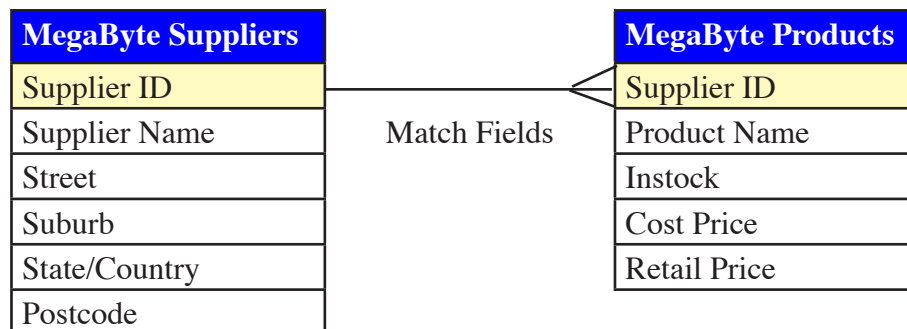# Applying Relational Database Features

As a database system becomes more involved, it is advantageous to split the system up into tables and to have these 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 price, 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.

MegaByte Suppliers		MegaByte Products
Supplier ID		Supplier ID
Supplier Name	Match Fields	Product Name
Street		Instock
Suburb		Cost Price
State/Country		Retail Price
Postcode		

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. The SUPPLIER ID field in this table is termed the FOREIGN KEY. The SUPPLIERS table can be considered to be the PARENT table and the PRODUCTS table the CHILD table.
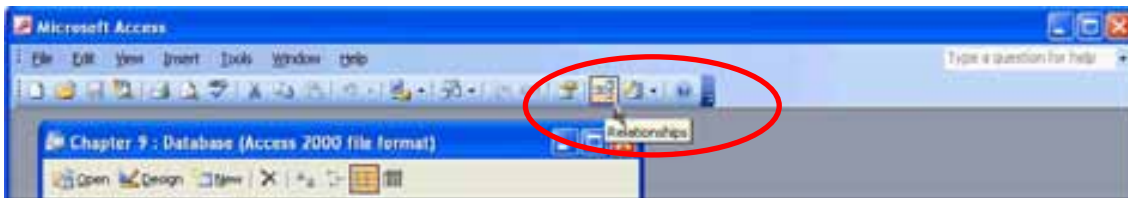
Loading the Sample File

1   Copy the CHAPTER 9 folder from the ACCESS SUPPORT FILES to your ACCESS STORAGE folder. Refer to pages 2-1 and 2-2 if you have forgotten how to do this.

2   Load Microsoft Access and click on the OPEN button in the *toolbar*, or close the current file and click on the OPEN button in the *toolbar*.

3   Access your ACCESS STORAGE folder and open the CHAPTER 9 folder.

4   Open the CHAPTER 9 file.

5   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.

6   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.

7   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   Return to the DATABASE WINDOW and click on the RELATIONSHIPS button in the *toolbar*.
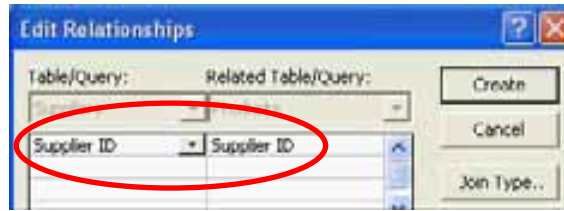

2   In the SHOW TABLE dialogue box, select the SUPPLIERS table and click on the ADD button to add it to the RELATIONSHIPS dialogue box.

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

4   Close the SHOW TABLE dialogue box.

5   Move the *pointer* over the SUPPLIER ID field in the SUPPLIERS table (this is the PRIMARY KEY field and it is displayed in bold). Hold down the mouse button and drag the SUPPLIER ID bar over the SUPPLIER ID field in the PRODUCTS table (this

is the FOREIGN KEY field). The relationship should be created and displayed in the EDIT RELATIONSHIPS dialogue box.
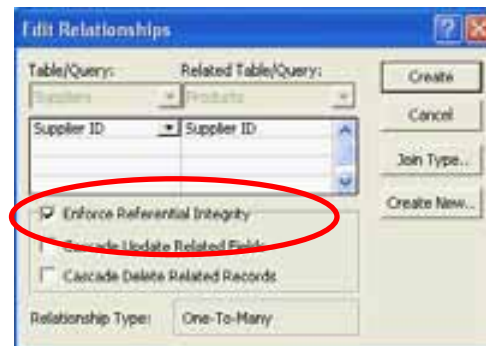
NB: The FOREIGN KEY field can be any field that has the same values as the PRIMARY KEY field. It is normal practice to try to set the FOREIGN KEY field to have the same name as the PRIMARY KEY field.

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

7   Select OK to set the JOIN TYPE. Click on the ENFORCE REFERENTIAL INTEGRITY check box in the EDIT RELATIONSHIPS dialogue box. This 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.

8   Click on the CREATE button to create the relationship.

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

NB: 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 key.

10   Close the RELATIONSHIPS dialogue box and select YES to SAVE CHANGES?

11   You should be returned to the DATABASE WINDOW.

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.

1   Display the FORMS frame, click on SUPPLIERS MAIN FORM and click on the DESIGN button to open the form in DESIGN VIEW.

2   Maximise the screen.
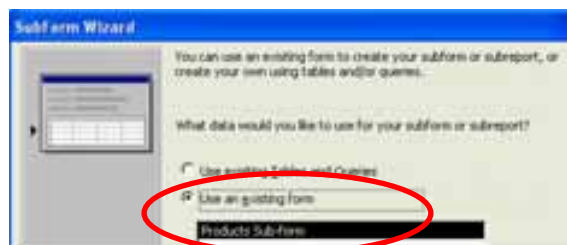
A   Setting the Sub-Form Frame

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.

1   Check that the CONTROL WIZARD button is on in the TOOLBOX then click on the SUBFORM/SUBREPORT tool 🔳 .

2   Drag a frame from (0.25,6) to (14,10). When you release the mouse button the SUBFORM/SUBREPORT wizard should be activated.
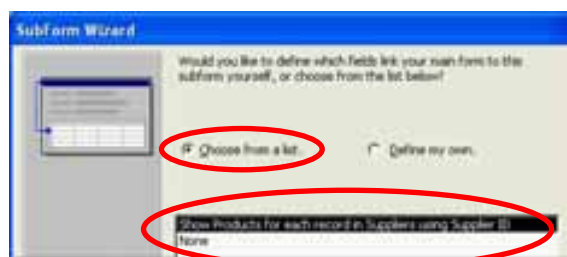
B   Setting the Wizard Options

The SUBFORM/SUBREPORT wizard will ask you a series of questions in order to create the sub-form.

1   The first question asks you which form, table or query should be used. Click on the USE AN EXISTING FORM radio button and the box below it should highlight the PRODUCTS SUB-FORM.
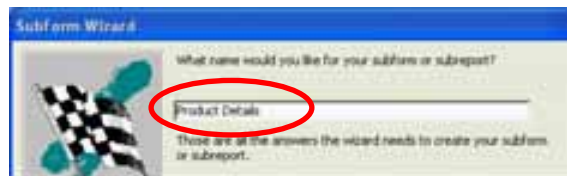

2   Click on the NEXT button and you will be asked about the linking required. We want to show products for each supplier using the SUPPLIER ID field. Leave CHOOSE FROM A LIST selected and SHOW PRODUCTS FOR EACH RECORD IN SUPPLIERS USING SUPPLIER ID should be highlighted.

3 Click on the NEXT button and you will be asked to name the sub-form. Enter:
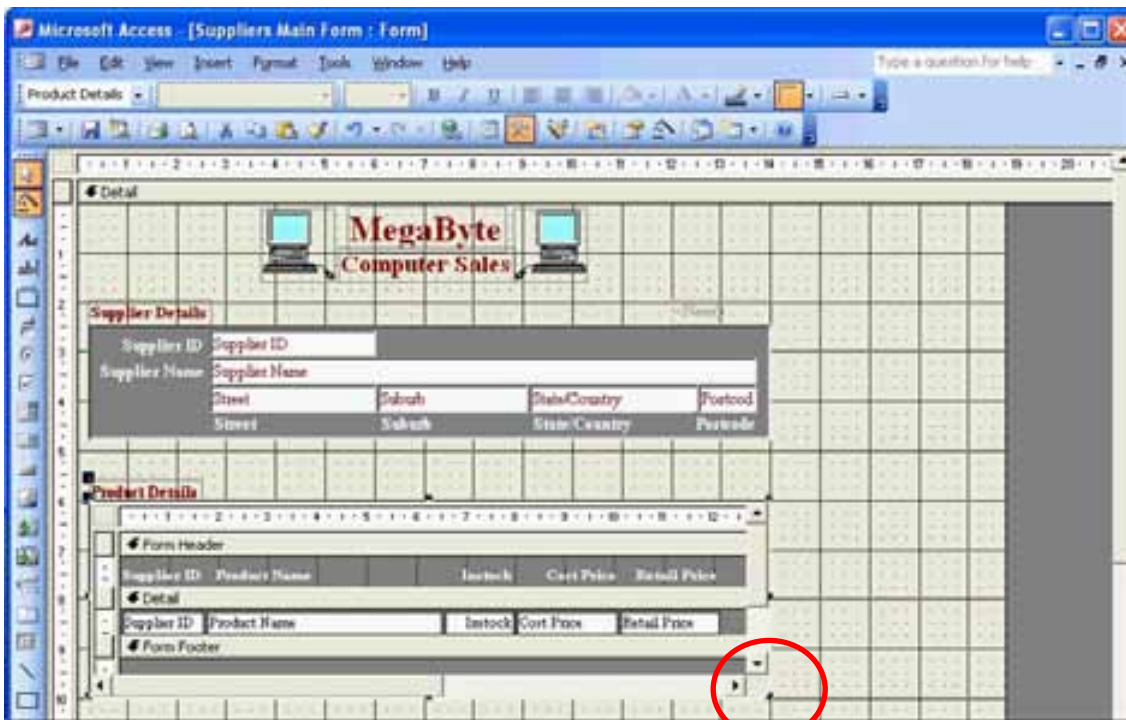
Product Details

and click on the FINISH button to complete the sub-form.

C Adjusting the Sub-Form

The sub-form frame will be enlarged so it will need to be re-aligned with the rectangle above it.

1 Use the bottom right size 'handle' to return the bottom right corner of the frame to (14,10).

2 Use the move 'handle' for the PRODUCT DETAILS label above the sub-form frame to move that control up so that its top edge is in line with 5.5 cm in the left ruler. This will add more space between the label and the sub-form.

D Looking at the Form

1 Set the screen to FORM VIEW and notice that details from the two tables are now displayed in the one form as shown in the diagram at the top of the next page.