In the Criteria line of the QBE grid for the Employee ID field, type what is shown in Figure B-46.

FIGURE B-46   Design of a Parameter query, continued

Note that the Criteria line uses square brackets, as you would expect to see in a calculated field. Now run the query. You will be prompted for the employee's ID number, as shown in Figure B-47.

FIGURE B-47   Enter Parameter Value window

Enter your own employee ID. Your query output should resemble the one in Figure B-48.

FIGURE B-48   Output of a Parameter query

MAKING SEVEN PRACTICE QUERIES

This portion of the tutorial gives you additional practice in creating queries. Before making these queries, you must create the specified tables and enter the records shown in the "Creating Tables" section of this tutorial. The output shown for the practice queries is based on those inputs.

AT THE KEYBOARD

For each query that follows, you are given a problem statement and a "scratch area." You also are shown what the query output should look like. Set up each query in Access and then run the query. When you are satisfied with the results, save the query and continue with the next one. Note that you will work with the Employee, Hours Worked, and Wage Data tables.

1. Create a query that shows the employee ID, last name, state, and date hired for employees who live in Delaware *and* were hired after 12/31/99. Perform an ascending sort by employee ID.

First click the Sort cell of the field, and then choose Ascending or Descending. Before creating your query, use the table shown in Figure B-49 to work out your QBE grid on paper.

Field					
Table					
Sort					
Show					
Criteria					
Or:					

FIGURE B-49   QBE grid template

Your output should resemble the one in Figure B-50.

Practice Query 1			
Employee ID ▾	Last Name ▾	State ▾	Date Hired ▾
11411	Davies	DE	6/1/2018
22282	Kowalczyk	DE	7/15/2009
*			

FIGURE B-50   Number 1 query output

2. Create a query that shows the last name, first name, date hired, and state for employees who live in Delaware *or* were hired after 12/31/99. The primary sort (ascending) is on last name, and the secondary sort (ascending) is on first name. The Primary Sort field must be to the left of the Secondary Sort field in the query setup. Before creating your query, use the table shown in Figure B-51 to work out your QBE grid on paper.

Field					
Table					
Sort					
Show					
Criteria					
Or:					

FIGURE B-51   QBE grid template

If your name were Joseph Brady, your output would look like the one in Figure B-52.

Practice Query 2			
Last Name ▾	First Name ▾	Date Hired ▾	State ▾
Amari	Zarif	6/1/1999	DE
Brady	Joseph	9/15/2019	MD
Caron	Victor	7/15/1989	DE
Davies	Dafina	6/1/2018	DE
Kowalczyk	Aleksandra	7/15/2009	DE
Perez	Santiago	8/15/2017	MD
*			

FIGURE B-52   Number 2 query output

3. Create a query that sums the number of hours worked by U.S. citizens and the number of hours worked by non-U.S. citizens. In other words, create two sums, grouped on citizenship. The heading for total hours worked should be Total Hours Worked. Before creating your query, use the table shown in Figure B-53 to work out your QBE grid on paper.

Field					
Table					
Total					
Sort					
Show					
Criteria					
Or:					

FIGURE B-53   QBE grid template

Your output should resemble the one in Figure B-54.

Total Hours Worked	US Citizen
363	☑
160	☐

Practice Query 3

FIGURE B-54   Number 3 query output

4. Create a query that shows the wages owed to hourly workers for Week 1. The heading for the wages owed should be Total Owed. The output headings should be Last Name, Employee ID, Week #, and Total Owed. Before creating your query, use the table shown in Figure B-55 to work out your QBE grid on paper.

Field					
Table					
Sort					
Show					
Criteria					
Or:					

FIGURE B-55   QBE grid template

If your name were Joseph Brady, your output would look like the one in Figure B-56.

Practice Query 4

Last Name	Employee ID	Week #	Total Owed
Brady	09911	1	$510.00
Davies	11411	1	$420.00
Caron	14890	1	$475.00

FIGURE B-56   Number 4 query output

5. Create a query that shows the last name, employee ID, hours worked, and overtime amount owed for hourly employees who earned overtime during Week 2. Overtime is paid at 1.5 times the normal hourly rate for all hours worked over 40. Note that the amount shown in the query should be just the overtime portion of the wages paid. Also, this is not a Totals query—amounts should be shown for individual workers. Before creating your query, use the table shown in Figure B-57 to work out your QBE grid on paper.

Field					
Table					
Sort					
Show					
Criteria					
Or:					

FIGURE B-57   QBE grid template

If your name were Joseph Brady, your output would look like the one in Figure B-58.

Last Name	Employee ID	Hours	OT Pay
Brady	09911	55	$191.25
Davies	11411	50	$157.50

Practice Query 5

FIGURE B-58   Number 5 query output

6. Create a Parameter query that shows the hours employees have worked. Have the Parameter query prompt for the week number. The output headings should be Last Name, First Name, Week #, and Hours. This query is for nonsalaried workers only. Before creating your query, use the table shown in Figure B-59 to work out your QBE grid on paper.

Field					
Table					
Sort					
Show					
Criteria					
Or:					

FIGURE B-59   QBE grid template

Run the query and enter 2 when prompted for the week number. Your output should look like the one in Figure B-60.

Last Name	First Name	Week #	Hours
Brady	Joseph	2	55
Davies	Dafina	2	50
Caron	Victor	2	40

Practice Query 6

FIGURE B-60   Number 6 query output

7. Create an Update query that gives certain workers a merit raise. First, you must create an additional table, as shown in Figure B-61.

Merit Raises		
Employee ID ▾	Merit Raise ▾	Click to Add ▾
11411	$0.25	·
14890	$0.15	
*	$0.00	

FIGURE B-61   Merit Raises table

Create a query that adds the Merit Raise to the current Wage Rate for employees who will receive a raise. When you run the query, you should be prompted with *You are about to update two rows.* Check the original Wage Data table to confirm the update. Before creating your query, use the table shown in Figure B-62 to work out your QBE grid on paper.

Field					
Table					
Update to					
Criteria					
Or:					

FIGURE B-62   QBE grid template

CREATING REPORTS

Database packages let you make attractive management reports from a table's records or from a query's output. If you are making a report from a table, the Access report generator looks up the data in the table and puts it into report format. If you are making a report from a query's output, Access runs the query in the background (you do not control it or see it happen) and then puts the output in report format.

There are different ways to make a report. One method is to create one from scratch in Design view, but this tedious process is not explained in this tutorial. A simpler way is to select the query or table on which the report is based and then click Report on the Create tab. This streamlined method of creating reports is explained in this tutorial.

Creating a Grouped Report

This tutorial assumes that you already know how to create a basic ungrouped report, so this section teaches you how to make a grouped report. If you do not know how to create an ungrouped report, you can learn by following the first example in the upcoming section.

AT THE KEYBOARD

Suppose you want to create a report from the Hours Worked table. Select the table by clicking it once. Click the Create tab, then click Report in the Reports group. A report appears, as shown in Figure B-63.

7. Create an Update query that gives certain workers a merit raise. First, you must create an additional table, as shown in Figure B-61.

FIGURE B-61   Merit Raises table

Create a query that adds the Merit Raise to the current Wage Rate for employees who will receive a raise. When you run the query, you should be prompted with *You are about to update two rows.* Check the original Wage Data table to confirm the update. Before creating your query, use the table shown in Figure B-62 to work out your QBE grid on paper.

Field					
Table					
Update to					
Criteria					
Or:					

FIGURE B-62   QBE grid template

CREATING REPORTS

Database packages let you make attractive management reports from a table's records or from a query's output. If you are making a report from a table, the Access report generator looks up the data in the table and puts it into report format. If you are making a report from a query's output, Access runs the query in the background (you do not control it or see it happen) and then puts the output in report format.

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Creating a Grouped Report

This tutorial assumes that you already know how to create a basic ungrouped report, so this section teaches you how to make a grouped report. If you do not know how to create an ungrouped report, you can learn by following the first example in the upcoming section.

AT THE KEYBOARD

Suppose you want to create a report from the Hours Worked table. Select the table by clicking it once. Click the Create tab, then click Report in the Reports group. A report appears, as shown in Figure B-63.

FIGURE B-63   Initial report based on a table

On the Design tab, select the Group & Sort button in the Grouping & Totals group. Your report will have an additional selection at the bottom, as shown in Figure B-64.

**FIGURE B-64**   Report with grouping and sorting options

Click the Add a group button at the bottom of the report, and then select Employee ID. Your report will be grouped as shown in Figure B-65.

FIGURE B-65   Grouped report

To complete this report, you need to total the hours for each employee by selecting the Hours column heading. Your report will show that the entire column is selected. On the Design tab, click the Totals button in the Grouping & Totals group, and then choose Sum from the menu, as shown in Figure B-66.
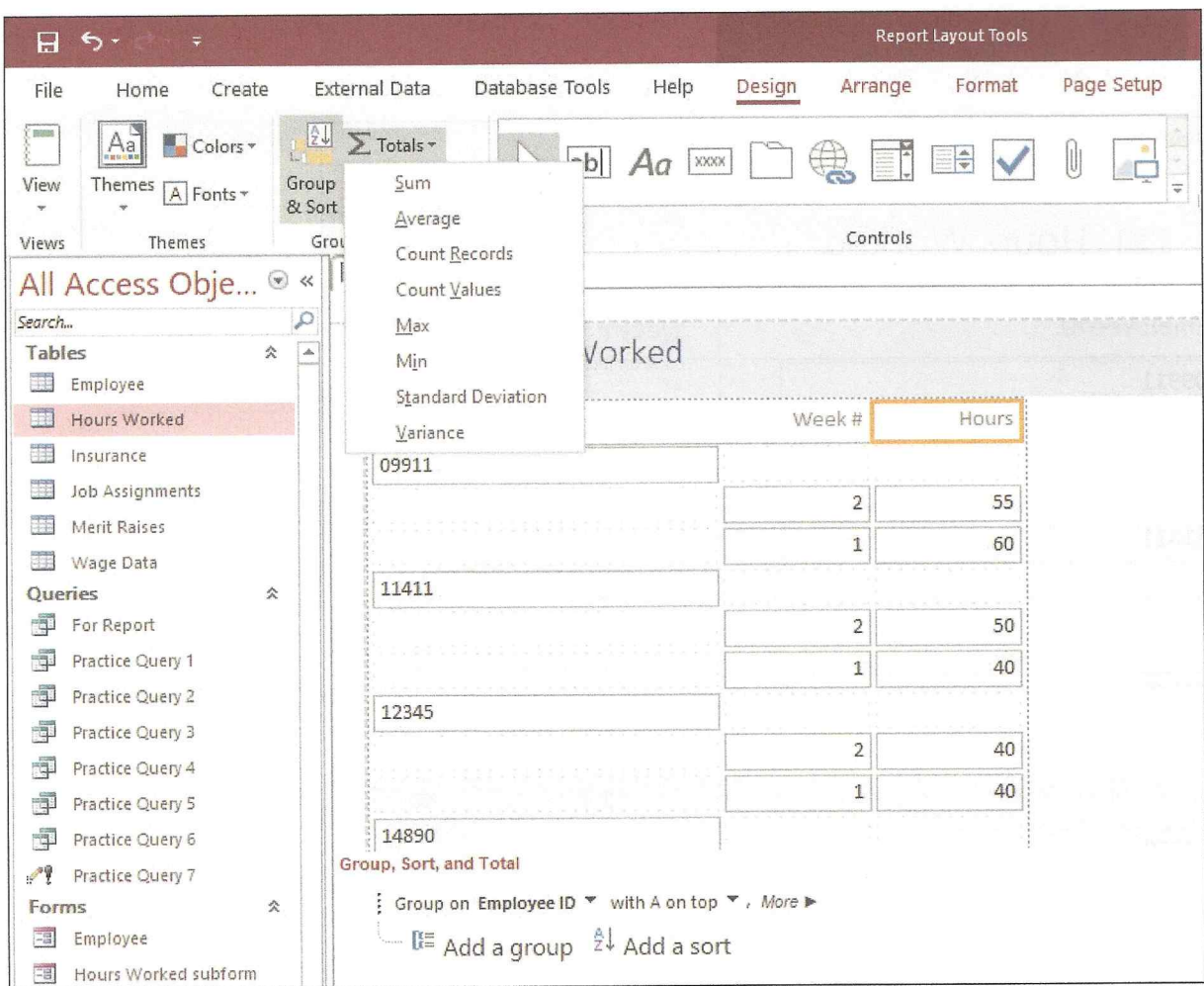
FIGURE B-66   Totaling the hours

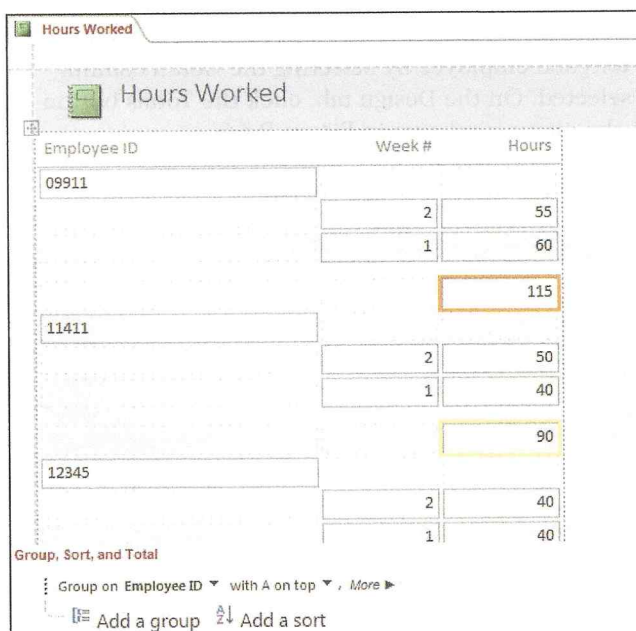Your report will look like the one in Figure B-67.

FIGURE B-67   Completed report

Your report is currently in Layout view. To see how the final report looks when printed, click the Design tab and select Report View from the Views group. Your report looks like the one in Figure B-68, although only a portion is shown in the figure.

Hours Worked		
Employee ID	Week #	Hours
09911		
	2	55
	1	60
		115
11411		
	2	50
	1	40
		90
12345		
	2	40
	1	40

FIGURE B-68   Report in Report view

> **NOTE**
>
> To change the picture or logo in the upper-left corner of the report when in Layout view, click the notebook symbol and press the Delete key. You can insert a logo in place of the notebook by clicking the Design tab and then clicking the Insert Image button in the Controls group.

Moving Fields in Layout View

If you group records based on more than one field in a report, the report will have an odd "staircase" look or display repeated data, or it will have both problems. Next, you will learn how to overcome these problems in Layout view.

Suppose you make a query that shows an employee's last name, first name, week number, and hours worked, and then you make a report from that query, grouping on last name only. See Figure B-69.

Hours Worked by Employees			
Last Name	First Name	Week #	Hours
Amari			
	Zarif	2	40
	Zarif	1	40
Brady			
	Joseph	2	55
	Joseph	1	60
Caron			
	Victor	2	40
	Victor	1	38
Davies			
	Dafina	2	50
	Dafina	1	40
Kowalczyk			
	Aleksandra	2	40

FIGURE B-69   Query-based report grouped on last name

As you preview the report, notice the repeating data from the First Name field. In the report shown in Figure B-69, notice that the first name repeats for each week worked—hence, the staircase effect. The Week # and Hours fields are shown as subordinate to Last Name, as desired.

Suppose you want the last name and first name to appear on the same line. If so, take the report into Layout view for editing. Click the first record for the First Name (in this case, Zarif) and drag the name up to the same line as the Last Name (in this case, Amari). Your report will now show the First Name on the same line as Last Name, thereby eliminating the staircase look, as shown in Figure B-70.

Hours Worked by Employees			
Last Name	First Name	Week #	Hours
Amari	Zarif		
		2	40
		1	40
Brady	Joseph		
		2	55
		1	60
Caron	Victor		
		2	40
		1	38
Davies	Dafina		
		2	50
		1	40
Kowalczyk	Aleksandra		
		2	40

FIGURE B-70   Report in Layout view with Last Name and First Name on the same line

You can now add the sum of Hours for each group. Also, if you want to add more fields to your report, such as Street Address and Zip, you can repeat the preceding procedure.

IMPORTING DATA

Text or spreadsheet data is easy to import into Access. In business, it is often necessary to import data because companies use disparate systems. For example, assume that your healthcare coverage data is on the human resources manager's computer in a Microsoft Excel spreadsheet. Open the Excel application and then create a spreadsheet using the data shown in Figure B-71.

	A	B	C
1	Employee ID	Provider	Level
2	11411	BlueCross	family
3	12345	BlueCross	family
4	14890	Coventry	spouse
5	22282	None	none
6	71460	Coventry	single
7	Your ID	BlueCross	single

FIGURE B-71   Excel data

Save the file and then close it. Now you can easily import the spreadsheet data into a new table in Access. With your Employee database open, click the External Data tab, then click New Data Source in the Import & Link group. In the drop-down list, choose From File − Excel. Browse to find the Excel file you just created, and make sure the first radio button is selected to import the source data into a new table in the current database (see Figure B-72). Click OK.
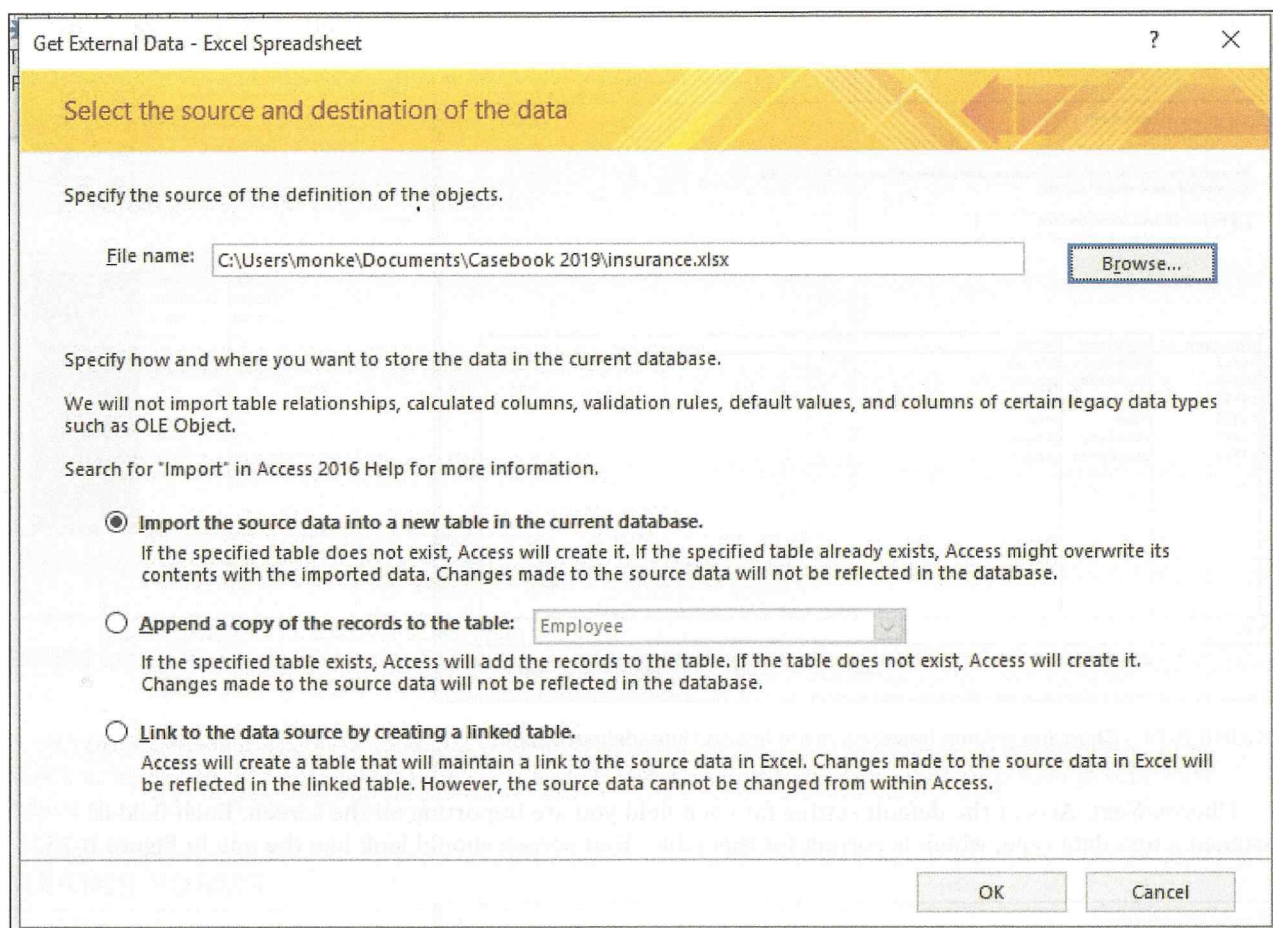
FIGURE B-72   Importing Excel data into a new table

If necessary, choose the correct worksheet, as illustrated in Figure B-73. If the Excel file has only one sheet, move on to the next step, as shown in Figure B-74.
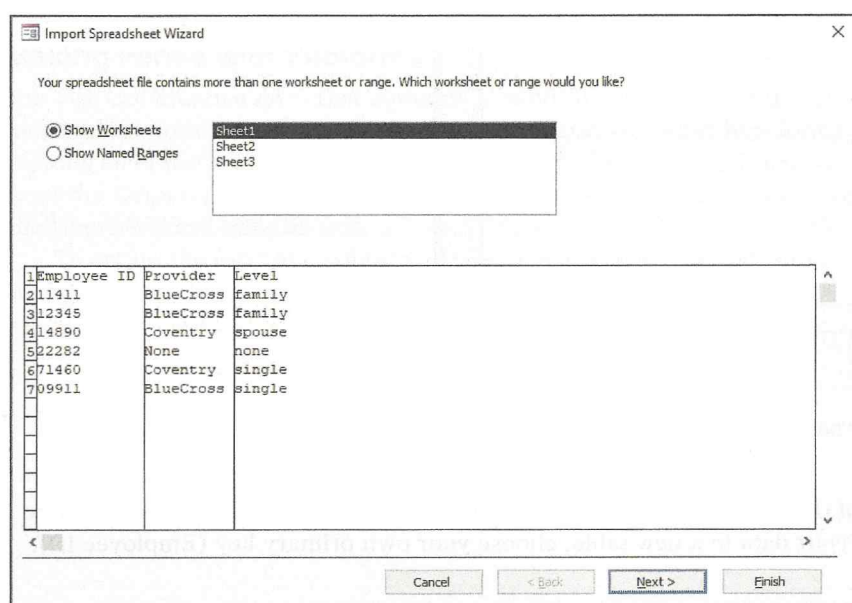

FIGURE B-73   First screen in the Import Spreadsheet Wizard

Choose Next, and then make sure to select the First Row Contains Column Headings box, as shown in Figure B-74.

FIGURE B-74   Choosing column headings in the Import Spreadsheet Wizard

Choose Next. Accept the default setting for each field you are importing on the screen. Each field is assigned a text data type, which is correct for this table. Your screen should look like the one in Figure B-75.

FIGURE B-75   Choosing the data type for each field in the Import Spreadsheet Wizard

Choose Next. In the next screen of the wizard, you will be prompted to create an index—that is, to define a primary key. Because you will store your data in a new table, choose your own primary key (Employee ID), as shown in Figure B-76.

FIGURE B-76   Choosing a primary key field in the Import Spreadsheet Wizard

Continue through the wizard, giving your table an appropriate name. After importing the table, take a look at its design by right-clicking the table and choosing Design View. Note that each field is very wide. Adjust the field properties as needed.

MAKING FORMS

Forms simplify the process of adding new records to a table. Creating forms is easy, and they can be applied to one or more tables.

When you base a form on one table, you simply select the table, click the Create tab, and then select Form from the Forms group. The form will then contain only the fields from that table. When data is entered into the form, a complete new record is automatically added to the table. Forms with two tables are discussed next.

Making Forms with Subforms

You also can create a form that contains a subform, which can be useful when the form is based on two or more tables. Return to the example Employee database to see how forms and subforms would be useful for viewing all of the hours that each employee worked each week. Suppose you want to show all of the fields from the Employee table; you also want to show the hours each employee worked by including all fields from the Hours Worked table as well.

To create the form and subform, first create a simple one-table form on the Employee table. Follow these steps:

1.   Click once to select the Employee table. Click the Create tab, then click Form in the Forms group. After the main form is complete, it should resemble the one in Figure B-77.

FIGURE B-77   The Employee form

2.   To add the subform, take the form into Design view. On the Design tab, make sure that the Use Control Wizards option is selected, scroll to the bottom row of buttons in the Controls group, and click the Subform/Subreport button, as shown in Figure B-78.
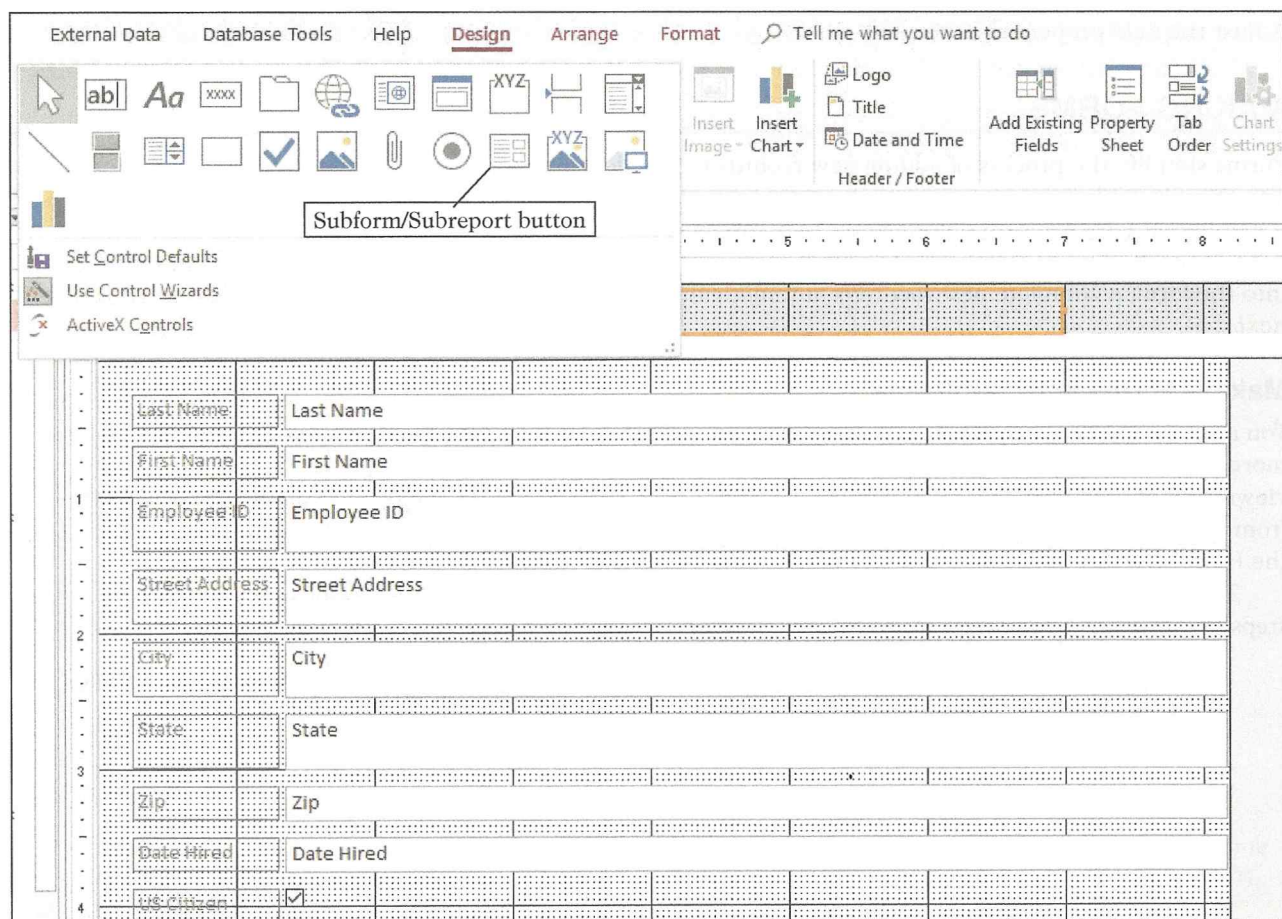

FIGURE B-78   The Subform/Subreport button

3. Use your cursor to stretch out the box under your main form. You might need to expand the area beneath the main form. The window shown in Figure B-79 appears.
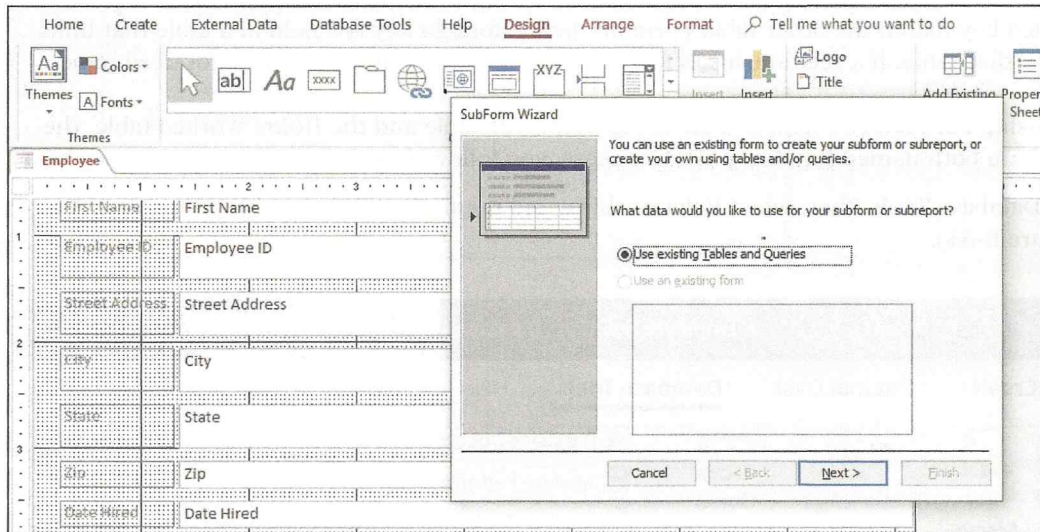

FIGURE B-79 Adding a subform

4. Select Use existing Tables and Queries, click Next, and then select Table: Hours Worked from the Tables/Queries drop-down list. Select all available fields. Click Next, select Choose from a list, click Next again, and then click Finish. Select the Form view. Your form and subform should resemble Figure B-80. You may need to stretch out the subform box in Design view if all fields are not visible.

FIGURE B-80 Form with subform

FORMING RELATIONSHIPS

At times you might want to form relationships between the tables in an Access database to enforce referential integrity. Relationships are similar to the joins made in queries; however, referential integrity requires that a value in a table's foreign key match the other table's primary key. A foreign key is a field in a table that links to a primary key in another table. If a relationship is formed, then the tables in a query will not need to be manually joined.

To form a relationship between two tables, such as the Employee table and the Hours Worked table, the two fields to be joined are both named Employee ID. In Access, you follow these steps:

1. Choose Database Tools, then select Relationships, and then select Relationships (see Figure B-81).
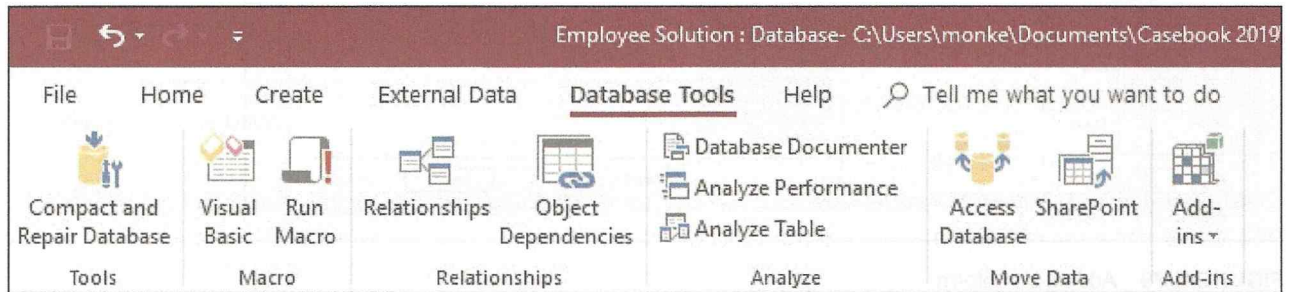

FIGURE B-81   Forming a relationship

2. In the Show Table dialog box, choose the Employee table and the Hours Worked table. Close the dialog box.
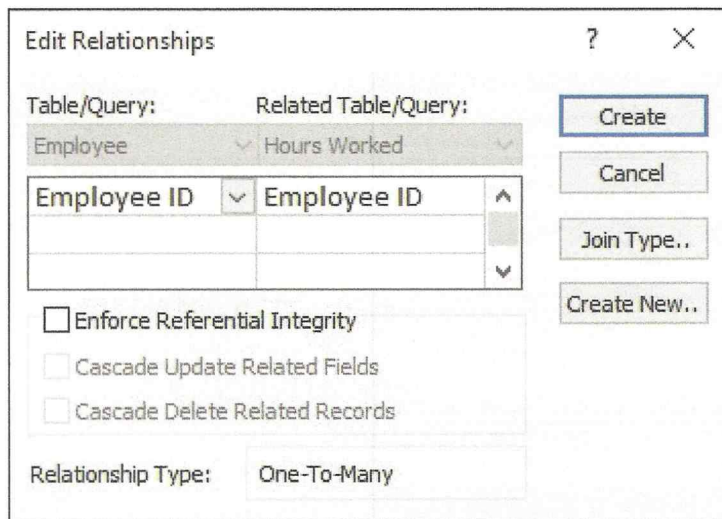3. Draw a join line between the two tables on Employee ID. A dialog box appears (see Figure B-82).

FIGURE B-82   Edit Relationships dialog box

4. Choose Enforce Referential Integrity and click Create.
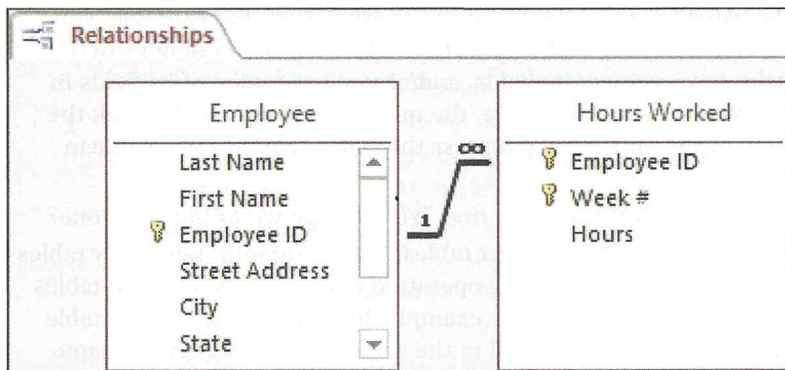5. A one-to-many relationship is formed automatically (see Figure B-83).

FIGURE B-83 A one-to-many relationship

TROUBLESHOOTING COMMON PROBLEMS

Access is a powerful program, but it is complex and sometimes difficult for new users. People sometimes unintentionally create databases that have problems. Some of these common problems are described below, along with their causes and corrections.

1. *"I saved my database file, but I can't find it on my computer! Where is it?"*

    You saved your file to a fixed disk or a location other than the Documents folder. Use the Windows Search option to find all files ending in .accdb (search for * .accdb). If you saved the file, it is on the hard drive (C:\) or a network drive. Your site assistant can tell you the drive designators.

2. *"What is a 'duplicate key field value'? I'm trying to enter records into my Sales table. The first record was for a sale of product X to customer 101, and I was able to enter that one. But when I try to enter a second sale for customer #101, Access tells me I already have a record with that key field value. Am I allowed to enter only one sale per customer?"*

    Your primary key field needs work. You may need a compound primary key—a combination of the customer number and some other field(s). In this case, the customer number, product number, and date of sale might provide a unique combination of values, or you might consider using an invoice number field as a key.

3. *"My query reads 'Enter Parameter Value' when I run it. What is that?"*

    This problem almost always indicates that you have misspelled a field name in an expression in a Criteria field or calculated field. Access is very fussy about spelling; for example, it is case sensitive. Access is also "space sensitive," meaning that when you insert a space in a field name when defining a table, you must also include a space in the field name when you reference it in a query expression. Fix the typo in the query expression.

4. *"I'm getting an enormous number of rows in my query output—many times more than I need. Most of the rows are duplicates!"*

    This problem is usually caused by a failure to link all of the tables you brought into the top half of the query generator. The solution is to use the manual click-and-drag method to link the common fields between tables. The spelling of the field names is irrelevant because the link fields need not have the same spelling.

5. *"For the most part, my query output is what I expected, but I am getting one or two duplicate rows or not enough rows."*

    You may have linked too many fields between tables. Usually, only a single link is needed between two tables. It is unnecessary to link each common field in all combinations of tables; it is usually sufficient to link the primary keys. A simplistic explanation for why overlinking causes problems is that it causes Access to "overthink" and repeat itself in its answer.