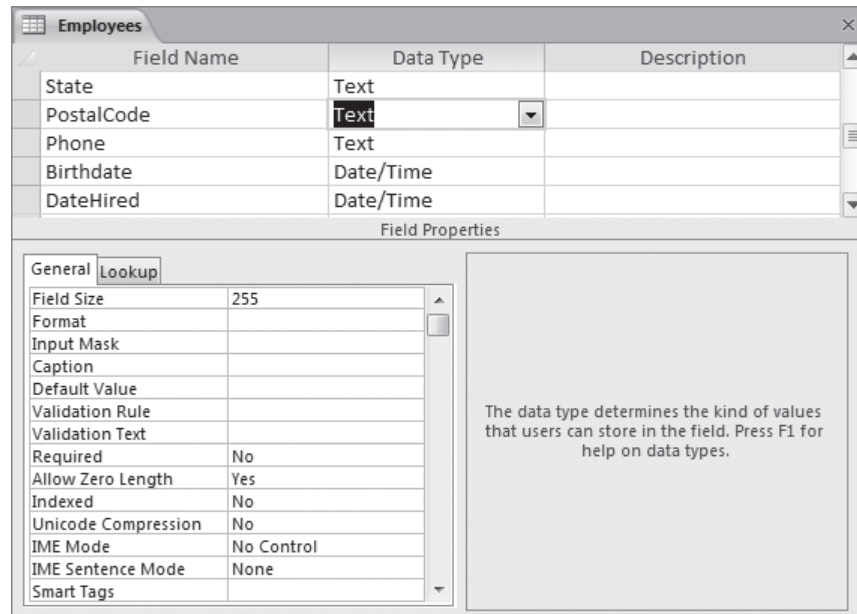
1. In the **Navigation** pane, right-click the **Employees** table, and then click **Design View**.
Access opens the table with its structure displayed. Because you created this table by copying the Customers table, you need to make some structural changes.
2. With **CustomerID** highlighted in the **Field Name** column, type **EmployeeID**, and then press the Tab key twice.
3. In the **Description** column, type **Unique identifying number**.
4. Click the **Country** field's selector, and then on the **Design** contextual tab, in the **Tools** group, click the **Delete Rows** button.
5. In the empty row below the **Phone** field, click the **Field Name** cell, and type **Birthdate**. Then click the **Data Type** cell.
Access assigns the default Text data type to the new field.
6. Click the arrow at the right end of the **Data Type** cell, and in the list, click **Date/Time**.
7. Repeat steps 5 and 6 to add another **Date/Time** field named **DateHired**.



8. Select the **ZIP** field name, change it to **PostalCode**, and then change its data type to **Text**.

Tip If you use only five-digit ZIP codes, the Number data type is fine. But setting it to Text allows you to enter ZIP+4 codes or the letter-number postal codes used in Canada and other countries.

The properties in the Field Properties area at the bottom of the design page change to those that are appropriate for this type of field.



The properties for the Text data type.

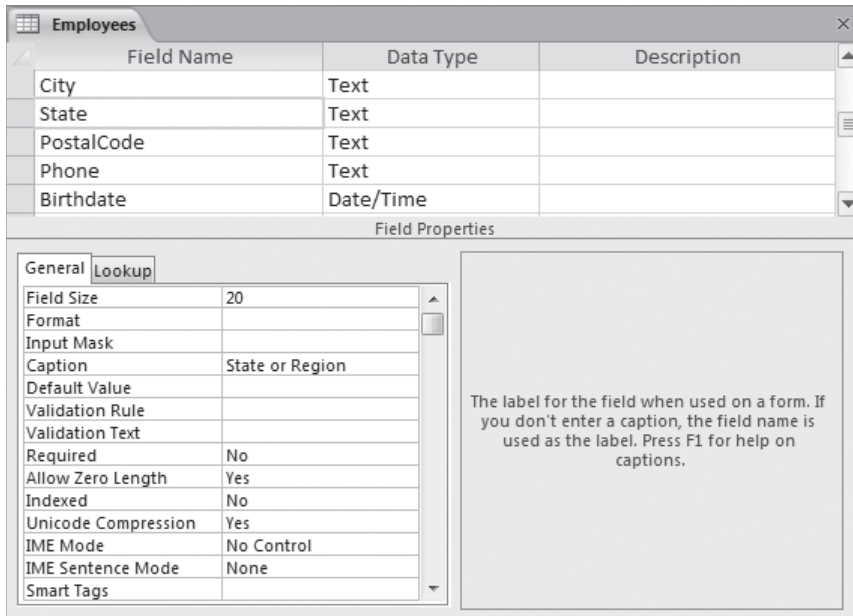
9. In the box to the right of **Field Size**, double-click **255**, and type **10**.
You are specifying that this field can contain no more than 10 characters.
10. Change the **Field Size** property of the following fields as shown:

FirstName 50 City 50 Phone 30
LastName 50 State 20

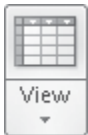
Tip Sometimes changing the field properties of a table that already contains data can produce unanticipated results. If you make a change to a field property that might cause data to be lost (for example, if you make the Field Size property smaller than one of the field's existing values), Access warns you of this problem when you attempt to save the table. For more information, see Chapter 6, "Maintain Data Integrity."

- Click the **State** field. Then in the **Field Properties** area, click the **Caption** box, and type **State or Region**.

The Field Name remains State, but in Datasheet view, the column heading will be *State or Region*.



You have changed the Field Size and Caption properties of the State field.



- On the **Design** tab, in the **Views** group, click the **View** button to switch to Datasheet view.

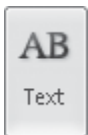
Access tells you that you must save the table before leaving Design view.

- In the message box, click **Yes** to save the table.

Access saves the table and displays it in Datasheet view.

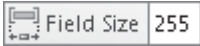
- With the table displayed in Datasheet view, click the **LastName** field name. Then on the **Fields** contextual tab, in the **Add & Delete** group, click the **Text** button.

A new field called *Field1* that has the Text data type is inserted to the right of the LastName field.



Tip You can also create a new field with a specific data type by clicking the **Click To Add** label to the right of the last field in the field name row. Then in the list that appears, you can click the data type you want.

15. With **Field1** selected, type **Title**, and press Enter.
16. Click the **Title** field name. Then in the **Properties** group, in the **Field Size** box, click **255** to select it, type **50**, and press Enter.
17. Type the following information in the first record:



FirstName **Karen**
LastName **Berg**
Title **Owner**

The Employees table is now ready for you to start entering data.

EmployeeID	FirstName	LastName	Title	Street	City	Stat
1	Karen	Berg	Owner			
*	(New)					

The first record of the Employees table.

✘ CLEAN UP Close the Employees table. Retain the MyTables database for use in the last exercise.

Creating Relationships Between Tables

In Access, a relationship is an association between common fields in two tables. You can use this association to link the primary key field in one table to a field that contains the same information in another table. The field in the other table is called the *foreign key*. For example, if customer accounts are assigned to specific sales employees, you can establish a relationship by linking the primary key EmployeeID field in the Employees table with the foreign key EmployeeID field in the Customers table. Each customer account is assigned to only one employee, but each employee can manage many customer accounts, so this type of relationship—the most common—is known as a *one-to-many relationship*.

Similarly, if every order is associated with a customer, you can establish a relationship by linking the primary key CustomerID field in the Customers table and foreign key CustomerID field in the Orders table. Each order is placed by only one customer, but each customer can place many orders. So again, this is a one-to-many relationship.

Less common relationships include:

- **One-to-one** In this type of relationship, each record in one table can have one and only one related record in the other table. This type of relationship isn't commonly used because it is easier to put all the fields in one table. However, you might use two related tables instead of one to break up a table with many fields, or to track information that applies to only some of the records in the first table.
- **Many-to-many** This type of relationship is really two one-to-many relationships tied together through a third table. You might see this relationship in a database that contains Products, Orders, and Order Details tables. The Products table has one record for each product, and each product has a unique ProductID. The Orders table has one record for each order placed, and each record in it has a unique OrderID. However, the Orders table doesn't specify which products were included in each order; that information is in the Order Details table—the table in the middle that ties the other two tables together. Products and Orders each have a one-to-many relationship with Order Details. Products and Orders therefore have a many-to-many relationship with each other. In plain language, this means that every product can appear in many orders, and every order can include many products.

The most common way of creating a relationship between two tables is to add the tables to the Relationships page displayed when you click the Relationships button in the Relationships group on the Database Tools tab. You then drag a field in one table to the common field in the other table and complete the relationship definition in the Edit Relationships dialog box. In this dialog box, you are given the opportunity to impose a restriction called *referential integrity* on the data, which means that an entry will not be allowed in one table unless it already exists in the other table.

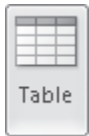
After you have created a relationship, you can delete it by deleting the line connecting the tables on the Relationships page. You can clear all the boxes from the page by clicking the Clear Layout button in the Tools group on the Relationship Tools Design contextual tab.

Tip The coverage of relationships in this topic is deliberately simple. However, relationships are what make relational databases tick, and Access provides a number of fairly complex mechanisms to ensure the integrity of the data on either end of the relationship. Some of these mechanisms are covered in Chapter 6, “Maintain Data Integrity.” For a good overview, search for *Guide to table relationships* in Access Help.

In this exercise, you’ll create relationships between one table and two other tables. Then you’ll test the referential integrity of one of the relationships.



SET UP You need the MyTables database you worked with in the preceding exercise to complete this exercise. Open the MyTables database, and then follow the steps.

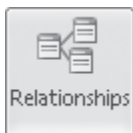


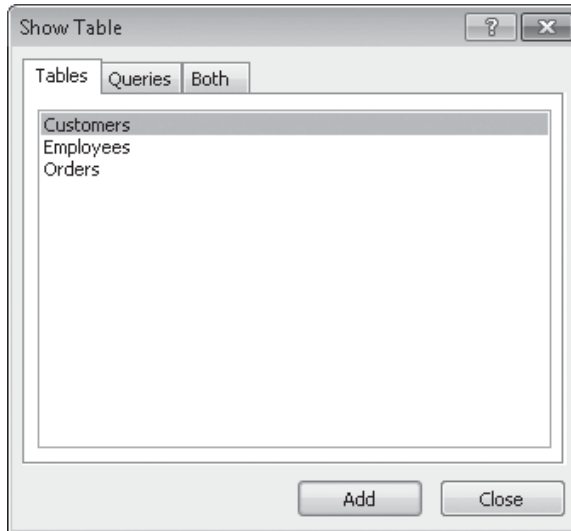
1. On the **Create** tab, in the **Tables** group, click the **Table** button to create a new table.
Before we add fields to this table, let’s save it.
2. On the Quick Access Toolbar, click the **Save** button, name the table **Orders**, and click **OK**.
3. To the right of **Click to Add**, click the arrow, and in the data type list, click **Number**. Repeat this step to create a second field with the **Number** data type.
4. Double-click **Field1**, and type **CustomerID**. Then double-click **Field2**, and type **EmployeeID**.

Each order in the Orders table will be placed by one customer and will be handled by one employee. Let’s create relationships between the Orders table and the Customers and Employees tables so that we don’t create records for orders from customers who don’t exist or that seem to have been handled by employees who don’t exist.

5. Close the **Orders** table.
Tip You cannot create a relationship for an open table.
6. On the **Database Tools** tab, in the **Relationships** group, click the **Relationships** button.

The Show Table dialog box opens so that you can indicate the tables for which you want to create a relationship.



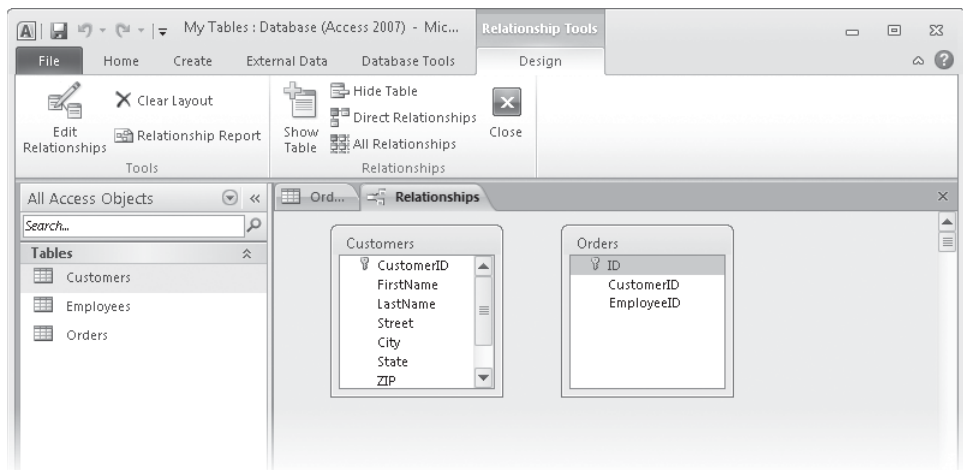


The **Tables** page of the **Show Table** dialog box.

Troubleshooting If the dialog box doesn't open automatically, click the **Show Table** button in the **Relationships** group on the **Design** contextual tab.

7. With **Customers** selected on the **Tables** page, click **Add**. Then double-click **Orders**, and click **Close**.

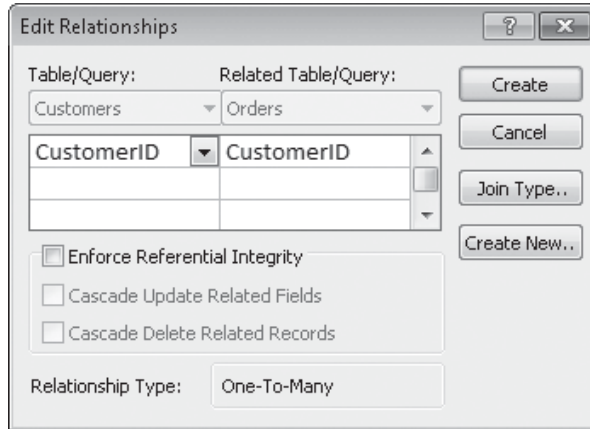
Access displays the **Relationships** page and adds a **Relationship Tools** contextual tab to the ribbon.



The two boxes list all the fields in their respective tables.

- In the **Customers** field list, click **CustomerID**, and drag it down and over **CustomerID** in the **Orders** field list, releasing the mouse button when two little boxes, one containing a plus sign, appear below the pointer.

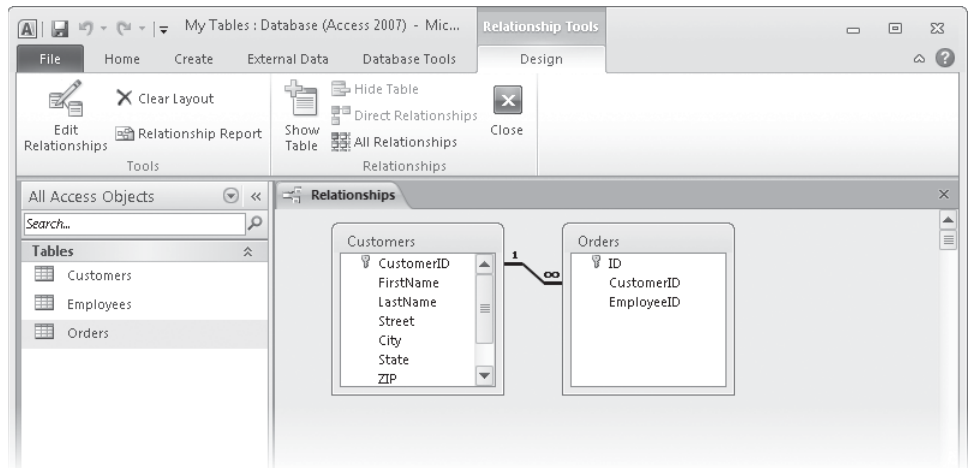
The Edit Relationships dialog box opens.



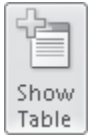
At the bottom of the dialog box, Access indicates that this will be a one-to-many relationship.

- Select the **Enforce Referential Integrity** check box, and then click **Create**.

Access creates the link between the primary key in the Customers table and the foreign key in the Orders table, and a line now connects the two field lists on the Relationships page.



The symbols at each end of the line indicate that each Customer ID value appears only once in the Customers table but can appear many times in the Orders table.

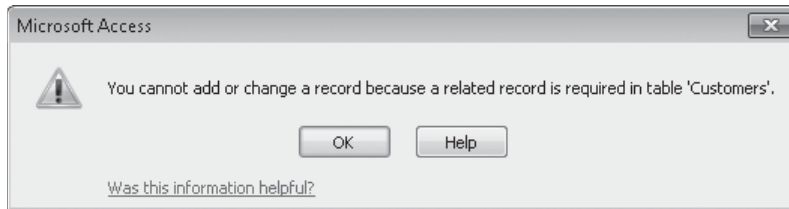


10. On the **Design** contextual tab, in the **Relationships** group, click the **Show Table** button. Then in the **Show Table** dialog box, double-click the **Employees** table, and click **Close**.

Access adds a box listing all the fields in the Employees table to the Relationships page.

11. On the page, drag the title bars of the three field lists to arrange them so that they are side by side and equidistant.
12. In the **Employees** field list, click the **EmployeeID** field, and drag it down and over the **EmployeeID** field in the **Orders** field list. Then in the **Edit Relationships** dialog box, select the **Enforce Referential Integrity** check box, and click **Create**.
13. After Access draws the relationship line between the primary key and the foreign key, close the Relationships page, clicking **Yes** to save its layout.
14. Open the **Orders** table. Then in the **CustomerID** field of the first record, type **11**, and click below the record to complete it.

Access displays a message box telling you that you cannot add the new record to the table.



The value in the CustomerID field in the Orders table must match a value in the primary key CustomerID field in the Customer table.

15. Click **OK**. Then change the value to **1**, and click below the record to complete it. This time, Access accepts the value because there is a record with the value 1 in the primary key CustomerID field of the Customers table.



CLEAN UP Close the Orders table, and then close the My Tables database.

Key Points

- Access 2010 includes templates to help you create databases and application parts to help you add related tables and other database objects.
- Rather than storing all information in one table, you can create different tables for each type of information, such as customers, orders, and suppliers.
- You can create a simple table structure by entering data and naming fields in Datasheet view. You can also set the data type and certain properties.
- You can manipulate or hide columns and rows without affecting the data.
- In Design view, you can modify any table, whether you created it manually or as part of a template.
- Data types and properties determine what data can be entered in a field, and how the data will look on the screen. Caution: changing some properties might affect the data.
- You can create a relationship between the primary key field of one table and the foreign key field of another so that you can combine information from both tables.