Chapter 11

Applying Relational Database Features

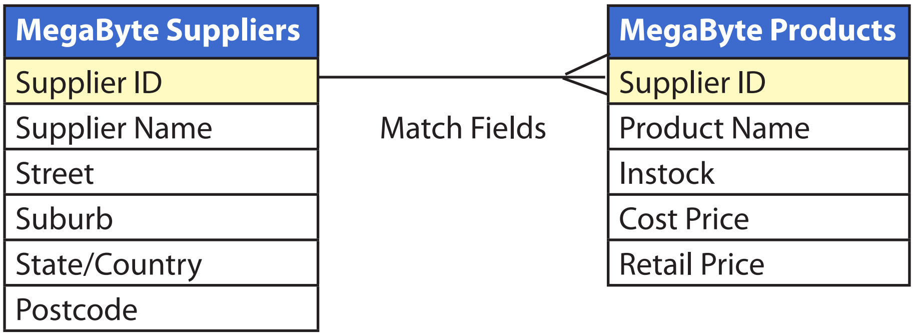
As a database system becomes more involved, it is advantageous to split the system up into numerous tables and to have those tables linked so that when data is updated in one table the data in any RELATED tables is also updated. This is the major value of relational database packages such as Microsoft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

MegaByte Products
Supplier ID
Product Name
Instock
Cost Price
Retail Price

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

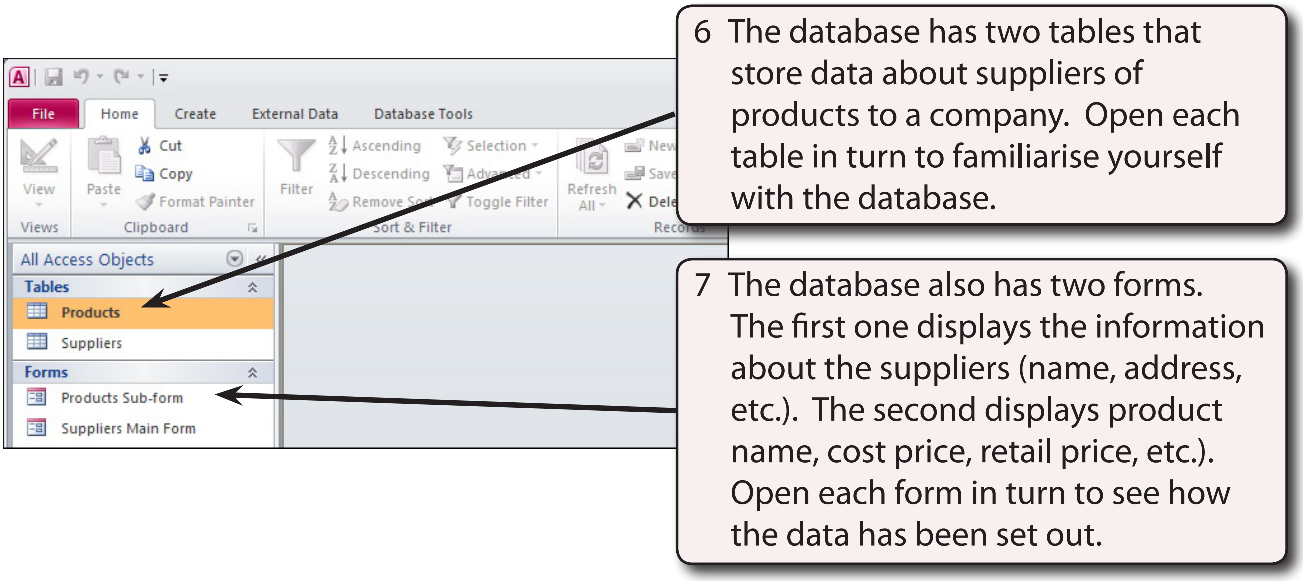
1 Load Microsoft Access or close the current database and click on the OPEN icon in the BACKSTAGE VIEW.

2 Access the CHAPTER 11 folder of the ACCESS 2010 SUPPORT FILES and open the CHAPTER 11 file as an OPEN READ-ONLY file.

3 Click on the FILE tab and select SAVE DATABASE AS.

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.



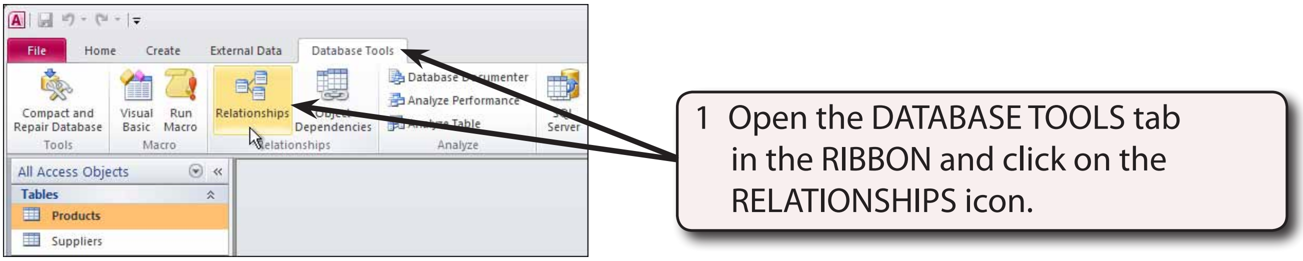
6 The database has two tables that store data about suppliers of products to a company. Open each table in turn to familiarise yourself with the database.

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.

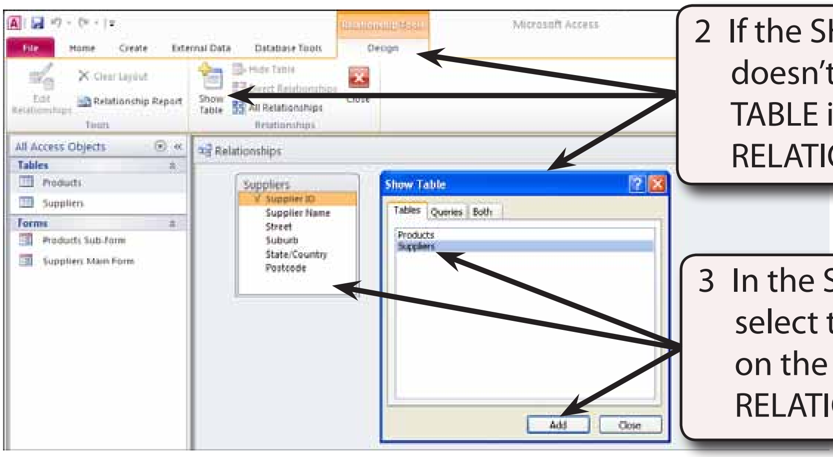
8 We are going to combine the information from the two forms into the one form so that this one form can be used to maintain the database.

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.

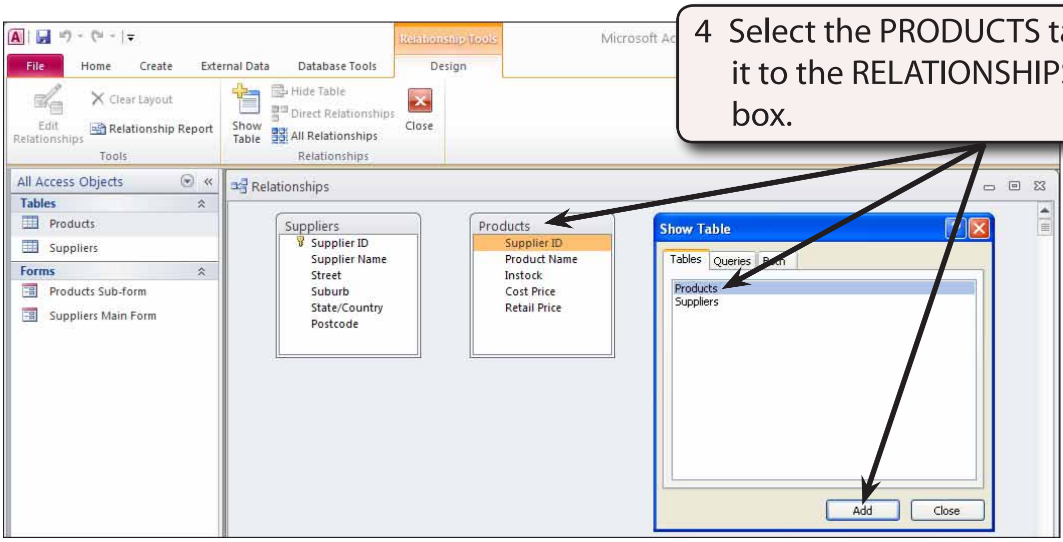


1 Open the DATABASE TOOLS tab in the RIBBON and click on the RELATIONSHIPS icon.



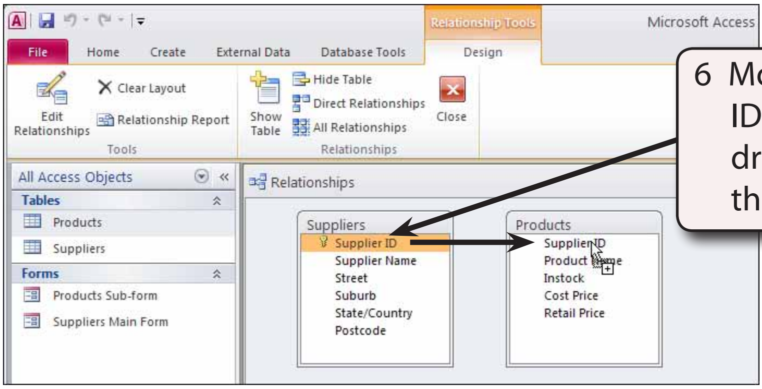
2 If the SHOW TABLE dialogue box doesn't open, click on the SHOW TABLE icon in the DESIGN tab of the RELATIONSHIP TOOLS.

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.

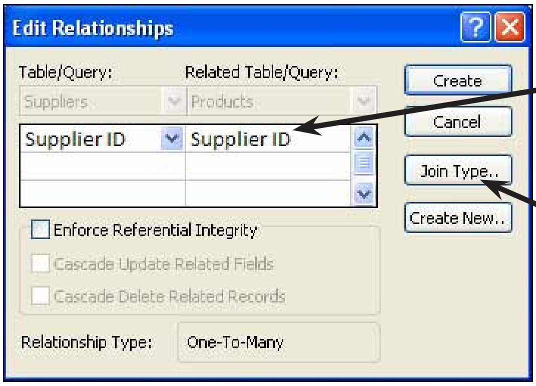
5 Close the SHOW TABLE dialogue box.



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.



Table/Query: Suppliers
Related Table/Query: Products

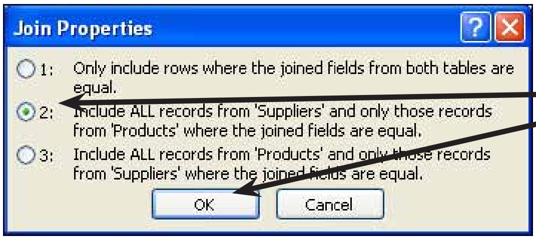
Supplier ID	Supplier ID

□ Enforce Referential Integrity
□ Cascade Update Related Fields
□ Cascade Delete Related Records

Relationship Type: One-To-Many

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.

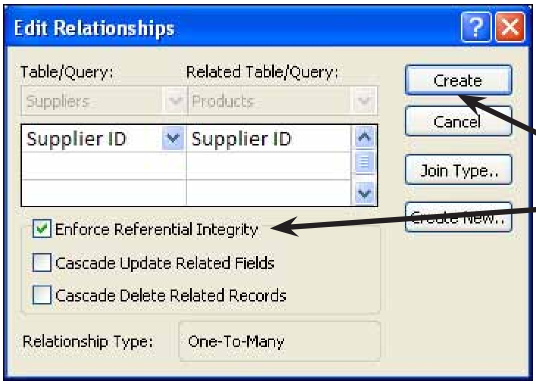


○ 1: Only include rows where the joined fields from both tables are equal.

● 2: Include ALL records from 'Suppliers' and only those records from 'Products' where the joined fields are equal.

○ 3: Include ALL records from 'Products' and only those records from 'Suppliers' where the joined fields are equal.

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.



Table/Query: Suppliers
Related Table/Query: Products

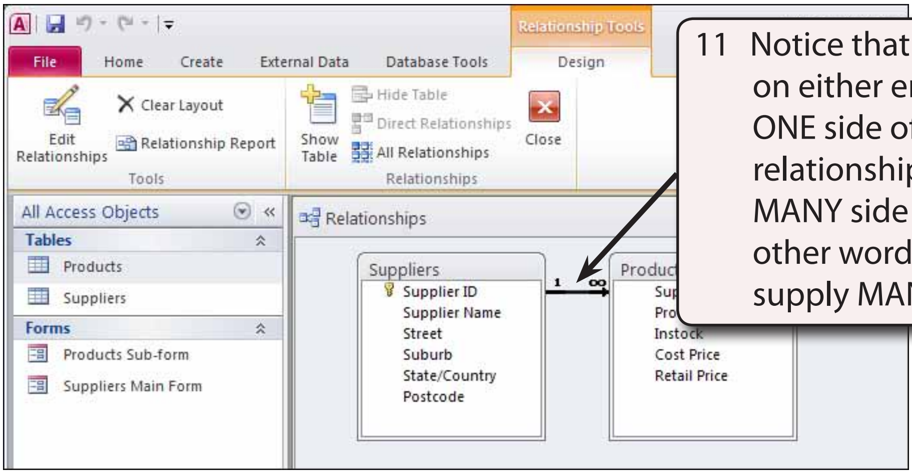
Supplier ID	Supplier ID

☑ Enforce Referential Integrity
□ Cascade Update Related Fields
□ Cascade Delete Related Records

Relationship Type: One-To-Many

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

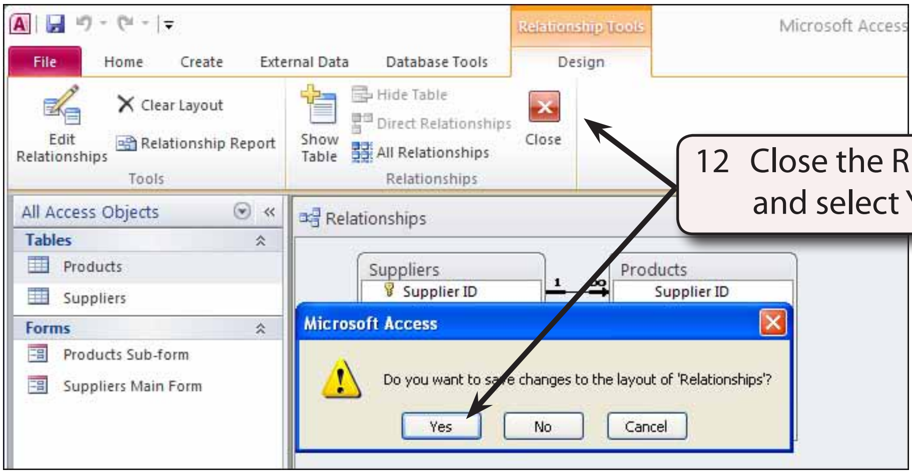
NOTE: ENFORCE REFERENTIAL INTEGRITY ensures that data in both tables is kept consistent. For example, you would not be able to enter a product from a supplier that is not in the SUPPLIERS table.



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.



Do you want to save changes to the layout of 'Relationships'?

12 Close the RELATIONSHIPS window and select YES to SAVE CHANGES?