

Guided Computer Tutorials

**Learning
Microsoft®
Access® 2016**

Module 2

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Learning Microsoft Access 2016

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Using Macros

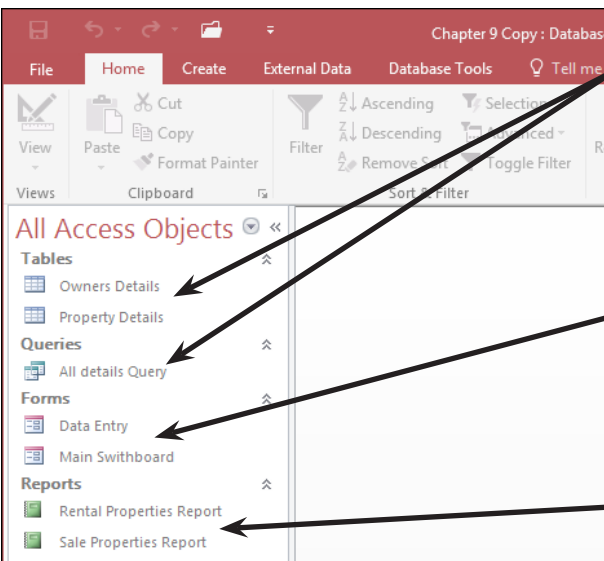
Macros are a time-saving feature within Microsoft Access. Many steps that are frequently used can be stored in a MACRO and the macro can be reused as often as required. You can also set a button to run a macro.

Your task for this activity is to create some macros for a simplified database for a real estate company. The database is similar to the one you used in Chapter 8, however, the queries to separate the rental, sale and auction properties have been removed. Macros will be used to separate data within the database.

Loading the Sample File

- 1 Load Microsoft Access or close the current file and click the FILE tab. Select the OPEN OTHER FILES icon in the START window or the OPEN icon in the BACKSTAGE VIEW.
- 2 Access the CHAPTER 9 folder of the ACCESS 2016 SUPPORT FILES and open the CHAPTER 9 file as an OPEN READ-ONLY file.
- 3 Click on the SAVE AS icon in the WARNING BAR under the RIBBON.
- 4 Access your STORAGE folder, save the file as CHAPTER 9 COPY and click on the ENABLE CONTENT button.

Looking at the Database



The screenshot shows the Microsoft Access interface with the 'All Access Objects' pane on the left. Arrows point from three numbered text boxes to specific objects in the database:

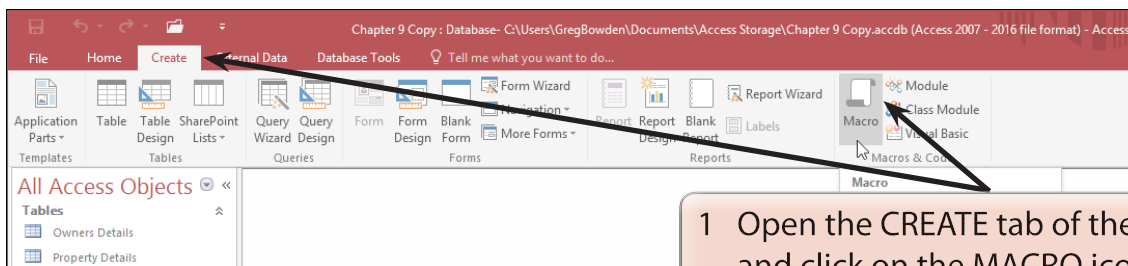
- 1 The database consists of two tables. The first table stores data about the owner of the property. The second table stores data about the property itself. A query is used to link the two tables.
- 2 There are 2 forms, a MAIN SWITCHBOARD form and a DATA ENTRY form.
- 3 One report prints the RENTAL details and the second report prints either the properties for SALE or AUCTION.

Creating the Rental Properties Macro

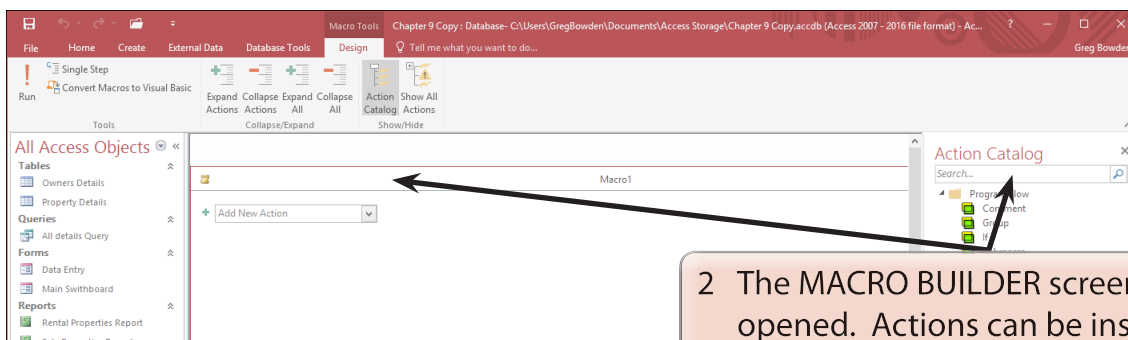
We need macros that print the reports for each of the three different types of properties (rental, auction and sale) that the company deals with.

A Starting the Macro

For the first macro the properties for rent need to be separated.



- 1 Open the CREATE tab of the RIBBON and click on the MACRO icon to start a new macro.

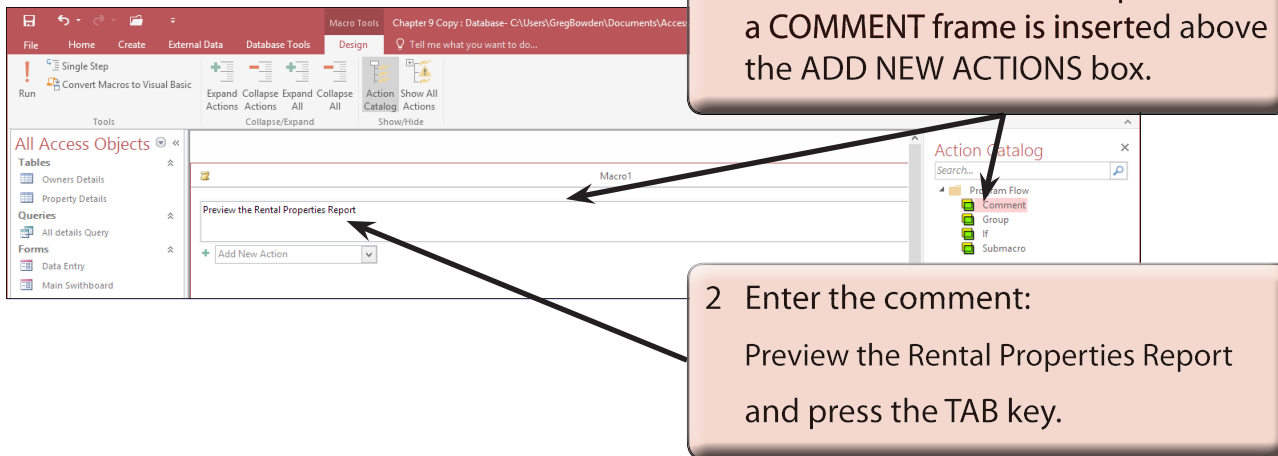


- 2 The MACRO BUILDER screen is opened. Actions can be inserted from the ACTION CATALOGUE pane at the right of the screen or from the ADD NEW ACTIONS box which is provided in the MACRO STEPS area.

- NOTE:**
- i The arrow at the right of the ADD NEW ACTION box is used to enter the commands of the macro. Those commands are executed in the order that they are displayed in the MACRO BUILDER window.
 - ii When you select an action a new ADD NEW ACTION box is added after the current action.
 - iii Maximize the MACRO window if you prefer to.

B Inserting a Comment

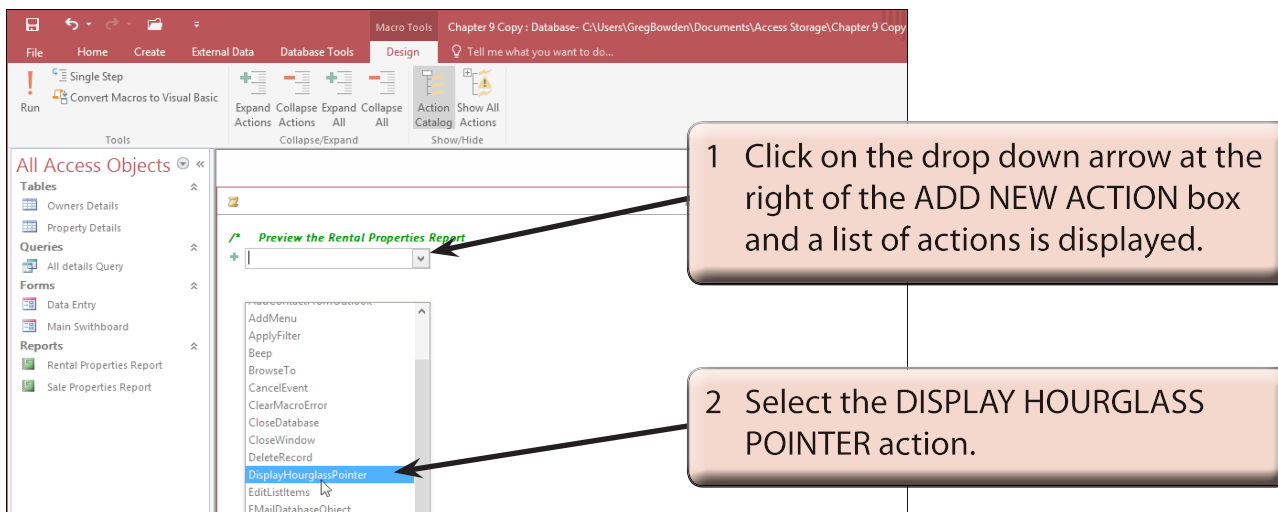
It is good practice to insert COMMENTS as you build macros. These comments don't effect the running of the macro in any way, but they help explain what the actions are doing.



1 Double click on the COMMENT icon in the ACTIONS CATALOG pane and a COMMENT frame is inserted above the ADD NEW ACTIONS box.

2 Enter the comment:
Preview the Rental Properties Report and press the TAB key.

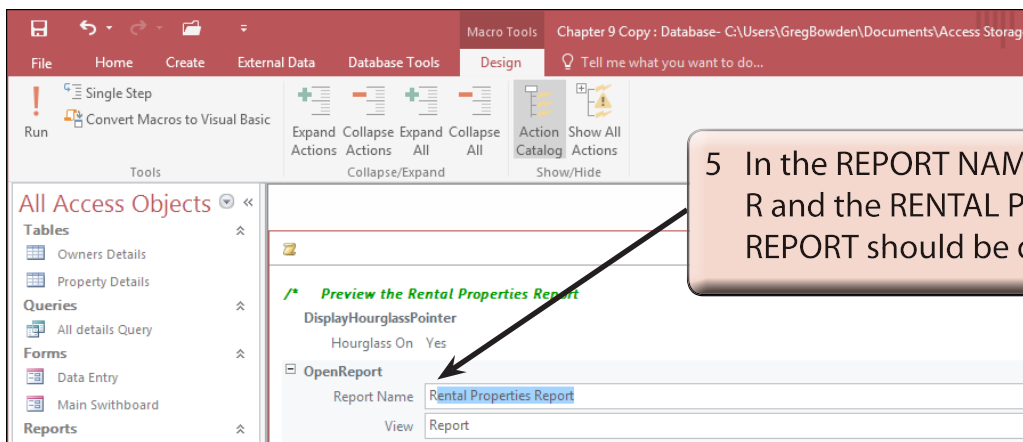
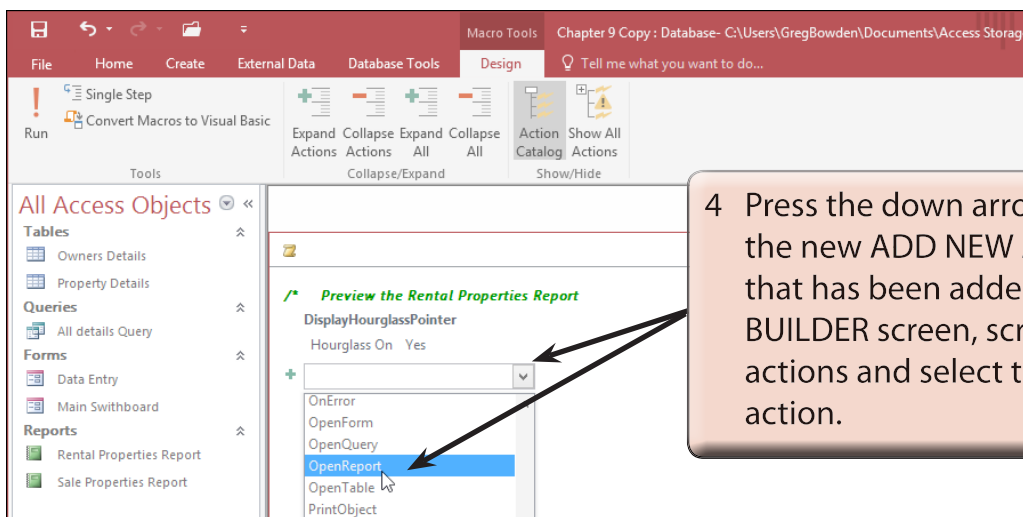
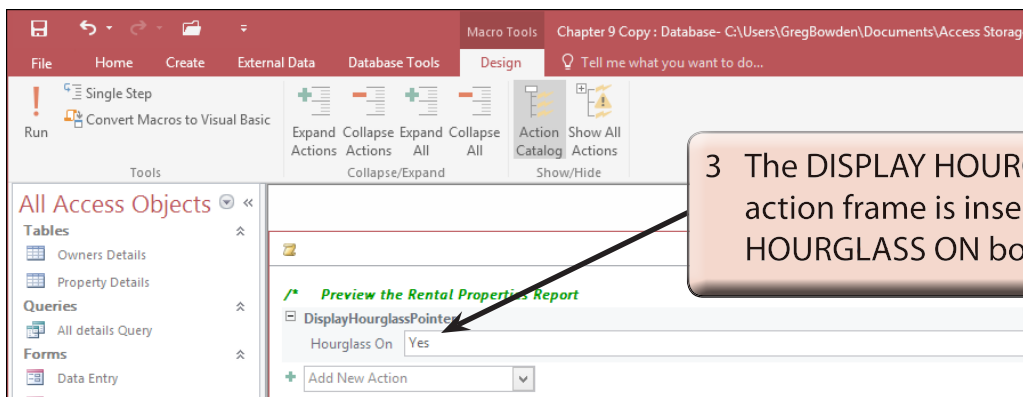
C Inserting the Actions



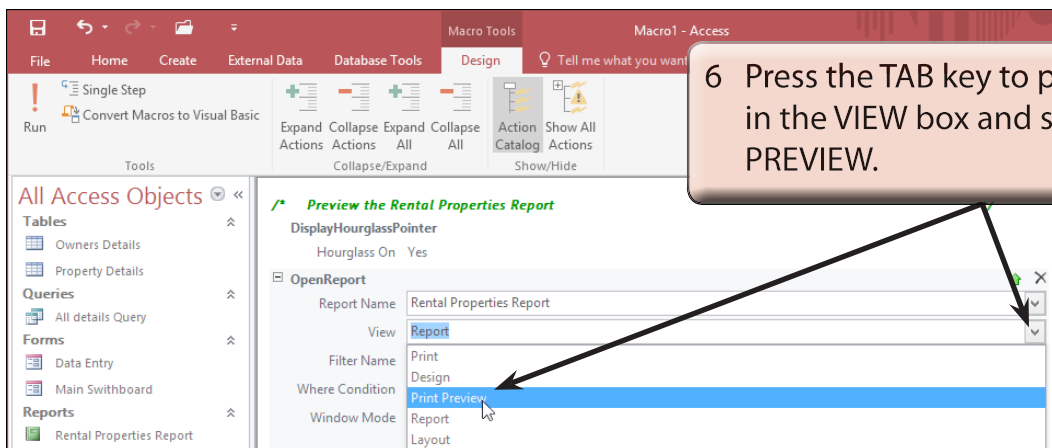
1 Click on the drop down arrow at the right of the ADD NEW ACTION box and a list of actions is displayed.

2 Select the DISPLAY HOURGLASS POINTER action.

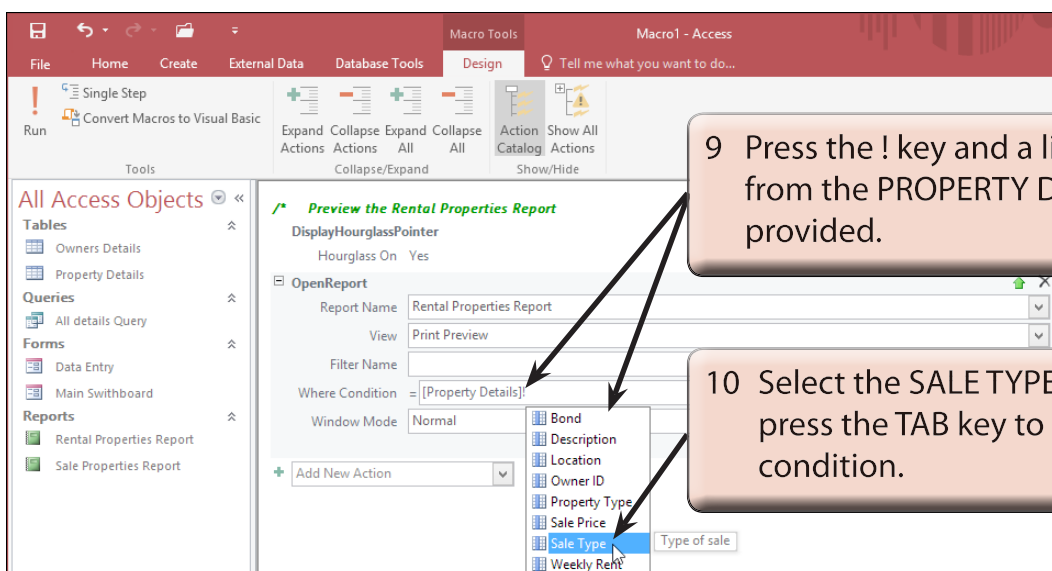
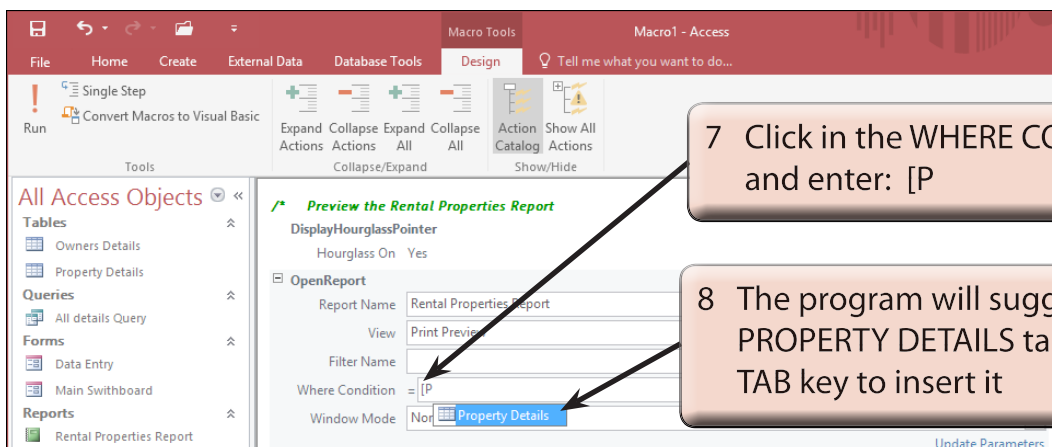
NOTE: You can also click in the ADD NEW ACTION box and press the DI keys to insert the action. The DISPLAY HOURGLASS command places the HOURGLASS cursor on the screen as the macro is operating. It lets the user know that the computer is doing something.

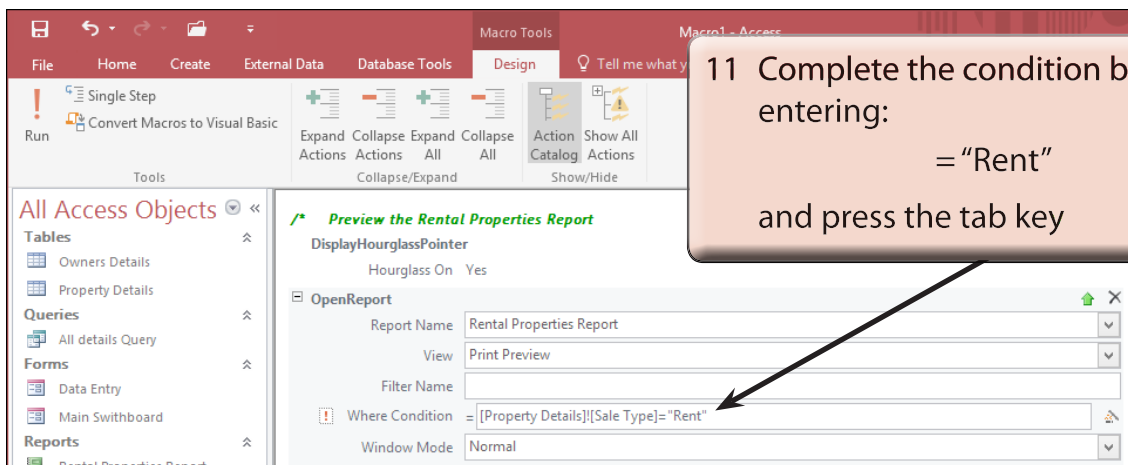


NOTE: The program will suggest possible arguments for each action step from the database as you enter a few letters to help you build the macro.



NOTE: You can maximize the Macro window by clicking on its MAXIMIZE button at the right of the Macro window.





- NOTE:**
- i The **REPORT NAME** box is used to select the required report.
 - ii The **VIEW** box indicates whether the report is to be printed directly, previewed or set to Design View.
 - iii The **WHERE CONDITION** box is telling the macro to look in the **PROPERTY DETAILS** table and find all the records where the **SALE TYPE** field contains the word **RENT**. The table name and field name must be separated by an exclamation mark (!). You could have typed the whole condition as:

[Property Details] ! [Sale Type] = "Rent"
 - iv You can use the **EXPRESSION BUILDER** icon at the right of the **WHERE CONDITION** box to build the condition if you prefer.
 - v The sections that you complete within the **ACTIONS** box are called **ARGUMENTS**.

Buttons

Buttons will need to be inserted in the two forms to run the macros.

A In the Data Entry Form

- 1 Place a button in the DATA ENTRY form to run the macro that switches the screen to the MAIN SWITCHBOARD.
- 2 Print a copy of one record of the DATA ENTRY form (use FROM 1 TO 1 in the PAGES section of the PRINT dialogue box).

B In the Main Switchboard Form

- 1 Place empty TEXT buttons next to each of the text labels in the MAIN SWITCHBOARD form and assign the buttons to run the appropriate macro.
- 2 Print a copy of the MAIN SWITCHBOARD form.

Printing the Reports and Macro Definitions

- 1 Use the buttons to print the three reports for the sections of the cafe.
- 2 Use the DATABASE DOCUMENTER icon in the DATABASE TOOLS tab of the RIBBON to preview the macro commands and print them. Refer to Page 9-34 if you have forgotten how to do this.

Hand in for Marking

- 1 A printout of the DATA ENTRY form.
- 2 A printout of the MAIN SWITCHBOARD form.
- 3 The three WAGES REPORT printouts.
- 4 A printout of the MACRO documentation.

Reports That Total Items

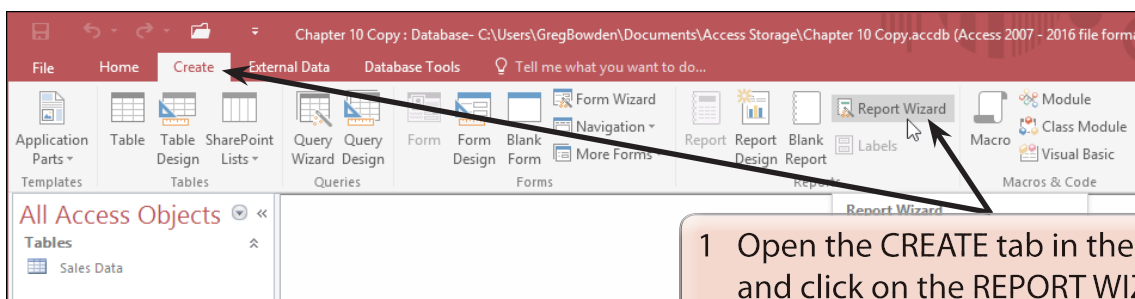
An important feature of a database is its ability to calculate and display totals of sections of data. It might be a monthly total of sales or a total of items in stock, etc. In this chapter you will produce totals and sub-totals on a prepared database.

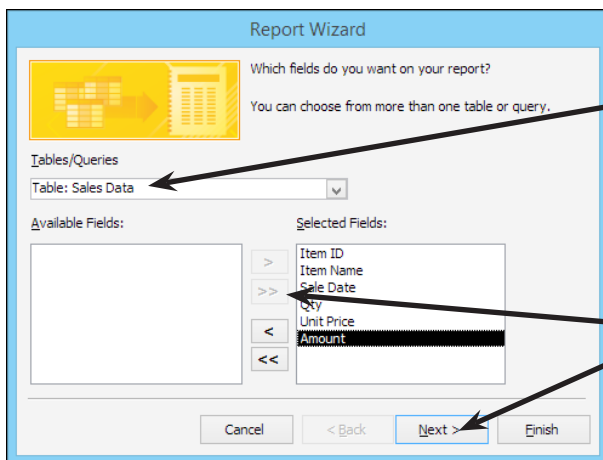
Loading the Sample File

- 1 Load Microsoft Access or close the current file and click on the FILE tab. Select OPEN OTHER FILES in the START window or the OPEN icon in the BACKSTAGE VIEW.
- 2 Access the CHAPTER 10 folder of the ACCESS 2016 SUPPORT FILES and open the CHAPTER 10 file as an OPEN READ-ONLY file.
- 3 Click on the SAVE AS icon in the WARNING BAR under the RIBBON.
- 4 Access your STORAGE folder and save the file as CHAPTER 10 COPY.
- 5 The database has a table that stores sales of items by a hardware store with a calculated field that calculates the amount of each sale.
- 6 Enable the content and open the table to familiarise yourself with the database.

Creating a Daily Sales Report

The database lists the sales of some items from a hardware store. Let's create a report that lists total sales at the end of each day. To do this we will need to set a GROUP that separates the sales for each day.

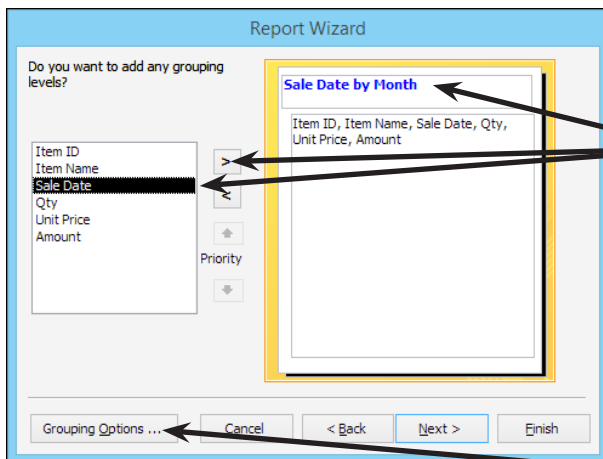




2 In the REPORT WIZARD dialogue box the TABLES/QUERIES box should be set to the SALES DATA table.

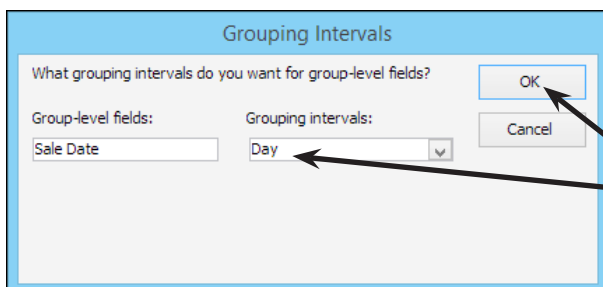
3 In this case we will use all the fields, so move all the fields into the SELECTED FIELDS frame and click on NEXT.

- 4 We want the program to provide us with totals at the end of each day, so we need to group the data so that all the records for a particular day are together.



5 Click on the SALE DATE field in the left frame then click on the forward arrow to place the SALE DATE in the group frame at the right of the dialogue box. The fields in the report are listed below the DATE group.

6 The default setting for the program is to group dates by MONTH (the most common date setting in reports). In this case the grouping is required by DAY so click on the GROUPING OPTIONS button.



7 Set the GROUPING INTERVALS box to DAY and select OK.

Report Wizard

Do you want to add any grouping levels?

Item ID
Item Name
Sale Date
Qty
Unit Price
Amount

Priority

Grouping Options ...

Cancel < Back Next > Finish

Sale Date by Day

Item ID, Item Name, Sale Date, Qty, Unit Price, Amount

8 The GROUPING is altered to BY DAY. Click on NEXT.

Report Wizard

What sort order and summary information do you want for detail records?

You can sort records by up to four fields, in either ascending or descending order.

1 Item ID Ascending

2 Ascending

3 Ascending

4 Ascending

Summary Options ...

Cancel < Back Next > Finish

9 We will sort the daily sales within the group into ITEM ID order, so set the first SORT box to ITEM ID, leave the box next to ITEM ID as ASCENDING and click on the SUMMARY OPTIONS button.

Summary Options

What summary values would you like calculated?

Field	Sum	Avg	Min	Max
Qty	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unit Price	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amount	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Show

☒ Detail and Summary

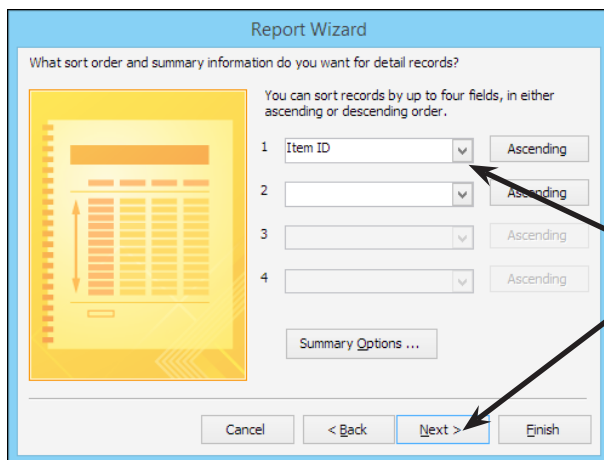
☐ Summary Only

☐ Calculate percent of total for sums

OK Cancel

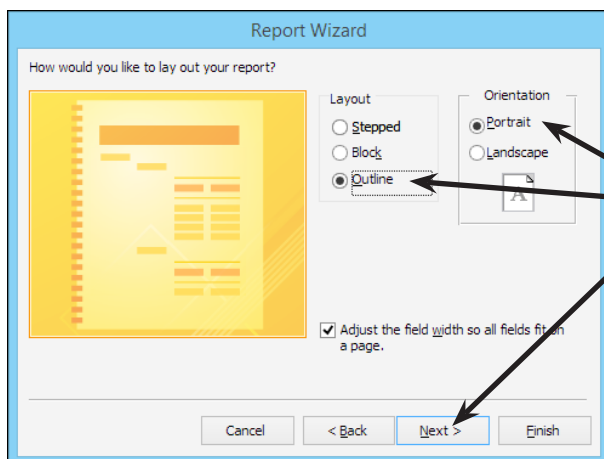
10 In this case we want to total the QTY and AMOUNT fields for each day so click on the SUM check boxes next to each of those fields, then select OK.

NOTE: The SUMMARY OPTIONS dialogue box allows you to set calculations on number type fields to add, average, find the maximum or minimum values or provide percentages on grouped data.



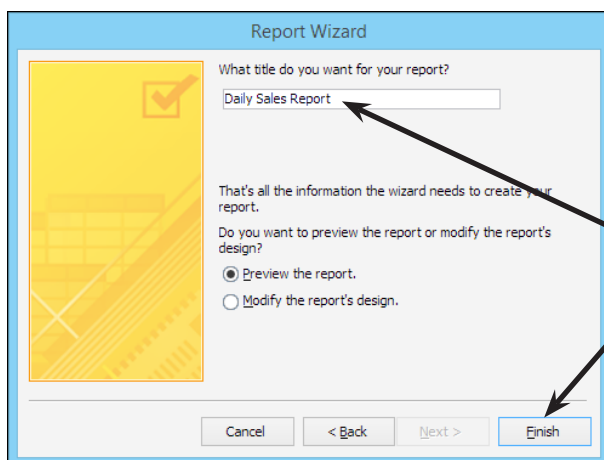
The 'Report Wizard' dialog box is shown with the title 'What sort order and summary information do you want for detail records?'. It features a preview window on the left showing a table with columns and rows. The main area contains a list of four fields to sort by, each with a dropdown menu and a button to select the sort order (Ascending or Descending). The first field is 'Item ID' with 'Ascending' selected. Below the list is a 'Summary Options ...' button. At the bottom are 'Cancel', '< Back', 'Next >', and 'Finish' buttons.

11 You are returned to the SORT ORDER dialogue box, click on NEXT.



The 'Report Wizard' dialog box is shown with the title 'How would you like to lay out your report?'. It features a preview window on the left showing a report layout. The main area contains two sections: 'Layout' with radio buttons for 'Stepped', 'Block', and 'Outline' (selected), and 'Orientation' with radio buttons for 'Portrait' (selected) and 'Landscape'. Below these is a checkbox 'Adjust the field width so all fields fit on a page.' which is checked. At the bottom are 'Cancel', '< Back', 'Next >', and 'Finish' buttons.

12 For the report LAYOUT select OUTLINE in the LAYOUT frame and PORTRAIT in the ORIENTATION frame, then click on NEXT.



The 'Report Wizard' dialog box is shown with the title 'What title do you want for your report?'. It features a preview window on the left showing a report layout. The main area contains a text box for the report title, which is 'Daily Sales Report'. Below the text box is a message: 'That's all the information the wizard needs to create your report.' followed by a question: 'Do you want to preview the report or modify the report's design?'. There are two radio buttons: 'Preview the report.' (selected) and 'Modify the report's design.'. At the bottom are 'Cancel', '< Back', 'Next >', and 'Finish' buttons.

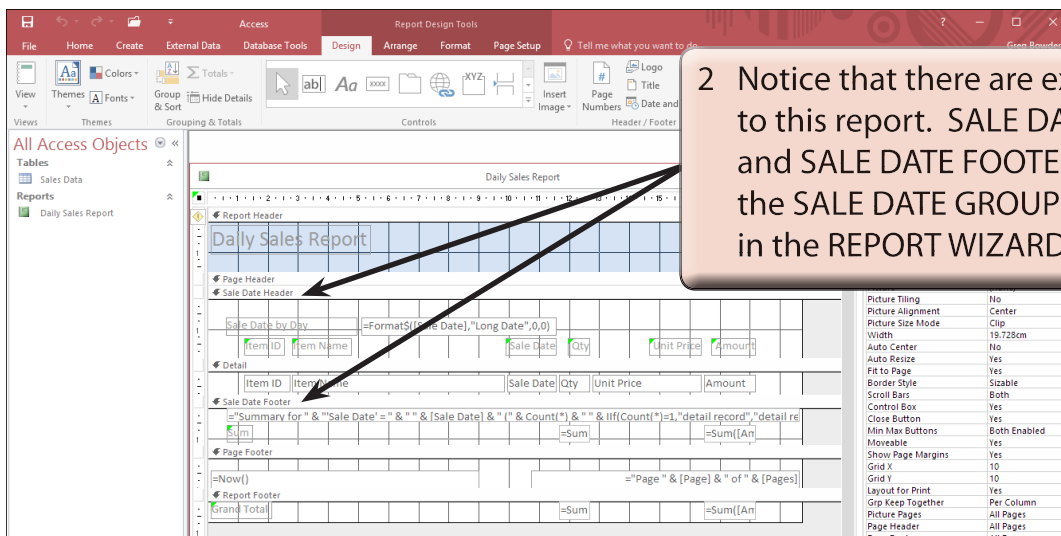
13 Name the report:
Daily Sales Report
and click on the FINISH button to generate the report.

14 Scroll through the report preview.

Adjusting the Report

As with most REPORT WIZARD generated reports some modifications are required to make the report totally suitable for your individual needs. Some fields have been given too much space and some of the headings and labels are not appropriate. This process of getting the wizard to produce a report and then modifying the result is quicker than producing the report from scratch.

- 1 Click on the CLOSE PRINT PREVIEW icon in the RIBBON to close the preview and return to DESIGN VIEW.

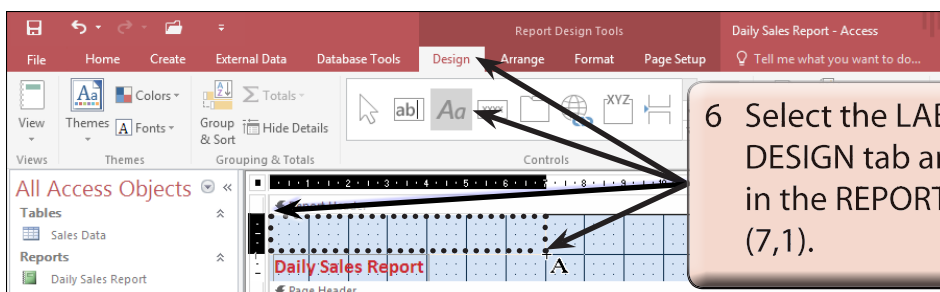
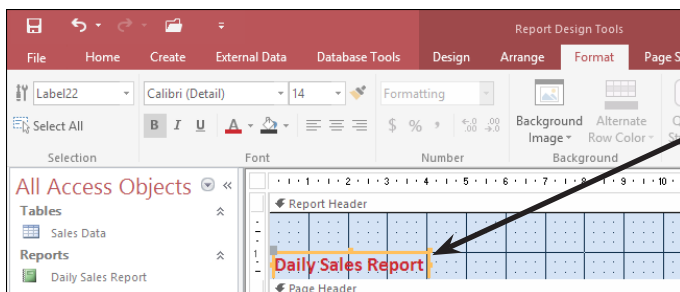
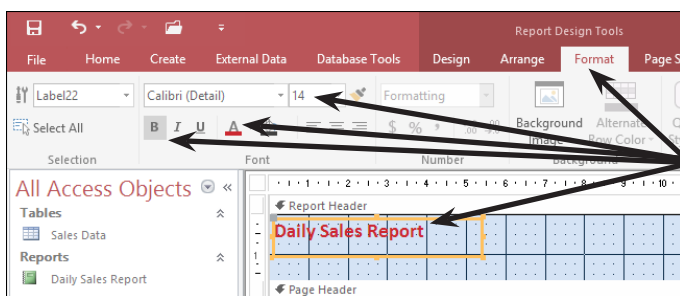
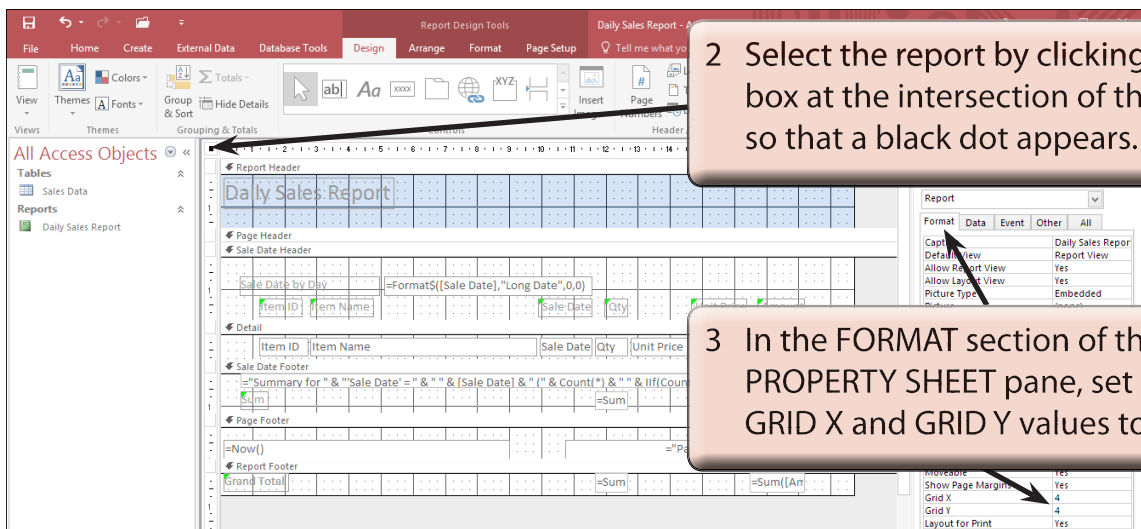


- NOTE:**
- Items in the GROUP HEADER are printed at the top of each group of records. Items in the GROUP FOOTER are printed at the end of each group of records.
 - There is probably an error icon at the top of the report to indicate a width issue. You can select IGNORE to the error as the width of the report will be adjusted shortly.

A Adjusting the Report Header

The company name needs to be added to the REPORT HEADER section.

- 1 Check that the PROPERTY SHEET pane is open at the right of the screen. If it isn't, click on the PROPERTY SHEET icon in the DESIGN tab of the REPORT DESIGN TOOLS.



Applying Relational Database Features

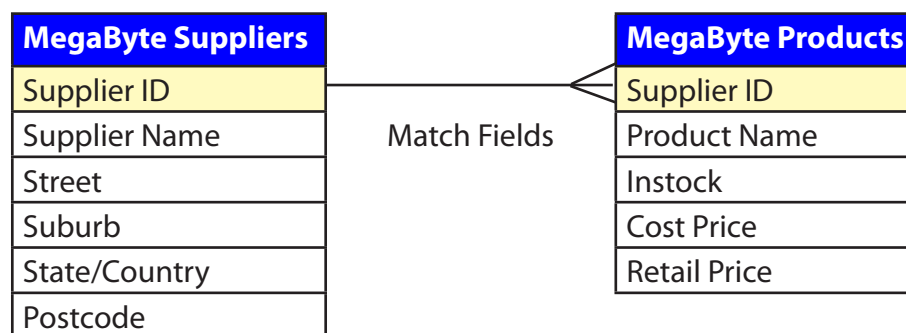
As a database system becomes more involved, it is advantageous to split the system up into numerous tables and to have those tables linked so that when data is updated in one table the data in any RELATED tables is also updated. This is the major value of relational database packages such as Microsoft Access.

Creating a Relational Database System

To demonstrate the creation of a relational database system, we will create a simple system for a company that sells computer products. It obtains its products from a variety of suppliers. We will use two tables:

- **Suppliers**, which lists the names and addresses of the suppliers of the computer products.
- **Products**, which lists the product name, the cost and retail prices, the store location of the product and how many items are in stock.

Each table has a separate form to display its data. The following diagram summarises the table structure of the database system.

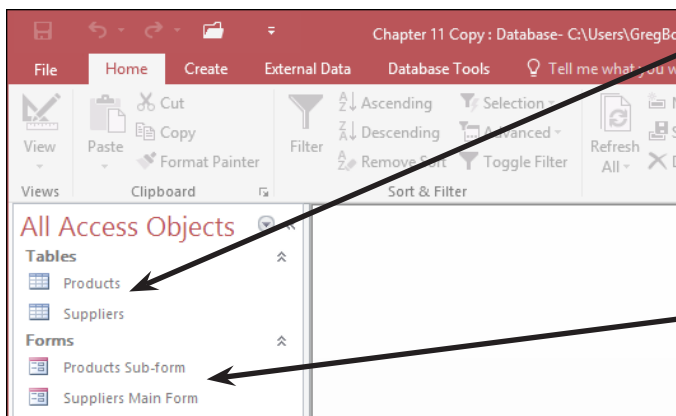


The first step in creating a relational database system is to decide what tables are required and how they will be linked. Notice that the line indicating the MATCH FIELDS (SUPPLIER ID), which will be used to link the two tables, has three lines at one end. In this case the ONE supplier can provide MANY products, but each product comes from ONE supplier. This ONE TO MANY relationship is the most common setup for a relational database system.

The SUPPLIER ID field is used to link the two tables. In the SUPPLIERS table it will be set as the PRIMARY KEY. It will be linked to the SUPPLIER ID field in the PRODUCTS table which is termed the FOREIGN KEY. The SUPPLIERS table can be considered to be the PARENT table and the PRODUCTS table the CHILD table.

Loading the Sample File

- 1 Load Microsoft Access or close the current file and click on the FILE tab. Select OPEN OTHER FILES in the START window or the OPEN icon in the BACKSTAGE VIEW.
- 2 Access the CHAPTER 11 folder of the ACCESS 2016 SUPPORT FILES and open the CHAPTER 11 file as an OPEN READ-ONLY file.
- 3 Click on the SAVE AS icon in the WARNING BAR under the RIBBON.
- 4 Access your ACCESS STORAGE folder and save the file as CHAPTER 11 COPY.
- 5 Click on the ENABLE CONTENT button so that the data can be viewed.



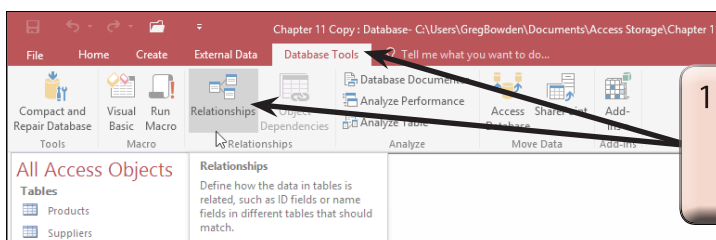
6 The database has two tables that store data about suppliers of products to a company. Open each table in turn to familiarise yourself with the database.

7 The database also has two forms. The first one displays the information about the suppliers (name, address, etc.). The second displays product name, cost price, retail price, etc. Open each form in turn to see how the data has been set out.

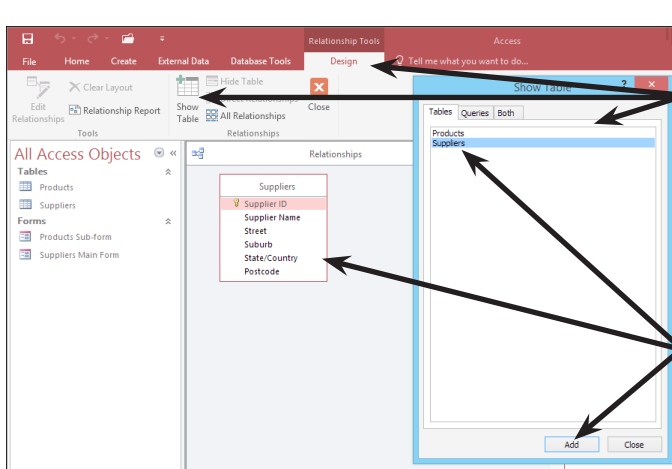
- 8 We are going to combine the information from the two forms into the one form so that this one form can be used to maintain the database.

Defining the Relationship

The link (or relationship) between the SUPPLIERS and PRODUCTS tables must be established before the forms can be combined in the one form.

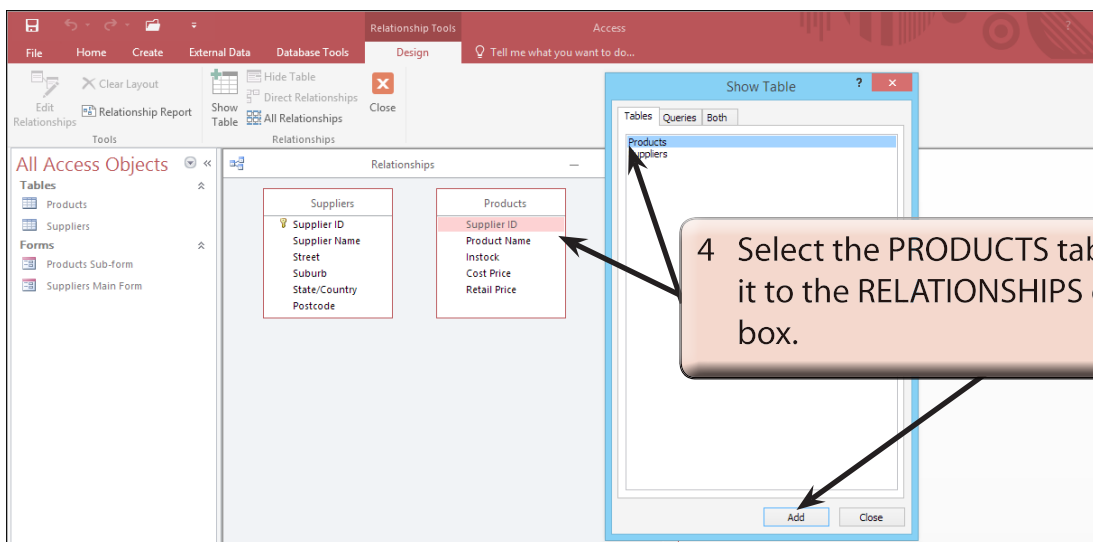


1 Open the DATABASE TOOLS tab in the RIBBON and click on the RELATIONSHIPS icon.



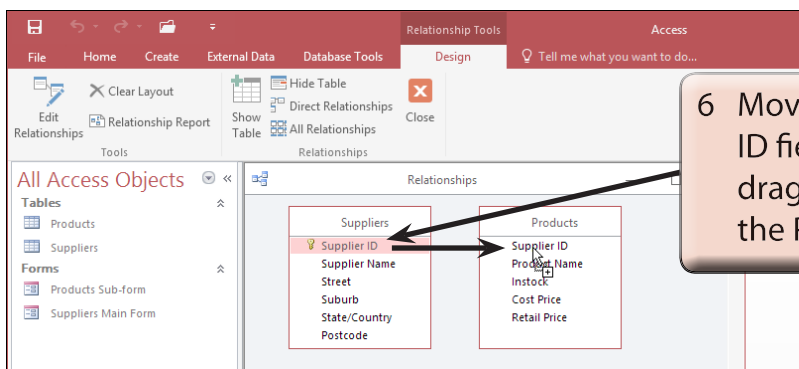
2 If the SHOW TABLE dialogue box doesn't open, click on the SHOW TABLE icon in the DESIGN tab of the RELATIONSHIP TOOLS.

3 In the SHOW TABLE dialogue box, select the SUPPLIERS table and click on the ADD button to add it to the RELATIONSHIPS dialogue box.



4 Select the PRODUCTS table and add it to the RELATIONSHIPS dialogue box.

5 Close the SHOW TABLE dialogue box.



6 Move the pointer over the SUPPLIER ID field in the SUPPLIERS table and drag it over the SUPPLIER ID field in the PRODUCTS table.

- NOTE:**
- i The SUPPLIER ID field in the SUPPLIERS table has a key symbol next to it to indicate that it is the PRIMARY key field. The SUPPLIER ID field in the PRODUCTS table is the FOREIGN KEY field.
 - ii The FOREIGN KEY field can be any field that has the same values as the PRIMARY KEY field. It is normal practice to try to set the FOREIGN KEY field to have the same name as the PRIMARY KEY field.

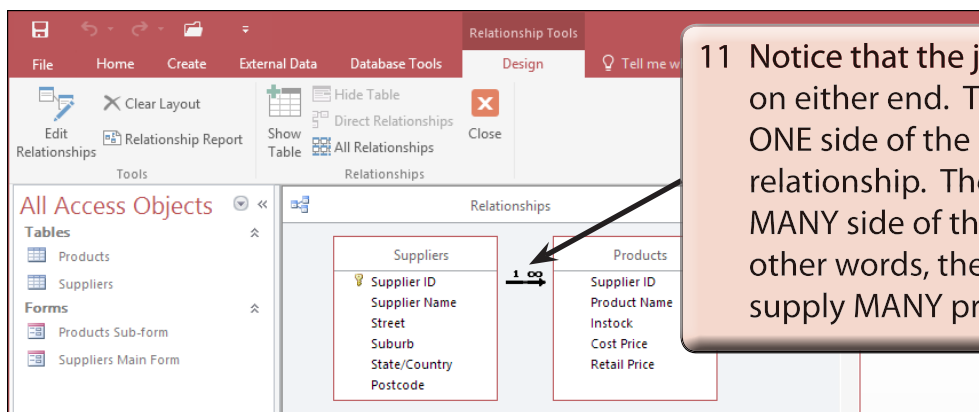
7 The relationship should be created and displayed in the EDIT RELATIONSHIPS dialogue box.

8 Click on the JOIN TYPE button to display the JOIN PROPERTIES dialogue box.

9 In this case we want to be able to display all the suppliers, but only those products that come from a particular supplier. This is option 2, so click on its radio button and select OK to set the JOIN TYPE.

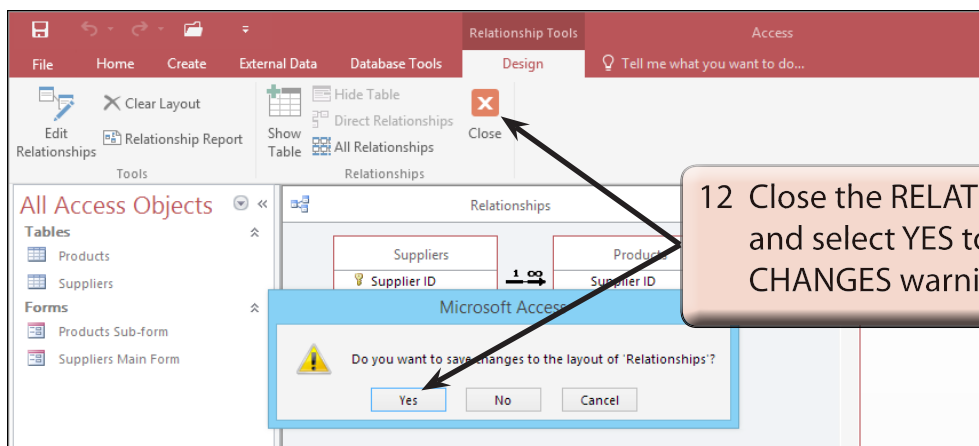
10 Click on the ENFORCE REFERENTIAL INTEGRITY check box in the EDIT RELATIONSHIPS dialogue box then click on CREATE to complete the relationship.

NOTE: ENFORCE REFERENTIAL INTEGRITY ensures that data in both tables is kept consistent. For example, you would not be able to enter a product from a supplier that is not in the SUPPLIERS table.



11 Notice that the join has symbols on either end. The 1 indicates the ONE side of the ONE TO MANY relationship. The ∞ indicates the MANY side of the relationship. In other words, the ONE supplier can supply MANY products.

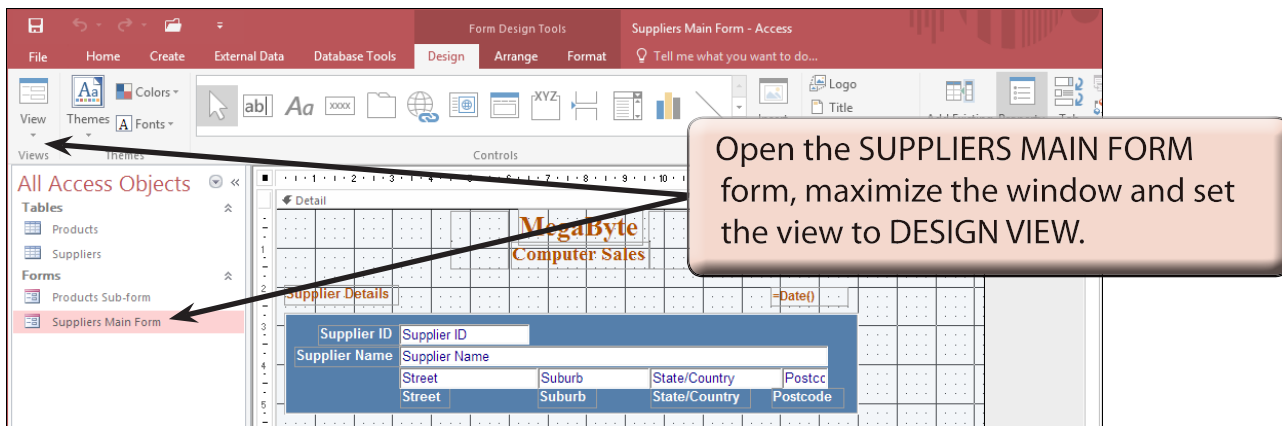
- NOTE:**
- i If you need to change the relationship properties, double click on the relationship line.
 - ii To delete a relationship, click on the relationship line and press the DELETE (DEL) key.



12 Close the RELATIONSHIPS window and select YES to the SAVE CHANGES warning.

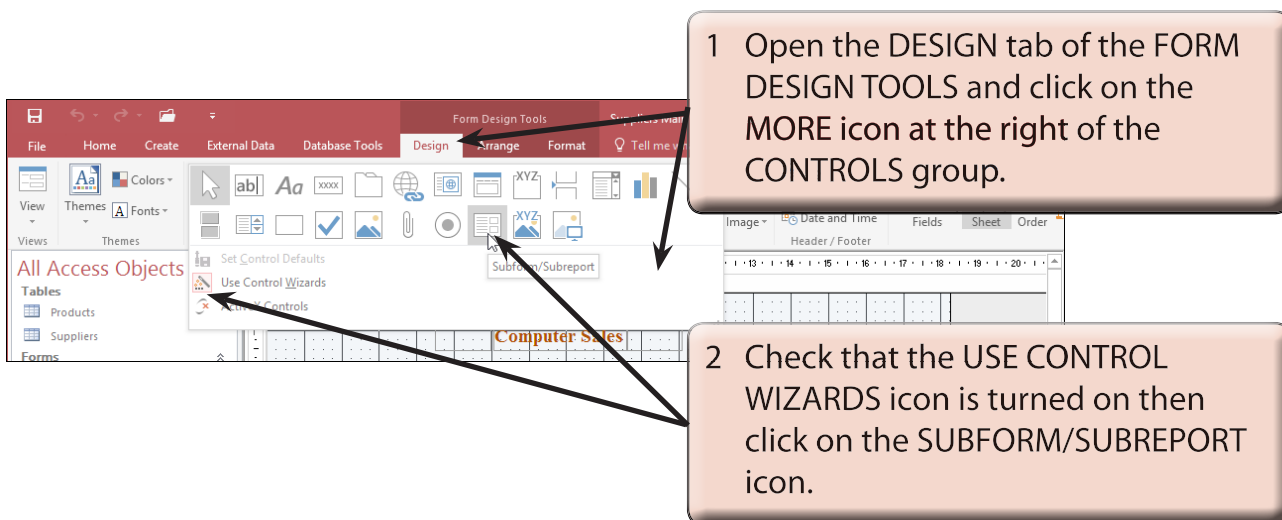
Completing the Suppliers Form

Two forms have been prepared for you. The SUPPLIERS MAIN FORM displays data from the SUPPLIERS table. The PRODUCTS SUB-FORM displays the data from the PRODUCTS table. We are going to insert the PRODUCTS SUB-FORM in the SUPPLIERS MAIN FORM so that data from both tables can be adjusted from the one form. This is achieved by using the SUBFORM/SUBREPORT tool.



A Setting the Sub-Form Frame

The SUBFORM/SUBREPORT tool can be used to create an area within the SUPPLIERS MAIN FORM that displays data from a second form. It acts like a port hole or window.



Setting Up An Invoice System

To fully understand the value of relational databases you need to create a detailed system. In this chapter you will setup an invoicing system for a computer mail order company, PC Direct, which sells computer peripherals through the mail. The invoice system will then be completed in the following three chapters. There are three main sections to the system, customers, products and the sales invoice.

In the creation of any database system you should do some careful planning. In general there are four steps that you should undertake.

- 1 Decide how many tables you think you might need.
- 2 Decide how the tables will be related to one another.
- 3 List the fields in each table trying to avoid having the same field in more than one table. Decide which fields will be the PRIMARY KEY and FOREIGN KEY fields to link the tables.
- 4 Decide what forms and/or reports (or printouts) are required.

In the case of PC Direct an initial TABLE RELATIONSHIP diagram might be:



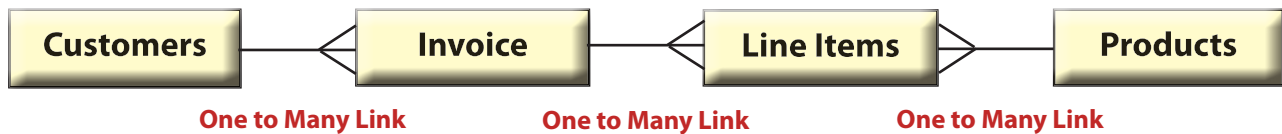
The CUSTOMERS to INVOICE section of this structure forms a ONE TO MANY relationship. The one customer can have MANY invoices sent to them over time, but there will always be ONE customer on each invoice. So the customer table is the ONE side of the relationship and the INVOICE is the MANY side. We can set a relationship to link these two tables.

There is a problem with the link between the INVOICE and the PRODUCTS tables. The one invoice can contain many products and the one product can be included in many invoices. A relational database cannot cater for a MANY TO MANY relationship as you cannot set multiple PRIMARY or FOREIGN KEY fields in the one relationship.

A further problem exists, one invoice might contain a sale of 5 of a particular item, the next invoice might contain a sale of 2 of the same item. The company needs a way of adding these sales so that it knows how many items it has sold. So this initial TABLE RELATIONSHIP will need modification.

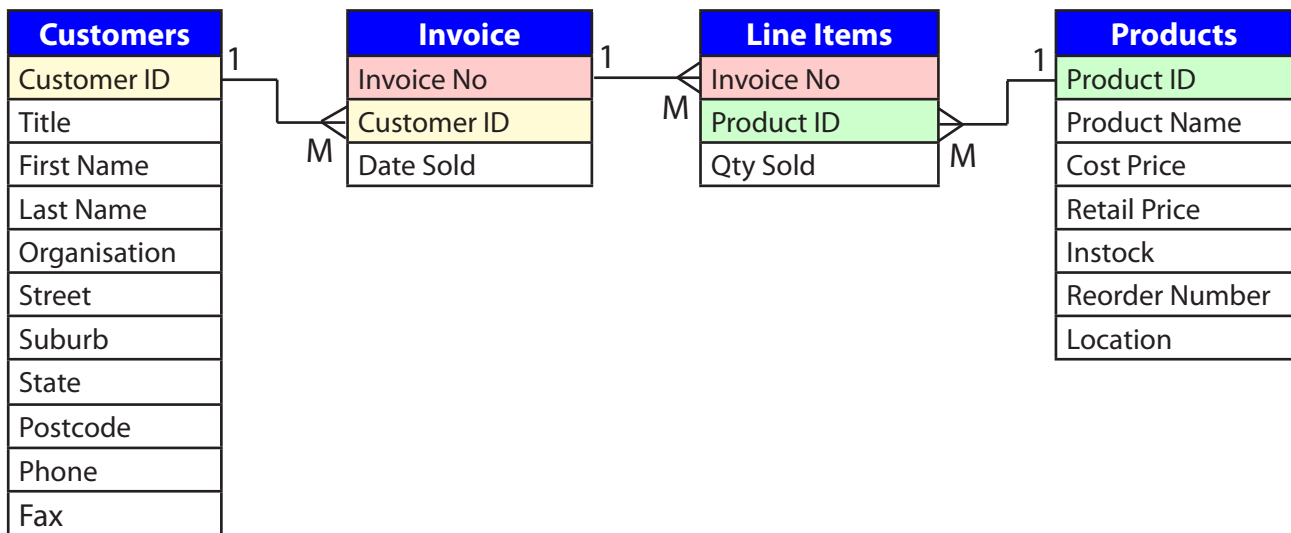
The easiest solution to these problems is to add a table between INVOICE and PRODUCTS. This table can store every item sold by the company as a single record allowing the company to keep track of every item sold. The new table can also provide data to the INVOICE table.

So a revised TABLE RELATIONSHIP diagram becomes:



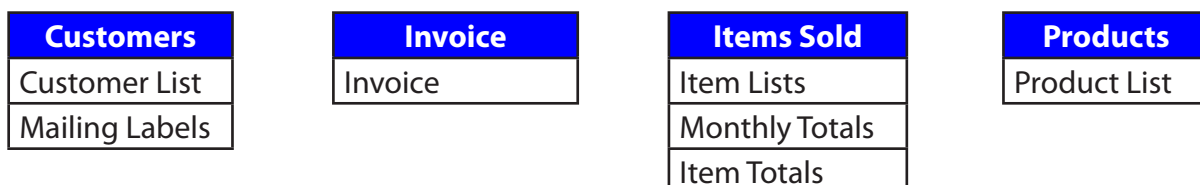
The ONE invoice can have MANY line items sold within it. The ONE product can be sold MANY times. By adding the LINE ITEMS table to the system a series of ONE TO MANY relationships are created and a relational database system can accommodate these.

The next step is to decide which fields will be placed in each table. The following TABLE STRUCTURE diagram shows one possibility. Remember, we do not want to store data more than once (except for PRIMARY KEY or FOREIGN KEY fields).



The PRIMARY KEY and FOREIGN KEY fields need to be considered. In the previous diagram you would have seen that CUSTOMER ID is used to link the CUSTOMERS and INVOICE tables, INVOICE NO is used to link the INVOICE and LINE ITEMS tables and PRODUCT ID is used to link the LINE ITEMS and PRODUCTS table. The INVOICE table is not directly linked to the PRODUCTS table, it will obtain values from the PRODUCTS table via the LINE ITEMS table.

The final consideration in the planning is what reports will be required. The following diagram shows some of the reports that could be made from the various tables. We will create some of these reports in the next chapter.

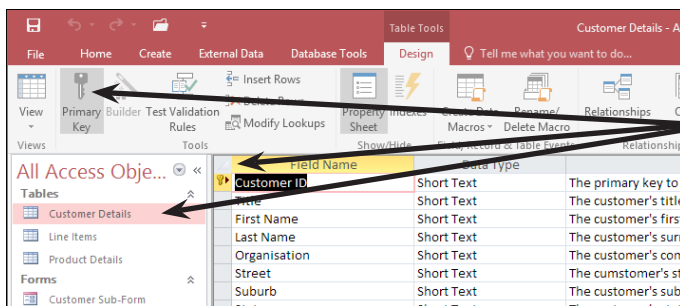


Loading the Sample File

- 1 Load Microsoft Access or close the current file and click on the FILE tab. Select OPEN OTHER FILES in the START window or the OPEN icon in the BACKSTAGE VIEW.
- 2 Access the CHAPTER 12 folder of the ACCESS 2016 SUPPORT FILES and open the CHAPTER 12 file as an OPEN READ-ONLY file.
- 3 Click on the SAVE AS icon in the WARNING BAR under the RIBBON.
- 4 Access your STORAGE folder and save the file as CHAPTER 12 COPY.
- 5 Click on the ENABLE CONTENT button so that the data can be viewed.

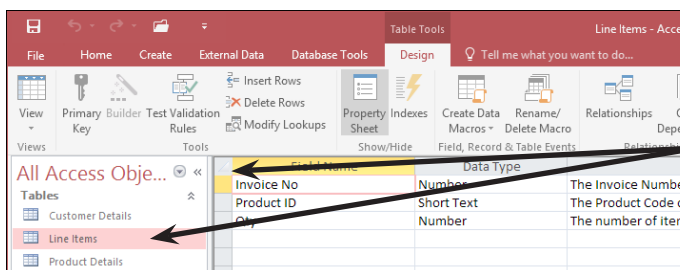
A Looking at the Tables

The database has 3 tables at the moment, CUSTOMER DETAILS which stores data about the company's customers, LINE ITEMS which stores details of each product sold and PRODUCT DETAILS which stores a list of the products that the company provides.



- 1 Open the CUSTOMER DETAILS table, set the view to DESIGN VIEW and notice that the CUSTOMER ID field has been set to the PRIMARY KEY field. The other fields store general information about the company's customers.

- 2 Close the CUSTOMER DETAILS table.

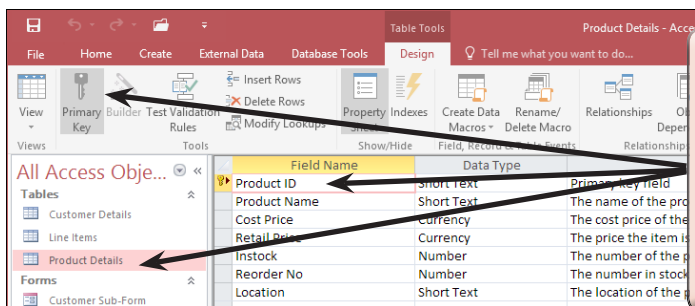


- 3 Open the LINE ITEMS table, set the view to DESIGN VIEW and notice that there is no PRIMARY KEY field. It just stores the INVOICE NUMBER and the basic details of PRODUCT ID and QTY sold that the invoice will need.

NOTE: The LINE ITEMS table will record each line of the invoice. It will have two main purposes:

- (A) to list each product sold as a separate record so that the company can calculate monthly sales and carry out stock checks.
- (B) to provide product data to the invoice. If you look at the diagram at the centre of page 12-2 you will see that the PRODUCTS table is not directly connected to the INVOICE table so some data, such as Product Name and Retail Price, will need to be linked to the LINE ITEMS table via a relationship to the PRODUCTS table so that the INVOICE can display them.

4 Close the LINE ITEMS table.

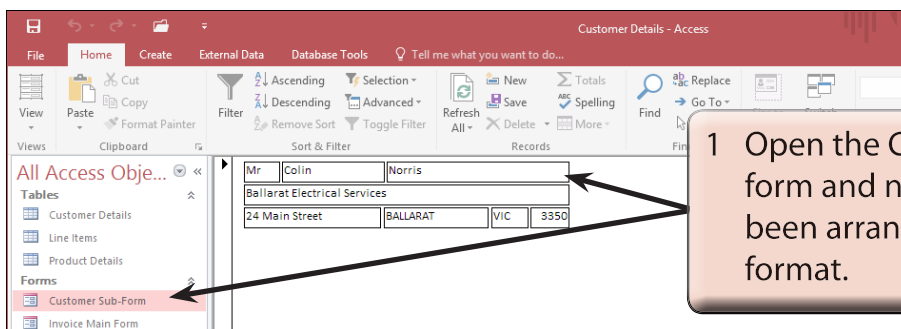


5 Open the PRODUCT DETAILS table, set the view to DESIGN VIEW and notice that PRODUCT ID has been set the a PRIMARY KEY field. It will provide data to the LINE ITEMS table via this field.

6 Close the PRODUCT DETAILS table.

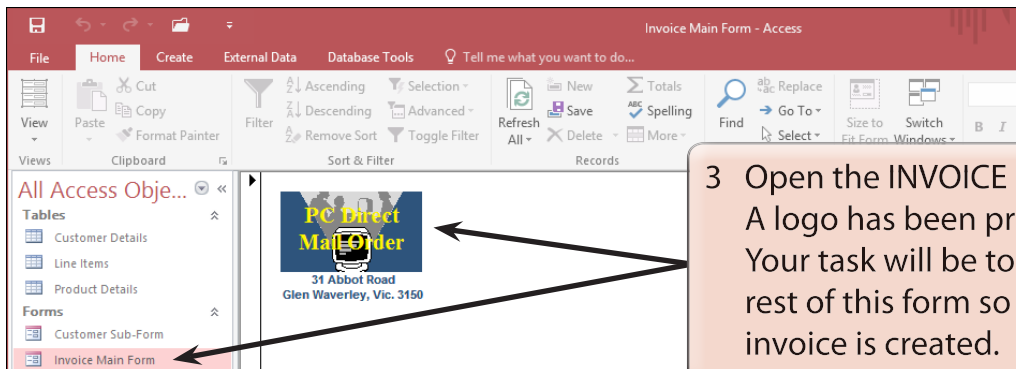
B Looking at the Forms

Two forms have been prepared for you. The CUSTOMER SUB-FORM which displays the details from the CUSTOMER DETAILS table and the INVOICE MAIN FORM which you will need to complete.



1 Open the CUSTOMER SUB-FORM form and notice that fields have been arranged in a normal address format.

2 Close the CUSTOMER SUB-FORM form.

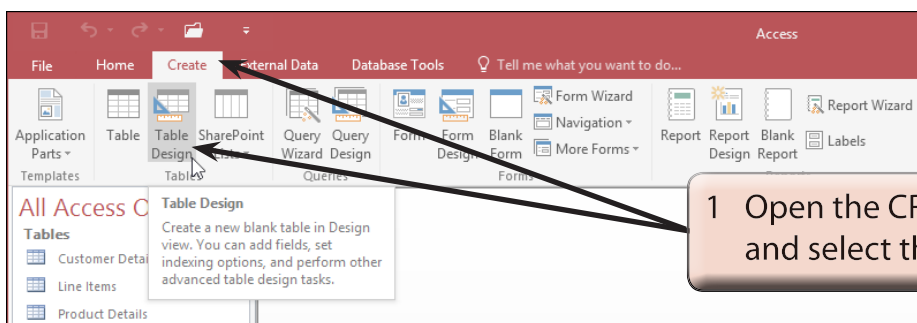


3 Open the INVOICE MAIN FORM form. A logo has been prepared for you. Your task will be to complete the rest of this form so that a functional invoice is created.

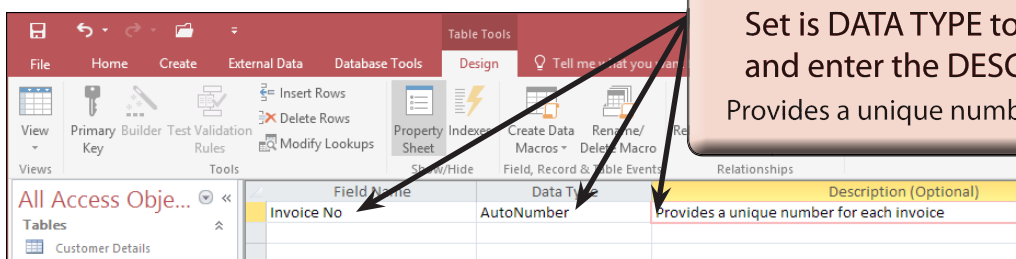
4 Close the INVOICE MAIN FORM form.

Creating the Invoice Table

An invoice table is required to store details every time an invoice is sent. This table simply records the INVOICE NUMBER, the CUSTOMER ID and the DATE of the purchase. The links that we make to the other tables will display other details such as product name and retail price.

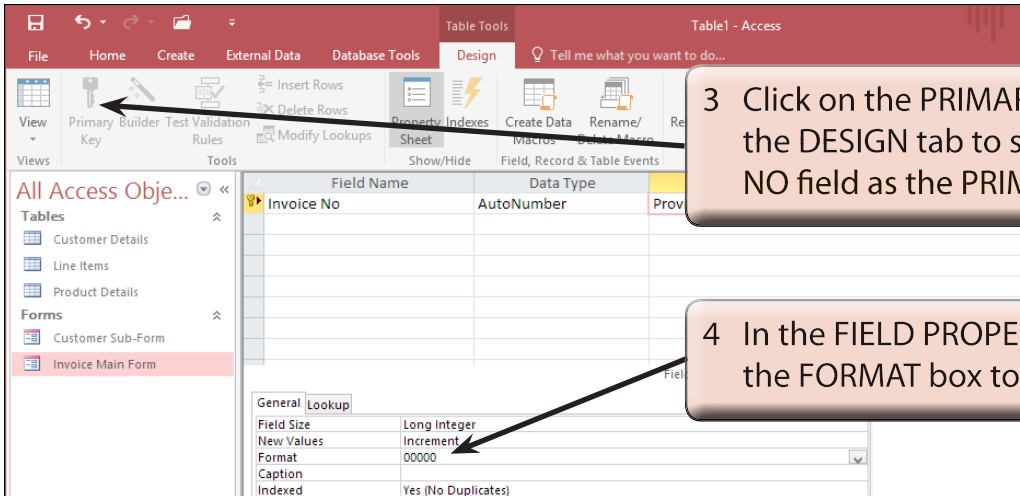


1 Open the CREATE tab of the RIBBON and select the TABLE DESIGN icon.



2 Enter the FIELD NAME:
Invoice No
Set is DATA TYPE to AUTONUMBER
and enter the DESCRIPTION:
Provides a unique number for each invoice.

NOTE: The AUTONUMBER field type will tell the program to provide a new number every time an invoice is created so that no two invoices will ever have the same number.



3 Click on the PRIMARY KEY button in the DESIGN tab to set the INVOICE NO field as the PRIMARY KEY field.

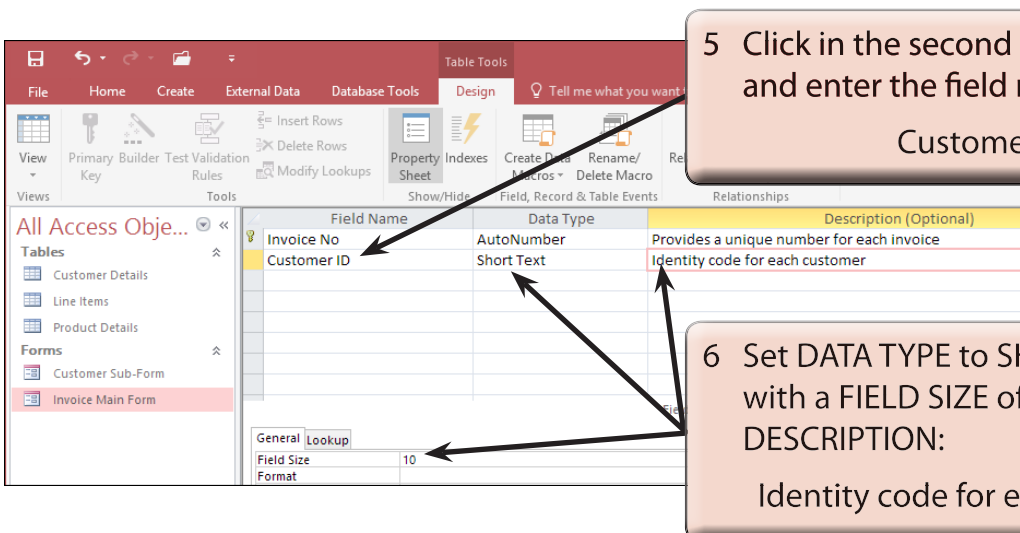
4 In the FIELD PROPERTIES pane set the FORMAT box to 00000.

Field Name	Data Type
Invoice No	AutoNumber

Property	Value
Field Size	Long Integer
New Values	Increment
Format	00000
Caption	
Indexed	Yes (No Duplicates)

NOTE:

- i The PRIMARY KEY field will index the table so that it is listed in INVOICE NO order.
- ii The format (00000) will set each number to five digits, for example, 00001, 00002, etc.



5 Click in the second FIELD NAME cell and enter the field name:
Customer ID

6 Set DATA TYPE to SHORT TEXT, with a FIELD SIZE of 10 and a DESCRIPTION:
Identity code for each customer

Field Name	Data Type	Description (Optional)
Invoice No	AutoNumber	Provides a unique number for each invoice
Customer ID	Short Text	Identity code for each customer

Property	Value
Field Size	10
Format	

Formatting Invoice Systems

In the previous chapter you setup the structure of an invoicing system. In this chapter that system will be formatted into an easier to use and printable invoice. This will involve setting lookup values for the customers and products so that the user doesn't need to know customer or product names. The invoice elements will be aligned so that they print in a neat fashion and a border and page break will be inserted.

Loading the File

You will be using the invoice system from the previous chapter.

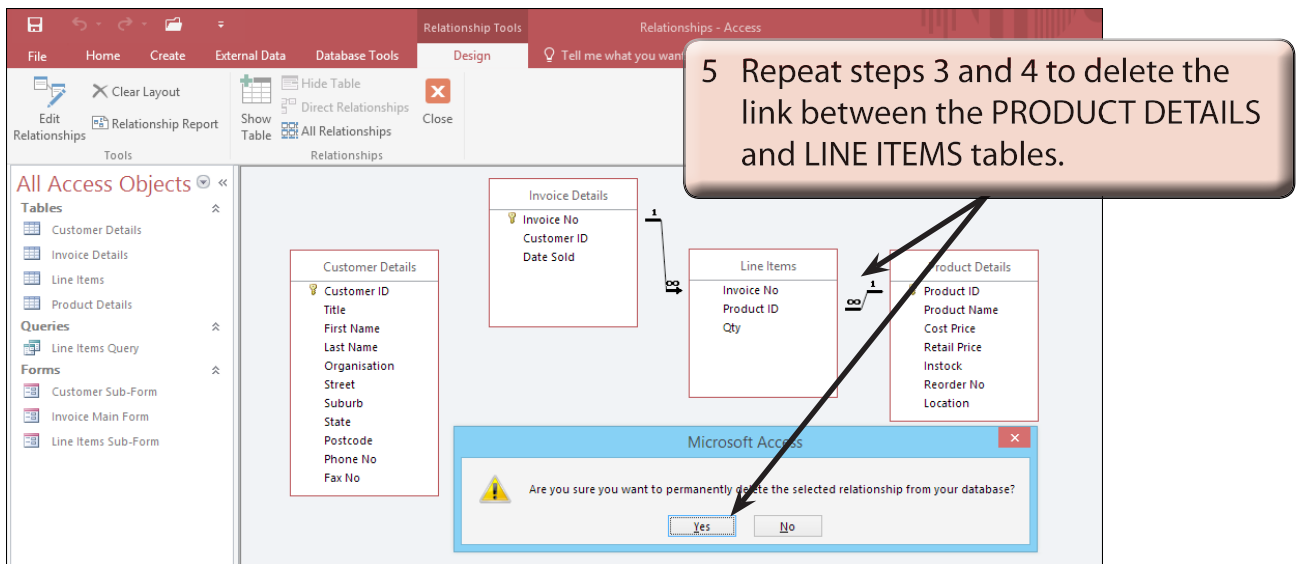
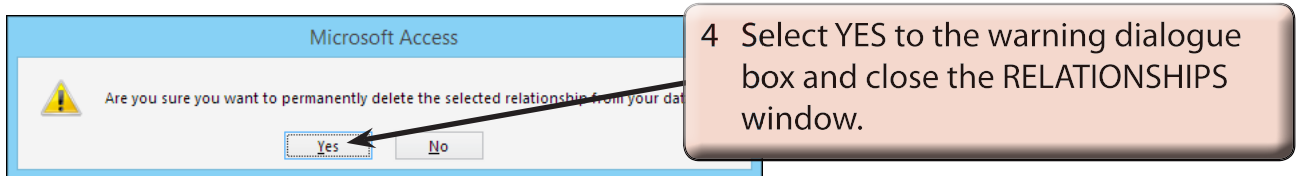
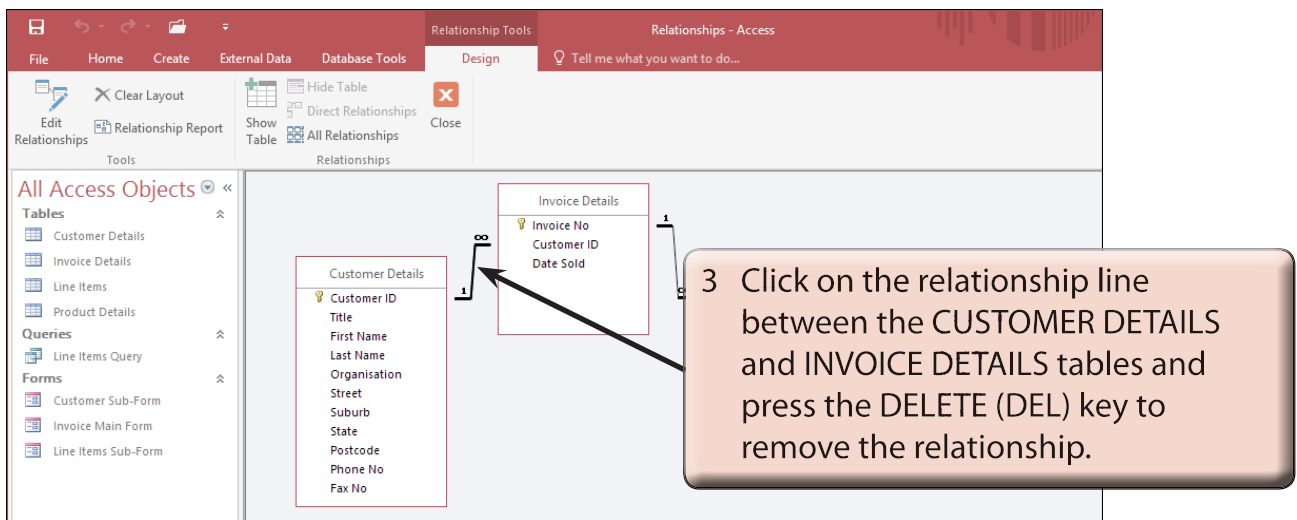
- 1 If your invoice system from the previous chapter worked well, load Microsoft Access and open the file from your STORAGE folder.
- 2 If you would prefer to use a fresh fully operational file:
 - (A) Load Microsoft Access or close the current file and click on the FILE tab. Select OPEN OTHER FILES in the START window or OPEN in the BACKSTAGE VIEW.
 - (B) Access the CHAPTER 13 folder of the ACCESS 2016 SUPPORT FILES and open the CHAPTER 13 file as an OPEN READ-ONLY file.
 - (C) Click on the SAVE AS icon in the WARNING BAR under the RIBBON.
 - (D) Access your STORAGE folder and save the file as CHAPTER 13 COPY.
 - (E) Click on the ENABLE CONTENT button so that the data can be viewed.

Setting Lookup Values

It is difficult to remember customer or product codes. We can set both of these to be lookup values. In order to use the lookup wizard any the relationships involving the fields that will be altered will need to be temporary deleted.

A Deleting the Customer and Product Relationships

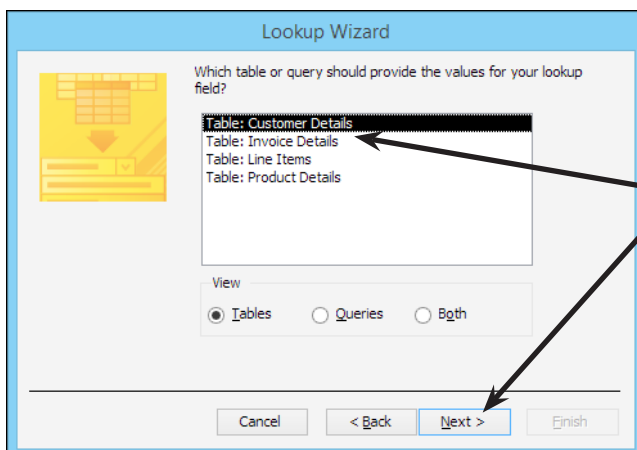
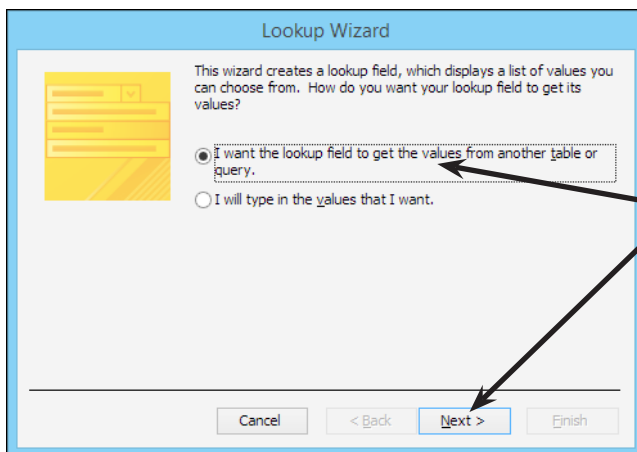
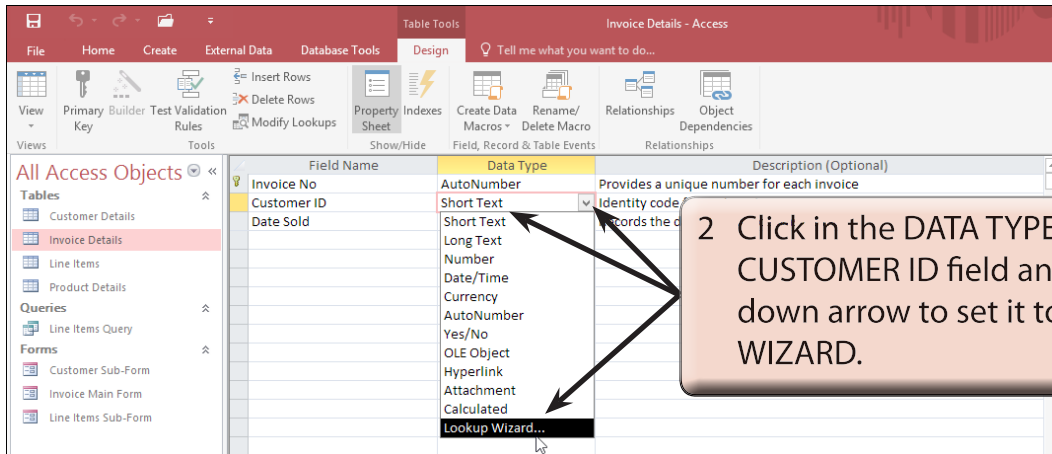
- 1 Close any tables or forms that may be open.
- 2 Open the DATABASE TOOLS tab in the RIBBON and click on the RELATIONSHIPS icon to open the RELATIONSHIPS window.



6 Click on the CLOSE icon in the RIBBON to close the RELATIONSHIPS window.

B Setting the Customer Lookup Values

- 1 Open the INVOICE DETAILS table and set its view to DESIGN VIEW.



Lookup Wizard

Which fields of Customer Details contain the values you want included in your lookup field? The fields you select become columns in your lookup field.

Available Fields:

- Title
- Organisation
- Street
- Suburb
- State
- Postcode
- Phone No
- Fax No

Selected Fields:

- Customer ID
- First Name
- Last Name

Buttons: Cancel, < Back, Next >, Finish

5 You will be asked which fields you want displayed in the lookup column. Move CUSTOMER ID, FIRST NAME and LAST NAME into the SELECTED FIELDS frame, then click on NEXT.

Lookup Wizard

What sort order do you want for the items in your list box?

You can sort records by up to four fields, in either ascending or descending order.

1 Last Name Ascending

2 First Name Ascending

3 Ascending

4 Ascending

Buttons: Cancel, < Back, Next >, Finish

6 You will be asked about the SORT ORDER of the list. Set the first box to LAST NAME and the second box to FIRST NAME (both fields should be set to ASCENDING order), then click on NEXT.

Lookup Wizard

How wide would you like the columns in your lookup field?

To adjust the width of a column, drag its right edge to the width you want, or double-click the right edge of the column heading to get the best fit.

☐ Hide key column (recommended)

Customer ID	First Name	Last Name
C0002	John	Bryant
C0007	Gary	Dyer
C0008	Lucy	Fitzgerald
C0006	Melinda	Forbes
C0009	Katherine	French
C0018	Emily	Grant
C0010	Steve	Halliday

Buttons: Cancel, < Back, Next >, Finish

7 The width of the columns will be displayed. The CUSTOMER ID field is hidden, so click on the HIDE KEY COLUMN check box to display it.

8 Reduce the width of the columns by double clicking on the borders at the right of the column headings, then click on NEXT.

Lookup Wizard

When you select a row in the lookup field, you can store a value from that row in your database, or you can use the value later to perform an action. Choose a field that uniquely identifies the row. Which column in your lookup field contains the value you want to store or use in your database?

Available Fields:

- Customer ID
- First Name
- Last Name

Buttons: Cancel, < Back, Next >, Finish

9 In the AVAILABLE FIELDS section leave CUSTOMER ID selected. This is the value that will be inserted from the popup menu, then click on NEXT.

Lookup Wizard

What label would you like for your lookup field?

Customer ID

Do you want to enable data integrity between these tables?

☐ Enable Data Integrity

☐ Cascade Delete

☒ Restrict Delete

Do you want to store multiple values for this lookup?

☐ Allow Multiple Values

Those are all the answers the wizard needs to create your lookup field.

Buttons: Cancel, < Back, Next >, Finish

10 Leave the label set to: Customer ID and click on the FINISH button.

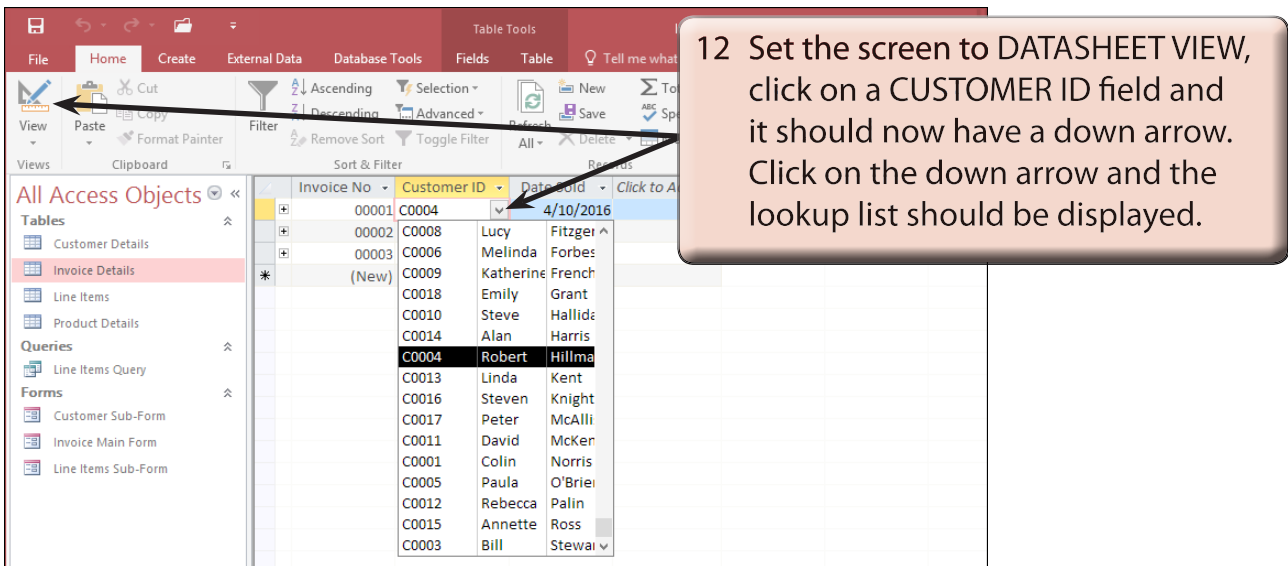
Lookup Wizard

The table must be saved before relationships can be created. Save now?

Buttons: Yes, No

11 You will now be required to save the table - click on YES.

NOTE: If a warning box appears - select YES. This may occur if some of the column widths are too small.



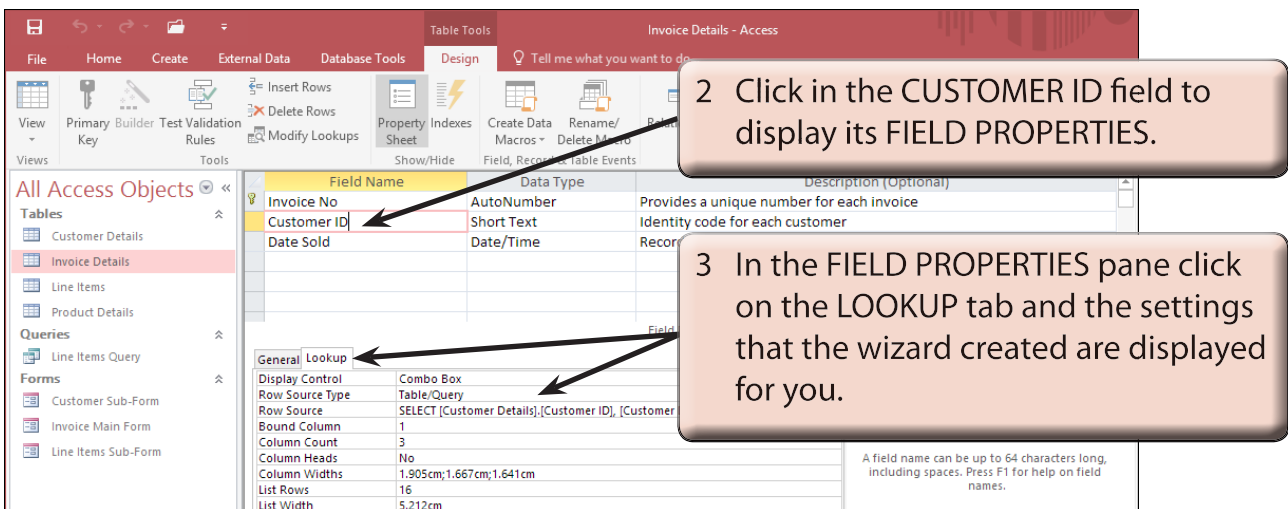
12 Set the screen to DATASHEET VIEW, click on a CUSTOMER ID field and it should now have a down arrow. Click on the down arrow and the lookup list should be displayed.

Invoice No	Customer ID	Customer Name	Date Sold
00001	C0004	Lucy Fitzgerald	4/10/2016
00002	C0008	Melinda Forbes	
00003	C0006	Katherine French	
(New)	C0009	Emily Grant	
	C0018	Steve Halliday	
	C0010	Alan Harris	
	C0014	Robert Hillman	
	C0013	Linda Kent	
	C0016	Steven Knight	
	C0017	Peter McAllister	
	C0011	David McKen	
	C0001	Colin Norris	
	C0005	Paula O'Brien	
	C0012	Rebecca Palin	
	C0015	Annette Ross	
	C0003	Bill Stewart	

13 Leave C0004 selected for now by clicking outside the drop down menu.

C Looking at the Customer Lookup Settings

1 Set the INVOICE DETAILS table back to DESIGN VIEW.



2 Click in the CUSTOMER ID field to display its FIELD PROPERTIES.

3 In the FIELD PROPERTIES pane click on the LOOKUP tab and the settings that the wizard created are displayed for you.

Field Name	Data Type	Description (Optional)
Invoice No	AutoNumber	Provides a unique number for each invoice
Customer ID	Short Text	Identity code for each customer
Date Sold	Date/Time	Record date

Property	Value
Display Control	Combo Box
Row Source Type	Table/Query
Row Source	SELECT [Customer Details].[Customer ID], [Customer Name]
Bound Column	1
Column Count	3
Column Heads	No
Column Widths	1.905cm;1.667cm;1.641cm
List Rows	16
List Width	5.212cm

A field name can be up to 64 characters long, including spaces. Press F1 for help on field names.

NOTE: Once you understand what the wizard is doing you can enter values manually or adjust its settings. For example, you could increase the width of the LAST NAME column by increasing the third COLUMN WIDTH value.

Reporting From Invoice Systems

A major advantage in setting a LINE ITEMS table in the invoice system such as the one you have set up in the past two chapters is that reports can be created from it. The company will be interested in two things. Firstly, the total number of each product that have been sold so the company can see which are the best sellers. Secondly, how much has been made each month. We will create two reports to satisfy these needs. The company will also want mailing labels based on the Customer Details to easily contact their customers.

Loading the Sample File

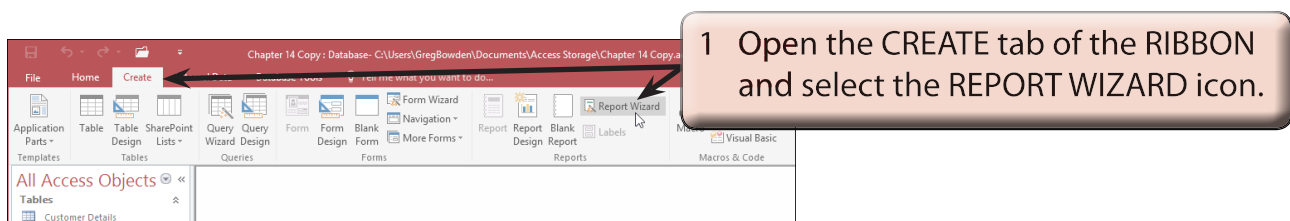
You will be using the invoice system from the previous chapter.

- 1 If your invoice system from the previous chapter worked well, open the file from your STORAGE folder.
- 2 If you would prefer to use a fresh fully operational file:
 - (A) Load Microsoft Access or close the current file and click on the FILE tab. Select OPEN OTHER FILES in the START window or OPEN in the BACKSTAGE VIEW.
 - (B) Access the CHAPTER 14 folder of the ACCESS 2016 SUPPORT FILES and open the CHAPTER 14 file as an OPEN READ-ONLY file.
 - (C) Click on the SAVE AS icon in the WARNING BAR under the RIBBON.
 - (D) Access your STORAGE folder and save the file as CHAPTER 14 COPY.
 - (E) Click on the ENABLE CONTENT button so that the data can be viewed.

Creating a Total Items Sold Report

A report can be created to show how many of each product has been sold. By doing this the company can see which products are selling well and which are not by the click of a mouse button.

A Starting the Report Wizard



Report Wizard

Which fields do you want on your report?
You can choose from more than one table or query.

Tables/Queries
Query: Line Items Query

Available Fields:
Invoice No
Product ID
Retail Price

Selected Fields:
Qty
Product Name
Amount

Buttons: Cancel, < Back, Next >, Finish

2 In the REPORT WIZARD dialogue box set the CHOOSE TABLE OR QUERY box to the LINE ITEMS QUERY.

3 Move the QTY, PRODUCT NAME and AMOUNT fields into the SELECTED FIELDS frame then click on NEXT.

Report Wizard

Do you want to add any grouping levels?

Qty
Amount

Product Name
Qty, Amount

Buttons: Grouping Options ..., Cancel, < Back, Next >, Finish

4 You will be asked about the grouping required. We want to list the totals for each product type so the PRODUCT NAME field is suitable. Select it in the left frame and move it into the GROUP frame. We will leave the GROUPING OPTIONS as normal, so click on NEXT.

Report Wizard

What sort order and summary information do you want for detail records?
You can sort records by up to four fields, in either ascending or descending order.

1 [] Ascending
2 [] Ascending
3 [] Ascending
4 [] Ascending

Summary Options ...

Buttons: Cancel, < Back, Next >, Finish

5 We won't need any sorting within the group in this case so click on the SUMMARY OPTIONS button.

Summary Options

What summary values would you like calculated?

Field	Sum	Avg	Min	Max
Qty	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amount	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

OK Cancel

☒ Detail and Summary
☐ Summary Only

☐ Calculate percent of total for sums

6 Set the QTY and AMOUNT fields to have their sums (sub-totals) calculated and click on OK.

Report Wizard

What sort order and summary information do you want for detail records?

You can sort records by up to four fields, in either ascending or descending order.

1	<input type="text"/>	Ascending
2	<input type="text"/>	Ascending
3	<input type="text"/>	Ascending
4	<input type="text"/>	Ascending

Summary Options ...

Cancel < Back Next > Finish

7 You will be returned to the SORT section of the REPORT WIZARD, click on NEXT.

Report Wizard

How would you like to lay out your report?

Layout

☒ Stepped
☐ Block
☐ Outline

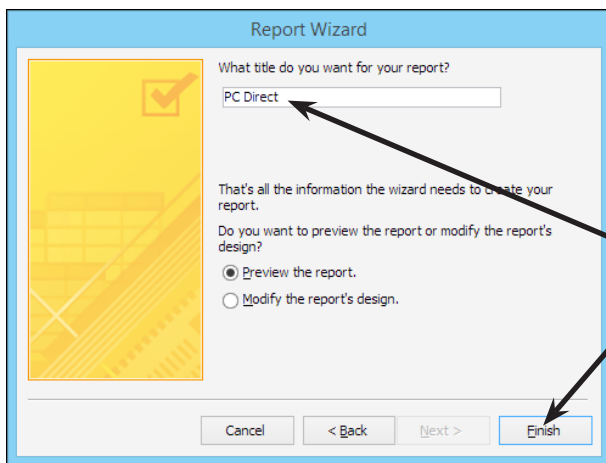
Orientation

☒ Portrait
☐ Landscape

☒ Adjust the field width so all fields fit on a page.

Cancel < Back Next > Finish

8 Select the STEPPED layout with PORTRAIT orientation and click on NEXT.



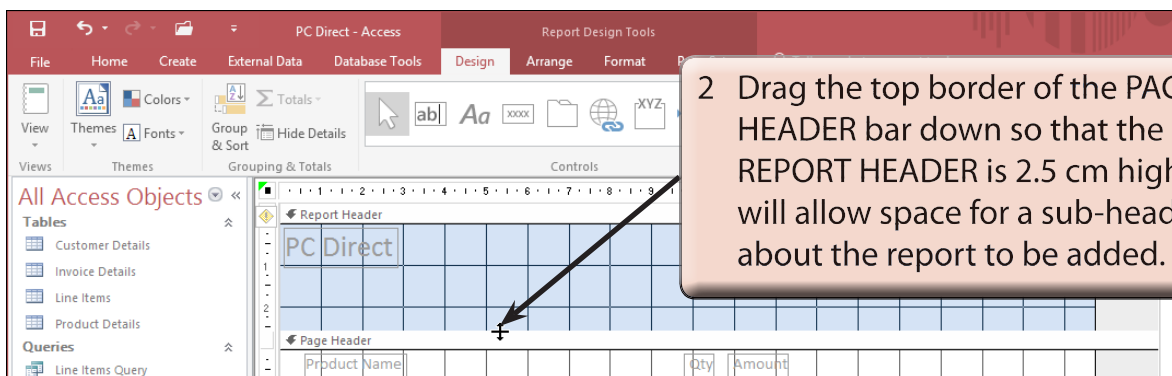
- 9 Enter the report title:
PC Direct
then click on the FINISH button to
create the report.

NOTE: The report title, PC Direct, will be placed as a heading in the report. It will also be the name under which the report is saved. It is not an appropriate name for the report, so we will alter it shortly.

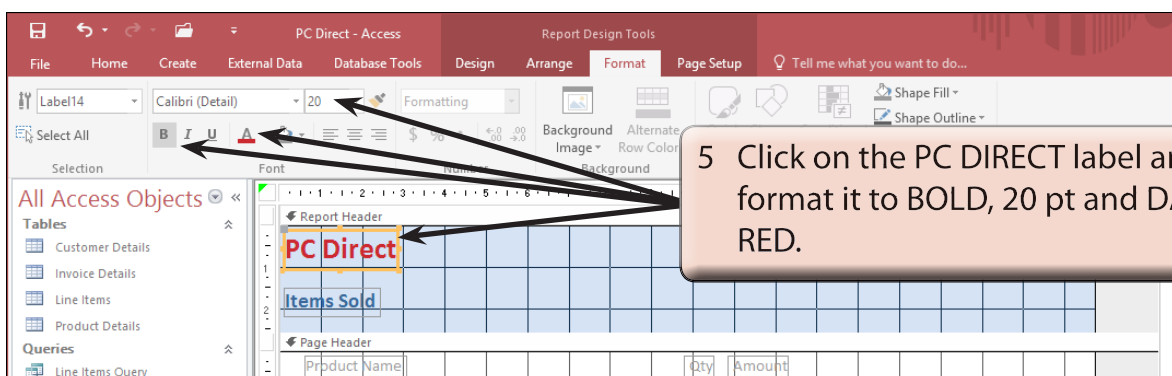
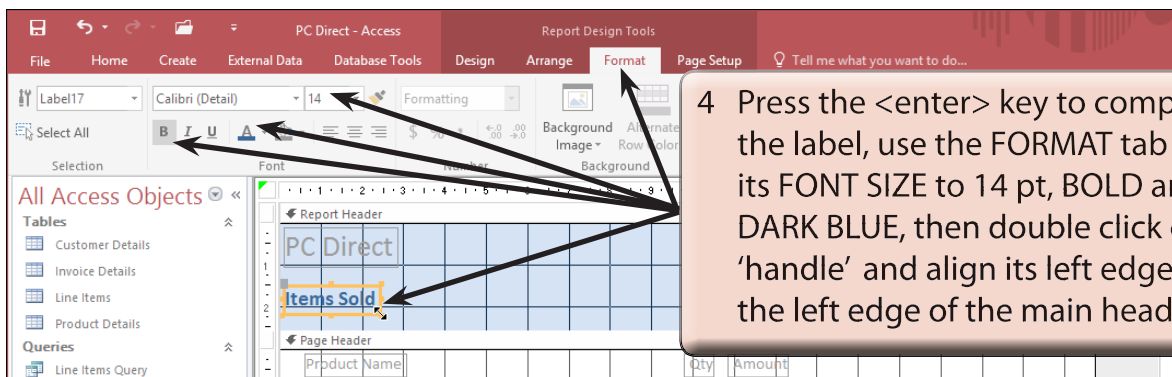
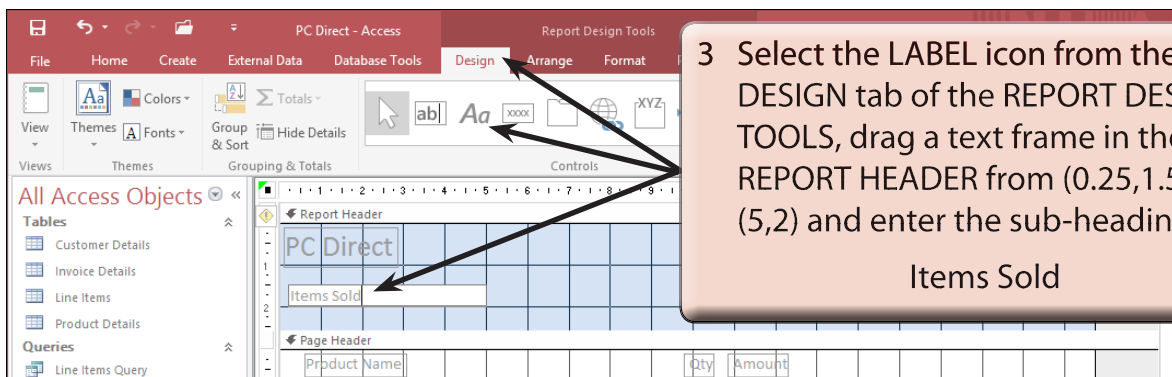
B Making the Total Items Sold Report More Concise

As with most Report Wizard generated reports, adjustments are required. If you look through the report you will see that the report is too detailed. We don't need to know the individual sales for each invoice, just the totals.

- 1 Close the preview to return the view to DESIGN VIEW.



- 2 Drag the top border of the PAGE HEADER bar down so that the REPORT HEADER is 2.5 cm high. This will allow space for a sub-heading about the report to be added.



- 6 To display the product name and its totals we need to place the PRODUCT NAME field in the PRODUCT NAME FOOTER section next to the sum calculation controls.

7 SHIFT+CLICK on the QTY and AMOUNT fields in the DETAIL section and delete them. Their labels in the PAGE HEADER should not be deleted.

8 Select the =SUMMARY FOR.....' label then SHIFT+CLICK on the SUM label at the top of the PRODUCT NAME FOOTER and delete them.

9 Select the PRODUCT NAME field in the PRODUCT NAME HEADER and press CTRL+X to cut it.

Enhancing Invoice Systems

Over the past three chapters you have developed quite an extensive database. Switchboard forms, macros and buttons can be added to the invoice system to allow it be fully usable by people with limited knowledge of Microsoft Access.

Loading the Sample File

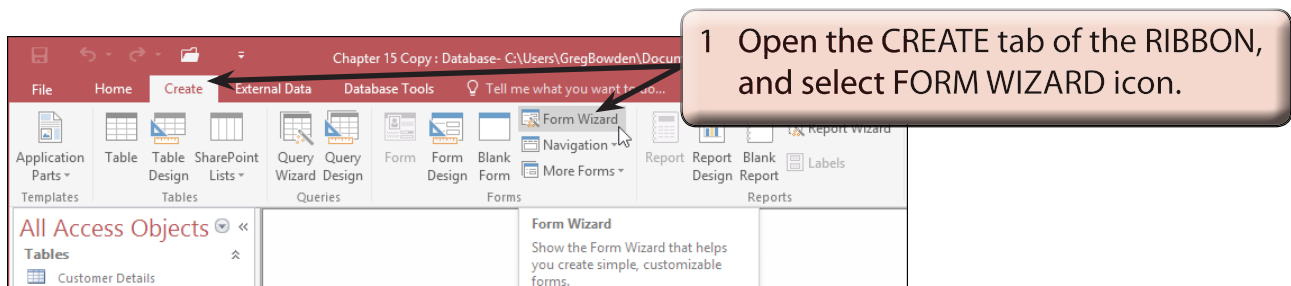
You will be using the invoice system from the previous chapter.

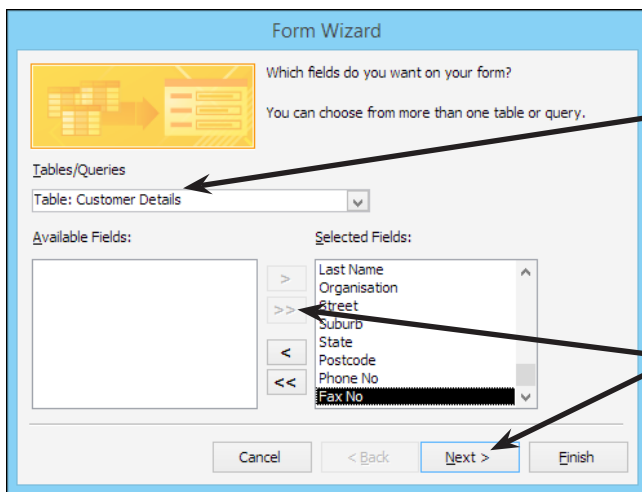
- 1 If your invoice system from the previous chapter worked well, load Microsoft Access and open the file from your STORAGE folder.
- 2 If you would prefer to use a fresh fully operational file:
 - (A) Load Microsoft Access or close the current file and click on the FILE tab. Select OPEN OTHER FILES in the START window or OPEN in the BACKSTAGE VIEW.
 - (B) Access the CHAPTER 15 folder of the ACCESS 2016 SUPPORT FILES and open the CHAPTER 15 file as an OPEN READ-ONLY file.
 - (C) Click on the SAVE AS icon in the WARNING BAR under the RIBBON.
 - (D) Access your STORAGE folder and save the file as CHAPTER 15 COPY.
 - (E) Click on the ENABLE CONTENT button so that the data can be viewed.

Creating a Customers Data Entry Form

At the moment there is only a table where new customers can be entered or existing customers modified. It would be far more effective to have a DATA ENTRY form to carry out this process. We will use the FORM WIZARD to create a very quick form.

A Creating the Form

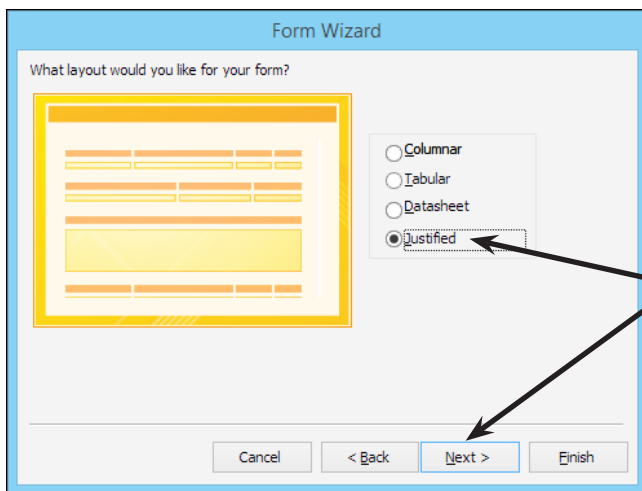




The Form Wizard dialog box is titled "Form Wizard". It asks "Which fields do you want on your form?" and "You can choose from more than one table or query." Below this, there is a "Tables/Queries" section with a dropdown menu showing "Table: Customer Details". To the right, there are two lists: "Available Fields" (empty) and "Selected Fields" (containing Last Name, Organisation, Street, Suburb, State, Postcode, Phone No, and Fax No). Arrows point from the "Table: Customer Details" dropdown and the "Selected Fields" list to callout boxes 2 and 3 respectively. At the bottom, there are buttons for "Cancel", "< Back", "Next >", and "Finish".

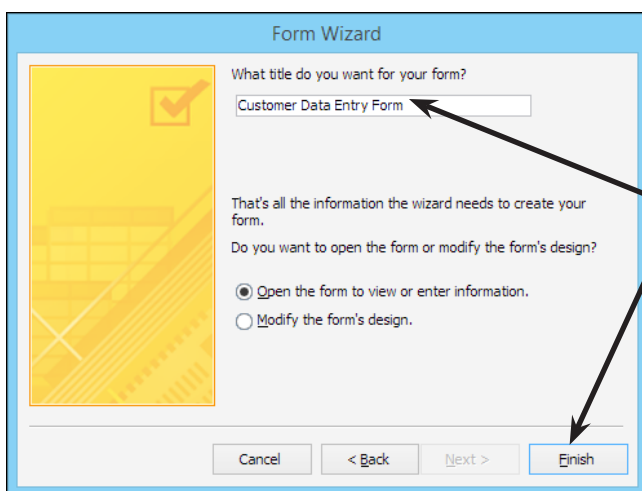
2 In the FORM WIZARD dialogue box set the CHOOSE TABLE OR QUERY box to the CUSTOMER DETAILS table.

3 Move all the fields into the SELECTED FIELDS frame and click on NEXT.



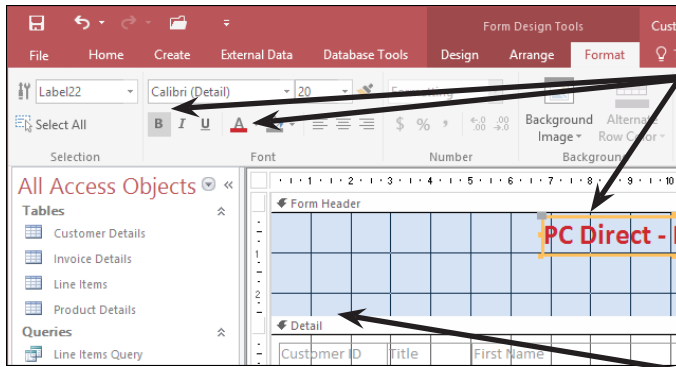
The Form Wizard dialog box is titled "Form Wizard". It asks "What layout would you like for your form?". On the left, there is a preview of a form layout. On the right, there are four radio button options: "Columnar", "Tabular", "Datasheet", and "Justified". The "Justified" option is selected. An arrow points from the "Justified" radio button to callout box 4. At the bottom, there are buttons for "Cancel", "< Back", "Next >", and "Finish".

4 Select the JUSTIFIED layout and click on NEXT.



The Form Wizard dialog box is titled "Form Wizard". It asks "What title do you want for your form?". On the left, there is a preview of a form layout with a checkmark icon. On the right, there is a text input field containing "Customer Data Entry Form". Below this, there is a message: "That's all the information the wizard needs to create your form. Do you want to open the form or modify the form's design?". There are two radio button options: "Open the form to view or enter information." (selected) and "Modify the form's design." At the bottom, there are buttons for "Cancel", "< Back", "Next >", and "Finish". An arrow points from the "Customer Data Entry Form" text input field to callout box 5.

5 Name the form:
Customer Data Entry Form
and click on the FINISH button to create the form.

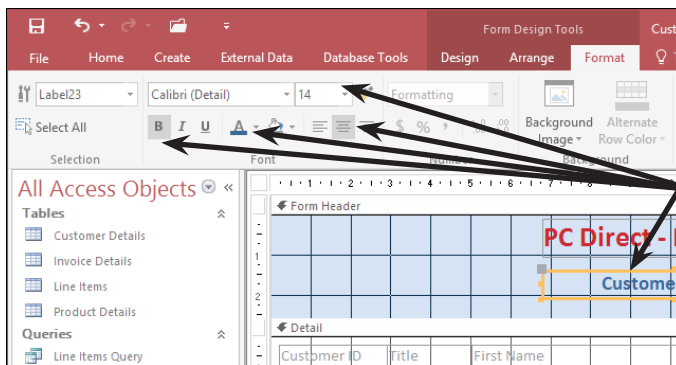


- 6 Set the view to DESIGN VIEW, adjust the heading to:

PC Direct - Mail Order

press <enter>, format it to BOLD, DARK RED, double click on a handle to enclose to text and centre it over the fields.

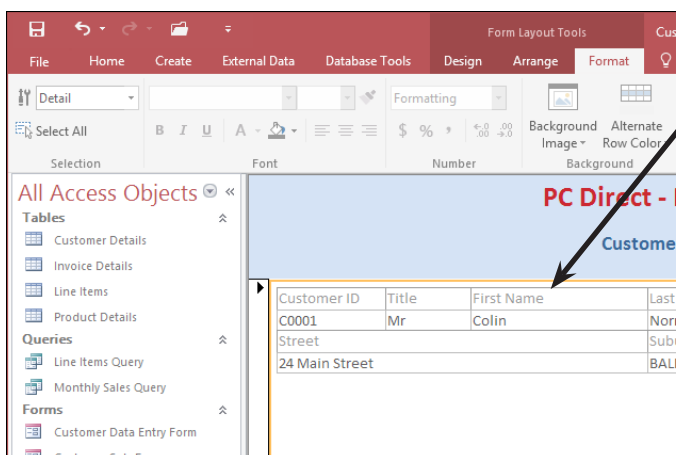
- 7 Increase the height of the FORM HEADER section to 2.5 cm by dragging the DETAIL border down.



- 8 Use the LABEL TOOL from the DESIGN tab to add a sub-heading label the width of the main heading called:

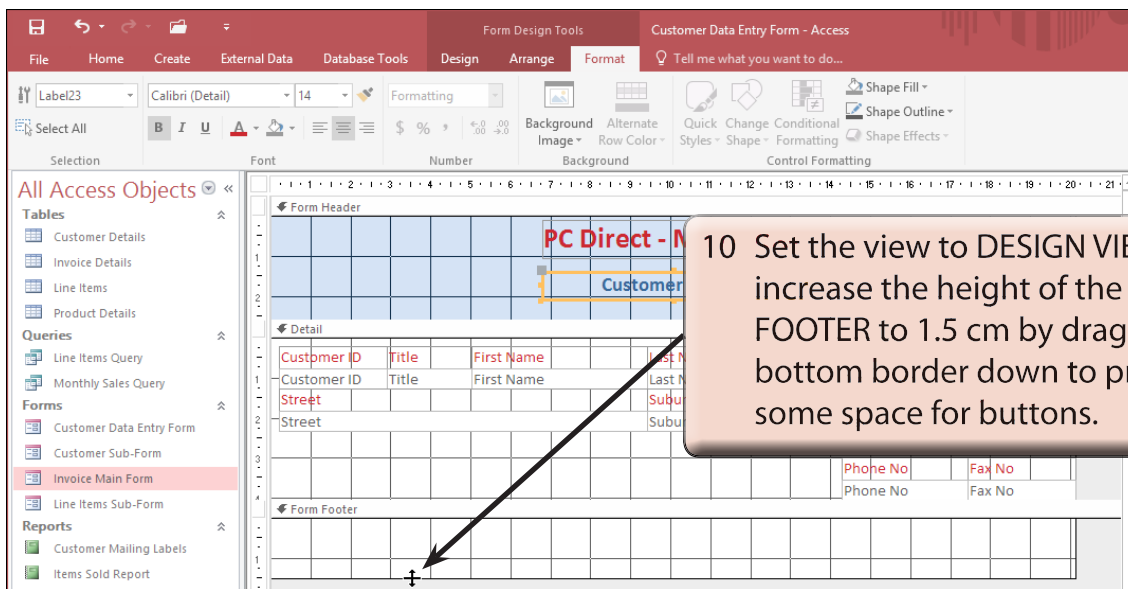
Customer Details

and format it to BOLD, 14 pt, DARK BLUE and CENTRE.



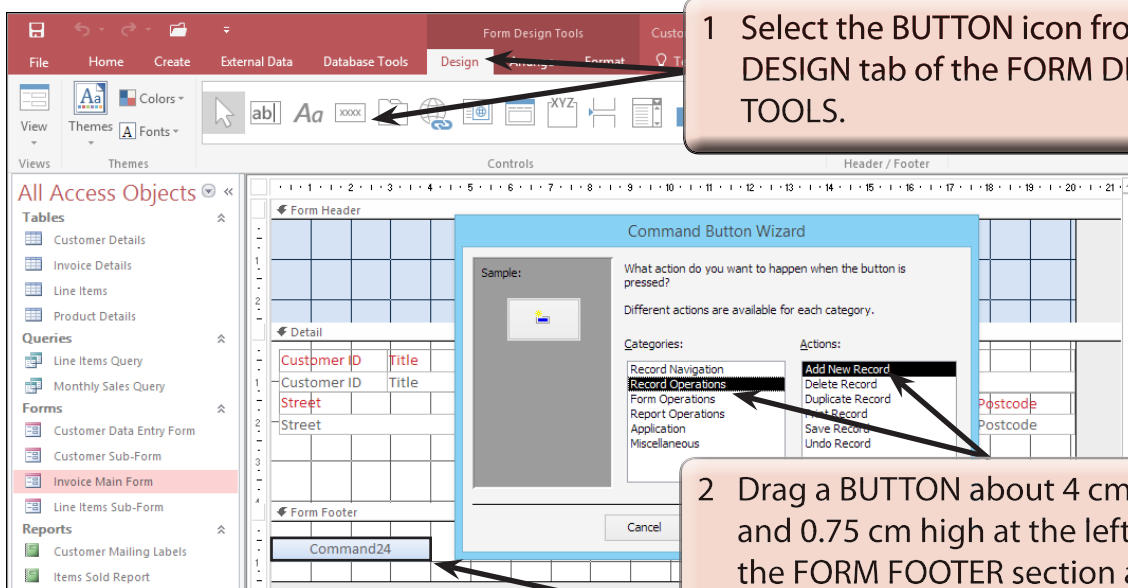
- 9 Set the view to LAYOUT VIEW and quickly adjust the field position and widths to make the layout more appealing, and set the POSTCODE, PHONE NO and FAX NO fields to be LEFT ALIGNED.

NOTE: You can SHIFT+CLICK on the field labels and set them to a colour if you wish to.

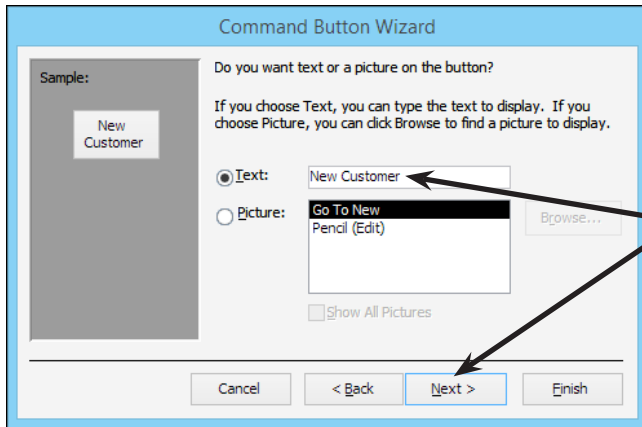


B Adding Buttons to the Form

Some buttons can be added to automate the common tasks of the form.

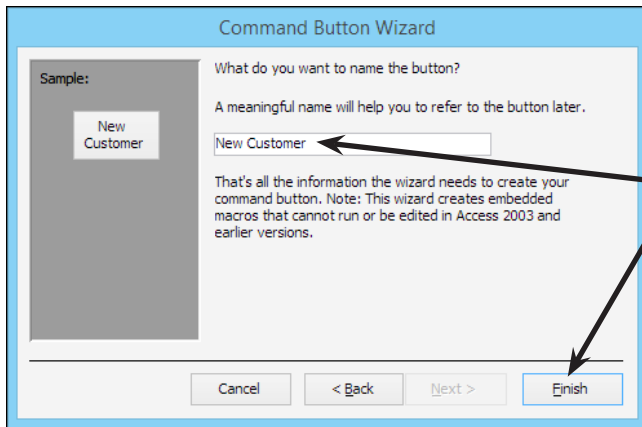


- 3 Click on the NEXT button to open the next section.



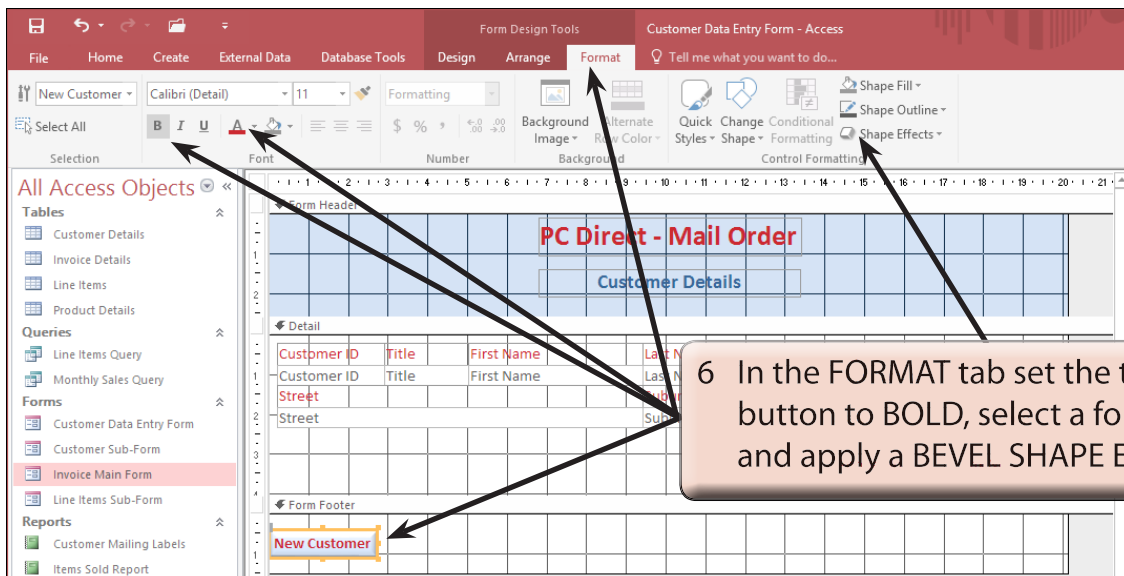
- 4 Make the button a TEXT button with the text label:

New Customer
and click on NEXT.

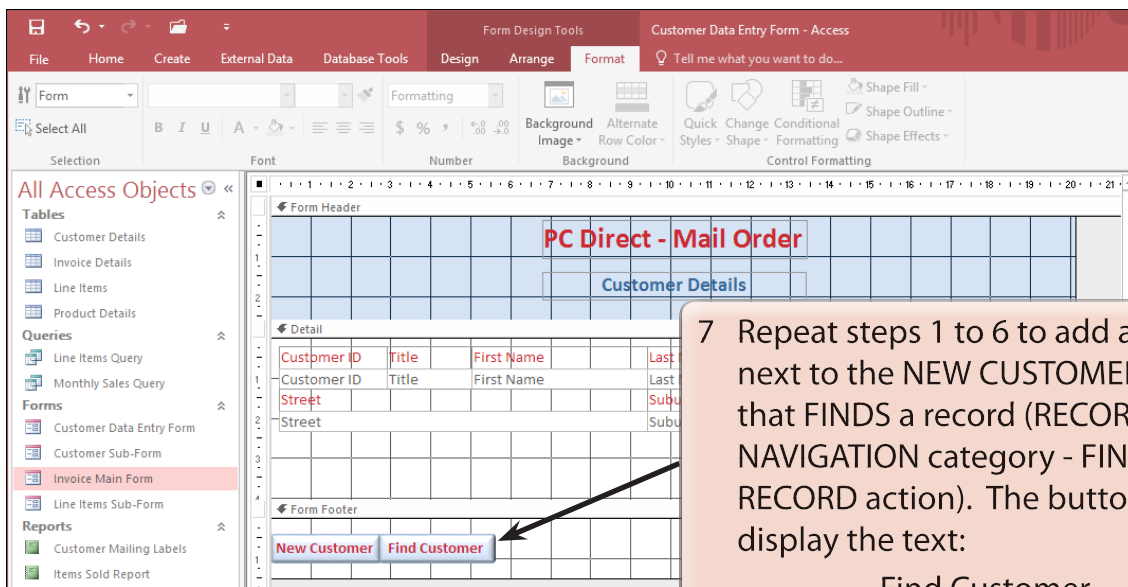


- 5 Name the button:

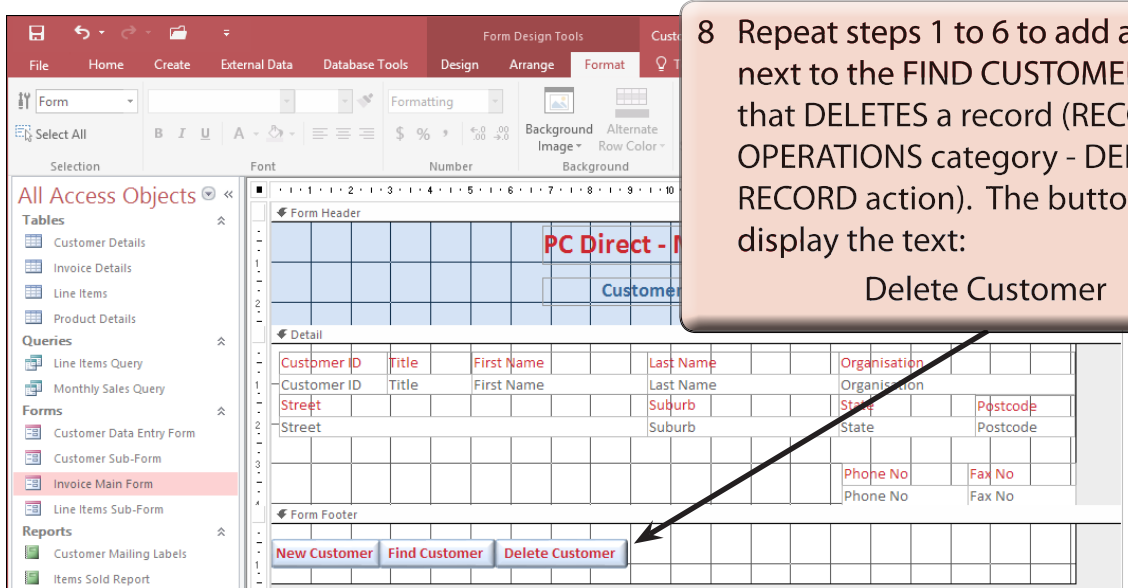
New Customer
and click on the FINISH button.



- 6 In the FORMAT tab set the text in the button to BOLD, select a font colour and apply a BEVEL SHAPE EFFECT.



NOTE: You can use the **FORMAT PAINTER** icon from the **FORMAT** tab to apply the formats from the first button to the second button.



Useful Tools

Microsoft Access provides numerous useful tools that can be used in your databases. In this chapter we will look at creating tabbed data-entry forms, finding duplicate entries in a database and using database templates.

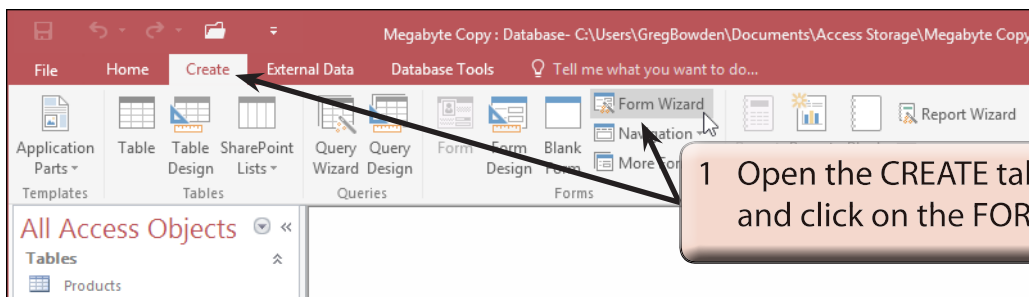
Loading the Sample File

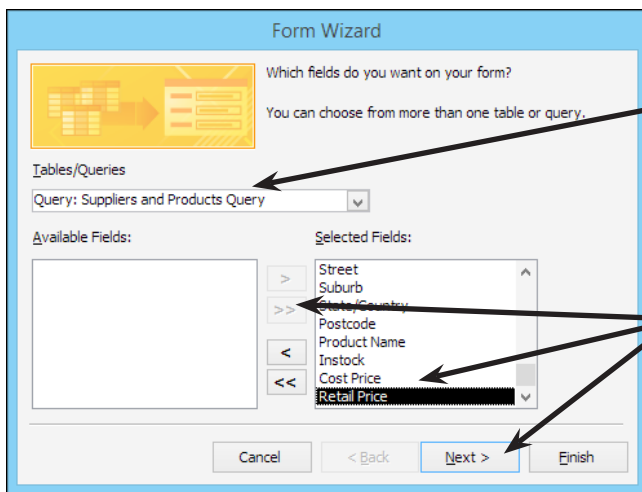
- 1 Load Microsoft Access or close the current file and click on the FILE tab. Select OPEN OTHER FILES in the START window or the OPEN icon in the BACKSTAGE VIEW.
- 2 Access the CHAPTER 16 folder of the ACCESS 2016 SUPPORT FILES and open the MEGABYTE file as an OPEN READ-ONLY file.
- 3 Click on the SAVE AS icon in the WARNING BAR under the RIBBON.
- 4 Access your STORAGE folder and save the file as MEGABYTE COPY.
- 5 Click on the ENABLE CONTENT button so that the data can be viewed.

Creating Form Tabs

You have created data entry screens before and they are a valuable tool for the accurate entering of data in a database system. Sometimes it is not possible to place all the data in one form, so FORM TABS can be used to show groups of fields and include more data within the one form.

A Creating the Form

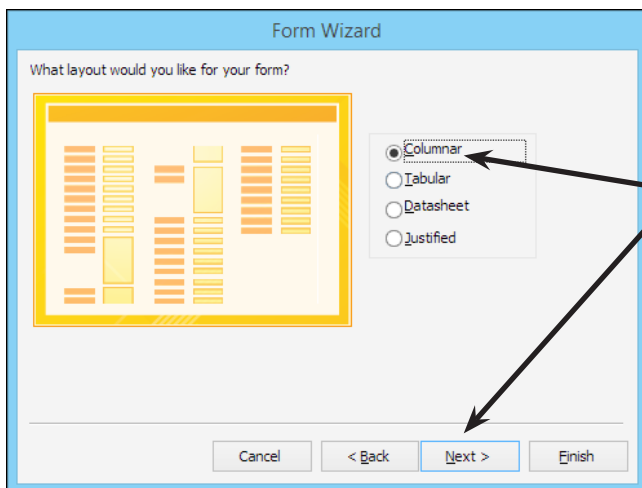




The Form Wizard dialog box is shown at Step 1. The title is "Form Wizard". The question is "Which fields do you want on your form?". Below this, it says "You can choose from more than one table or query." The "Tables/Queries" dropdown menu is set to "Query: Suppliers and Products Query". The "Available Fields" list is empty. The "Selected Fields" list contains: Street, Suburb, State/Country, Postcode, Product Name, Instock, Cost Price, and Retail Price. The "Next >" button is highlighted.

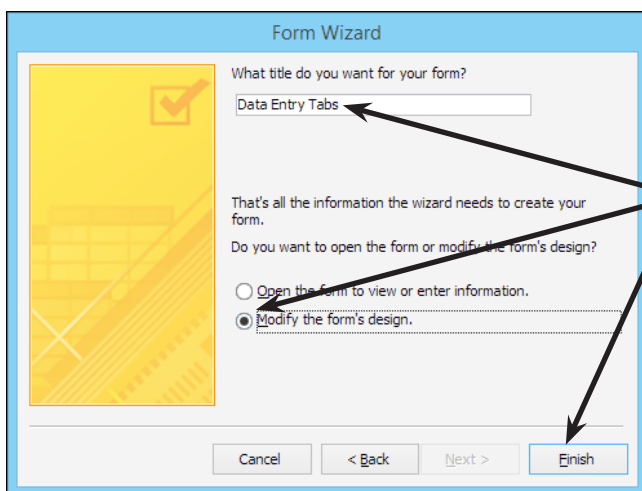
2 Set the TABLE OR QUERY box to the SUPPLIERS AND PRODUCTS QUERY.

3 Move all the fields into the SELECTED FIELDS frame and click on NEXT.



The Form Wizard dialog box is shown at Step 2. The title is "Form Wizard". The question is "What layout would you like for your form?". There are four layout options: Columnar (selected), Tabular, Datasheet, and Justified. The "Next >" button is highlighted.

4 Leave the COLUMNAR layout selected and click on NEXT.



The Form Wizard dialog box is shown at Step 3. The title is "Form Wizard". The question is "What title do you want for your form?". The text box contains "Data Entry Tabs". Below this, it says "That's all the information the wizard needs to create your form." and "Do you want to open the form or modify the form's design?". There are two radio button options: "Open the form to view or enter information." (unselected) and "Modify the form's design." (selected). The "Finish" button is highlighted.

5 Name the form:

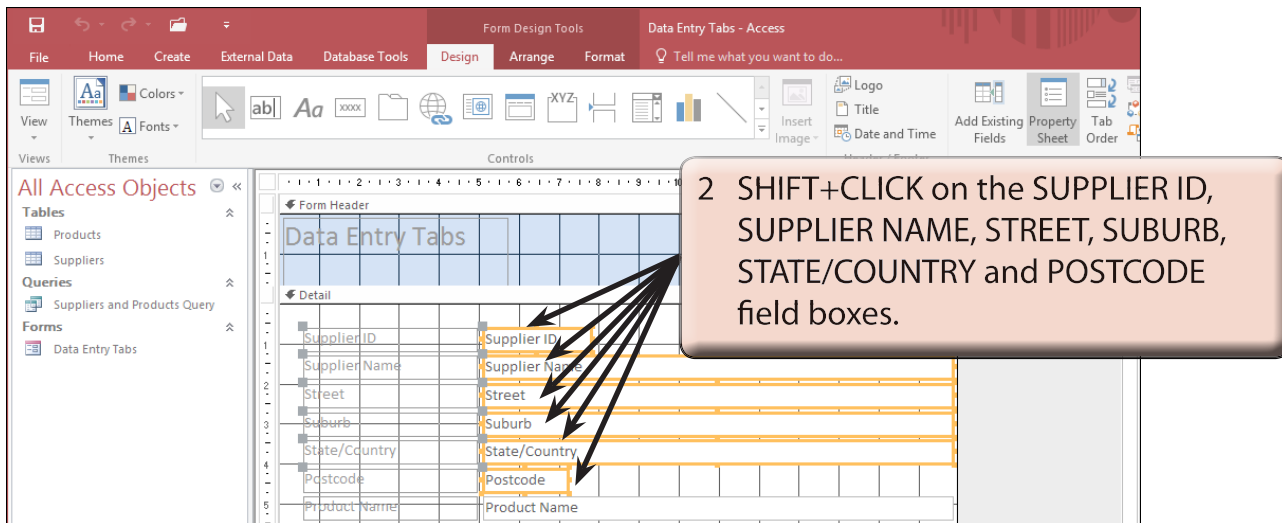
Data Entry Tabs

Click on the MODIFY THE FORM'S DESIGN radio button followed by FINISH to open the form in DESIGN VIEW.

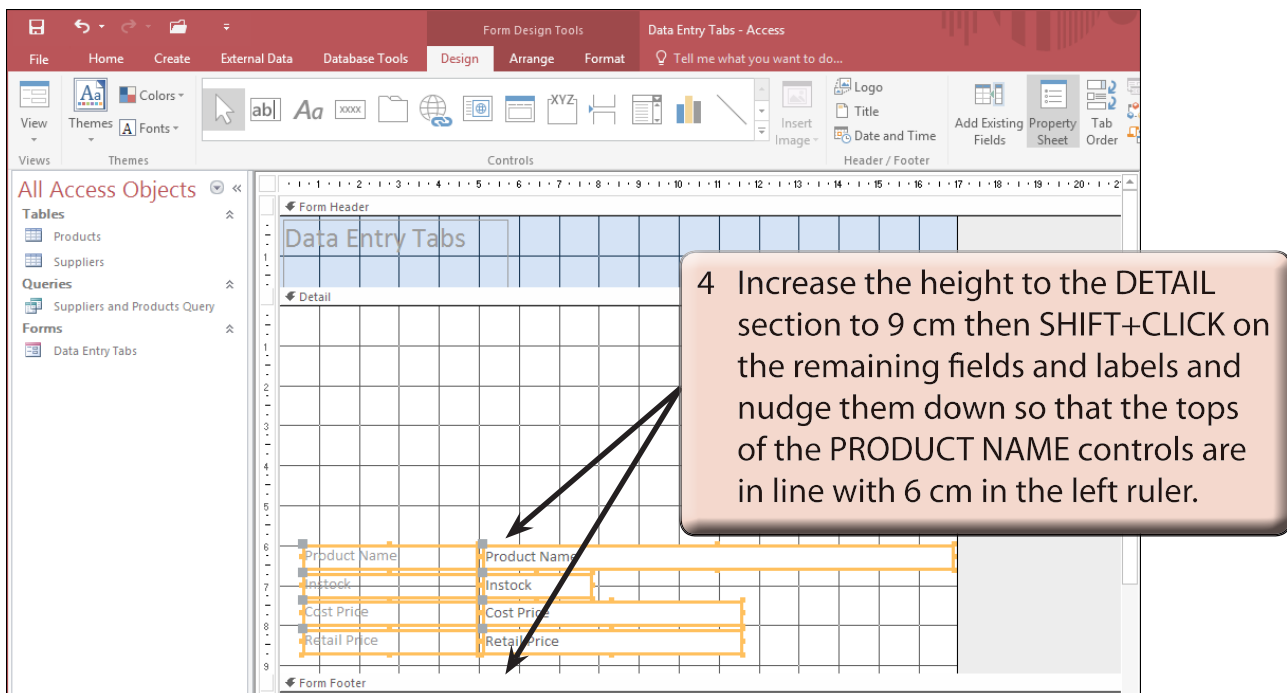
B Creating the Tab Controls

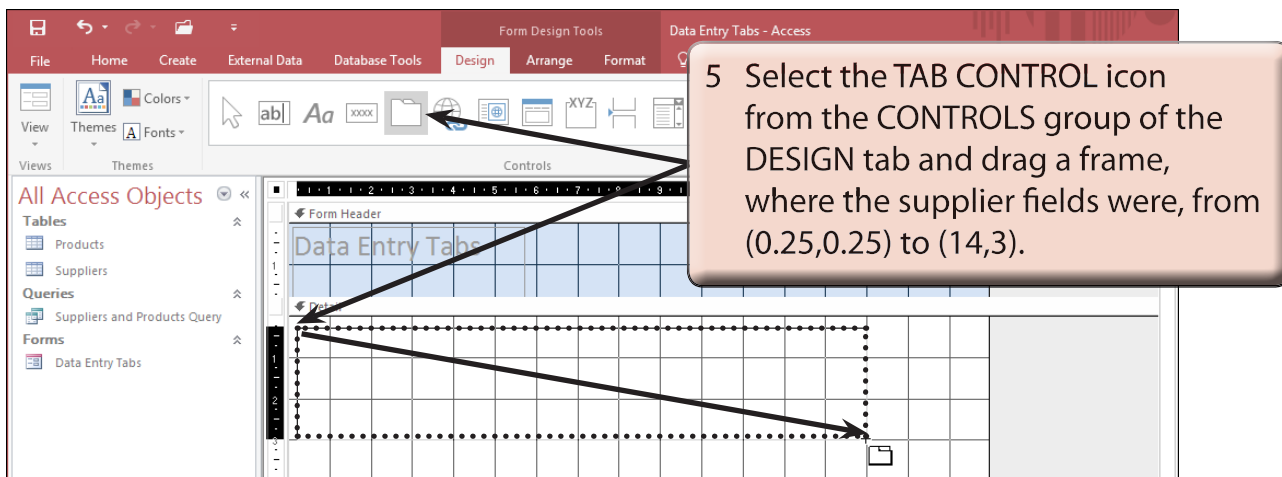
We are going to create two 'cards' that will make up the form, one for the supplier details, the other for the product details.

- 1 The form should be opened in DESIGN VIEW. Maximise the window.

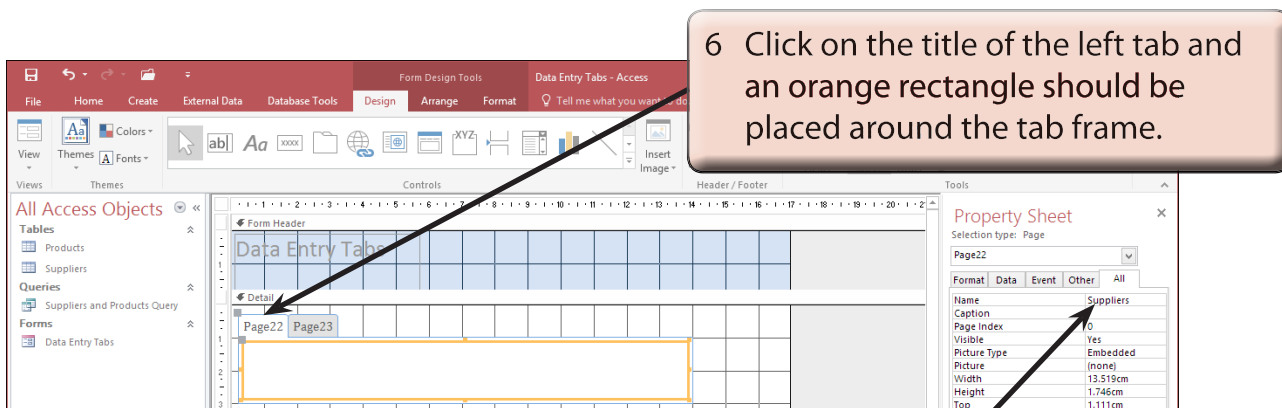


- 3 Press CTRL+X to cut the controls from the form.





NOTE: By default two tabs are provided, however, you can add more tabs as you will see shortly.



7 The tab can be renamed. In the PROPERTY SHEET pane open the ALL tab, set the NAME box to:

Suppliers

and press the <enter> key to set it.