

UNIT

3

Advanced Access 2010: Advanced Databases

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Mina Chapman/CORBIS



Why It Matters

A database is an organized collection of information. You may be using databases every day without realizing it. For example, personal music players, such as iPods, organize thousands of music, photo, and video files by title, artist, year, and more. The best thing about databases is that they make it easy to search for information using different criteria saving time and effort. *What other common databases might you use daily?*

Step-By-Step

- 1 Choose **Start>All Programs>Microsoft Office®>Microsoft Excel 2010**.
 - 2 Choose **File>Open**.
 - 3 Locate and open the data file **Product Info.xlsx**.
Save as: **Product Info-[your first initial and last name]** (for example, *Product Info-rgupta*).
 - 4 Read each field name. Note that the fields **Product ID**, **Product Name**, **Cost**, and **Inventory** all contain stored data.
 - 5 Click in cell **E2** in the **Total Value** field (see Figure 1.1).
 - 6 **CHECK** Your screen should look like Figure 1.1.
- Continued on the next page.

Tech Tip

If a database stores customer address information, the data remains the same until a user goes into the database and changes it. If the database tracks the total value of a product, the value in inventory changes when the price changes.

EXERCISE 1-1 Define Data Needs



When you begin to design a database, you should think about the types of data that you need to include. One way to prepare data for use in a database is to create a table for your data fields in a spreadsheet program such as Microsoft Excel. When entering data in an Access database, consider whether the data should be calculated by the database or entered by the user. Stored data will remain the same until the user manually changes it. Calculated data changes in response to other data modifications. Examples of stored data and calculated data are shown in Table 1.1.

TABLE 1.1 Examples of stored data fields and calculated data fields

Stored Data	Calculated Data
Product ID	Total value of all products in inventory.
Product name	Total number of products in inventory.
Product cost	Total Value is calculated by multiplying the Product cost field by the Inventory field.
Inventory	Average monthly inventory levels.

FIGURE 1.1 Product Info worksheet

	A	B	C	D	E	F
	Product ID	Product Name	Cost	Inventory	Total Value	
2	1	Type 2 fuel injector	\$265.20	1,000	\$265,200.00	
3	2	Head bolt	\$22.50	1,500	\$33,750.00	
4	3	Head gasket	\$45.00	800	\$36,000.00	
5	4	Tailpipe	\$76.25	800	\$61,000.00	
6	5	3-series fuel pump	\$710.44	200	\$142,088.00	
7	6	Exhaust bracket	\$17.50	600	\$10,500.00	
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						

Step-By-Step

- 7 Click in cell **D2** (see Figure 1.2).
- 8 Select 1000. Key: **500**. Press **ENTER**.
- 9 **!CHECK** Your screen should look like Figure 1.3. Note that the value in cell **E2** changes to \$132,600.
- 10 Save and close the **Product Info** spreadsheet and exit **Excel**.

Continue to the next exercise.

You Should Know

Stored data, such as the price of an inventory in an automotive parts warehouse database, must be changed manually. Calculated data depends on other data. For example, the total value of all gaskets held in the warehouse's inventory would change if either the price of head gaskets went up or the quantity of gaskets went up or down. You can calculate stored data in Excel and import it to Access. You also can create calculated and stored data directly in Access.

EXERCISE 1-1 (Continued) Define Data Needs

FIGURE 1.2 Stored data in Product Info worksheet

	A	B	C	D	E	F
1	Product ID	Product Name	Cost	Inventory	Total Value	
2	1	Type 2 fuel injector	\$265.20	1,000	\$265,200.00	
3	2	Head bolt	\$22.50	1,500	\$33,750.00	
4	3	Head gasket	\$45.00	800	\$36,000.00	
5	4	Tailpipe	\$76.25	800	\$61,000.00	
6	5	3-series fuel pump	\$710.44	200	\$142,088.00	
7	6	Exhaust bracket	\$17.50	600	\$10,500.00	

FIGURE 1.3 Calculated data changed

	A	B	C	D	E	F
1	Product ID	Product Name	Cost	Inventory	Total Value	
2	1	Type 2 fuel injector	\$265.20	500	\$132,600.00	
3	2	Head bolt	\$22.50	1,500	\$33,750.00	
4	3	Head gasket	\$45.00	800	\$36,000.00	
5	4	Tailpipe	\$76.25	800	\$61,000.00	
6	5	3-series fuel pump	\$710.44	200	\$142,088.00	
7	6	Exhaust bracket	\$17.50	600	\$10,500.00	

Change in cell D2 causes calculated value in cell E2 to change

Tech Tip

When you begin to design forms and reports, you will choose how to find, display, and edit data from one or more tables or queries.

Step-By-Step

- 1 Click **Start>All Programs>Microsoft Office®>Microsoft Access 2010**.
- 2 Choose **File>Open**.
- 3 Navigate to the **Phils Pick-a-Part.accdb** database file. Ask your teacher how and where to copy the database before working in it.
- 4 Select the database file and click **Open**.
- 5 In the **Navigation Pane**, right-click the **Product Info** table and select **Design View** from the menu.
- 6 In the **Field Name** column, click in the blank cell under **Cost**. Key: **QtyInStock**. Press **TAB**.
- 7 Click the **Data Type** drop-down arrow. From the list of data types, select **Number**.
- 8 **CHECK** Your screen should look like Figure 1.4.
- 9 Under **Field Properties**, click in the **Caption** box and key: **Stock Quantity**.
- 10 Click **Save**. Click the **Cost** field and press **TAB**. Change the **Data Type** to **Currency**.

EXERCISE 1-2 Define Field Data Types

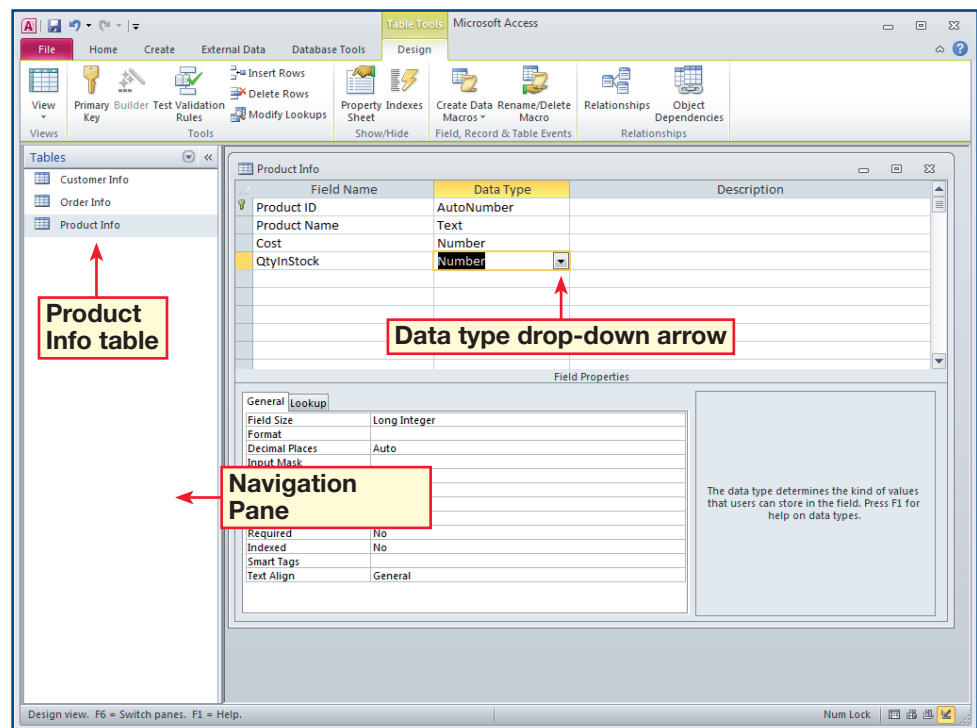


You can use various data types to organize the data tables in your database. Some data is best presented as text, while other data should appear as a number. Sometimes, data should be stored as a combination of both, or as one of two values, such as Yes or No. A Memo data type, which can store up to 65,535 characters, is best for storing large amounts of text data, such as a comment or note about a particular order or product. A Currency data type is best for storing monetary values. To ensure that data in a field supports searches or meets certain conditions, use a data type that supports a conditional expression, or Boolean operator, such as AND, OR, or NOT. One kind of Boolean operator is a comparison operator, such as equal, not equal, less than, more than, and so on. Common data types that support Boolean operators are shown in Table 1.2.

TABLE 1.2 Common Data Types that Support Boolean Operators

Text	Currency
Number	Yes/No
Date/Time	AutoNumber

FIGURE 1.4 Product Info QtyInStock field added to parts database



➔ *Continued on the next page.*

Step-By-Step

- 11** Under **Field Properties**, click in the **Format** box. Choose **Currency**.
- 12** Click **Datasheet View**. Click **Yes** to save changes. Click **Yes** again.
- 13** **iCHECK** Your screen should look like Figure 1.5. Close the **Product Info** table.
- 14** Open the **Customer Info** table in **Design View**.
- 15** Click in the **Notes** field **Data Type** box. Click the drop-down arrow and select **Memo**.
- 16** **iCHECK** Your screen should look like Figure 1.6.
- 17** Click **Save**. Close the **Customer Info** table.

Troubleshooter

The data types you assign will depend on how you want to use the data. A **Date/Time** data type stores dates. A **Number** data type performs calculations. The **Memo** data type saves notes. To ensure that data meets a condition, change a field's data type to support searches or comparisons.

EXERCISE 1-2 (Continued) Define Field Data Types



FIGURE 1.5 Product Info table in Datasheet View

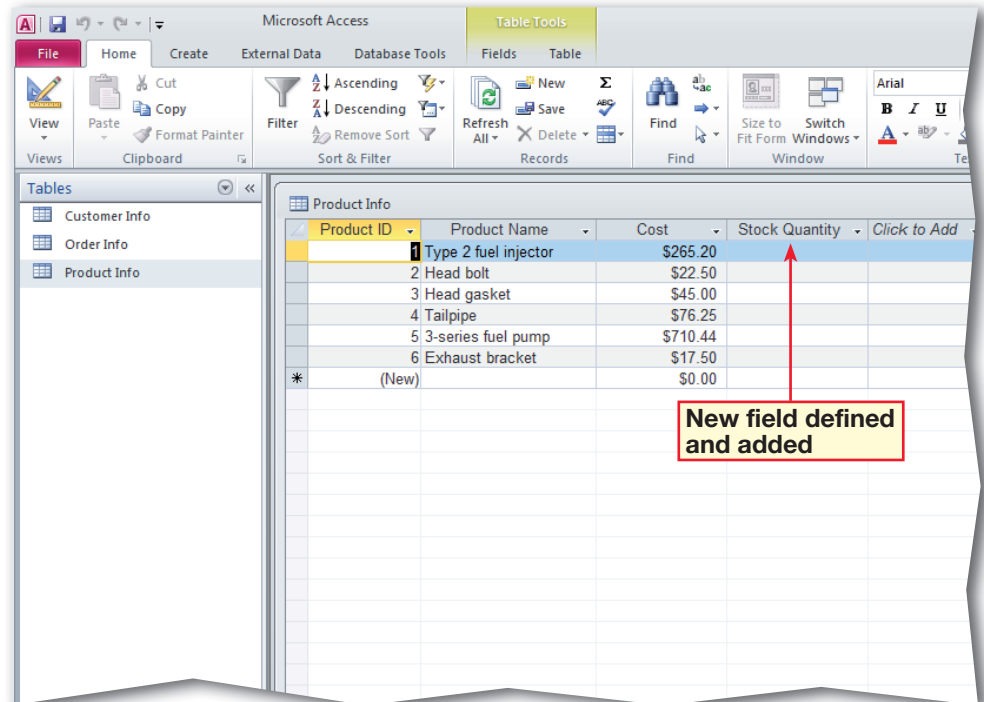
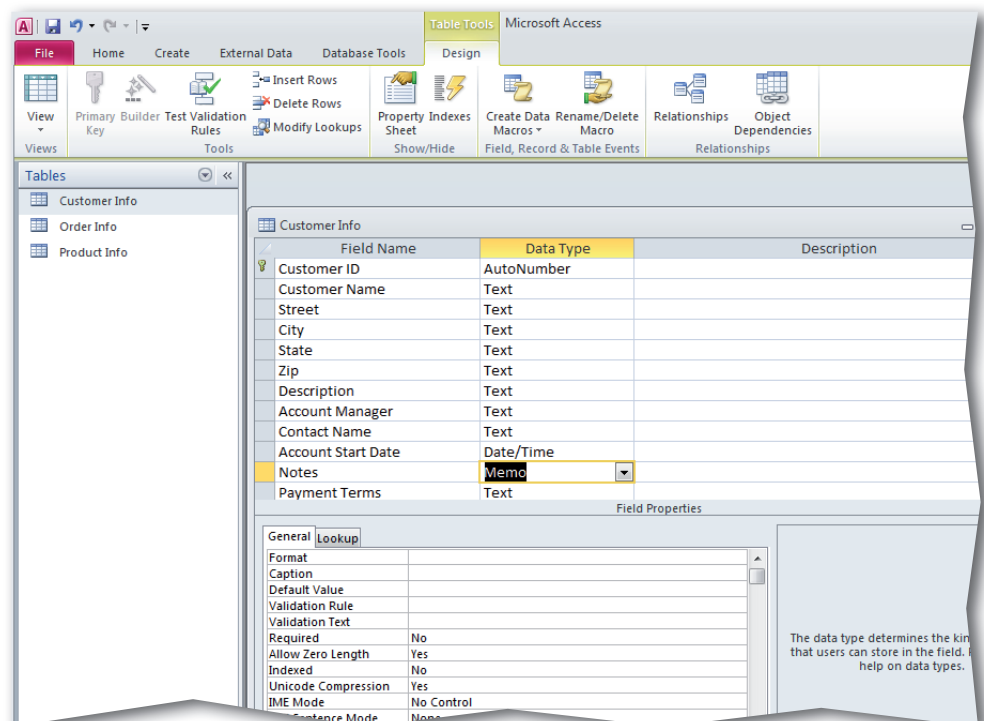





FIGURE 1.6 Customer Info table in Design View



Step-By-Step

- 1 In your **Phil's Pick-a-Part** database, in the **Naviga-tion Pane**, double-click the **Customer Info** table.
- 2 Choose **Home>Views> Design View** .
- 3 Click the **Customer Name** field. In **Field Properties**, click in the **Field Size** box. Key: **80**. Press .
- 4 Click the row selector to the left of **Telephone**. While still holding the mouse button, drag down until the bold black line is above the **Description** field.
- 5 Release the mouse. Scroll down the field names list and click in the **Notes** field.
- 6 Scroll down the **Field Properties** and click in the **Append Only** box.
- 7 Click the drop-down arrow and select **Yes**.
- 8 **!CHECK** Your screen should look like Figure 1.7.
- 9 Click **Save** . Close the table.

 Continue to the next exercise.

You Should Know

Access assigns a default field name if you do not enter a caption for a field.

EXERCISE 1-3 Modify Field Properties

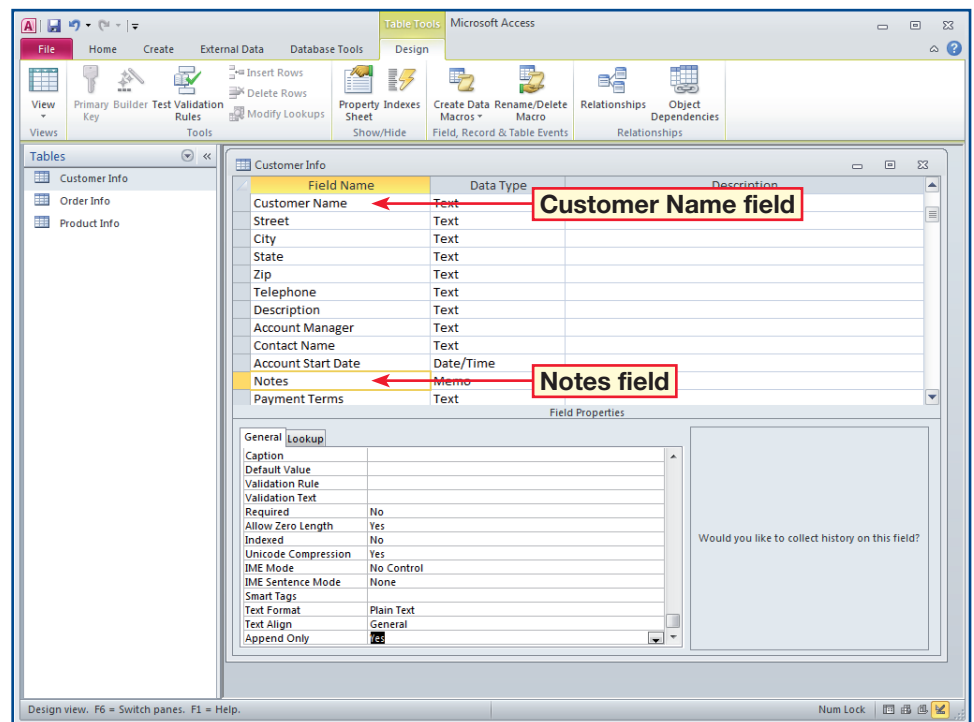


Access allows you to set and modify properties for entire tables and for individual fields within a table. For example, by specifying the Field Size, or maximum number of characters that a user can enter in a field, you can ensure that data in the Phone Number field contains ten digits. You also can set a memo field as Append Only. With this option, users can add data to a field, but they cannot delete data from it. Common properties for fields in a table are shown in Table 1.3.



TABLE 1.3 Common Field Properties

Allow Zero Length	Specifies that a Text, Memo, or Hyperlink field can accept strings of <i>zero length</i> , or null values, with no characters.
Append Only	Specifies that data can be added to a Memo field, but that the existing data in the field cannot be overwritten.
Caption	Specifies the name of a Text field.
Field Size	Specifies the maximum number of characters a user can enter in a field.
Required	Specifies that data must be entered in a field.

FIGURE 1.7 Customer Info table edited



Step-By-Step

- 1 In your **Phil's Pick-a-Part** file, in the **Navigation Pane**, double-click the **Customer Info** table.
- 2 Choose **Home>Views>Design View** .
- 3 Click in the **Account Start Date** field box. Under **Field Properties**, click in the **Validation Rule** box and key: `>=#01/01/2011#`.
- 4 Click in the **Validation Text** box and key: `Date entered must be after January 1, 2011`.
- 5 **iCHECK** Your screen should look like Figure 1.8.
- 6 Choose **Design>Views>Datasheet View** . Click **Yes** to save changes.
- 7 **iCHECK** Your screen should look like Figure 1.9.
- 8 If necessary, in the **Data Integrity** warning box, click **Yes**.

 *Continued on the next page.*

Tech Tip

To delete a field in **Datasheet View**, right-click on the field's column head and select **Delete Field**.

EXERCISE 1-4 Set Validation Rules



You can use the Validation Rule property to restrict the type and amount of data users can enter into a field by creating a Boolean (or conditional) expression in the Validation field. Validation rules use conditional expressions to specify that the data meets certain criteria. You can use the Validation Text property to customize the error message that Access displays when data that is entered into a field violates a validation rule. Validation messages should contain information about the invalid data and how to fix the error. Examples of validation rules are shown on page 256 in Table 1.4.

FIGURE 1.8 Customer Info table with validation added

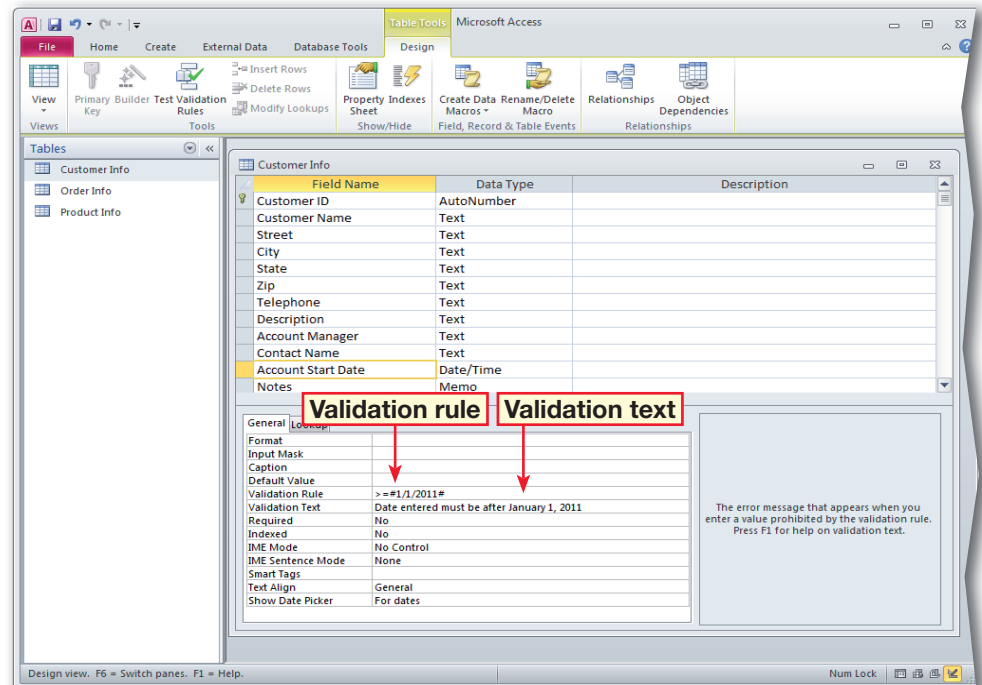
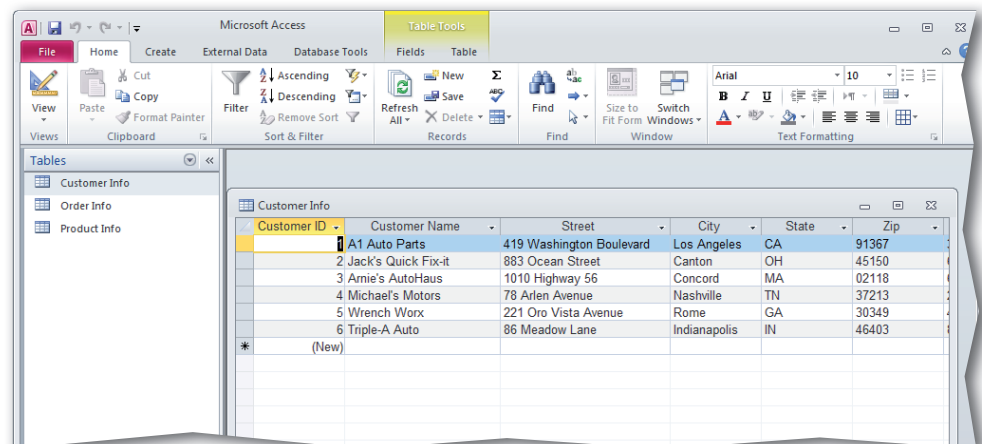


FIGURE 1.9 Customer Info table in Database View



Step-By-Step

- 9 Scroll to the right until you can see the **Account Start Date** field.
 - 10 Click in the first record under the heading.
 - 11 Highlight the year **2011** in the date and key: **2009**.
 - 12 Press **TAB**.
 - 13 **CHECK** Your screen should look like Figure 1.10.
 - 14 In the warning dialog box, click **OK**. Highlight the date and key: **2011**.
 - 15 Press **ENTER**.
 - 16 Close the table. Click **Yes**.
-  Continue to the next exercise.

You Should Know

If you enter data into a field that violates a validation rule, Access prevents you from moving to another field until the problem is fixed. The **Validation Text** property tells you how to fix the error.

EXERCISE 1-4 (Continued) Set Validation Rules



FIGURE 1.10 Validation error dialog box

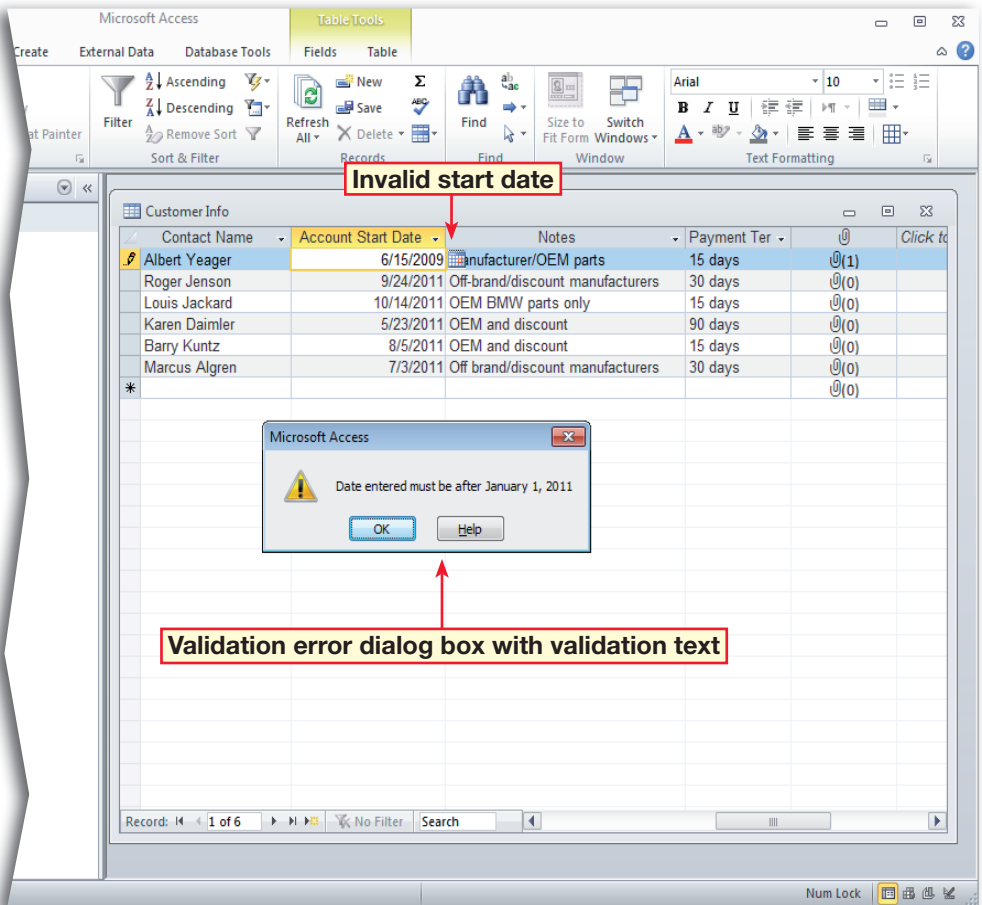







TABLE 1.4 Sample Validation Rules

Validation Rule	Description of Rule
>0	Requires users to enter a positive value
<100	Requires users to enter a value that is less than 100
>100 AND <1000	Requires users to enter a value between 100 and 1,000
[EndDate]>=[StartDate]	Requires users to enter an ending date that occurs on or after a starting date
>=#01/01/2012#	Requires users to enter a date on or after January 1, 2012
[RequiredDate]<=[OrderDate]+30	Requires users to enter a date that is no later than 30 days after the order date

Step-By-Step

- 1 In your **Phil's Pick-a-Part** database, open the **Customer Info** table in **Design View**.
- 2 Click the record selector for the **Customer ID** field. Choose **Design>Tools>Primary Key** .
- 3 Click the record selector for the **Customer Name** field. Choose **Design>Tools>Primary Key** .
- 4 Choose **Design>Views>Datasheet View** .
- 5 Click **Yes** to save the changes to the **Customer Info** table.
- 6 **CHECK** Your screen should look like Figure 1.11.
- 7 Choose **Design>Views>Design View** .
- 8 Click **Save**  and close the **Customer Info** table.

 Continue to the next exercise.

Academic Skills

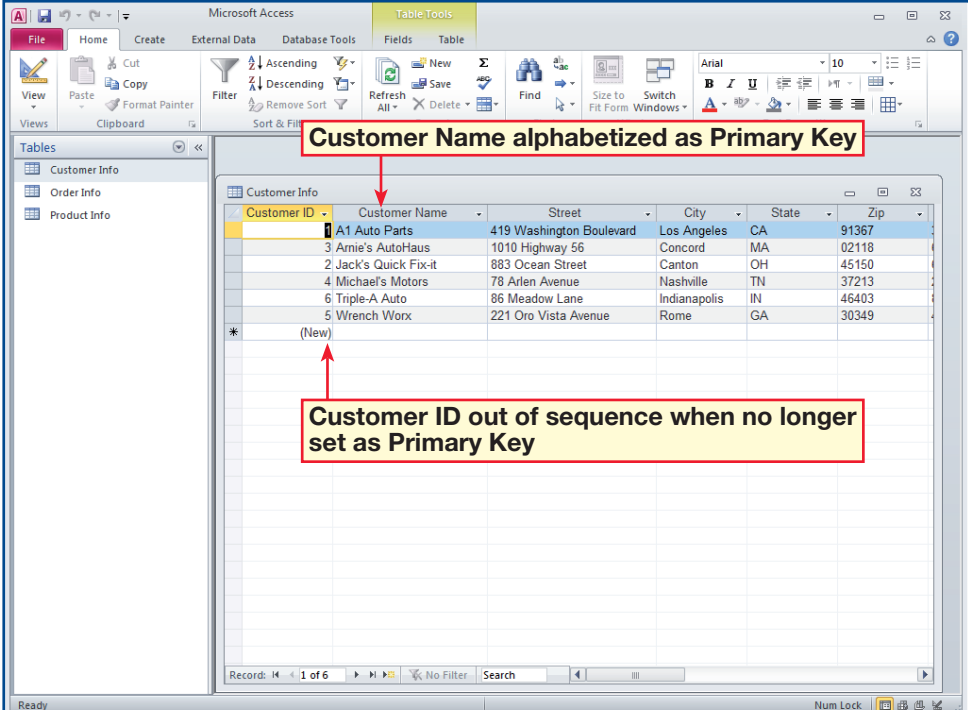
Some database fields would not make a good choice for primary keys. For example, you may have more than one John Smith in the **Name** field.

EXERCISE 1-5 Define and Modify Primary Keys



A *primary key* is a field that ensures that each record in a table is unique. By default, Access records in a table are sorted based on the primary key. In the Phil's Pick-a-Part database, for example, the Customer ID acts as a unique identifier for each customer in the database. You can identify each customer uniquely because no two customers have the same Customer ID number. A field with the AutoNumber data type is often used as the primary key because the numbers assigned to the field increase automatically with each new record. Characteristics of a good choice for a primary key are shown in Table 1.5.

FIGURE 1.11 Customer Info table Datasheet View








Customer ID	Customer Name	Street	City	State	Zip
1	A1 Auto Parts	419 Washington Boulevard	Los Angeles	CA	91367
3	Arnie's AutoHaus	1010 Highway 56	Concord	MA	02118
2	Jack's Quick Fix-it	883 Ocean Street	Canton	OH	45150
4	Michael's Motors	78 Arlen Avenue	Nashville	TN	37213
6	Triple-A Auto	86 Meadow Lane	Indianapolis	IN	45403
5	Wrench Worx	221 Oro Vista Avenue	Rome	GA	30349
*	(New)				

TABLE 1.5 Choosing a primary key

A good candidate for a primary key...

1. Is a value that uniquely identifies each record in the table.
2. Is a field that is never empty. It always contains a value.
3. Is a value that does not change.

Step-By-Step

- 1 In your **Phil's Pick-a-Part** database, open the **Product Info** table in **Design View**.
- 2 Click the record selector for the **Product Name**.
- 3 Hold down **CTRL** and click the record selector for **Cost**.
- 4 Choose **Design>Tools>Primary Key** .
- 5 **iCHECK** Your screen should look like Figure 1.12.
- 6 Choose **Design>Views>Datasheet View** . Click **Yes**.
- 7 **iCHECK** Your screen should look like Figure 1.13.
- 8 Click **Design View** .
- 9 Click the record selector for the **Product ID** field. Click **Primary Key** .
- 10 Click **Close**  on the **Product Info** table. Select **Yes** to save changes.

You Should Know

A multi-field primary key is also referred to as a composite key.

EXERCISE 1-6

Define and Modify Multi-Field Primary Keys

A *multi-field primary key* is a table with two or more fields defined as the primary key. A multi-field key is used if a table has no single field that is appropriate to serve as the primary key. Although a primary key should include as few fields as possible, if a table has no single field with a set of unique values, two or more fields can be combined to create a unique value. In this exercise, the Product ID field in the Product Info table is not a suitable primary key. Multiple primary keys are assigned to the Product Name and Cost fields to fix this problem. Because there are no two products with the same name or price in the Phil's Pick-a-Part database, the multiple primary keys assign a unique value to the relationship between these two fields.

FIGURE 1.12 Product Info table multiple primary keys

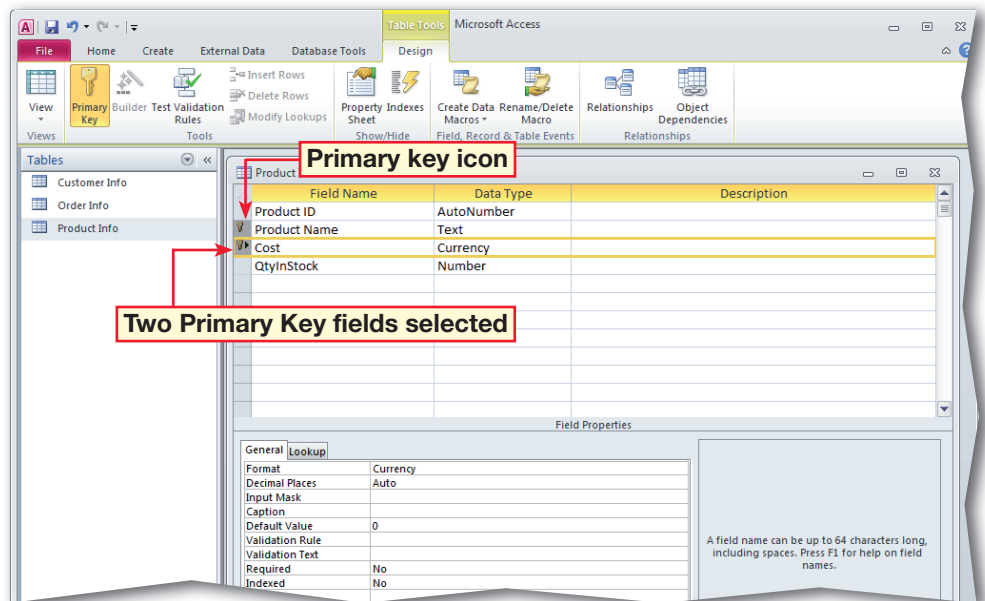
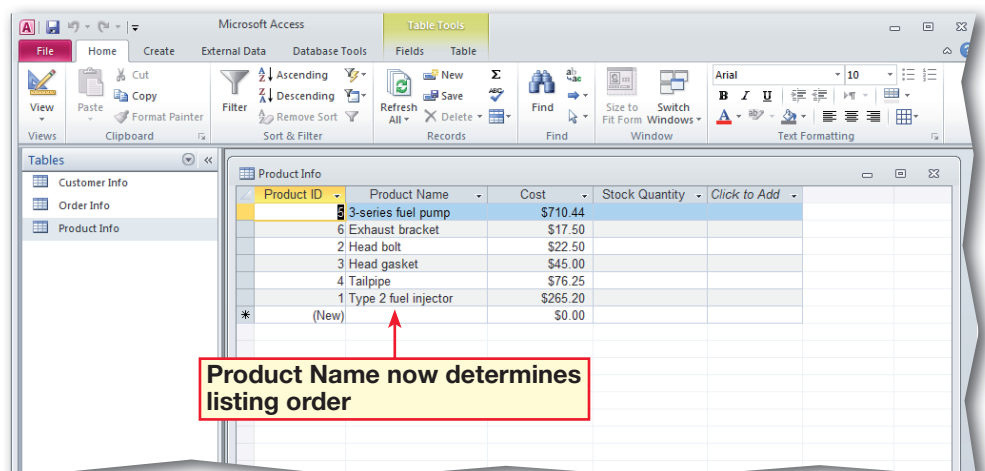





FIGURE 1.13 Product Info table in Datasheet View



Step-By-Step

- 1 In your **Phil's Pick-a-Part** database, open the **Customer Info** table.
- 2 Scroll to the right until you see the **Account Manager** field. Read the Account Managers' last names listed in the **Customer Info** table.
- 3 Close the **Customer Info** table.
- 4 Choose **Create>Tables>Table** .
- 5 Choose **Datasheet>Views>Design View** . In the **Save As** dialog box key: **Sales Info**. Click **OK**.
- 6 **!CHECK** Your screen should look like Figure 1.14.
- 7 Key: **Account Manager**. Press .

Academic Skills

Formatting the objects in your database can make data much more readable. Adding a visual element, such as a logo, is especially useful when creating forms and reports. Logos can make your forms and reports look more professional and visually appealing.



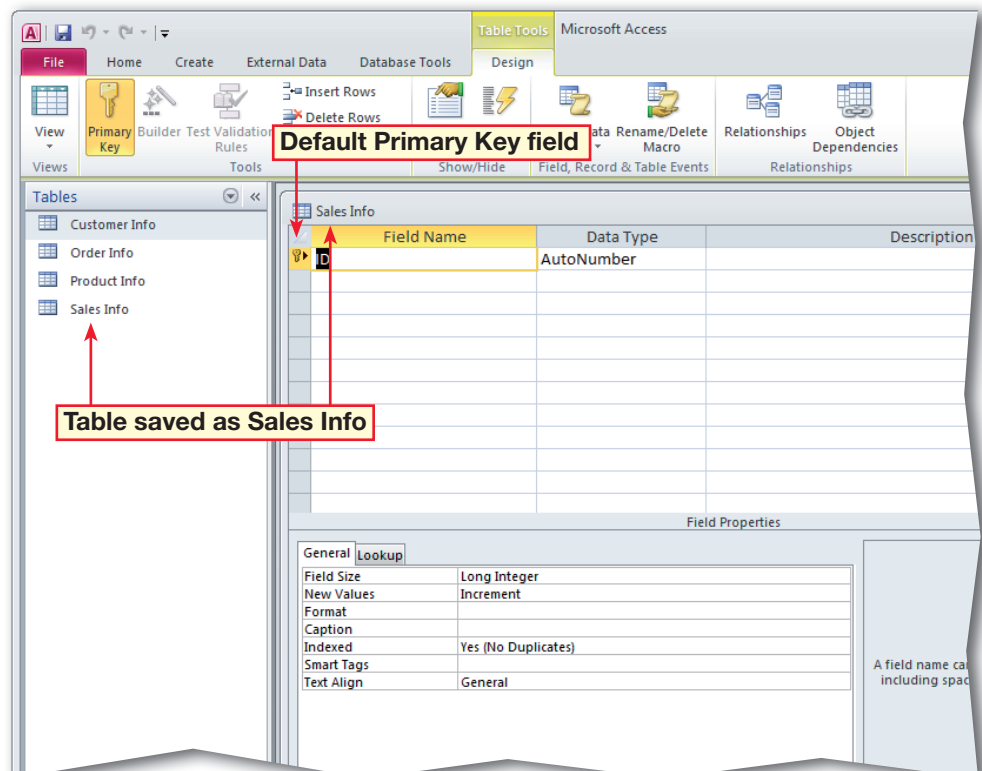
EXERCISE 1-7 Define Tables in Databases

When you design a database, it should be structured correctly so that the data is accurate, easy to work with, and accommodates your needs. When you add new tables to any database, analyze your design for errors to see if your tables are normalized, or structured correctly without repeated groups of information. A well-designed database typically contains 3NF tables. A *3NF table* is a table that is normalized to the third order. This means that they comply with the first three rules of normalization. The three rules to create a 3NF table are shown in Table 1.6. The rules of form build on the previous rules, so a Third Normal Form table complies with all the rules of the first and second forms as well as the third form.

TABLE 1.6 Rules of normalization

Rule	Description of Rule
1NF	Each field in database table contains a single value, and the table has no repeating groups of information
2NF	Each non-key field in the table must be dependent on the entire primary key (including multi-field primary keys)
3NF	Each non-key field in the table is dependent <i>only</i> on the primary key

FIGURE 1.14 New Sales Info table



Step-By-Step

- 8 Click the **Data Type** drop-down arrow and select **Text**. Press **TAB** twice.
- 9 Key: **First Name**. Press **TAB**.
- 10 Set the **Data Type** to **Text**. Press **TAB** twice.
- 11 Key: **Cell Phone**. Click in the field below **Cell Phone**.
- 12 Key: **Employee Number**. Press **TAB**.
- 13 Click the drop-down arrow and select **Number**. Press **TAB** twice.
- 14 Key: **Client**. Press **TAB**.
- 15 Click the drop down arrow and select **Text**.
- 16 **CHECK** Your screen should look like Figure 1.15.
- 17 Choose **Design>Views>Datasheet View**. In the dialog box, click **Yes** to save changes to the table.
- 18 Key the information into the table as it is shown in Figure 1.16.
- 19 Click **Close** to close the **Sales Info** table. Click **Yes** to save changes to table layout, if necessary.

Continue to the next exercise.

EXERCISE 1-7 (Continued) Define Tables in Databases



FIGURE 1.15 Sales Info table 3NF fields Design View

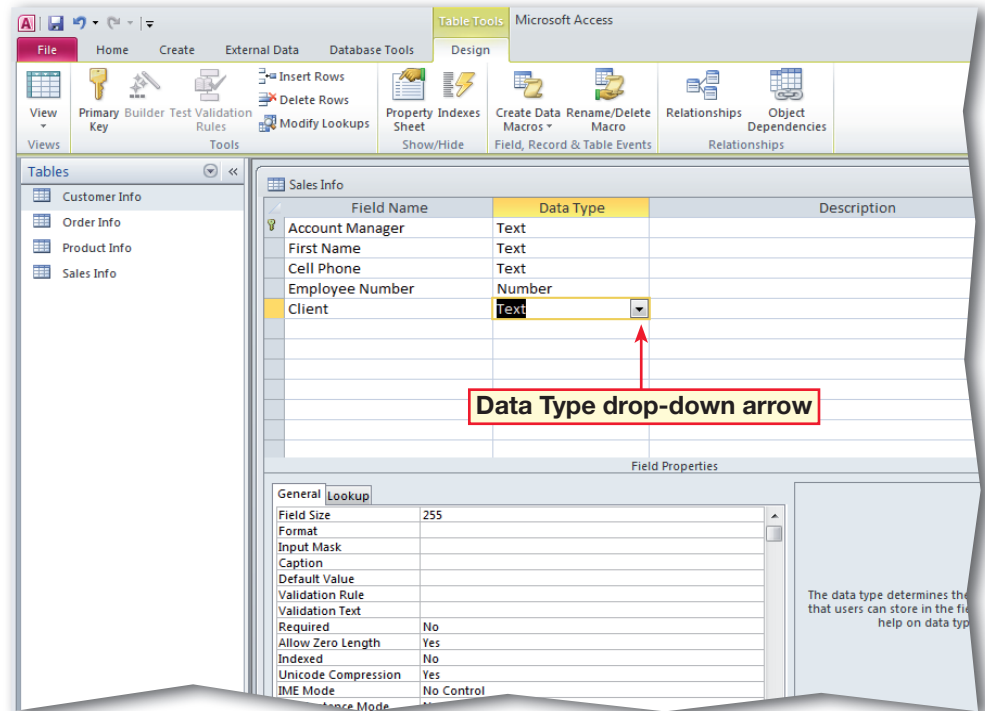
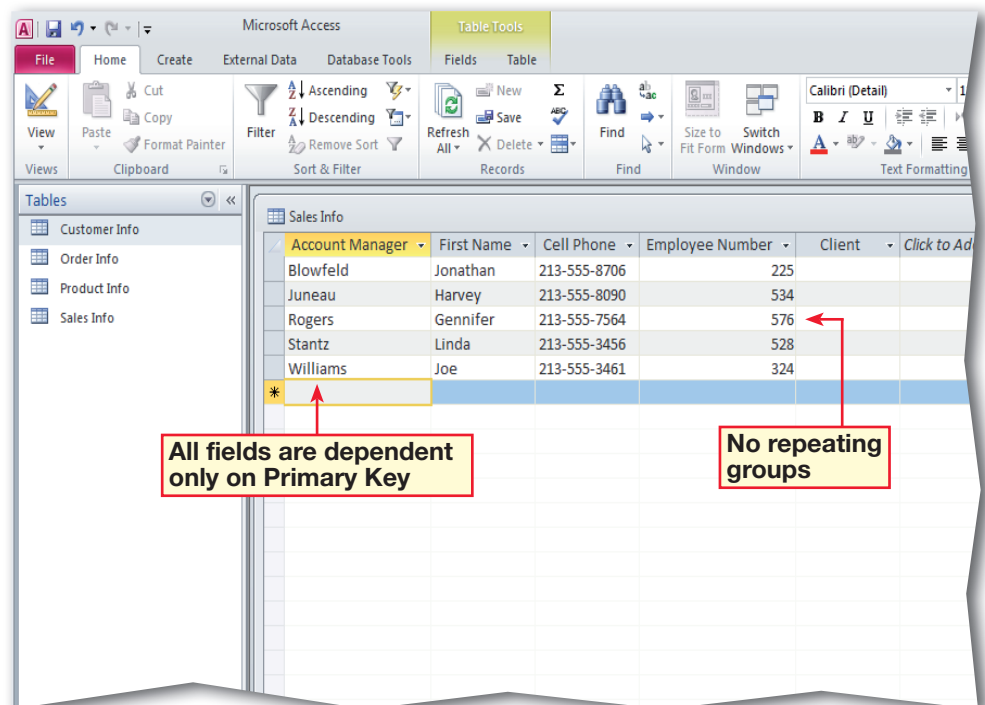


FIGURE 1.16 Populated Sales Info table in Datasheet View



Step-By-Step

- 1 In your **Phil's Pick-a-Part** database, in the **Navigation Pane**, right-click the **Sales Info** table and select **Copy**.
- 2 Right-click in an open area of the **Navigation Pane**. Select **Paste**.
- 3 In the **Paste Table As** dialog box, click in the **Table Name** box. Key: **Customer Contacts**.
- 4 Under **Paste Options**, select **Structure Only** (see Figure 1.17). Click **OK**.
- 5 In the **Navigation Pane**, double-click the **Customer Contacts** table.
- 6 **!CHECK** Your screen should look like Figure 1.18. Close the table.
- 7 In the **Navigation Pane**, right-click the **Customer Contacts** table. Select **Rename**.
- 8 Key: **Quick Customer Contacts**. Press **ENTER**.

➔ *Continue to the next exercise.*

Troubleshooter

To delete a database object, such as table, select the object in the **Navigation Pane**, right-click and select **Delete**.

EXERCISE 1-8

Create Tables Based on the Structure of Other Tables

Rather than using a table template, or taking the time to build a new table for your database using Design View or Datasheet View, you can use an existing table's structure to create a new table. You can create a table by copying and pasting the structure of an existing table in the Navigation Pane. You can edit the table name using the Paste Table As dialog box.

FIGURE 1.17 Paste Options in Paste Table As dialog box

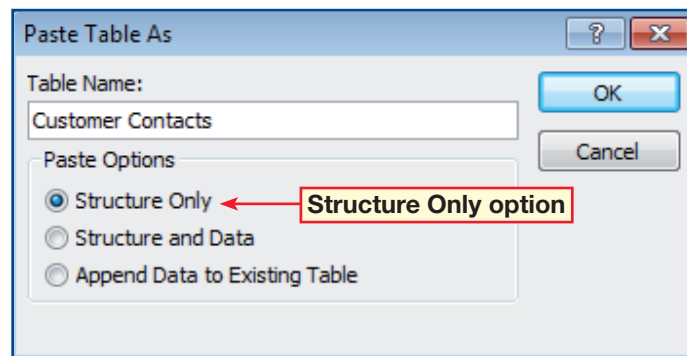
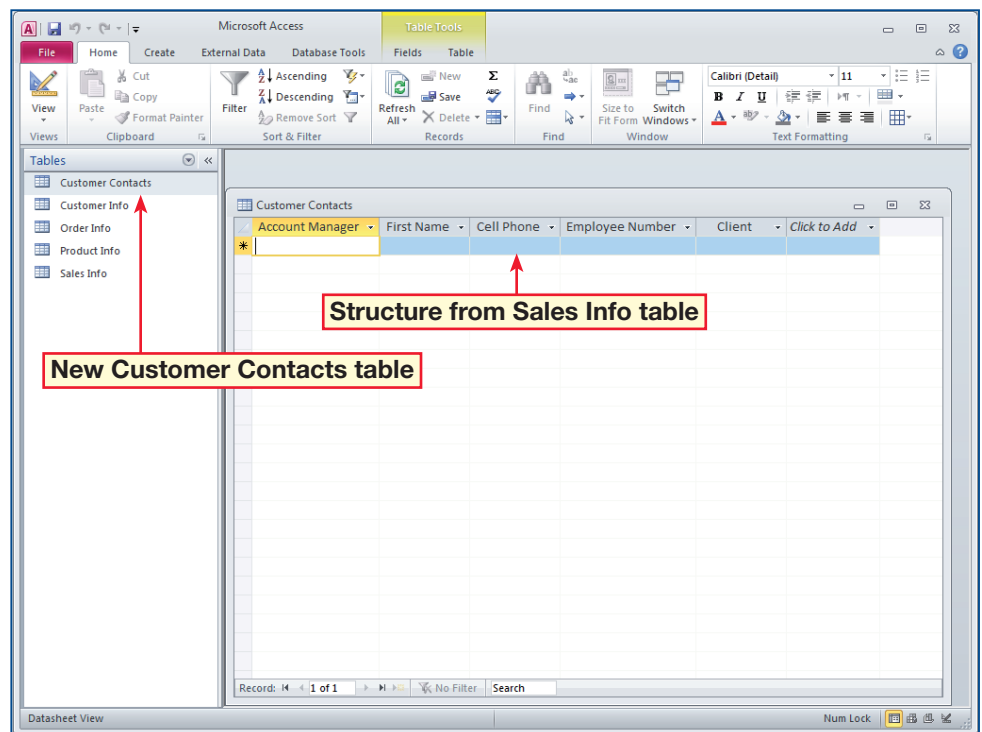


FIGURE 1.18 Table structure copied to Customer Contacts



Step-By-Step

- 1 In your **Phil's Pick-a-Part** file, choose **Create>Queries>Query Wizard** (see Figure 1.19).
- 2 In the **New Query** dialog box, make sure the **Simple Query Wizard** option is selected. Click **OK**.
- 3 In the **Simple Query Wizard** dialog box, under **Tables/Queries**, click the drop-down arrow and select **Table: Sales Info**.
- 4 Under **Available Fields**, click the double right arrow **>>** to select all fields in the **Sales Info** table.
- 5 **!CHECK** Your dialog box should look like Figure 1.20.
- 6 Click **Next**. Leave the **Detail** option selected and click **Next**.
- 7 Do not change the title for your query. Click **Finish**.

You Should Know

To view the results of a query, choose **Design>Results>Run** or switch to **Datasheet View**.

Continued on the next page.

EXERCISE 1-9 Create and Modify Queries



A query gathers data from one or more tables based on criteria. Queries allow you to retrieve and display information from tables so that you can edit the results. A query is made up of the fields and records you add, remove, and rearrange in the order you want. If two or more tables have fields with the same name, you must identify which table you want the query to draw from. The information you need to provide to run a query is:

1. the criteria that you want the data to meet
2. the fields that you want to include
3. the tables from which you will retrieve the data

FIGURE 1.19 Simple Query Wizard

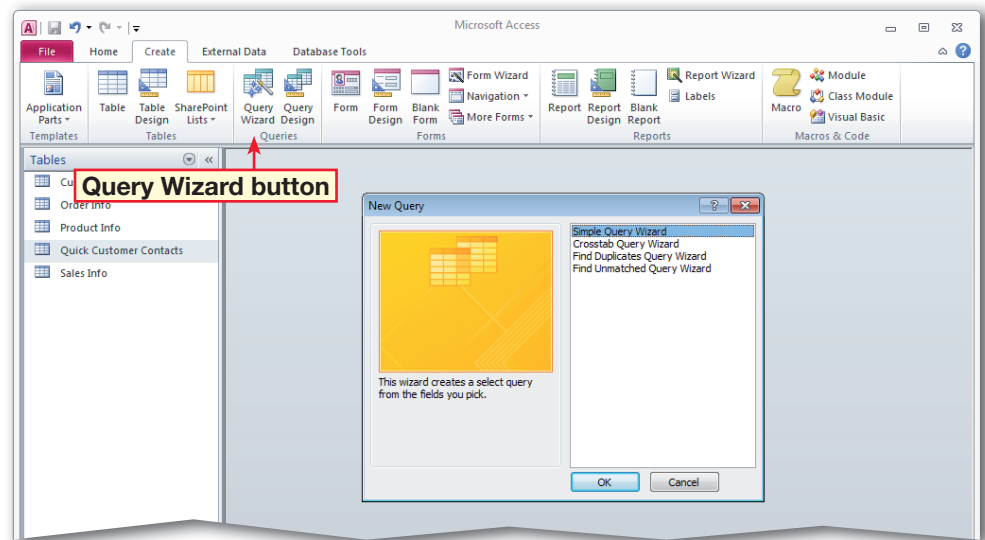
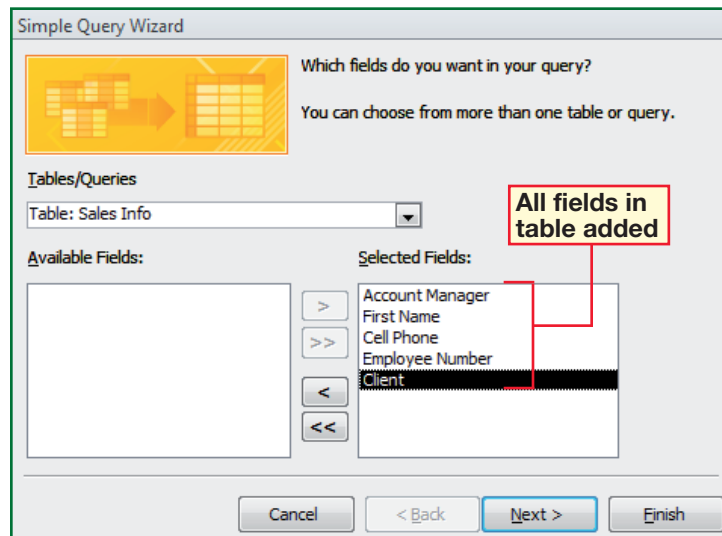


FIGURE 1.20 Simple Query Wizard with all Sales Info table fields selected



Step-By-Step

- 8 Choose **Home>Views>Design View**.
- 9 **!CHECK** Your screen should look like Figure 1.21.
- 10 Choose **Design>Query Setup>Show Table**.
- 11 In the **Show Table** dialog box, select the **Customer Info** table and click **Add**.
- 12 Click **Add** again.
- 13 **!CHECK** Your screen should look like Figure 1.22.
- 14 Close the **Show Table** dialog box. Right-click the header of the **Customer Info_1** table and select **Remove Table**.

➔ *Continued on the next page.*

Tech Tip

Another way to add all the fields from a table to query is to open the query in **Design View**. Then, double-click the **asterisk (*)** at the top of the list of fields in the query.

Shortcuts

To remove a field from a query, select the field in the field list area, right-click and select **Cut**.

EXERCISE 1-9 (Continued) Create and Modify Queries



FIGURE 1.21 Sales Info Query in Design View

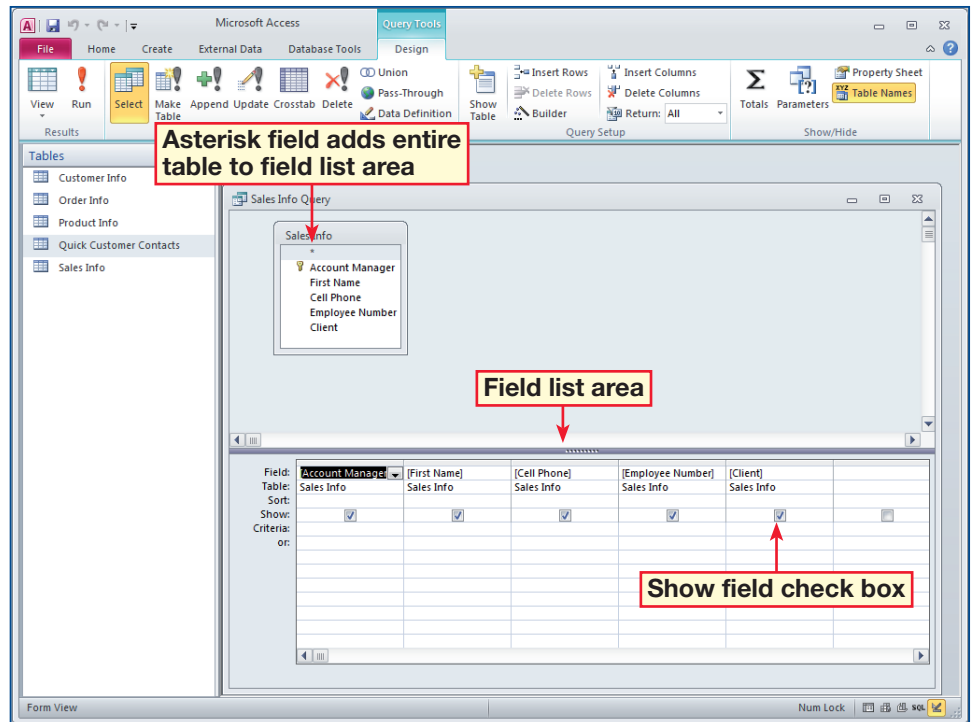
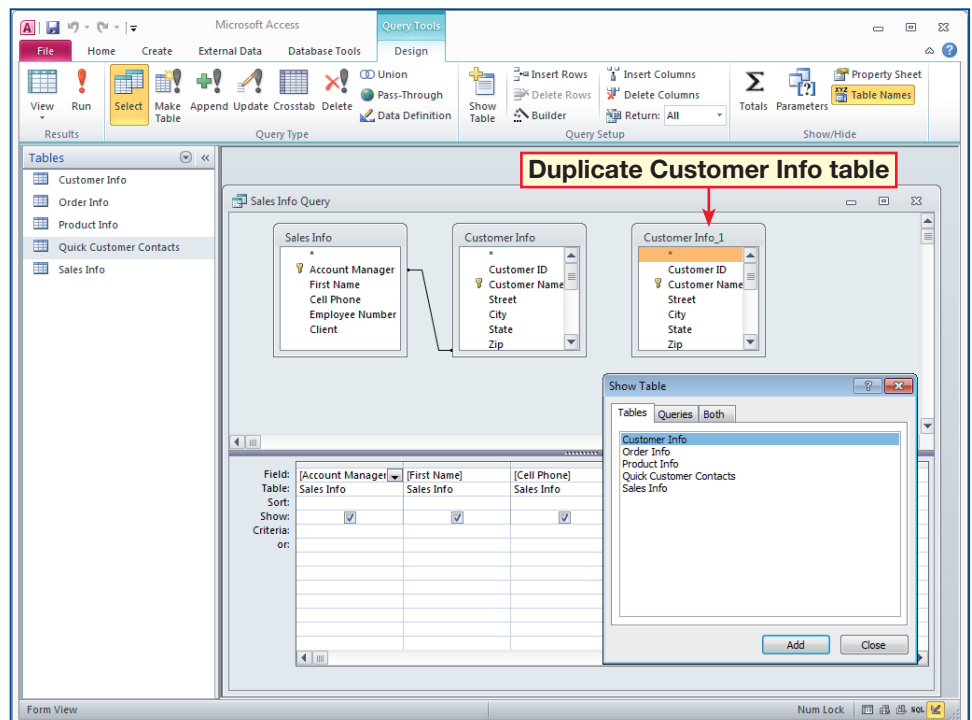






FIGURE 1.22 Sales Info Query with duplicate tables added



Step-By-Step

- 15 In the **Sales Info Query**, click the **Customer Info** table. Scroll through the field list and double-click the **Account Manager** field.
- 16 Scroll to the top of the table and double-click the **Customer Name** field.
- 17 Choose **Design>Results>Datasheet View** .
- 18 **CHECK** Your screen should look like Figure 1.23.
- 19 Click **Design View** .
- 20 In the field list area, under the **Account Manager** field of the **Customer Info** table, uncheck the box in the **Show** field.
- 21 Click **Datasheet View** .
- 22 **CHECK** Your screen should look like Figure 1.24.
- 23 Click **Save** . Close the **Sales Info Query**.
- 24 Click the **File** tab and select **Close Database**.

You Should Know

To rearrange fields, select the field that you want to move in the field list pane and click and drag the field to the right or left.

EXERCISE 1-9 (Continued) Create and Modify Queries



FIGURE 1.23 Sales Info Query in Datasheet View

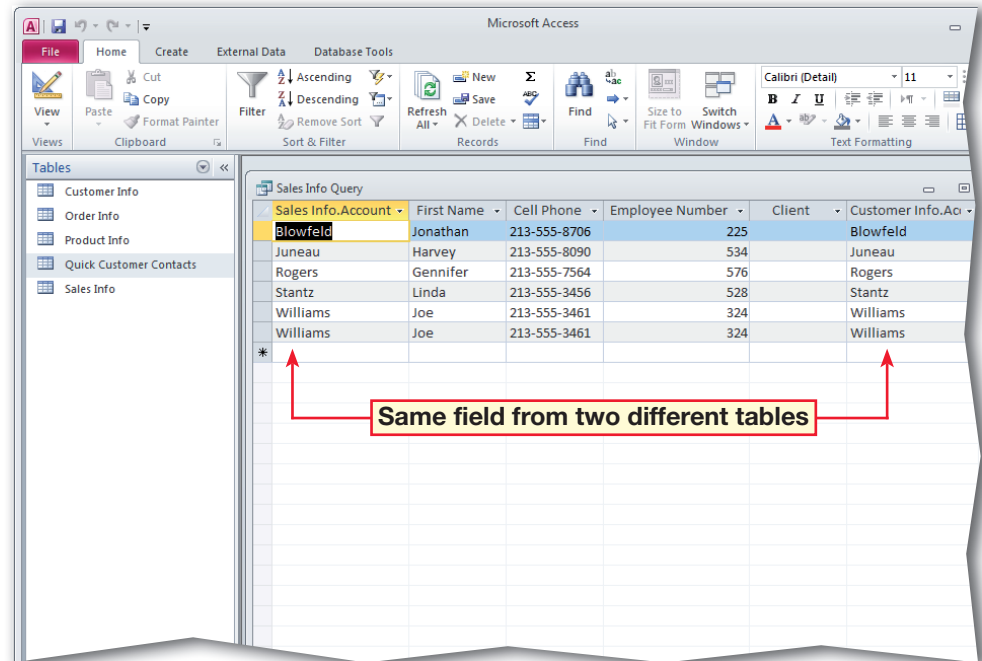
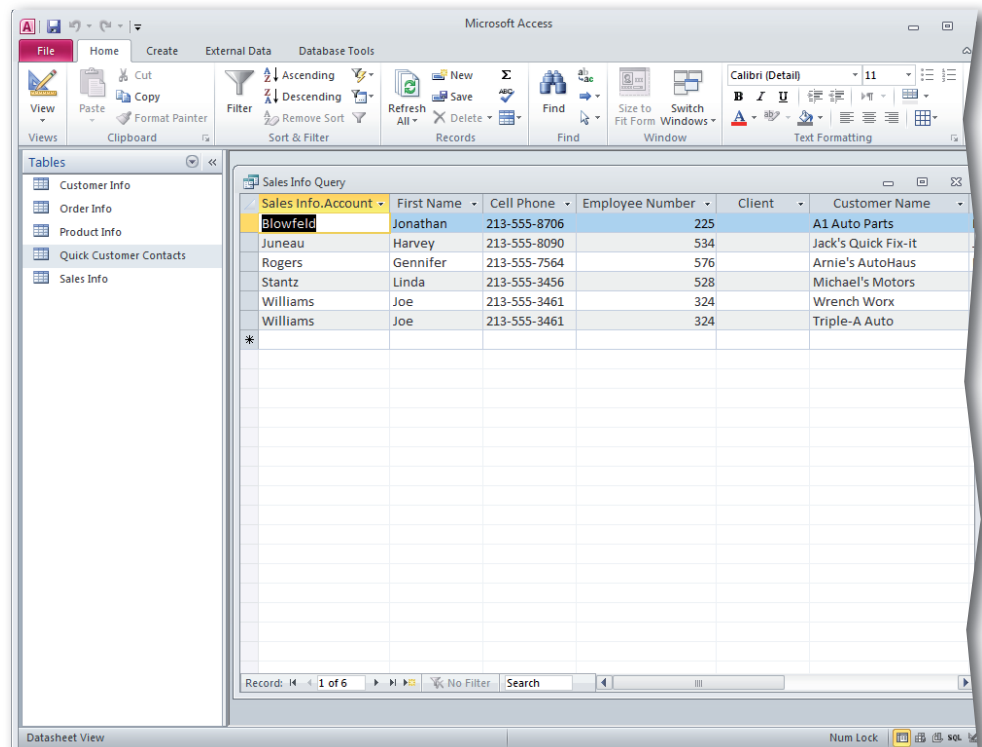


FIGURE 1.24 Query with duplicate field drawn from single table



Step-By-Step

- 1 Click **File**. Click **Open**.
- 2 In the **Open** dialog box, navigate to your **Phil's Pick-a-Part** file. Select the database file and click the **Open** drop-down arrow.
- 3 **iCHECK** Your dialog box should look similar to Figure 1.25. Select **Open Exclusive**.
- 4 Click the **File** tab and select **Close Database**.
- 5 Choose **File>Open**. Select the database file again and click the **Open** drop-down arrow. Select **Open Exclusive Read-Only**.
- 6 **iCHECK** Your screen should look like Figure 1.26.
- 7 Click the **File** tab and close the database.

Continue to the next exercise.

Shortcuts

Press **CTRL** + **O** to display the **Open** dialog box.

You Should Know

To configure **Access** to open the last used database when **Access** starts, choose **File>Options>Advanced** and click **Open last used database when Access starts**.

EXERCISE 1-10 Open Databases

When you open a database in Access, by default it can still be opened and edited by others at the same time. This is called shared access. If you need to ensure that you are the only one who can open and make changes to the database, you can select the Open Exclusive option in the Open dialog box or set the Default open mode to Exclusive using the Access Options dialog box. That means that no one else can open or edit the database because you have exclusive access. Access also offers an Open Exclusive Read Only option so that you and other users can view the database at the same time but cannot edit it. This read-only mode is helpful in a multi-user environment if you want to view a file but want to avoid making any accidental changes.

FIGURE 1.25 Open dialog box

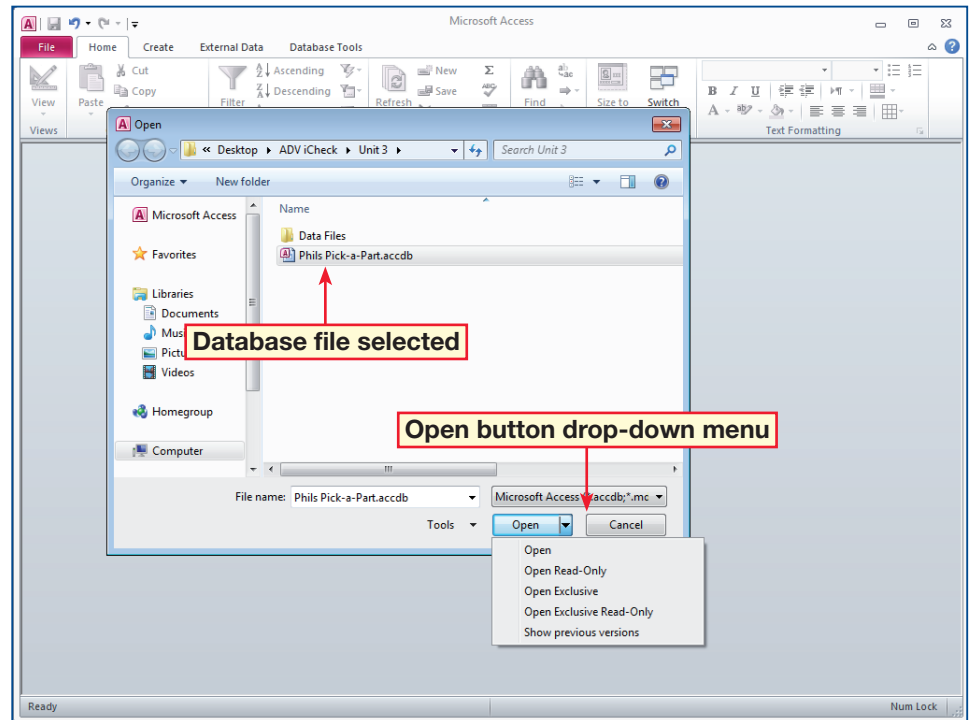
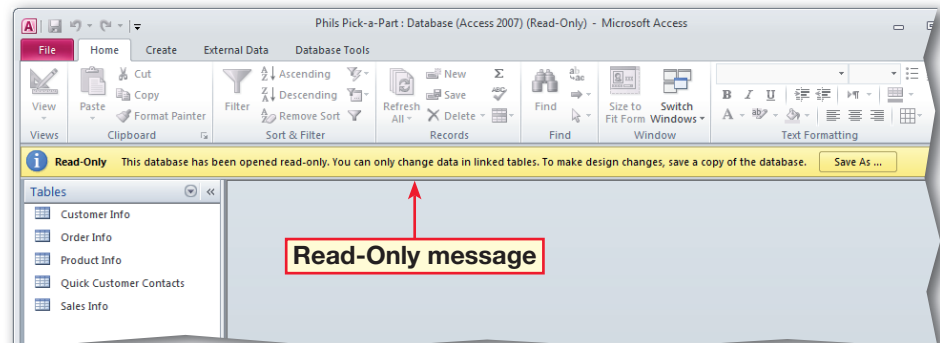


FIGURE 1.26 Database opened exclusive read-only



Step-By-Step

- 1 Choose **File>Open**. Select your **Phil's Pick-a-Part** database. Click **Open**.
- 2 In the **Navigation Pane**, click the **Navigation Bar**. Under **Filter By Group**, select **Forms**.
- 3 Double-click the **All Orders Chart** form. Choose **Design>Tools>Property Sheet**. With the **General** tab selected, click **Quantity** (to the right of Years) on the chart space. Click **Delete** in the **Properties** dialog box. Close the dialog box.
- 4 **! CHECK** Your screen should look like Figure 1.27.
- 5 Choose **Design>Type>Change Chart Type**.
- 6 In the dialog box, on the **Type** tab in the left column, select **Bar**. Click the **3D Bar Clustered** chart type (see Figure 1.28).
- 7 Click the largest graphed quantity on the chart (see Figure 1.28). In the **Properties** dialog box, click the **Border/Fill** tab.
- 8 Under **Fill**, in the **Fill Type** box, select **Gradient**. Click the **Border Color** drop-down arrow. Select **White**.

➔ *Continued on the next page.*

EXERCISE 1-11 Format and Modify a Chart

Access offers many tools to format and present data. You can reformat the font in a form, apply a background image to a report, add Quick Styles to controls, or apply conditional formatting in a form. However, often one of the easiest and most effective ways to present data is through the use of charts. Depending upon the type of data and your audience, the same data can be presented in several different chart formats. Access allows you to easily change the format and type of a chart to improve the presentation of your data.

FIGURE 1.27 All Orders Chart

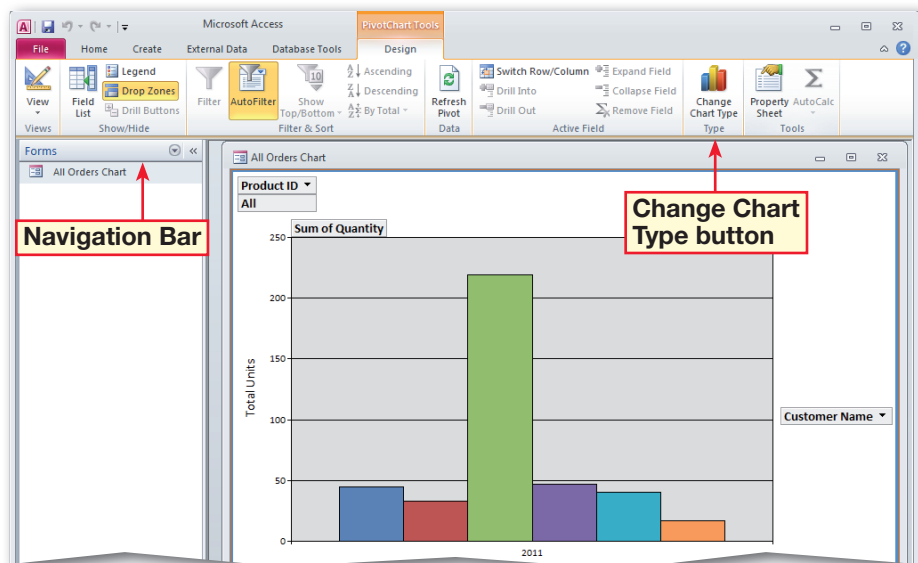
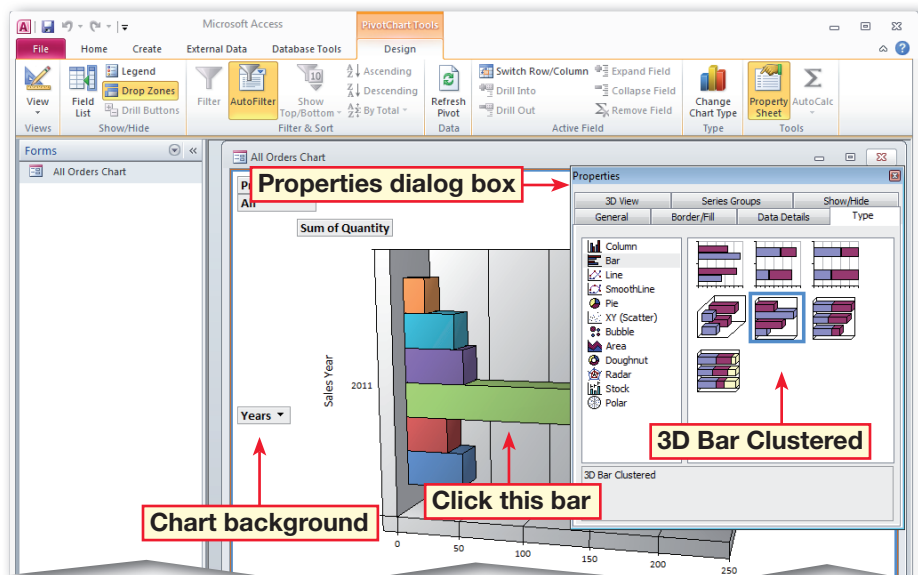




FIGURE 1.28 Chart type to 3D Bar Clustered



Step-By-Step

- 9 Click in an open area of the chart space to select the chart background.
- 10 In the **Properties** box, under **Fill**, click the **Color** drop-down arrow and select **MediumSeaGreen**.
- 11 In the **Properties** box, click the **Show/Hide** tab. Under **Show by default**, uncheck the **Field buttons/drop zones** option.
- 12 **iCHECK** Your screen should look similar to Figure 1.29.
- 13 In the **Properties** box, click the **General** tab. Under **Add**, click **Add Title** .
- 14 Click **Chart Workspace Title** in the chart window. In the **Properties** box, click the **Format** tab.
- 15 In the **Caption** box, highlight the default text and key: **Parts Purchases by Volume**.
- 16 Choose **Design>Tools>Property Sheet** .
- 17 **iCHECK** Your screen should look similar to Figure 1.30.
- 18 Close the **All Orders Chart**.

 Continue to the next exercise.

EXERCISE 1-11 (Continued) Format and Modify a Chart



FIGURE 1.29 Changes to chart formatting

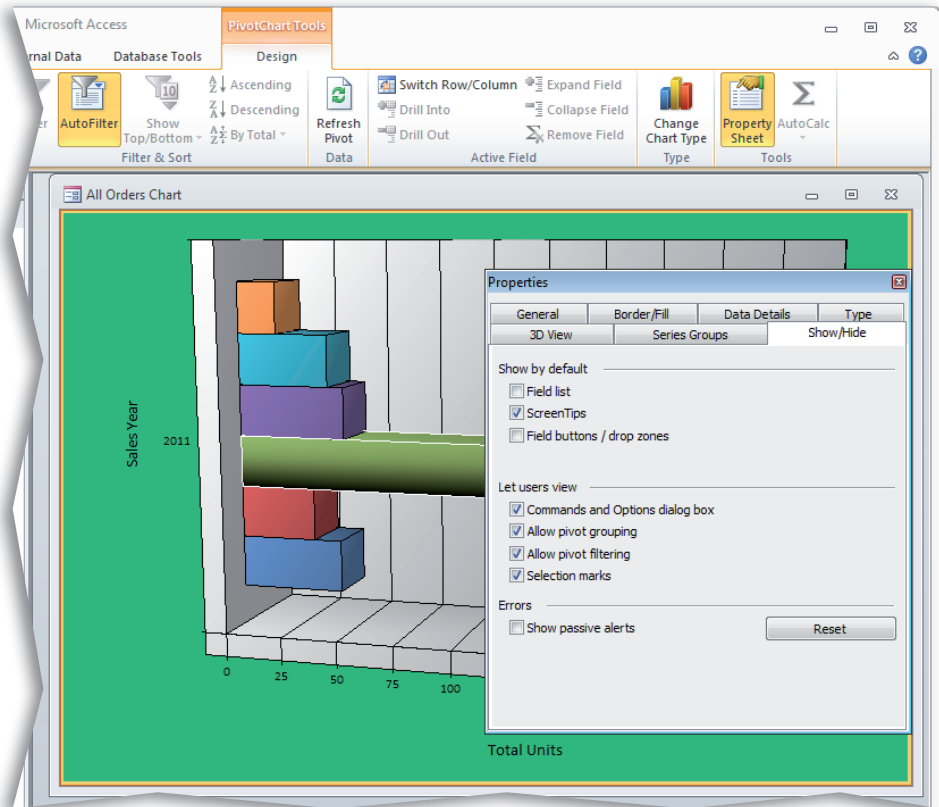
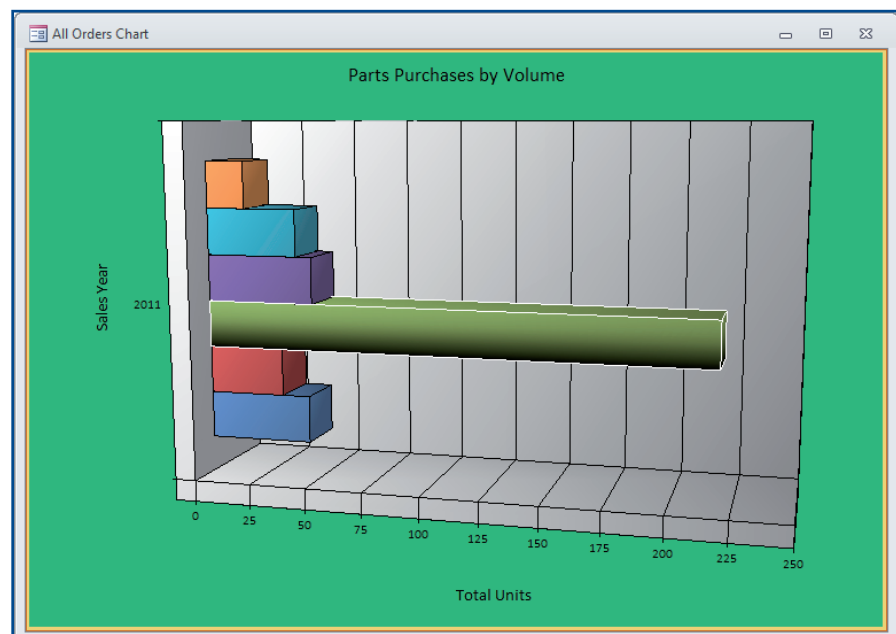



FIGURE 1.30 Title added to chart



Step-By-Step

1 In your **Phil's Pick-a-Part** database, in the **Navigation Pane**, show **Tables**.

2 Choose **External Data>Import>Text File** .

3 Select the **Append a copy of the records to the table:** option. Click the drop-down arrow. Select the **Quick Customer Contacts** table.

4 **!CHECK** Your screen should look similar to Figure 1.31.

5 Click the **Browse** button. In the **File Open** dialog box, navigate to and select the **Customer Contacts.txt** data file. Click **Open**.

6 In the **Get External Data – Text File** dialog box, click **OK**. Click **Next** twice. Click **Finish**. Click **Close**.

7 Double-click the **Quick Customer Contacts** table.

8 **!CHECK** Your screen should look like Figure 1.32.

 *Continued on the next page.*

EXERCISE 1-12 Import and Export Data



You can gather and present different types of information in Access by importing the data. You can import Excel files, XML Paper Specification (XPS) files, and Access databases. You also can import data from ordinary text files, as long as the information is delimited. A delimited file is a file that uses delimiters, or separators, such as semicolons, colons, or tabs to separate information. An example of a delimited file is a comma-separated values (CSV) file. Access allows you to export data in a database file to many different files, programs, or databases. Access also allows you import and append records to an existing table and import data as a linked table.

FIGURE 1.31 Importing a CSV file

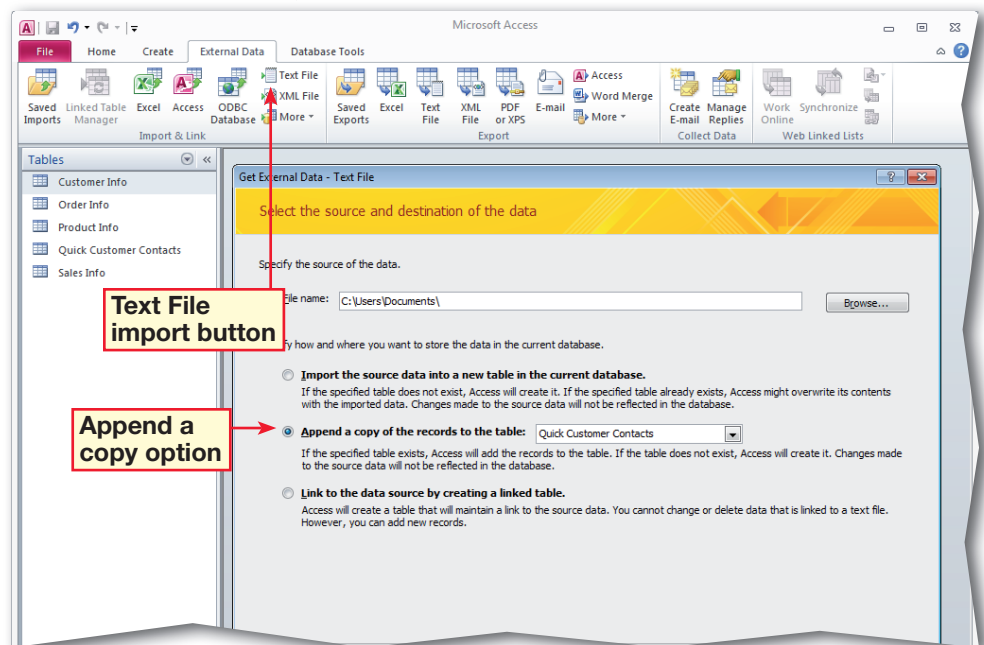
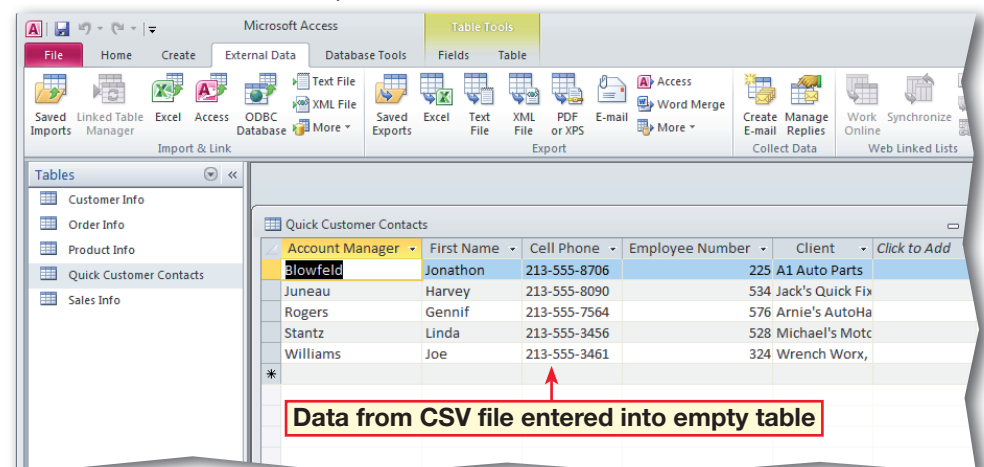


FIGURE 1.32 CSV data imported into Quick Customer Contacts



Step-By-Step

- 9 Close the **Quick Customer Contacts** table.
- 10 Open the **Customer Info** table and scroll to the last column on the right.
- 11 In the **Attachment** field, in the first record, double-click the attachment (see Figure 1.33).
- 12 In the **Attachments** dialog box, select the listed attachment and click **Save As**. Save the attachment in the location specified by your teacher. Click **OK**.
- 13 Choose **File>Save & Publish>Save Object As>PDF or XPS**. Click **Save As** (see Figure 1.34). Click the **Save as type** drop-down arrow. Select **XPS Document (*.xps)**.

Continued on the next page.

Tech Tip

To export an attachment to a record in a database table, use the **Save Object As** command.

You Should Know

If you want to keep a file in its original format, you can link to it or attach the file to the database.

EXERCISE 1-12 (Continued) Import and Export Data



FIGURE 1.33 Customer Info table attachment

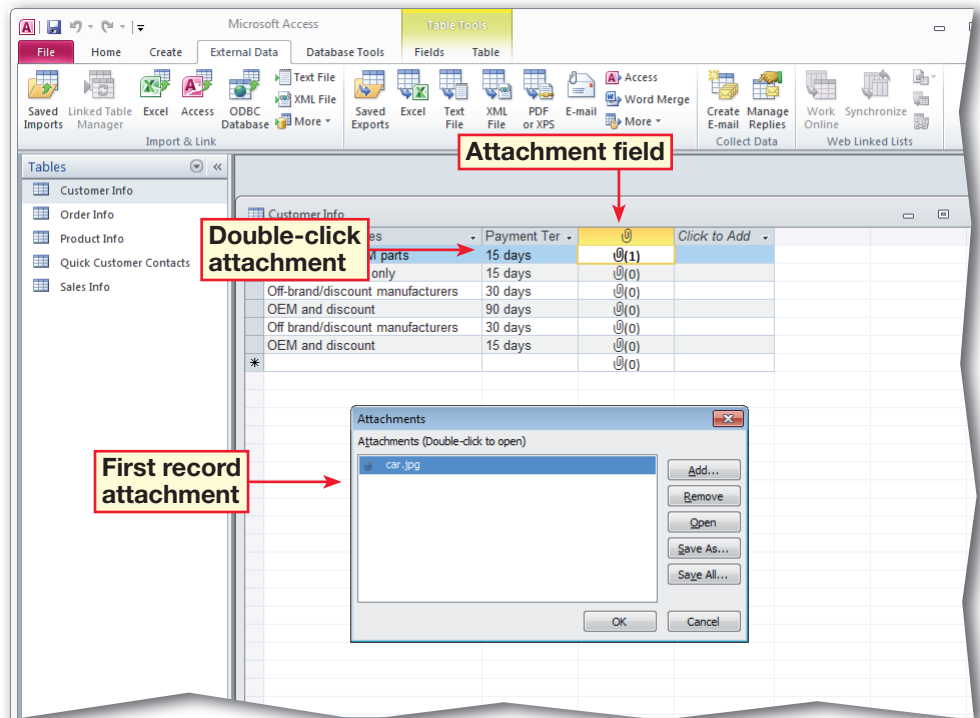
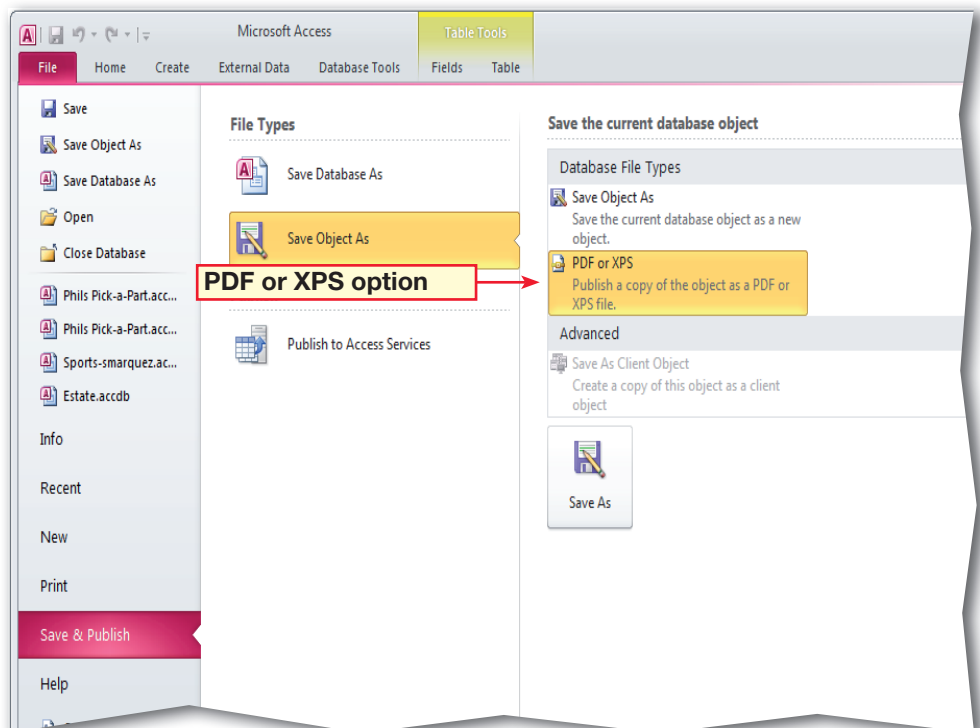


FIGURE 1.34 Saving Object As XPS file



Step-By-Step

- 18** In the **Publish as XPS** dialog box, navigate to the location given by your teacher.
- 19** Select the **Open file after publishing** option and click **Publish** (see Figure 1.35).
- 20** **!CHECK** Your screen should look like Figure 1.36.
- 21** Close the application displaying the XPS document. Close the **Customer Info** table.

Continue to the next exercise.

You Should Know

To save or publish a database object as an XPS document or PDF file, choose **External Data>Export>PDF or XPS**. To save or publish a copy of the database object as a PDF or XPS file, choose **File>Save & Publish>Save Object As>PDF or XPS**.

Tech Tip

When creating and designing forms, create a hyperlink to a file, a Web page, a picture, an e-mail address or another program by choosing **Design>Controls>Hyperlink**.

EXERCISE 1-12 (Continued) Import and Export Data



FIGURE 1.35 Publish as PDF or XPS dialog box

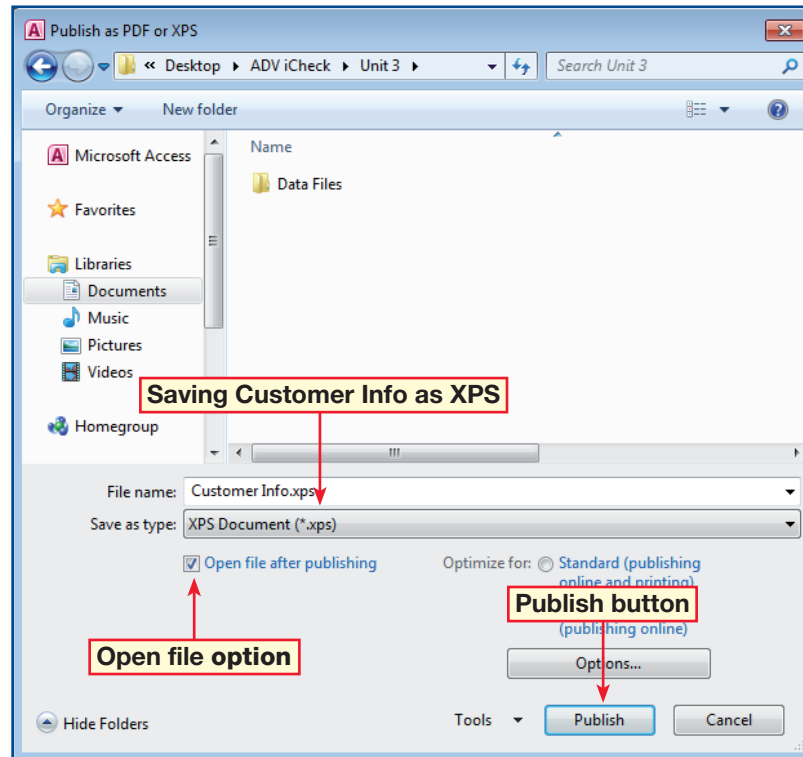
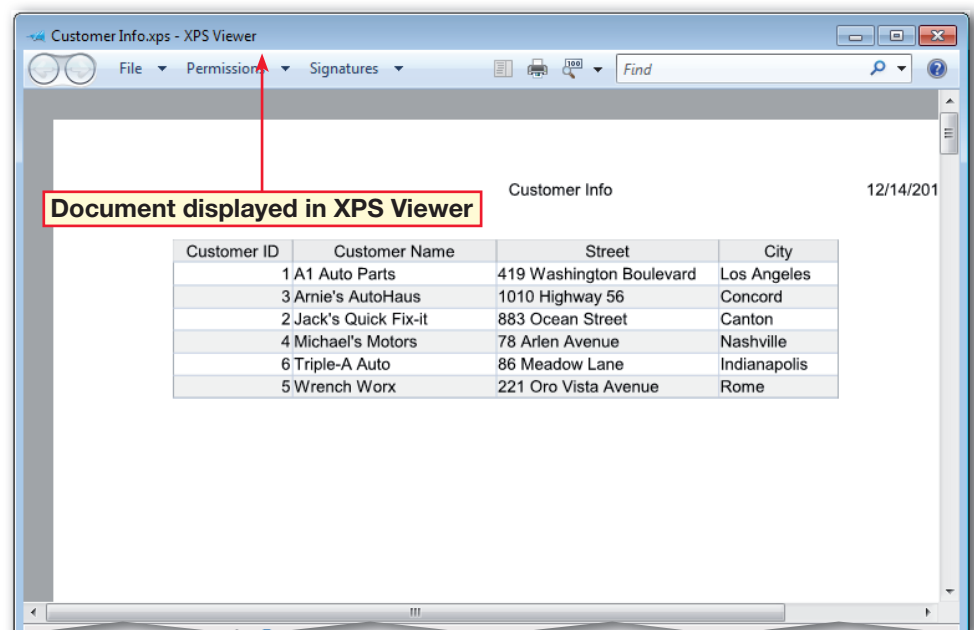





FIGURE 1.36 Published XPS file opened in XPS Viewer



Step-By-Step

- 1 In your **Phil's Pick-a-Part** database, in the **Navigation Pane**, click the **Navigation Bar** and select **Reports**.
- 2 Open the **All Orders** report.
- 3 Choose **Home>Views>Layout View** .
- 4 Scroll to the end of the report.
- 5 **iCHECK** Your screen should look like Figure 1.37.
- 6 Select **Home>Views** and click the **View** drop-down arrow. Select **Print Preview** .
- 7 Choose **Print Preview>Zoom>Two Pages** .
- 8 **iCHECK** Your screen should look like Figure 1.38.

 *Continued on the next page.*

You Should Know

You can also use a Page Break control to mark where you want to start a new page within a section when designing your reports. To insert a page break control, open the report in Design view, choose **Design>Controls>Insert Page Break** and click where you want to insert the page break.

EXERCISE 1-13 Set Printing Options



Sometimes you might want to make sure that the data in a report is kept together to avoid excess pages and to improve the overall appearance of the report. Print Preview lets you review each page and helps you make sure that text and fields are correctly placed and formatted. Layout View allows you to manipulate fields and groups, but it does not show page breaks or certain other elements. Access also lets you use the Keep Groups Together property to keep data together so that a portion of a record does not display on one printed page with the remainder on the next. You can use the Force New Page property to print a section of data on a separate page.

FIGURE 1.37 All Orders report Layout View

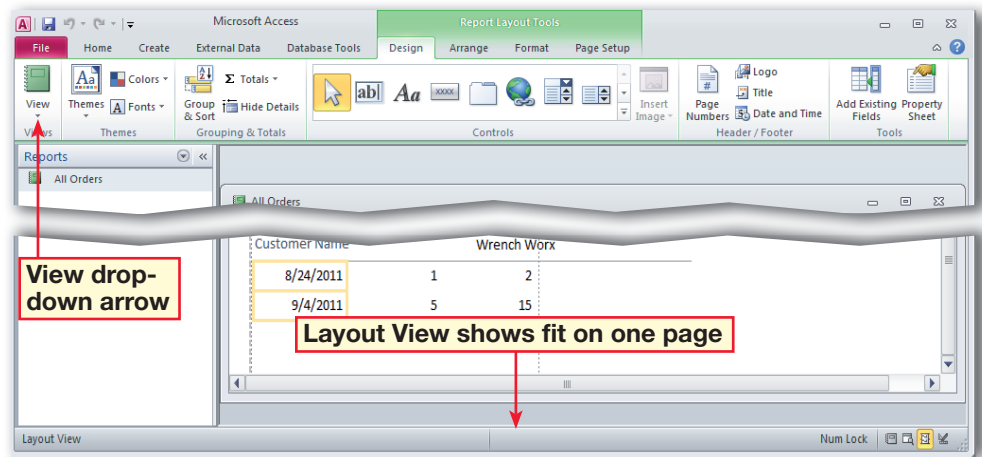
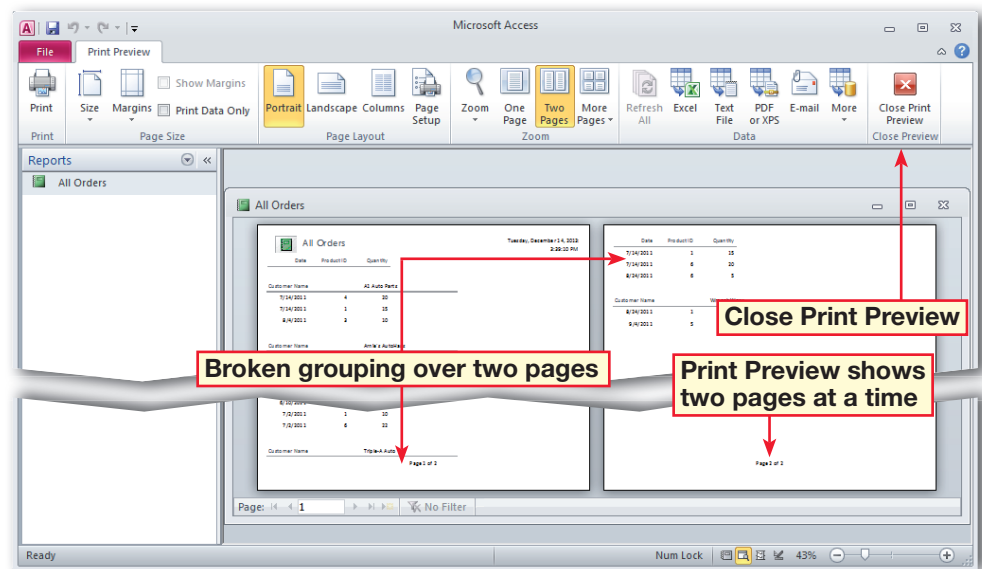





FIGURE 1.38 All Orders report Print Preview



Step-By-Step

- 9 Close **Print Preview**. Choose **Home>Views>Layout View** .
- 10 Choose **Design>Tools>Property Sheet** . Under **Selection type**, click the drop-down arrow. Select **Detail**. On the **Format** tab, click the **Force New Page** box. Select **After Section**.
- 11 Right-click in an open area and select **Print Preview**.
- 12 **!CHECK** Your screen should look like Figure 1.39. Close **Print Preview**.
- 13 In the **Property Sheet**, under **Selection type**, click the drop-down arrow. Select **Detail**. Click in the **Force New Page** box. Select **None**.
- 14 Close the **Property Sheet**. Choose **Design>Grouping & Totals>Group & Sort** .
- 15 **!CHECK** Your screen should look like Figure 1.40.

You Should Know

To add a background image to a report using the Report Layout Tools, choose **Format>Background>Background Image**.

EXERCISE 1-13 (Continued) Set Printing Options



FIGURE 1.39 All Orders report with Force New Page After Section

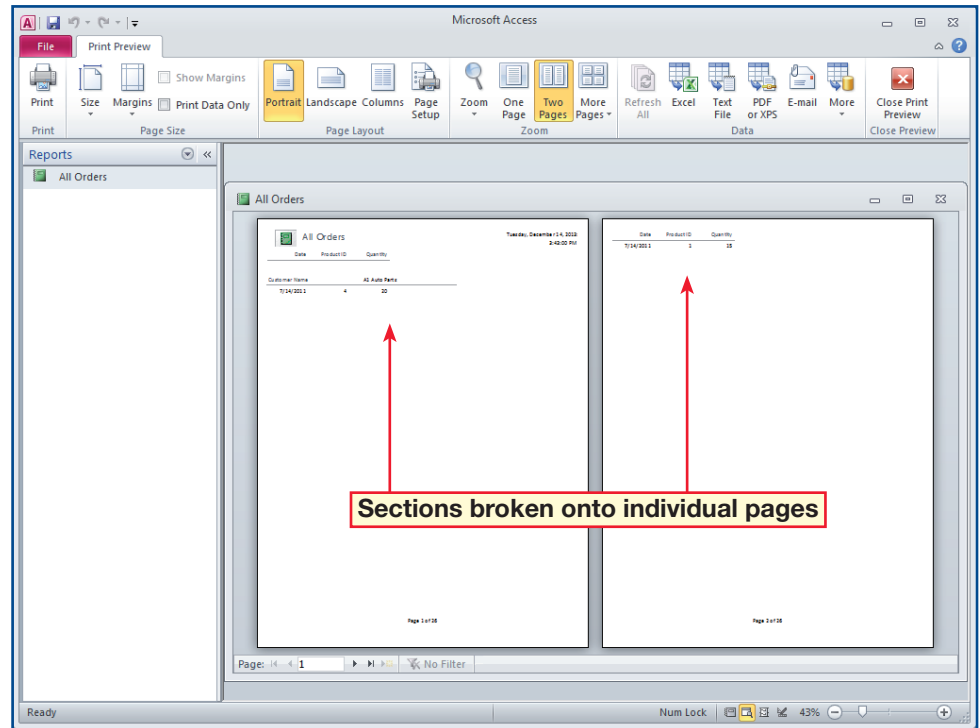
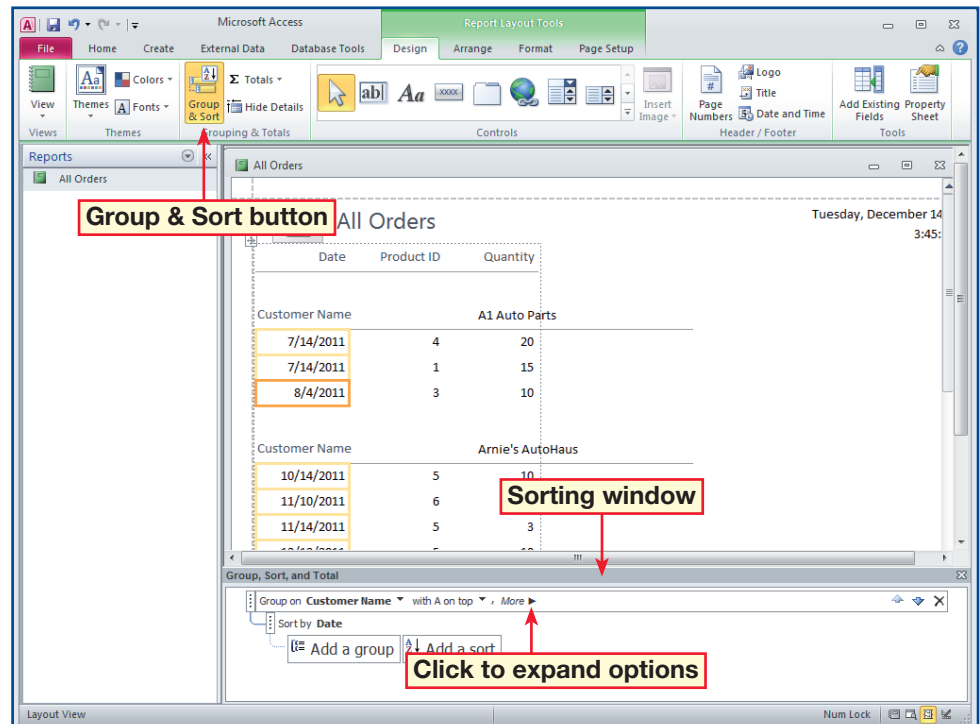


FIGURE 1.40 Grouping and Sorting window



Step-By-Step

- 16** In the **Group, Sort, and Total** window on the **Total** window on the **Group on Customer Name** bar, click **More**.
- 17** Click the **do not keep group together on one page** drop-down arrow and select **keep whole group together on one page**.
- 18** **iCHECK** Your screen should look like Figure 1.41.
- 19** Choose **Design>Grouping & Totals>Group & Sort** to close the window.
- 20** Choose **Design>Header/Footer>Logo**. Navigate to and select the **car.jpg** data file. Click **OK**.
- 21** Choose **Design>Controls>More**. Click **Insert Hyperlink**. Click slightly to the right of the **Product ID** header (when you see the yellow line).
- 22** Navigate to your **Product Info** file and click **OK**. Choose **Design>Views View>Print Preview**.
- 23** **iCHECK** Your screen should look like Figure 1.42. Close the report. Click **Yes** to save the changes. Close your database. **Exit Access**.

EXERCISE 1-13 (Continued) Set Printing Options



FIGURE 1.41 Grouping sections together on same page

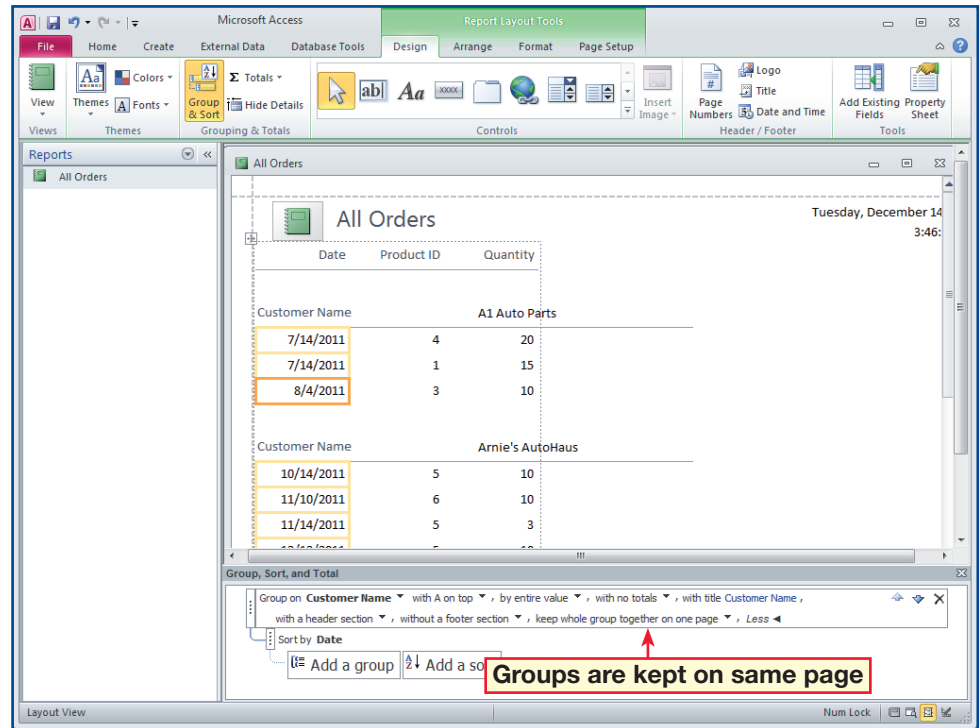
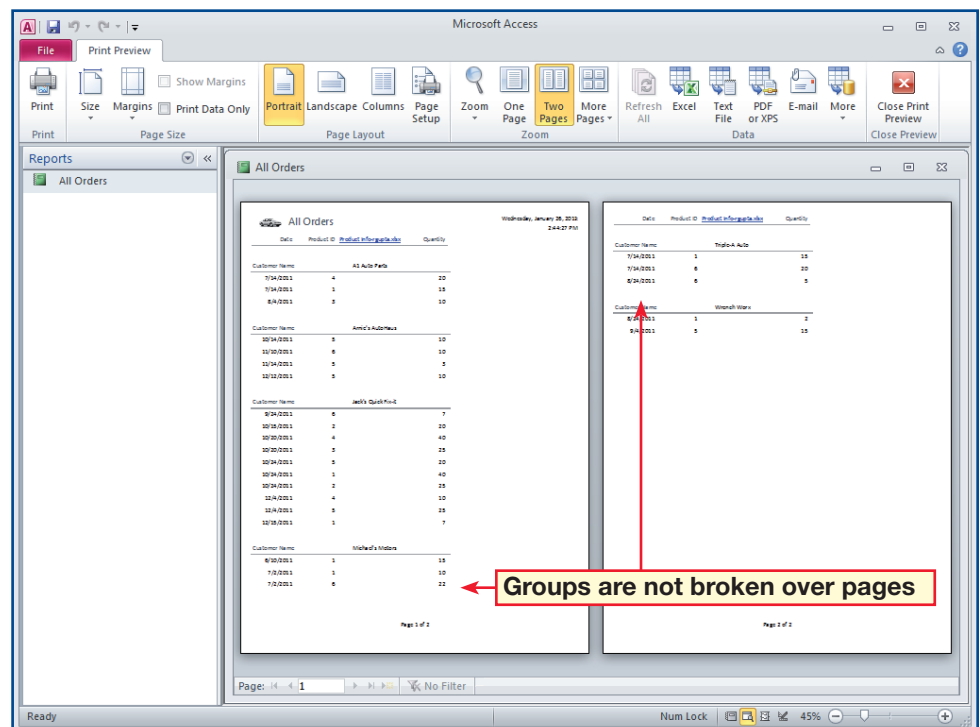


FIGURE 1.42 All Orders report with logo and grouped in sections Print Preview



Step-By-Step

- 1 In your **Phil's Pick-a-Part** database, choose **Create>Macros & Code>Macros**.
- 2 Under **Macro1**, in the **Add New Action** drop-down list, select **Maximize Window**.
- 3 Click the **Add New Action** drop-down arrow again and select **OpenReport**. In the **Report Name** box, key: **All Orders**. Your screen should look like Figure 1.43.
- 4 Click **Save**. In the **Save As** dialog box, key: **AutoExec**. Click **OK**.
- 5 Click **Run**. Your screen should look like Figure 1.44.
- 6 In the **Navigation Pane**, click the **Reports** drop-down arrow and select **All Access Objects**.
- 7 Under **Macros**, select the **AutoExec Macro**. Switch to **Design View**.

Continued on the next page.

Tech Tip

If you cannot find the action you want, choose **Design>Show/Hide** and make sure **Show All Actions** is selected.

EXERCISE 1-14

View Code and Convert Macros to Visual Basic

If you find that you regularly perform the same series of actions, or use the same functionality for controls, such as command buttons or text boxes, in your databases, you can create a macro to speed up your work. A macro is an action or sequence of actions that you record and then play back with a single command, a click of a mouse, opening a form, or modifying data in a text box, for example. Macros allow you to improve efficiency because they are an easy way to automate programming tasks and add functionality to your forms, reports, and controls without writing code in a Visual Basic editor. Visual Basic (or VBA) is an event-driven programming language that allows you to perform much more complex operations and applications in Access. In this exercise, you are going to create a macro that will automatically maximize the application window and open a particular report every time your database opens, view code, and convert macros to Visual Basic.

FIGURE 1.43 Selecting actions in Macro Builder

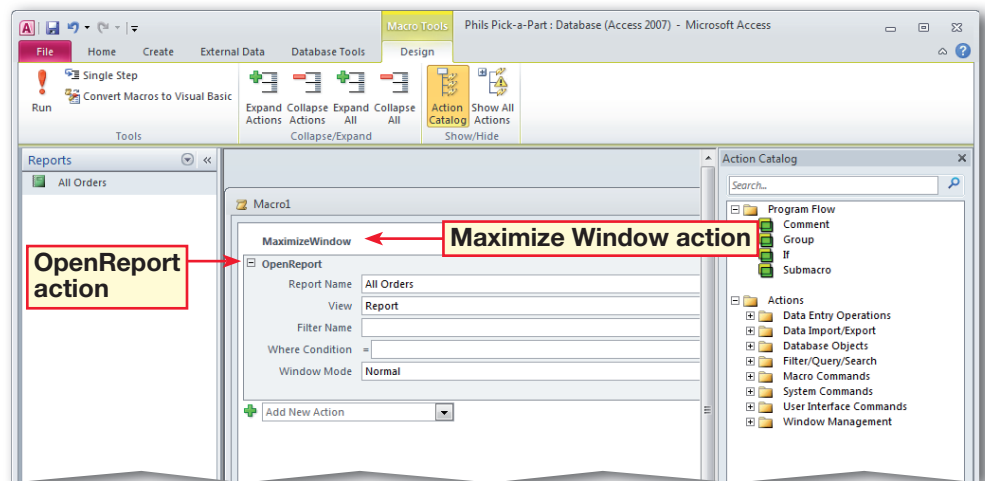
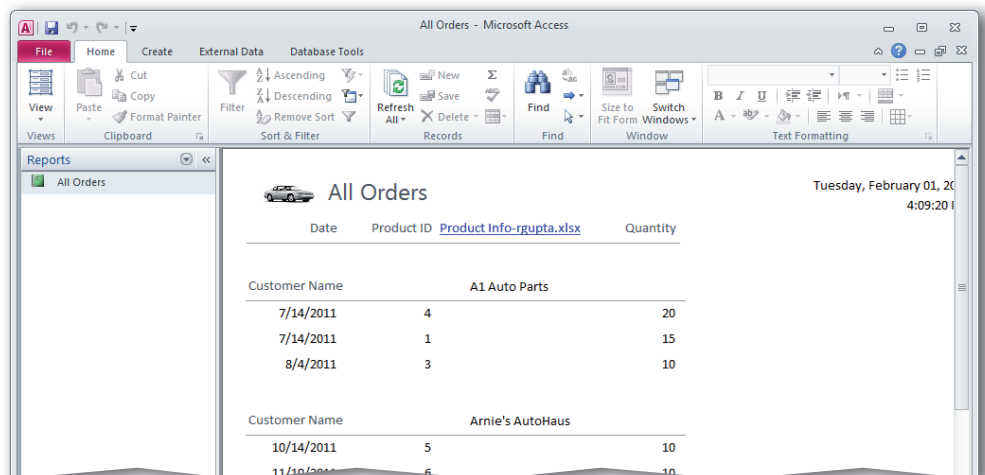


FIGURE 1.44 Window maximized and All Orders Report opened



Step-By-Step

8 Choose **Design>Tools>Convert Report's Macros to Visual Basic** (See Figure 1.45). Click **Convert**. Click **OK**. The **Visual Basic Editor** opens.

9 In the **Visual Basic Editor**, if necessary, choose **View>Project Explorer** to open the **Project Explorer** pane.

10 Expand each item on the tree under the **Phil's Pick-a-Part** database. Under **Modules**, double-click the **Converted Macro-AutoExec**.

11 Close the **Visual Basic Editor**. In the **Navigation Pane**, under **Modules**, select **Converted Macro-AutoExec**.

12 Choose **Design>Tools>View Code**.

13 Your screen should look like Figure 1.42. Close the **Visual Basic Editor**.

14 Save and close your database.

➔ *Continue to the next exercise.*

You Should Know

If you do not want an AutoExec macro to run when opening a database, hold down **SHIFT** while you open the database.

EXERCISE 1-14 (Continued)

View Code and Convert Macros to Visual Basic

FIGURE 1.45 Converting report's AutoExec macro to Visual Basic Editor

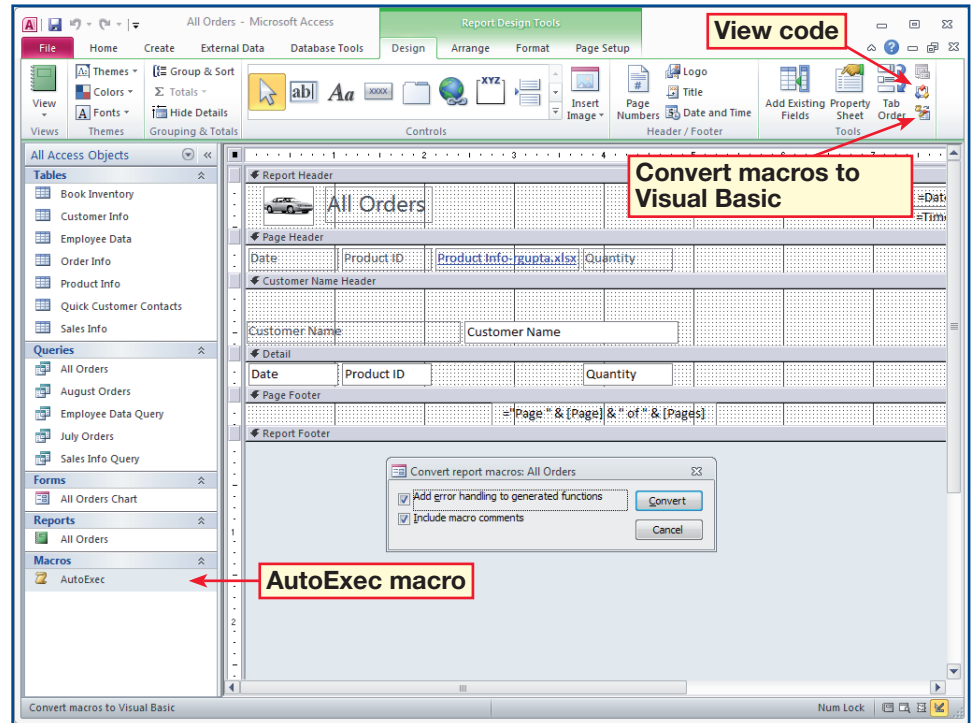
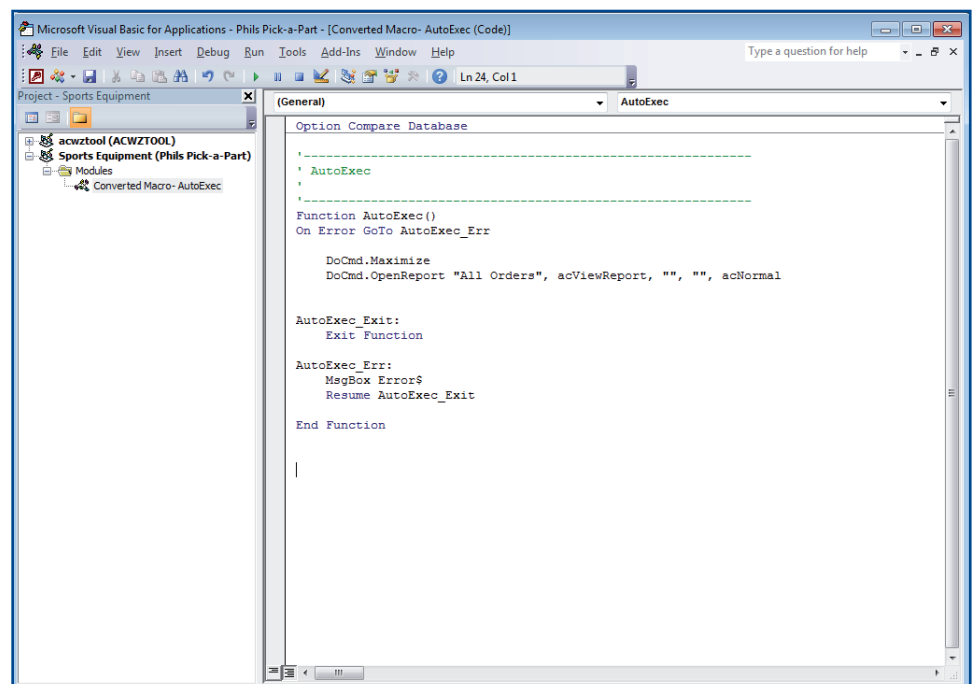


FIGURE 1.46 Code for converted macro viewed in Visual Basic



Step-By-Step

- 1** In your **Phil's Pick-a-Part** database, choose **Home>Views>Design View**.
- 2** Choose **Design Tools>Tab Order**. The **Tab Order** dialog box opens. Under **Custom Order**, click and drag **Date** below **Product ID and Quantity** in the list (see Figure 1.47). Click **OK**.
- 3** Click the **Arrange** tab. In the **All Orders** table layout, select the cell that contains the hyperlink to the **Product Info** table.
- 4** Choose **Arrange>Move>Move Up**. The cell containing a hyperlink moves up in the table layout.
- 5** With the cell still selected, choose **Arrange Format>Sizing & Ordering>Align** and click **To Grid**. Your screen should look like Figure 1.48.
- 6** Choose **Design>Controls>Button**. Click just to the right of the hyperlink. With the button still selected, choose **Format>Control Formatting>Change Shape**. Click **Oval**.

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EXERCISE 1-15

Modify Forms and Reports



Before you print out a form or report, you may decide that you want to change its layout to better organize its information. The simplest way to make changes to a form or report to make it more readable is to use the Design Tools in Design View. The layout of a form or report is similar to a table in a word processing document in that it is made up of cells that are arranged in rows and columns. You may decide that you want to add, rearrange, or remove controls from the page layout using the Table group on the Arrange tab, apply Quick Styles to a command button, change the tab order of controls, or align the output to a grid. You may also want to rearrange, or move, a table cell to a new location in the layout, or change a button's shape. In this exercise, you will make changes to the design and layout of the All Orders report. You will also create and format a command button for a form that you plan to use at a future date.

FIGURE 1.47 Tab Order dialog box

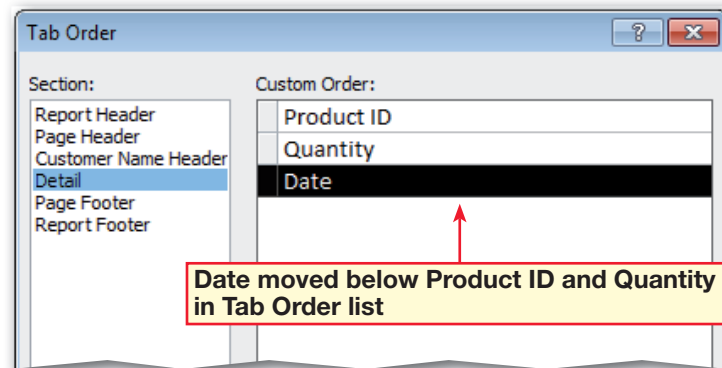
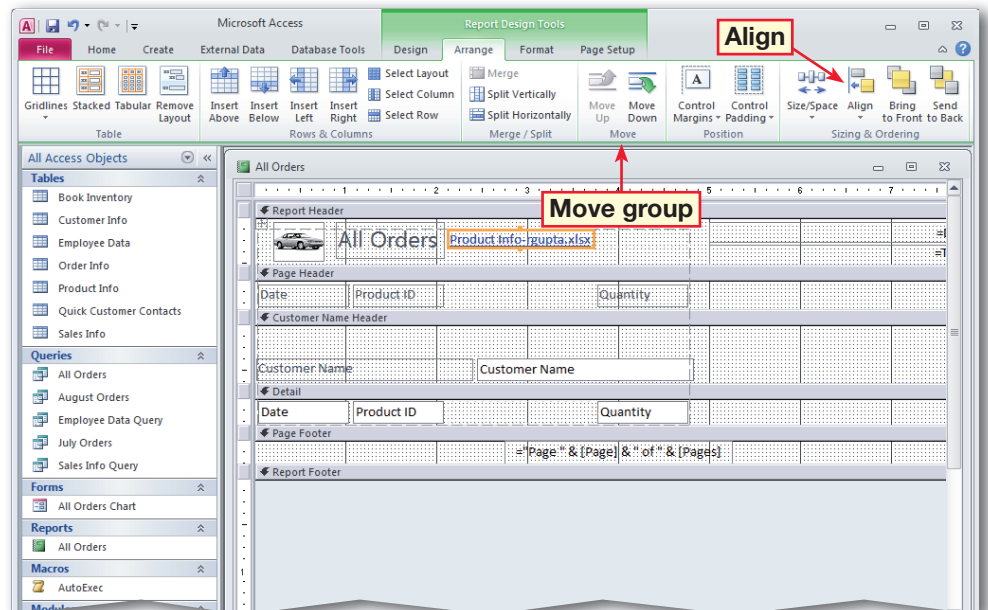


FIGURE 1.48 Hyperlink moved to another table cell in report design layout



Step-By-Step

- 7** Choose **Format>Control Formatting>Quick Styles** and select the fourth button in the last row.
- 8** Click inside the button and change the button's text to **All Orders**. Press **ENTER**. See Figure 1.49.
- 9** Right-click on the button and select **Delete**.
- 10** Close the **All Orders Report** and click **Yes** to save the changes.
- 11** In the **Navigation Pane**, select **All Orders Report** and choose **Create>Forms>Form Design**. Repeat steps 6 and 7 to create and format a similar button called **Next**.
- 12** In the **Command Button Wizard**, click **Next**. Select **Text**. In the **Text** box, key **Next**. Click **Finish**.
- 13** Apply the same shape and Quick Style. Click anywhere on the form's table grid (see Figure 1.49).
- 14** Save the form as: **Next button**.
- 15** With your teacher's permission, choose **File>Print** to print the modified All Orders Report.
- 16** Save and close your database.

EXERCISE 1-15 (Continued) Modify Forms and Reports



FIGURE 1.49 Command button's shape and style changed

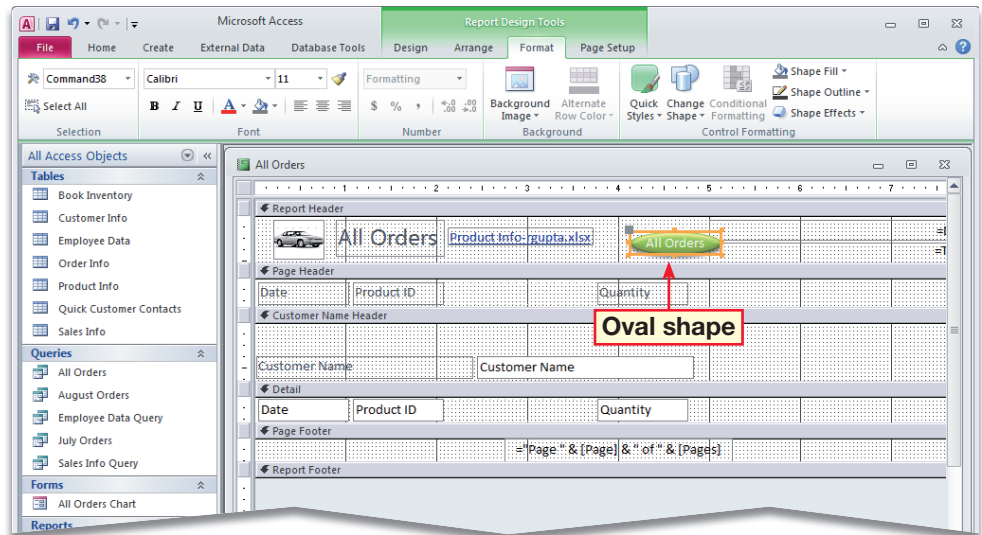
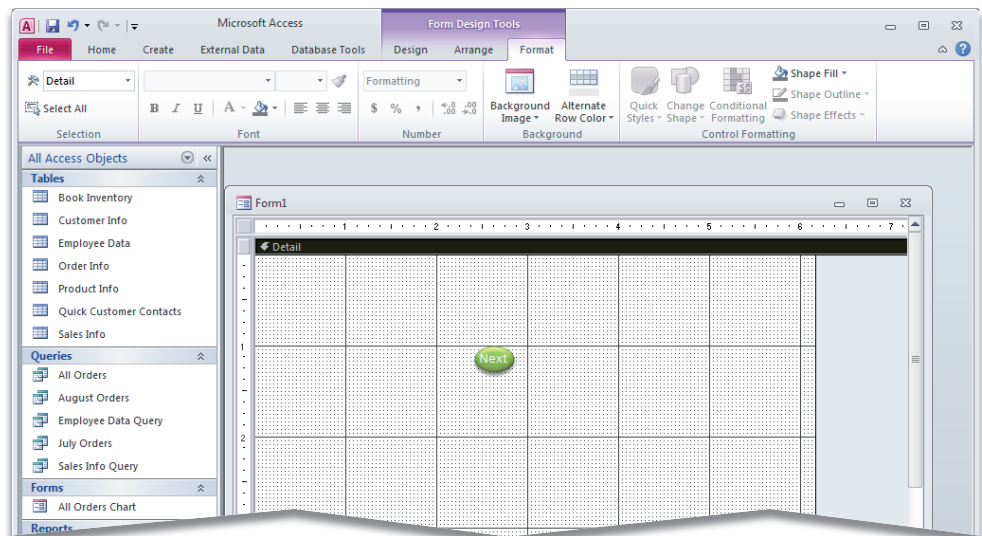


FIGURE 1.50 New shape and Quick Style applied to command button for a form



You Should Know

If you want to move the content of a table's cells in a form layout, open the form in **Design View** and choose **Arrange>Move** and select **Move Up** or **Move Down**.

Tech Tip

To change a command button's shape in a form or report, choose **Format>Control Formatting>Change Shape**.