CONTENTS

INTRODUCTION

This introductory level course is aimed at those who want to learn how to create a database using Microsoft Access 2010. You will create a simple relational database, input a small amount of data into the tables, and retrieve specific information from the database.

Knowledge assumed

experience of using a computer, for example keyboard and mouse familiarity
experience of using Windows
experience of using the Office 2010 ribbon

Areas covered

creating a table
entering data
relationships
creating queries
creating simple forms
producing simple reports

European Computer Driving Licence (ECDL)

If you are undertaking the ECDL Database unit, this document covers all of the assessment objectives.

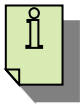
You may also like to enrol for the on-line training for ECDL which is available through your Blackboard account. For enrolment information, contact the IT Training Office on (0116) 257 7160.

Document signposts

Instructions for you to type

Bold text

Shortcuts



Reminders

Notes

Exercises

DATABASE CONCEPTS

WHAT IS A DATABASE?

A database is defined as an organised collection of related data. It can be regarded as an electronic filing system that can hold thousands, even millions, of items of information.

As you design the tables that hold the data, you specify what type of data will be stored, for example, a date, text, number etc.

The huge advantage of a database is that, once the data has been entered, you can query it to extract information in seconds rather than the hours it might take you if it were stored in a manual system.

Creating a really effective relational database is a job for an expert. This course does not aspire to those levels, but will provide you with sufficient expertise to produce the kind of database that you might find useful for saving information for inclusion in a report or mail merge.

HOW IS A DATABASE ORGANISED?

A database is organised into tables, records, and fields.

A **table** is a collection of data about a specific topic, such as course delegates or equipment. Using a separate table for each topic means that you store that data only once. This results in a more efficient and flexible database and reduces the possibility of data-entry errors. A database may consist of one or many tables.

Tables organise data into columns (called **fields**) and rows (called **records**).

For example, each **record** in a 'course delegates' table will contain all the information about an individual delegate, such as ID number, last name, first name, department etc. Each **field** in that table contains the same type of information for each delegate, such as last name. A field should only contain one element of data.

A **query** is used to extract and analyse data.

A **report** is a way to present and print selected information.

A **form** is used to view, enter and edit data in the database in a format that is more convenient and user-friendly than a table.

A **relationship** is a link between information in one table and information in another table.

WHAT IS A PRIMARY KEY?

In order to set up a relationship between two tables and show how information in one relates to information stored in the other, you need to identify a field in one of the tables where the data will be unique for every record.

This field is called the key field or primary key field and is usually referred to as the primary key.

WHAT IS AN INDEX?

When a field is set to be indexed, the database attaches an indexing structure to the field; this makes it quicker to perform searches on the field.

The primary key of a table is automatically indexed.

You should be aware that Access updates all of its indexes every time you add or update a record. Because of this, you should ensure that you only use indexes where you really need to, otherwise you will find the entering and editing of data slows down considerably.

PLANNING AND DESIGNING A DATABASE

Before you create a database you must give it a lot of thought and make a plan as to how you will construct it. There are obviously some questions you need to ask:

- Why do I need this database? What will I use the data for?
- Is there an existing database that I could use?
- What data is to be included and should it be split into several related tables?
- How will the data be divided into fields, and will any of these contain a unique value that could be used as a primary key field?
- What will the data types be: text, numbers, currency, etc?
- What properties am I likely to define for each field when I am creating the tables?
- How will the tables be related?
- What forms, queries and reports will I need?

A very important point to remember is that, while data entered in separate fields can always be brought together again in a report, data entered in a single field cannot be split.

For example, if you input a person's title, first name or initial, and last name in a single field, say Mrs Joanna Smith, the data will always be displayed in that form. You cannot decide later that you would like to use individual components, say Joanna or Smith on their own.

It is advisable to have three separate fields (title, first name, last name) which you can join together in various combinations: Mrs Joanna Smith, Mrs Smith, Joanna Smith, Dear Joanna, or Dear Mrs Smith.

RELATIONAL DATABASES

As you determine the purpose of the database, a list of information you want from it will begin to emerge.

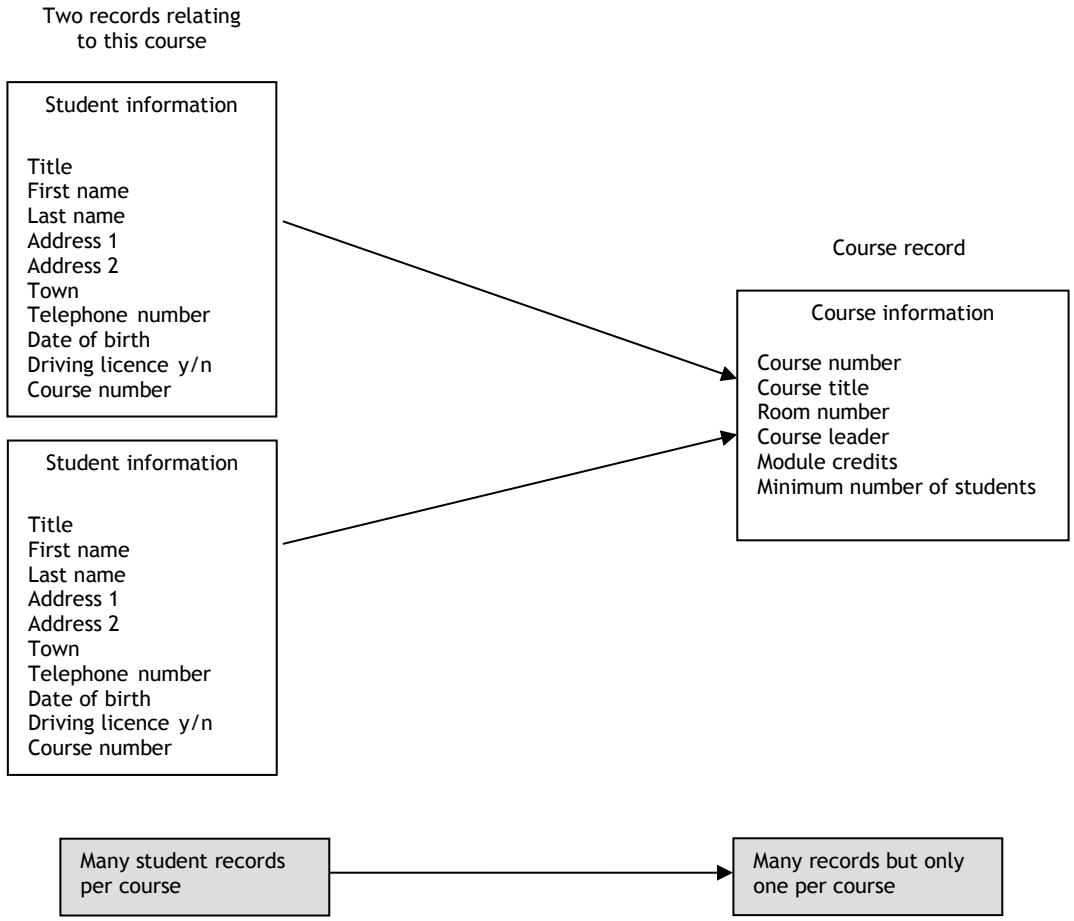
When you plan the database, you will no doubt start by listing all of the fields that you need to store the data. If it is a very simple database, you can probably manage with a single table.

However, if you try to fit a more complex database into just one table, you will find that you are repeating some of the data.

For example, you might set up a database to record the courses that students are enrolled on. It is reasonable to assume that many students will be enrolled on each course. If you have a single table, you will be endlessly repeating the course details for each student. It is much better to have two tables: one for the course details, and one for the student details. You then create a **relationship** between the tables.

If you have two or more tables linked by a relationship, you must have a field in each table that holds information that can be used to create the relationship. One of these fields must be a **primary key** field which means that the information it holds is **unique** for each record.

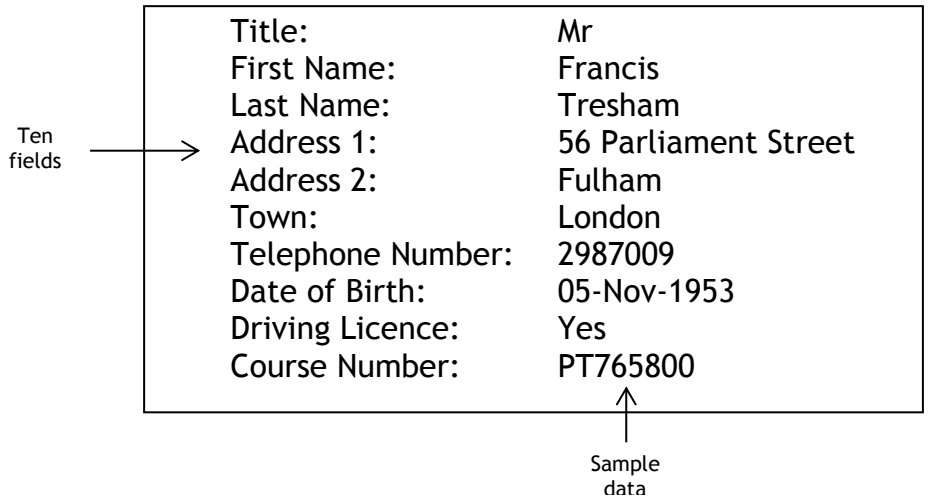
In the example below, the **course number** field will be used to make the relationship between the tables. The primary key field will be in the Course information table. This is because each course in the Course information table will have a unique course number. The course number will not be unique in the Student information table, because you can expect many students to be on the same course.



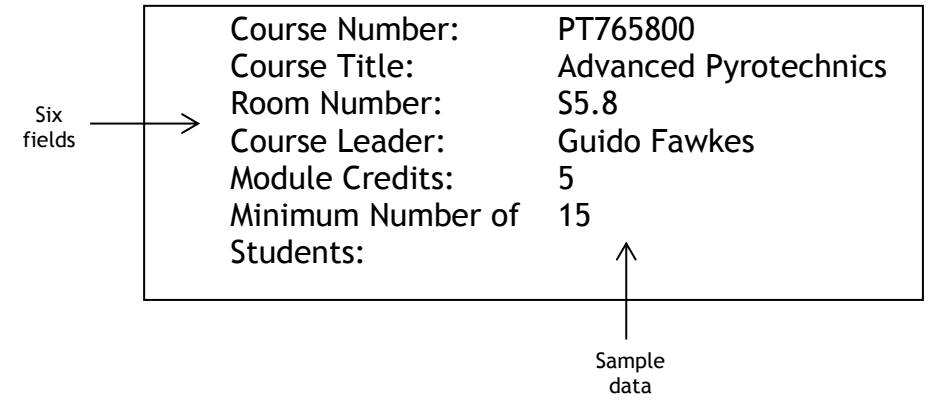
Do bear in mind that data in some databases is not suitable for a relational database, and you have no alternative but to use a single table 'flat' database.

The database you are about to create contains information about students and courses. Course data will be the same for many students, so the database will have two related tables, one containing student details and the other containing information about the courses.

The table of student details will contain the information listed below:



The table of course details will contain the following information:



NAMING CONVENTION

It is always a good idea to use descriptive names when naming aspects of the database. Very long names should be avoided however, because they may result in typing errors when you need to refer to them later.

Access 2010 allows the use of names that include spaces, but this can cause problems if, in future, you decide to enhance your database with Visual Basic for Applications (VBA) modules. It is therefore advisable not to include spaces when naming any aspect of the database.

When choosing descriptive names it is sometimes necessary to have more than one word in the name. Most database developers use either the underscore character between the words, or capitalise the initial character of the second and subsequent words in order to make it readable.

In this training document the second method is used, so the 'first name' field in the student details table will be given the field name **firstName**.

It is also useful for the name of a database object to give an indication of the type of object that it is associated with. Many database designers therefore add a three letter prefix to the name to specify the type of object that it is.

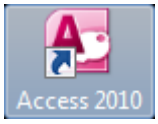
This training guide uses the following prefixes:

Object	Prefix
Table	tbl
Query	qry
Form	frm
Report	rpt

So, for example, the table of course details will be called **tblCourses**.

CREATING A RELATIONAL DATABASE

You are going to create a relational database.

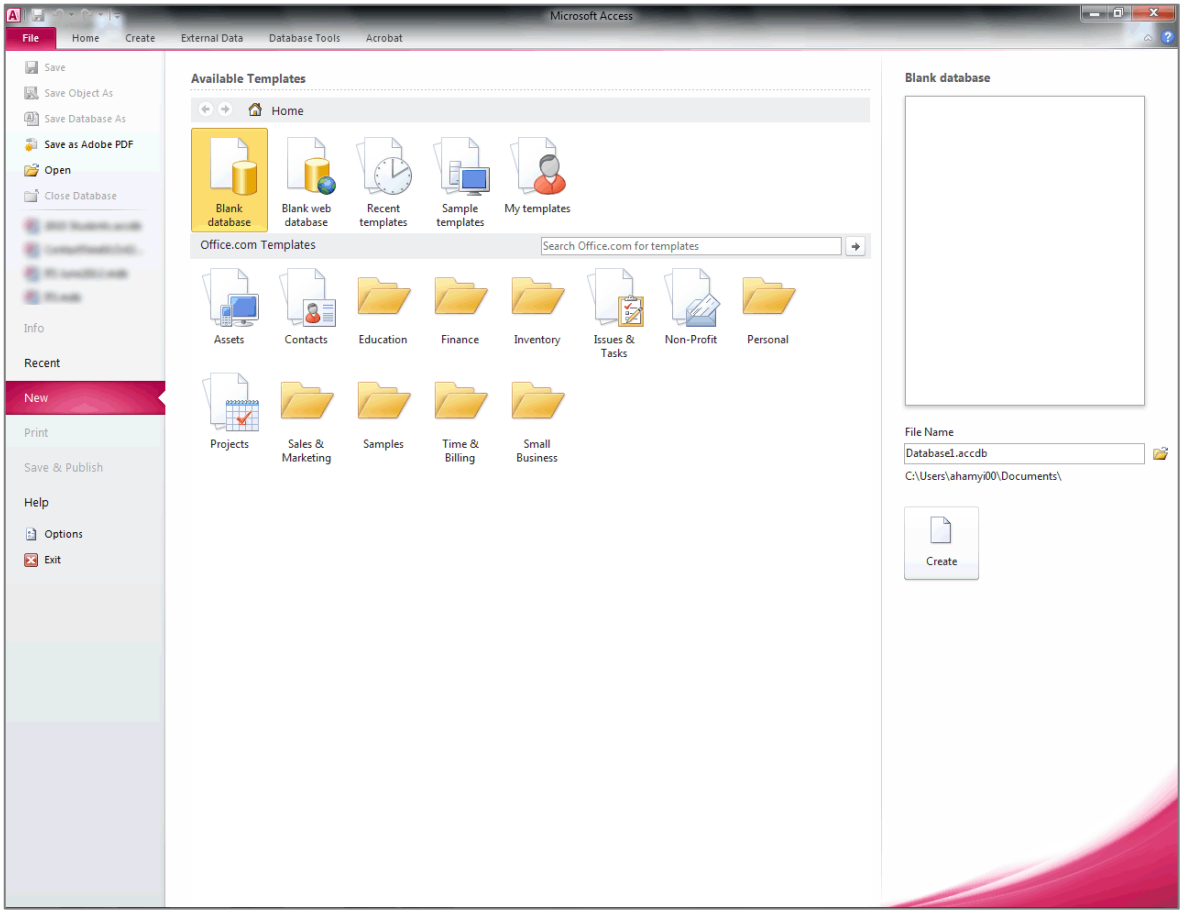


- Double click the **Access 2010** shortcut icon on the Desktop

Or

- Click the **Start** button
- All Programs
- Microsoft Office
- Microsoft Access 2010

The Access opening screen is displayed.



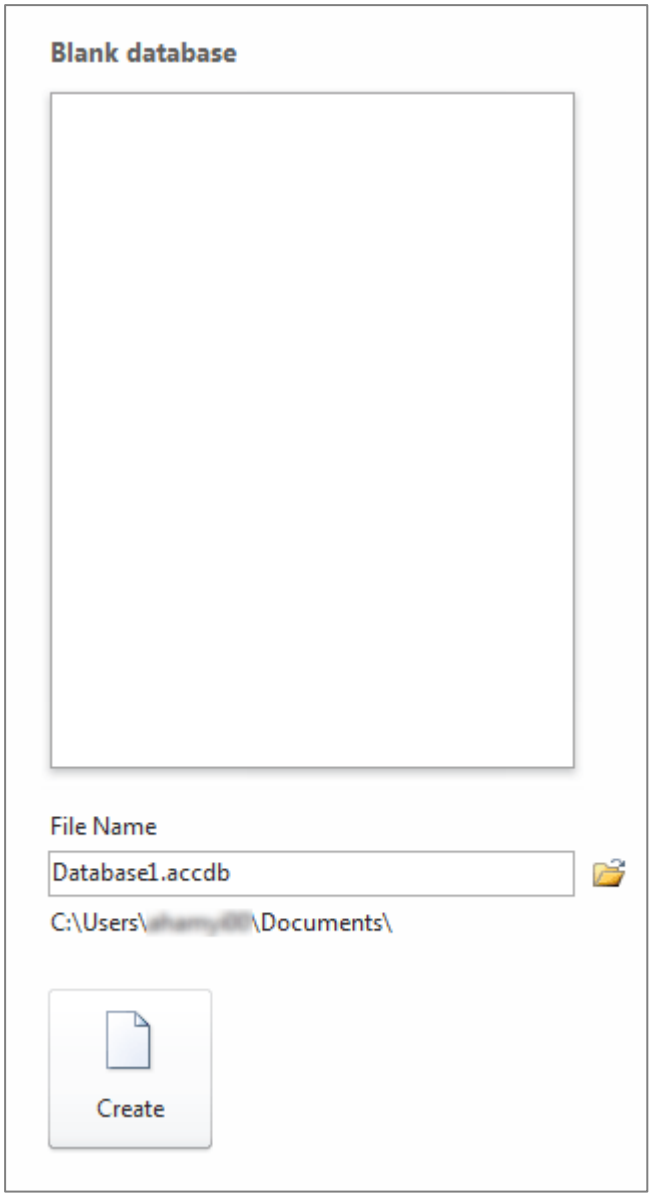
To start a new blank database:

- Ensure that **Blank Database** is selected from the Available Templates

The pane on the right of the window shows the location and file name of the database being created.

A filename is automatically assigned, but you can change it.

Access requires a filename before you begin to construct the database.

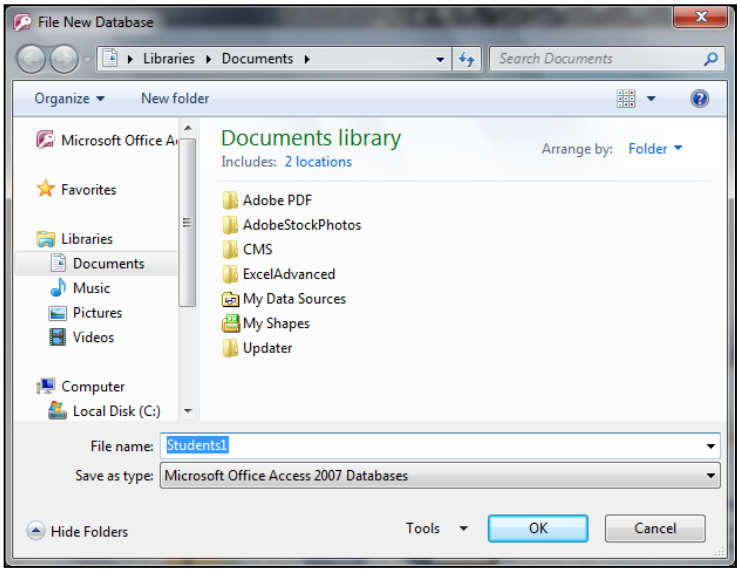


The database that you are creating will be called **Students1** and is to be saved in the **AccessIntroduction** folder on drive **C**.

To change the location and file name:

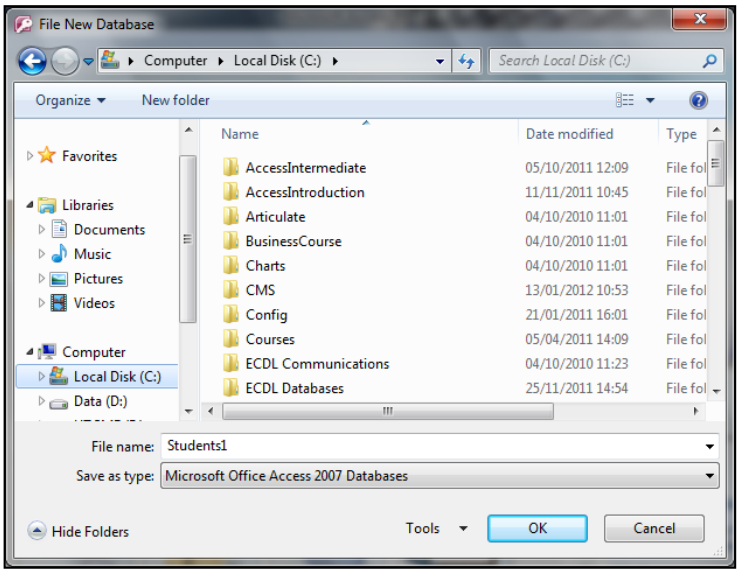
- Click into the File Name text box and replace the default filename with **Students1**
- Click the **Browse** icon next to the File Name text box 

The File New Database dialog box is displayed.



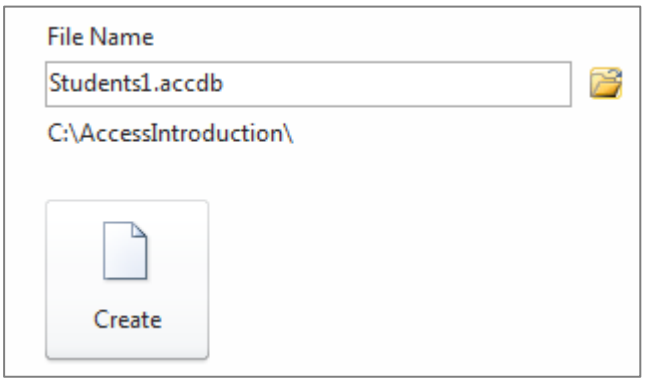
From the navigation pane on the left select:

- **Local Disk (C:)**



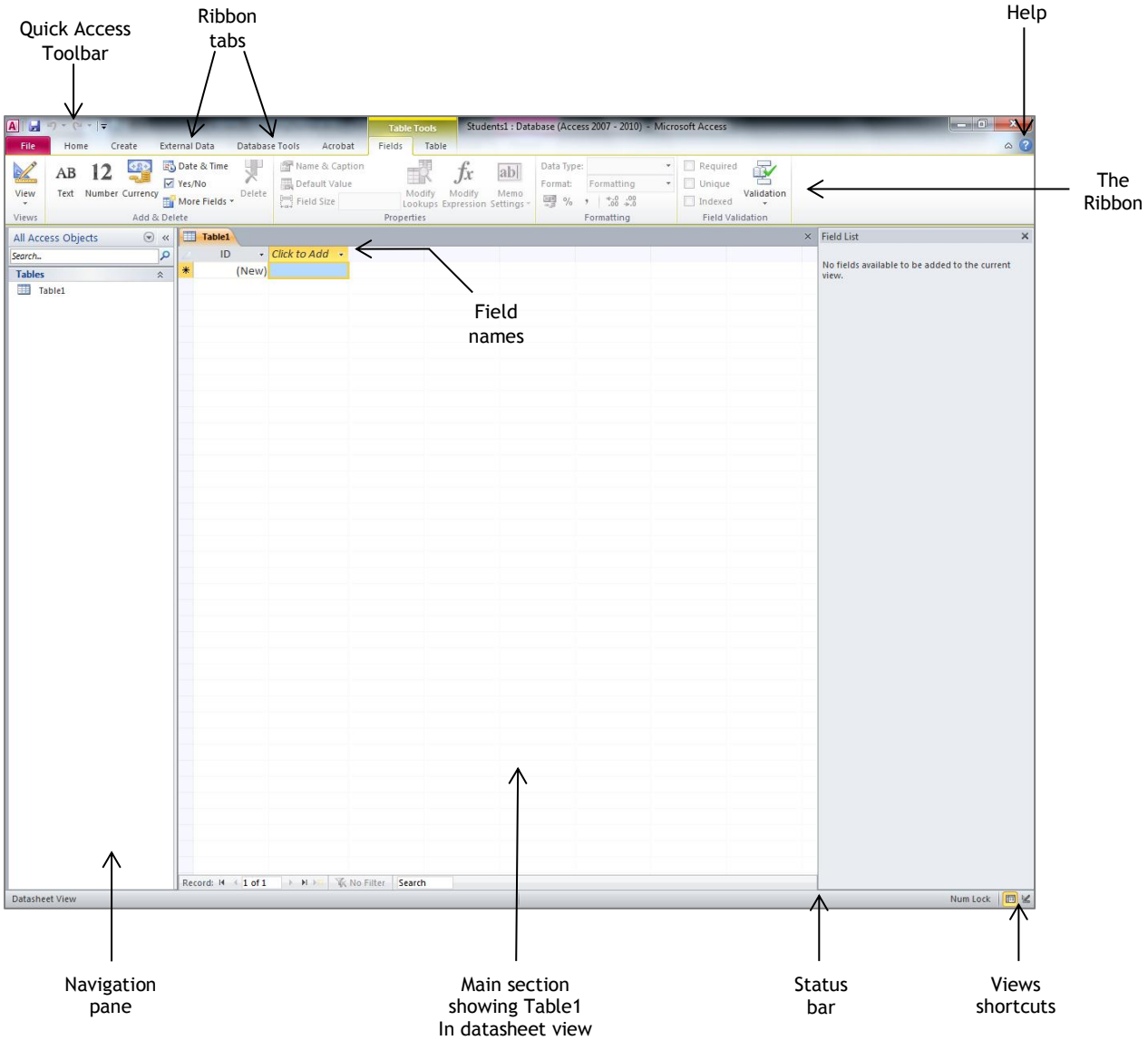
- Select the **AccessIntroduction** folder
- Click **Open**
- Click **OK** to accept that folder as the location for the database

The following file name and location should now be seen in the right pane of the Getting Started window.



➢ Click **Create**

When a database is created a table opens in 'datasheet' view with the default name Table1.

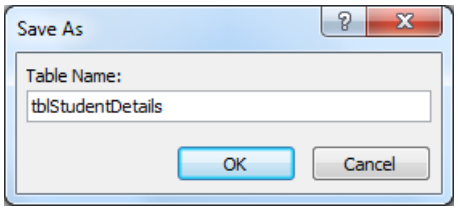


SAVING A NEW TABLE

You will use Table1 for the student details information.

To save the new table with an appropriate name:

- Click the **Save** button on the Quick Access Toolbar
- In the **Save As** dialog box that appears, overwrite the default table name with **tblStudentDetails**



- Click **OK**

ADDING FIELDS TO A TABLE

To prepare the table to receive your data you must now add the required fields to the table using appropriate field names.

The two possible views for a table are design view and datasheet view.

Design view is used to alter the design of the table, which includes adding and editing fields and setting the properties of the fields.

Datasheet view is used to view and edit the data contained in the table. This version of Access has made it possible to alter some aspects of the table design in datasheet view in order to make the creation of simple tables more user-friendly.

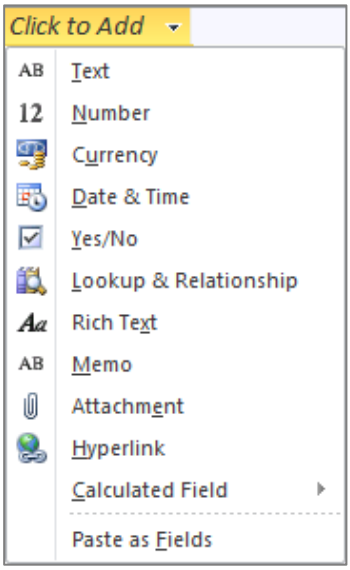
Adding fields in datasheet view

The first field was added to the table automatically and named ID. The next five fields to be added are: title, firstName, lastName, address1, and address2. You will use datasheet view to set up these fields in the table.

To create the field named **title**:

- Click the **Click to Add** heading at the top of the table

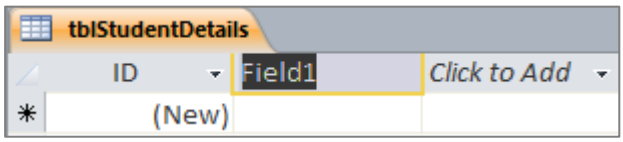
A list of options is displayed.



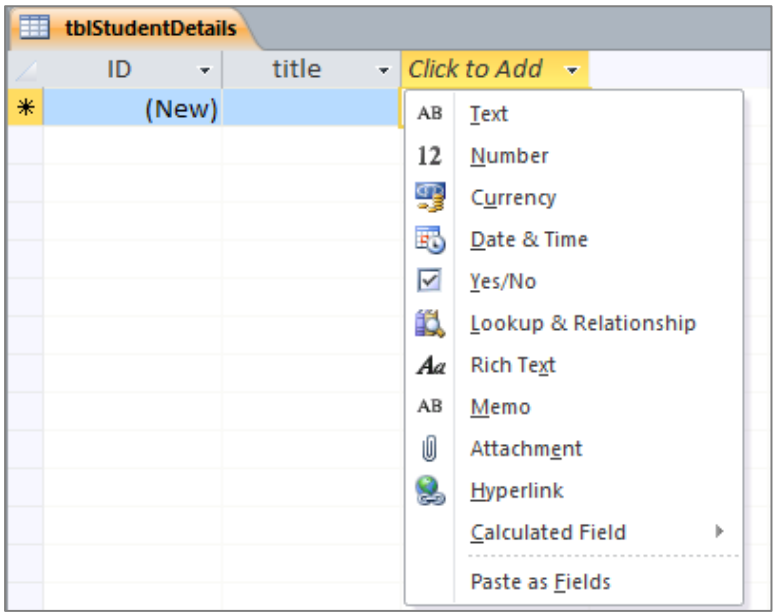
You use this list to select the type of data that will be stored in the new field.

- Click **Text**

A new field is added to the table with the default name '**Field1**' highlighted.



- Type **title**
- Press the Tab key to go to the next field (or click on **Click to Add**)



- Select **Text** as the data type
- Type **firstName** as the name of the field

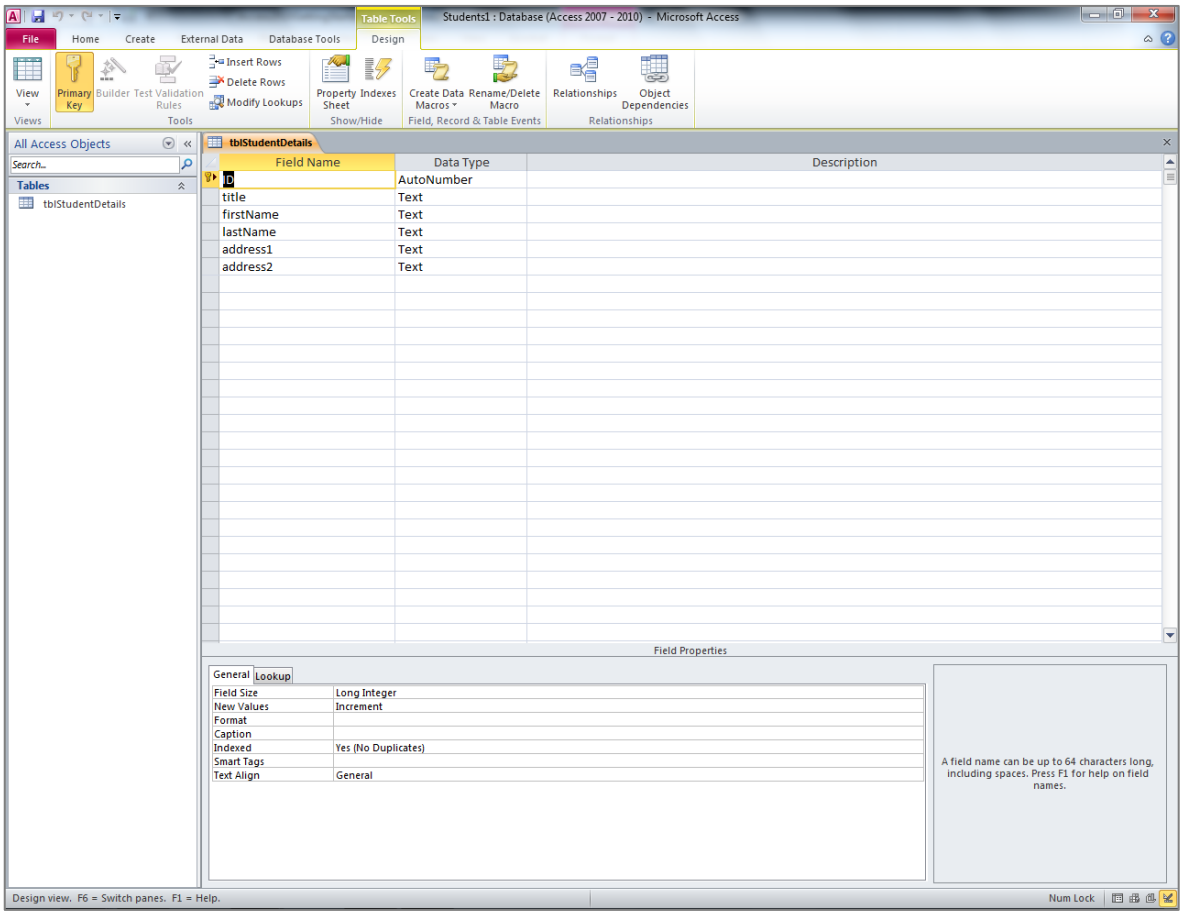
- Continue the process to add the next three field names: **lastName**, **address1** and **address2**
- When the last field name is added click in the row below the field names to exit from the field naming process

Adding fields in design view

To switch to design view:

- Ensure that the **Home** tab is selected
- Click the **Design View** icon in the **Views** group of commands 

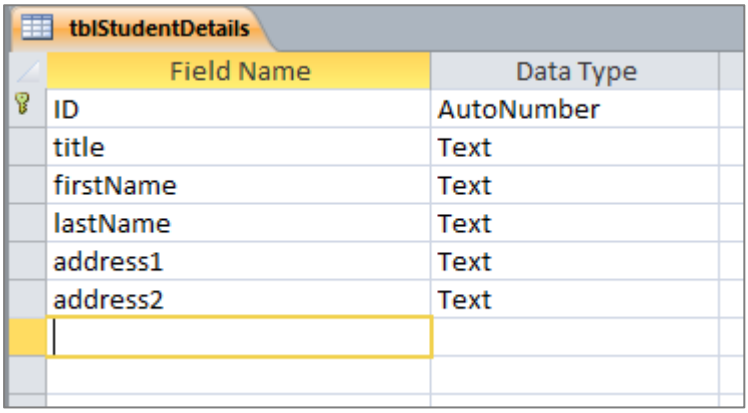
The table is shown in design view.



The remaining field names are: town, telephoneNumber, dateOfBirth, drivingLicence, and courseNumber. You will use design view to add these fields to the table.

In the Field Name column you enter the names of the fields you want to create.

- Click into the first empty row in the Field Name column



- Type **town**
- Press the down arrow key to go to the next field name
- Type **telephoneNumber**
- Continue the process to add the last three fields: **dateOfBirth**, **drivingLicence**, and **courseNumber**

Data types

When setting up a table you need to indicate what type of data will be stored in each field.

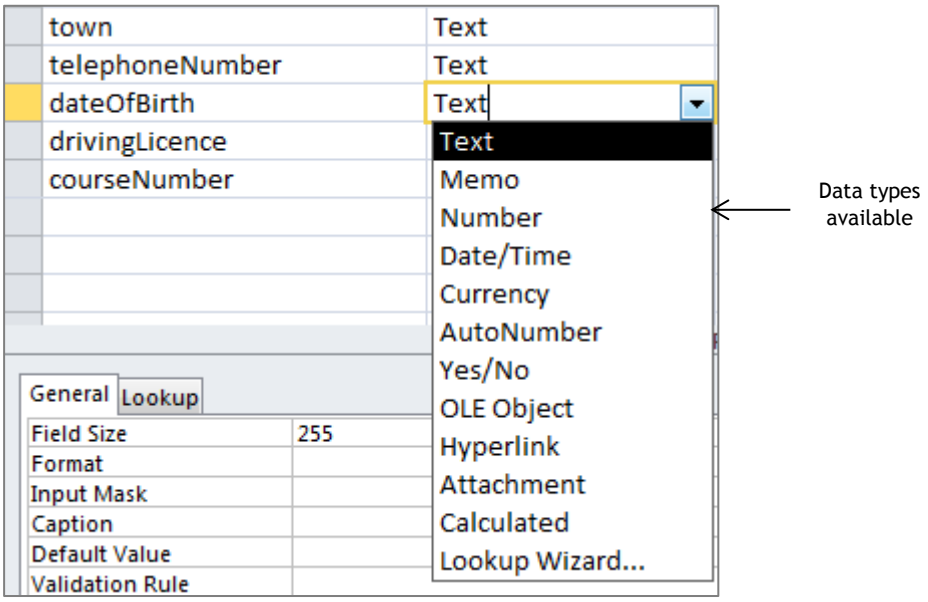
Observe the **Data Type** column and see that all the fields that you have added have been given a **Text** data type. This is the default data type and will usually be correct for most fields. A text field can hold both alphabetic and numeric data.

Data Type	Uses
Text	Use for text, or text and numbers that are not used in calculations. Up to 255 characters.
Memo	Use for text greater than 255 characters, or for text that uses rich text formatting.
Number	Use for storing numbers to be used in calculations, except for monetary values.
Date/Time	Use for storing date/time values.
Currency	Use for storing monetary values.
Auto Number	Use for generating unique numeric values automatically that can be used as a Primary key.
Yes/No	Use for fields that can hold one of two values.
OLE Object	Use for storing images and objects from other Microsoft applications.
Attachment	Use for images, objects and files. This new data type is more flexible than the older OLE Object, and is expected to slowly take its place.
Hyperlink	Use for storing hyperlinks to web pages and files.
Lookup Wizard	This is not actually a data type, but is used to create a combo box to look up values stored in another table.

In your present table, the data in the dateOfBirth field will be a date and for the drivingLicence field you will use a tick box to indicate whether or not the student has a licence. You will therefore need to change the data type for these two fields, but the text data type is suitable for all the others.

- Click into the **Data Type** column for the **dateOfBirth** field
- Click the down arrow in the Data Type box

A list of the available data types is displayed.



- Select **Date/Time** from the list
- Change the Data Type for the **drivingLicence** field to **Yes/No**

The completed list of fields and their data types:

tblStudentDetails

Field Name	Data Type
ID	AutoNumber
title	Text
firstName	Text
lastName	Text
address1	Text
address2	Text
town	Text
telephoneNumber	Text
dateOfBirth	Date/Time
drivingLicence	Yes/No
courseNumber	Text

Field properties

Each field in a table has a set of properties that determine how the data is entered or displayed. For example, numeric data may need to be displayed to three decimal places, while dates may need to be shown in a specific format.

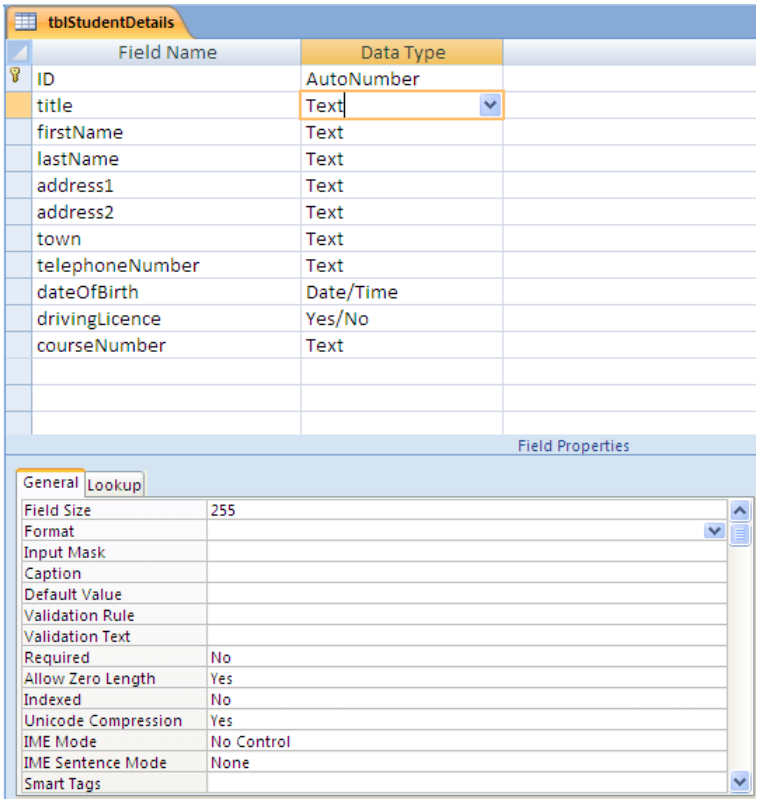
The field properties are displayed in the bottom pane of the design window. The properties you are offered are dependent upon the data type that you choose for the field.

Defining field properties allows you to control what data will be accepted in the field, and how information is entered and displayed.

It is not necessary to change the properties for every field, but you should set a property if it helps to validate information entered in the table, or if it helps to make the database easier to use.

- Click into the **Data Type** column of the **title** field

The properties for this field are shown in the bottom pane.



Field Properties for the selected field →

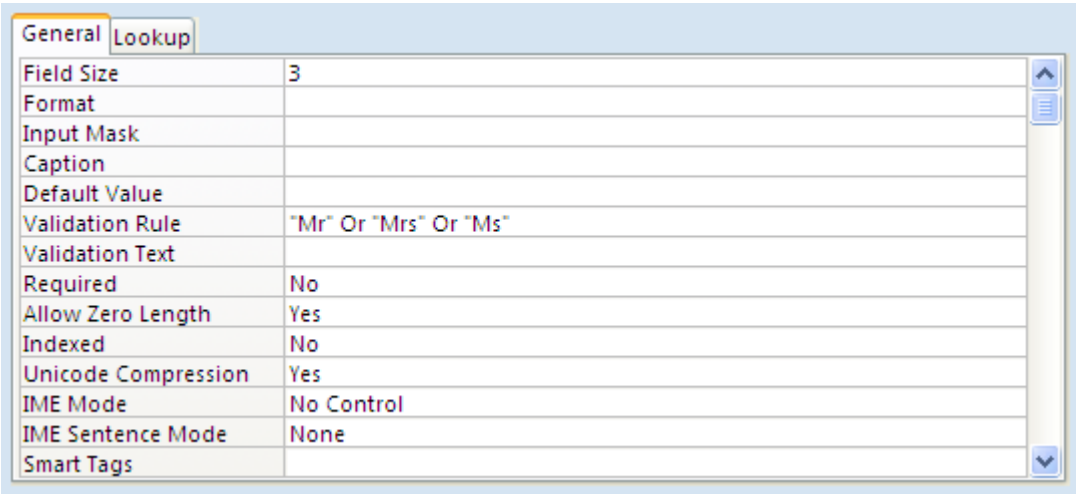
Text field sizes are set to 255 characters by default, but you can set it to any value between 0 and 255. You use the field size property to restrict the number of characters that a field will accept. It is sometimes a good idea to limit the size to the value equal to the largest number of characters you expect to store in the field.

- Change the **Field Size** to **3**

To restrict the data that can be entered into a field, you can create a validation rule.

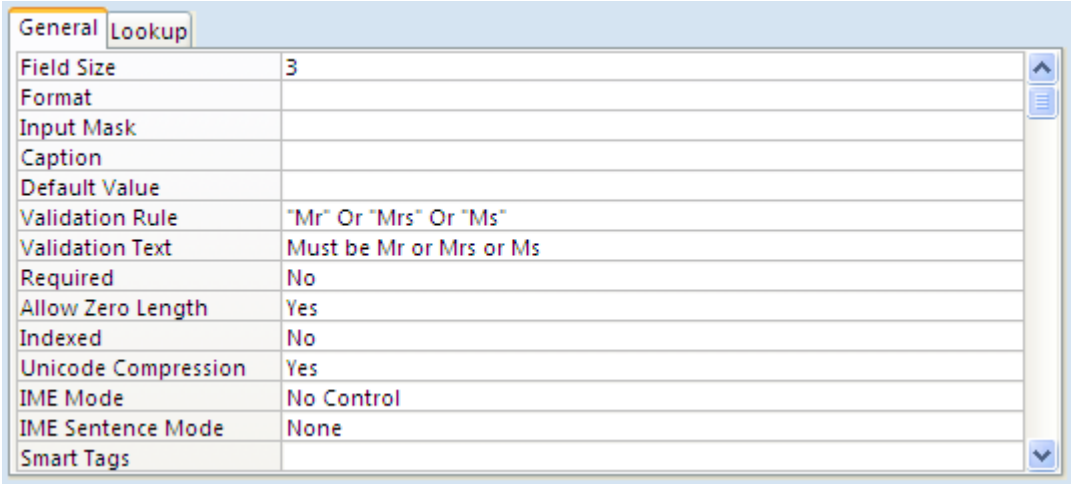
- Click into the **Validation Rule** row in the field properties
- Type the text **Mr or Mrs or Ms**
- Press Enter

Access automatically adds quotation marks to the text items.



You can use the **Validation Text** property to add text that will be displayed if the database user violates the Validation Rule.

- In the **Validation Text** row type the text **Must be Mr or Mrs or Ms**



The **Caption** property is used to set the heading or label for the field in forms, reports and datasheet view of the table. If the property is not set, the field name will be used for the heading or label.

It is good practice to use the Caption property to set user-friendly headings and labels for fields with complex field names.

The **title** field does not have a complex field name, but you will set the Caption property using upper case for the initial character.

- In the **Caption** row type **Title**

By default, the **Required** property is set to **No**. This allows the user to leave this field empty when completing a record. To ensure that the **title** field cannot be left empty you will change the property.

- Click into the **Required** row

A down arrow appears to the right of the text box

Validation Rule	"Mr" Or "Mrs" Or "Ms"
Validation Text	Must be Mr or Mrs or Ms
Required	No
Allow Zero Length	Yes
Indexed	No

- Click the down arrow

- Choose **Yes** from the options listed

The **Default Value** property enables you to set a value for the field that Access will enter automatically in each new record.

- In the **Default Value** row type **Mr**

- Press Enter

Quotation marks are automatically added to the text.

Caption	Title
Default Value	"Mr"
Validation Rule	"Mr" Or "Mrs" Or "Ms"
Validation Text	Must be Mr or Mrs or Ms
Required	Yes

The **Indexed** property creates a hidden index for the field. Although this inevitably makes the database bigger, it speeds up the process of searching for specific values in that field.

- Click into the **Indexed** row
- Click the down arrow on the right of the property box

The following options are displayed.

Yes (No Duplicates) will create an index and will not allow two different records to have the same value in this field.

Yes (Duplicates OK) will create an index that will accept the same value in multiple records.

You will not index the title field.

- Select **No** to leave the property unchanged

- For the other fields in the table, set the properties according to the following list and save the changes before continuing

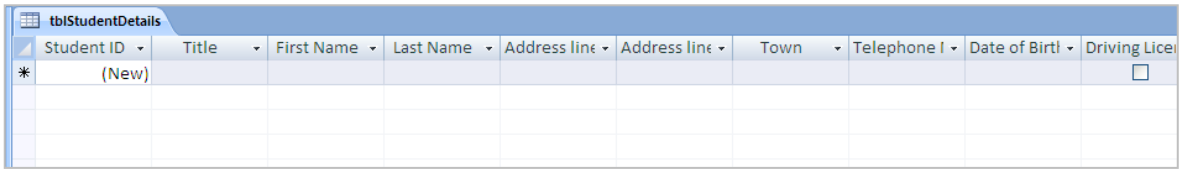
Field name	Data type	Field size	Caption	Format	Indexed
ID	AutoNumber		Student ID		
firstName	Text	15	First Name		
lastName	Text	15	Last Name		Yes (Duplicates OK)
address1	Text	30	Address line1		
address2	Text	30	Address line2		
town	Text	20	Town		
telephoneNumber	Text	11	Telephone Number		
dateOfBirth	Date/Time		Date of Birth	Medium Date	
drivingLicence	Yes/No		Driving Licence		
courseNumber	Text	8	Course Number		

- Save the changes to the table

To switch to datasheet view:

- Ensure that the **Design** tab is selected
- Click the **Datasheet View** icon in the **Views** group of commands 

The table is displayed in datasheet view:



Notice that the field headings are no longer taken from the field names but are now taken from the caption properties.

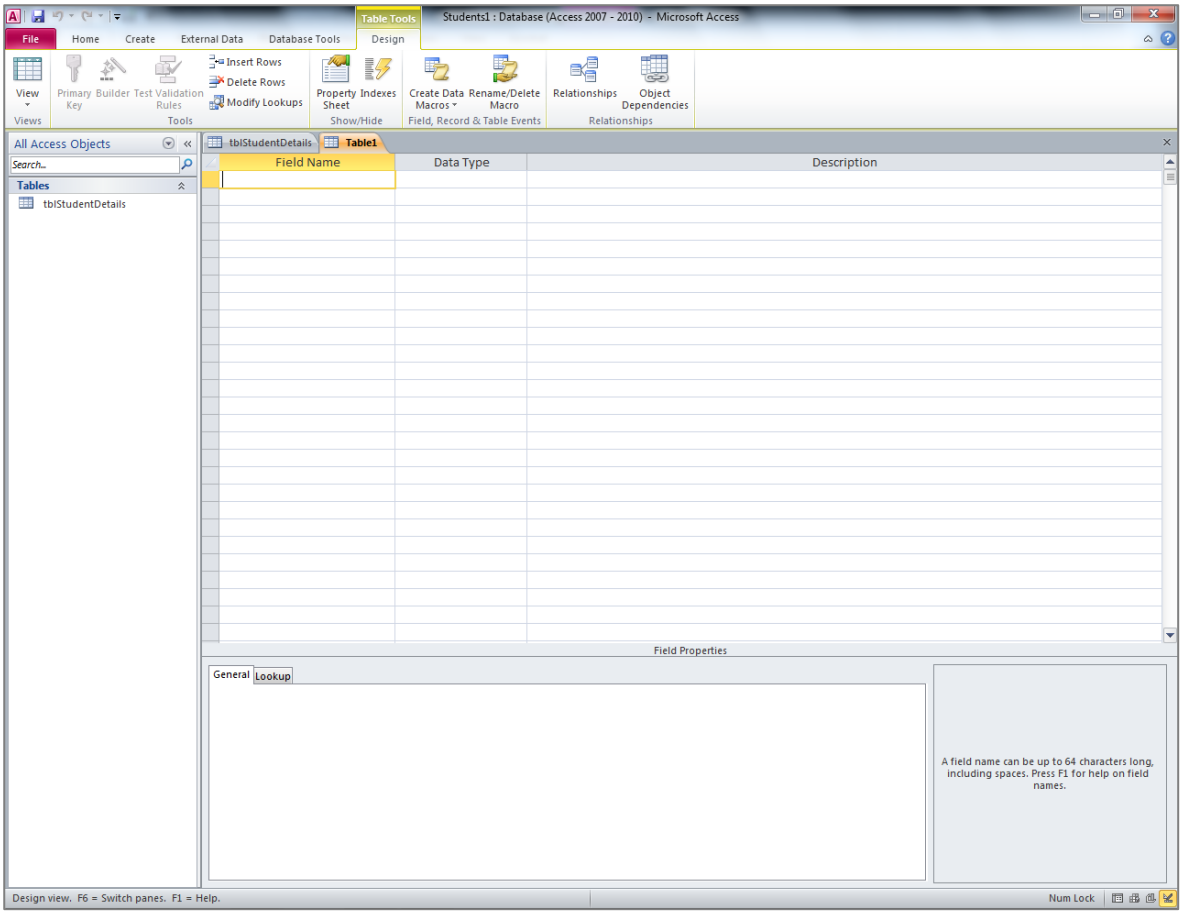
Don't worry that you cannot read the full heading for some of the fields, we will address that later.

CREATING A NEW TABLE

You will now create a second table to hold the course information.

- Select the **Create** tab
- Click **Table Design** from the **Tables** group of commands

A new table is opened in design view.



- Create the following fields with the properties as listed

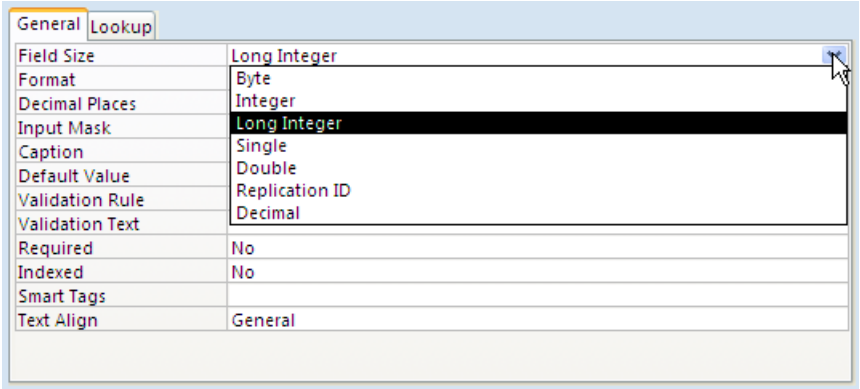
Field name	Data type	Field size	Caption
courseNumber	Text	8	Course Number
courseTitle	Text	30	Course Title
roomNumber	Text	6	Room Number
courseLeader	Text	20	Course Leader

The final two fields of this table will hold numeric data.

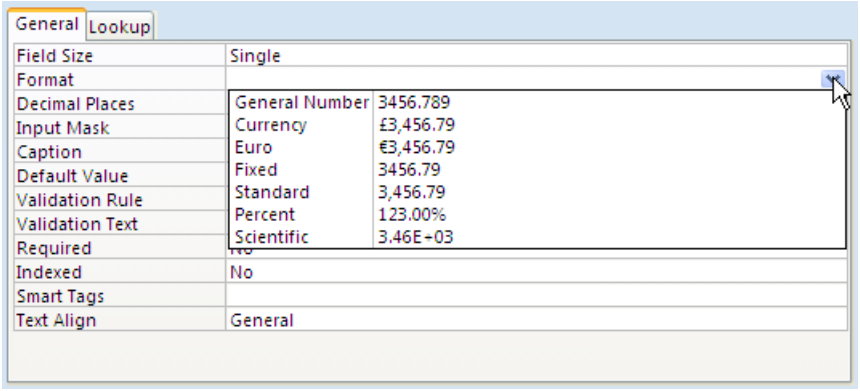
- Add a new field with name **moduleCredits**
- Assign it the data type **Number**

The default field size is Long Integer. An integer is a whole number – no decimal places. If the data that you are going to enter into a field needs to display decimal places, you must change the field size. If you do not, Access will automatically round the numbers up or down and only store the rounded values. The decimal values will therefore be lost.

- Click into the **Field Size** property
- Click the down arrow to see the available options



- Select **Single** (this allows decimal places, see page 118)
- Click into the **Format** property and click the down arrow to see the available options



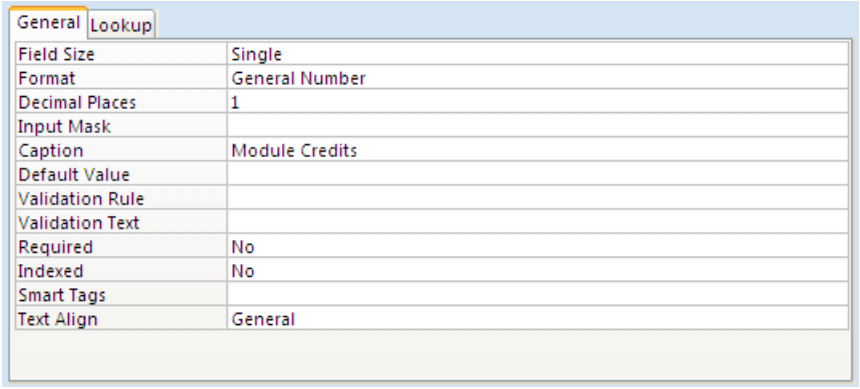
Formats affect the way data is **displayed**, not how it is entered or stored in the table.

- Select **General Number**

By default the Decimal Places property is set to **Auto**. This means that the numbers will be displayed as specified in the Format property. (See page 118 for more information about number formats.)

- Click into the **Decimal Places** property and click the down arrow
- Select **1**

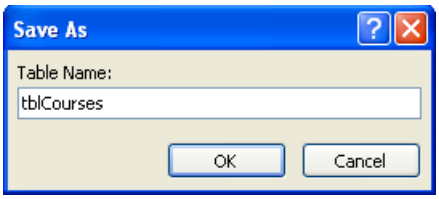
- Set the **Caption** property to **Module Credits**



- Add a new field name **minimumStudents**
- Assign it the data type **Number**
- Change the field size property to **Integer**
- Set the caption to **Minimum Number of Students**

You have finished entering the details of the design.

- Click the Save button on the Quick Access Toolbar
- Replace the table name with **tblCourses** in the Save As dialog box



- Click **OK**

Access reminds you that a primary key has not been defined and asks if you would like to create one.

You will cancel the saving process while we discuss setting up a primary key.

- Click **Cancel**

Setting the primary key field

A relational database contains two or more tables that are related to each other. In order to have a relationship between two tables, one of the fields that define the relationship must be a **primary key** field. Remember that a primary key field holds unique information.

Think about the two tables you have just created. In each table you have included a field named courseNumber. In the courses table the courseNumber field will contain 'unique' data since each course has a different number. This will therefore be set as the primary key field in the courses table and used to make the relationship with the students table.

The fields used in the relationship need not have the same name but the field properties must be the same.

You have already seen that, when you save a table for the first time, if you have not set a primary key, Access will remind you that you should consider specifying one.

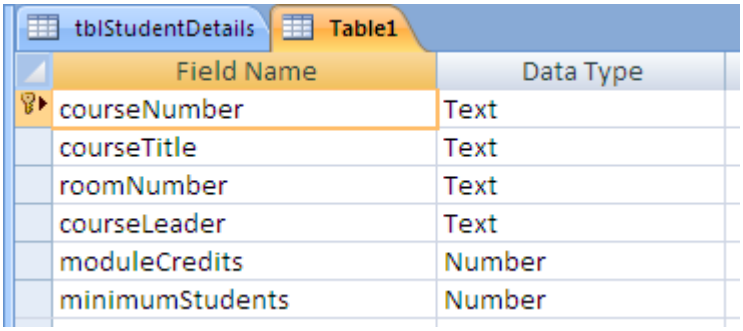
That reminder dialog box gives you three options:

Option	What it means	What it does
Yes	Allow Access to do it for you	Access cannot recognise which of the fields should be a primary key, so it will add an AutoNumber field at the top of the table
No	Tell Access that you do not want a primary key in this table	Saves the table without a primary key
Cancel	Cancel the saving process	Takes you back to the table design so that you can select the field to be used as the primary key

To set the primary key field for the courses table:

- Ensure that the **Design** tab is selected
- Click onto the **courseNumber** field
- Click the **Primary Key** button in the **Tools** group of commands

A key symbol is displayed next to the field name.

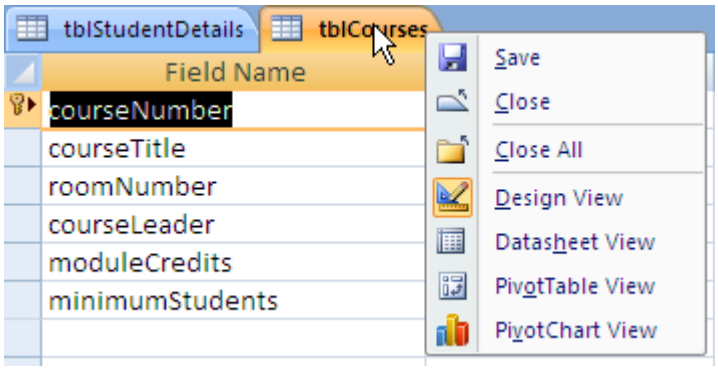


The primary key of a table is automatically indexed. Notice that the Indexed property for the courseNumber field is set to **Yes (No Duplicates)**.

- Save the table using the name **tblCourses**

To close this table:

- Click the right mouse button on the tblCourses tab



- Select **Close** from the displayed shortcut menu
- Close tblStudentDetails table

Both tables could be closed simultaneously by selecting **Close All** from the shortcut menu.

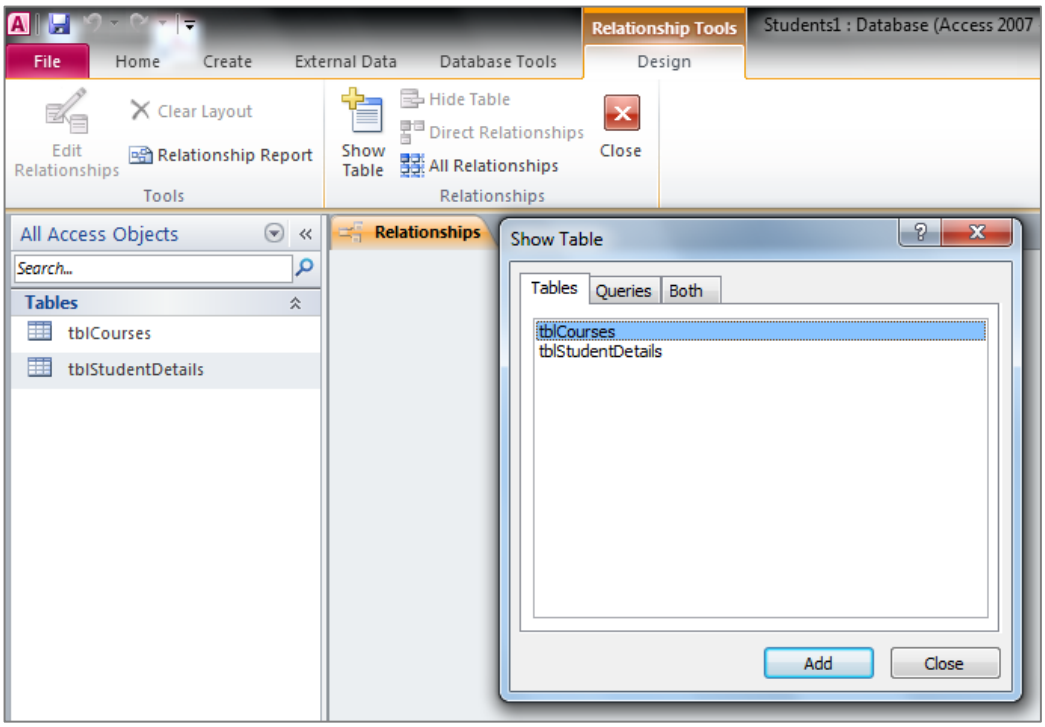
MAKING THE RELATIONSHIP

Once you have created the tables in the database, you need to instruct Access how to bring the information in those tables together. The first step in this process is to define relationships between the tables. You will then be able to create queries, forms, and reports to display information from several tables at once.

To create the relationship between tblStudentDetails and tblCourses:

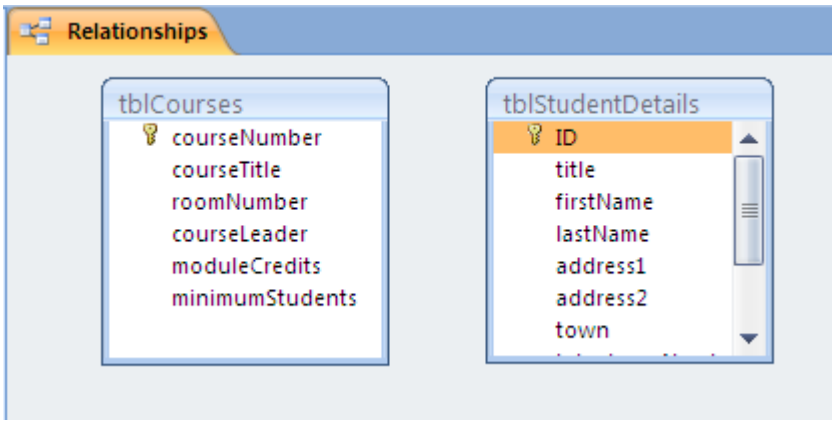
- Select the **Database Tools** tab
- Select **Relationships** from the **Relationships** group of commands

Since this is the first time that you are creating a relationship in this database, the **Show Table** dialog box is displayed automatically to enable you to add the required tables to the relationship window.



- Ensure that **tblCourses** is selected in the **Show Table** dialog box
- Click **Add** to add this table to the Relationships window
- Select **tblStudentDetails**
- Click **Add**
- Close the Show Table dialog box

Both tables with their respective fields are now displayed in the Relationships window.

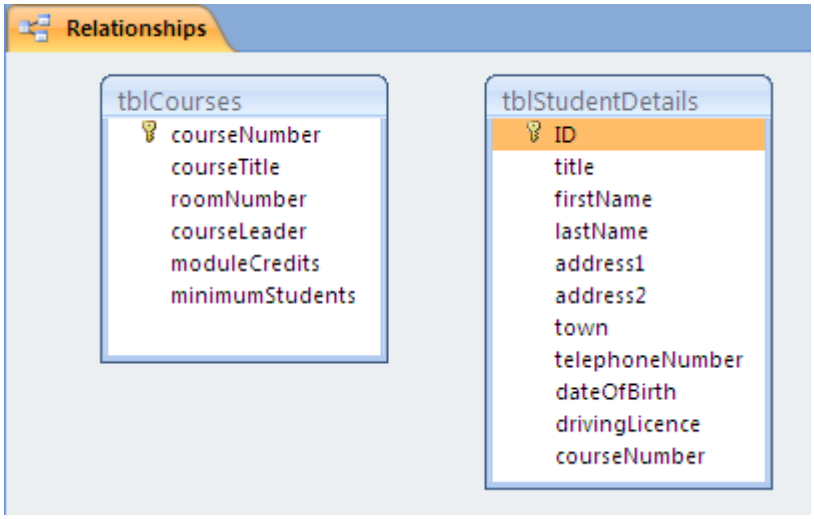


To create the relationship, you need to see the courseNumber field in both tables.

- Use the scroll bar on the tblStudentDetails table to move down the list until the courseNumber field is visible

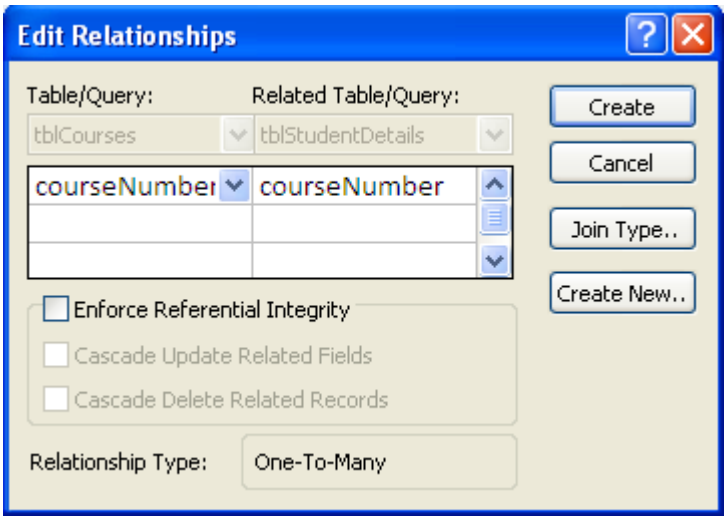
Or

- Drag the bottom edge of the tblStudentDetails table down so that you can see all of the field names



- Hold down the mouse button over the courseNumber field in tblCourses, drag the mouse pointer to the courseNumber field in tblStudentDetails, then release the mouse button

The Edit Relationships dialog box is displayed showing the tables and fields that have been selected.



You have the following options:

Enforce Referential Integrity

By selecting this option you ensure that data in the related fields is the same. For example, a student may be enrolled on a course only if there is a matching record in tblCourses.

Selecting this option also ensures that you cannot delete a course from tblCourses if tblStudentDetails contains records referring to that course.

Cascade Update Related Fields
(Available only if Enforce Referential Integrity is checked.)

If you choose this option, changing the value in the courseNumber primary key field will result in related records in tblStudentDetails being updated automatically.

Cascade Delete Related Records
(Available only if Enforce Referential Integrity is checked.)

With this option selected, if you delete a record in tblCourses, the related records in tblStudentDetails will also be deleted. Before choosing this option you should give it some serious thought.

- Ensure that the **Enforce Referential Integrity** box is ticked

Relationship types

The Relationship Type is shown at the bottom of the dialog box.

There are four relationship types:

- One-to-one
- One-to-many
- Many-to-one
- Many-to-many

To create a one-to-one relationship each of the fields used to define the relationship must be a primary key field.

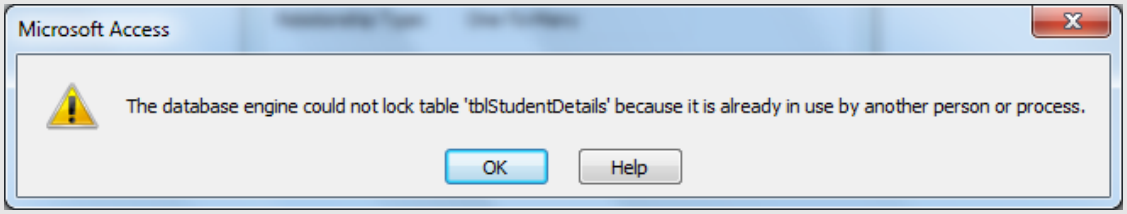
Because courseNumber is the primary key field in just one of the tables, a one-to-many relationship is created. This is the most commonly used relationship.

In this database it will mean that:

- A record in tblCourses can have many matching records in tblStudentDetails
- A record in tblStudentDetails can match only one in tblCourses
- In other words, many students can enrol on the same course, but each student can enrol on only one course

➢ Click **Create**

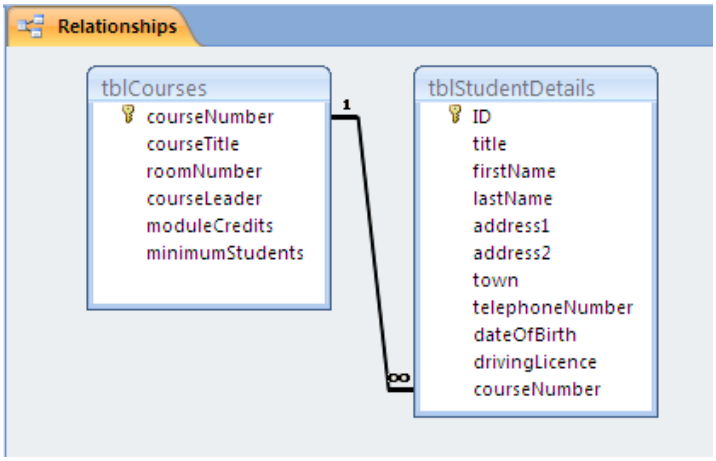
You may get the following message:



This warning message is displayed if at least one of the tables being linked is open.

- If you see this message, click **OK**
- Click **Cancel** to close the Edit Relationships dialog box
- Close the table(s)
- Then Create the relationship as described above

Notice the relationship line linking the two tables with the courseNumber fields.



The **1** at the tblCourses end of the line and the **∞** symbol at the tblStudentDetails end of the line confirm that this is a one-to-many relationship, and that for any one record in tblCourses, this relationship will allow many student records to contain a matching value.

To edit a relationship after it has been created:

- Click the relationship line between the two tables to select it – when selected it will be emboldened
- Select **Edit Relationships** from the **Tools** group on the **Design** tab

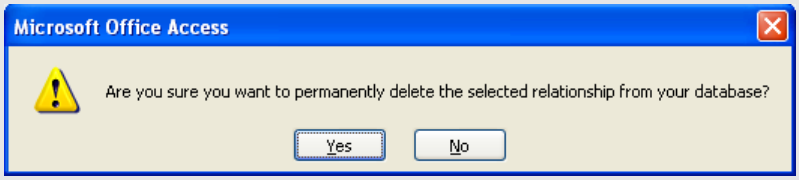
The **Edit Relationships** dialog box is displayed allowing you to make any necessary changes. No changes need to be made at present.

- Click the **Cancel** button to close the dialog box

To delete a relationship:

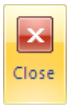
- Ensure that the relationship is selected
- Press the **Delete** key

A warning is displayed:

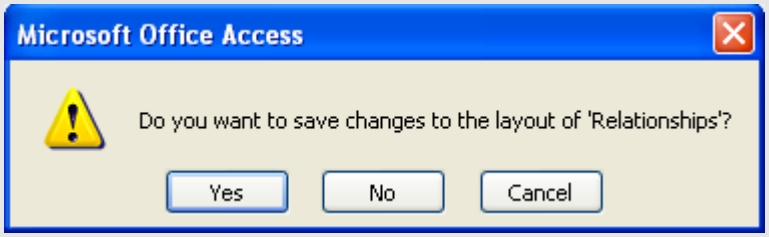


- Selecting **Yes** will complete the deletion

- Click the Save icon on the Quick Access Toolbar to save the relationship
- Ensure that the Relationship Tools' **Design** tab is selected
- Select the **Close** button to close the Relationships window



If the relationship was not saved, the following reminder is displayed:



- Confirm that you want to save the changes

WORKING WITH TABLES

ENTERING DATA

Entering data is straightforward but, obviously, if the database is to work properly, the data must be input into the correct designated fields.

The records are written to the database file as they are entered. The order in which records are input is not important, as information can be selected and sorted into any order when reports are being produced.

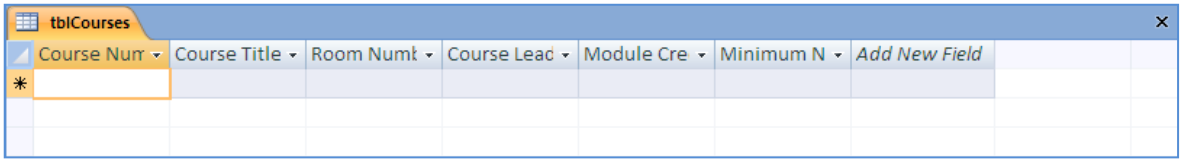
Do bear in mind that, once you set up a relationship between tables, the rules of that relationship apply. For example, you have created a relationship between tblCourses and tblStudentDetails based on the courseNumber field, and you have chosen to 'enforce referential integrity'.

You will find that, because of this, you must enter the data into tblCourses first. This is because the 'enforce referential integrity' option will validate the courseNumber data entered into tblStudentDetails and will not allow any student to be enrolled onto a course that does not exist in tblCourses.

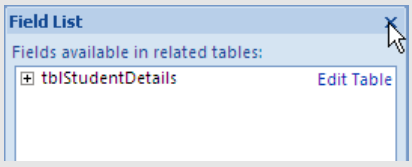
To open the Courses table:

- Double-click **tblCourses** in the Navigation Pane on the left

The tblCourses table opens in datasheet view ready for data entry.



If a **Field List** window is displayed on the right, close it by clicking on the cross. This will provide extra space to display the table.



- In the Course Number field type **PT765800**
- Press the Tab key to move to the next field
- In the Course Title field type **Advanced Pyrotechnics**

Notice that the column is not wide enough to display all of the information. Do not worry about this – the data is stored even though you cannot see all of it. You will learn how to change the column widths shortly.

➢ Complete this first record with the information below

Course Number	Course Title	Room Number	Course Leader	Module Credits	Minimum Number of Students
PT765800	Advanced Pyrotechnics	S5.8	Guido Fawkes	5	45

➢ Enter the other records

Course Number	Course Title	Room Number	Course Leader	Module Credits	Minimum Number of Students
SN765000	Sailing and Navigation	H2.5a	William Bligh	7.5	20
TU823000	Trade Unionism and Its History	H6.8	George Loveless	4	25

CHANGING THE COLUMN WIDTH

When you create a table, columns are set to a default width.

To change the width of the Course Title column:

➢ Point to the line between the column headings **Course Title** and **Room Number**

The mouse pointer changes to ⇿

➢ Double-click the mouse button

The Course Title column is automatically resized to fit its data.

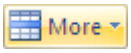
tblCourses

Course Num	Course Title	Room Numb	Course Lead	Module Cre	Minimum N	Add New Field
PT765800	Advanced Pyrotechnics	S5.8	Guido Fawkes	5	45	
SN765000	Sailing and Navigation	H2.5a	William Bligh	7.5	20	
TU823000	Trade Unionism and Its History	H6.8	George Lovele	4	25	

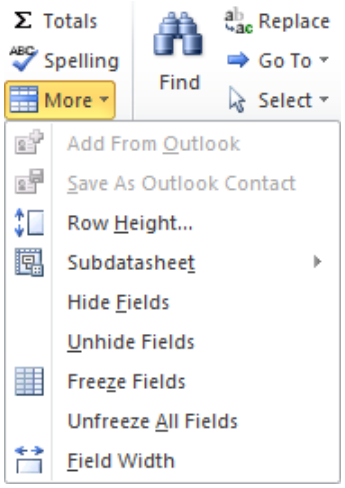
Instead of double-clicking, you can click and drag the column to the desired width.

Alternatively, you can use the Field Width option in the shortcut menu.

To change the width of the Course Leader column:

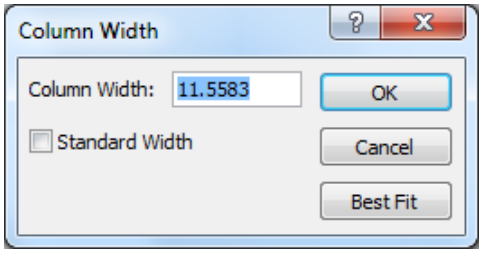
- Hover the mouse pointer over the title **Course Leader** and click once to select the column
- Ensure that the **Home** tab is selected
- Select **More** in the **Records** group of commands 

A list of options is displayed.



- Select **Field Width**

The Column Width dialog box is displayed.



You have the option to type a new value for the column width or to resize the column automatically to the best width for the data by selecting the Best Fit button.

- Change the column width to **15**
- Click **OK**

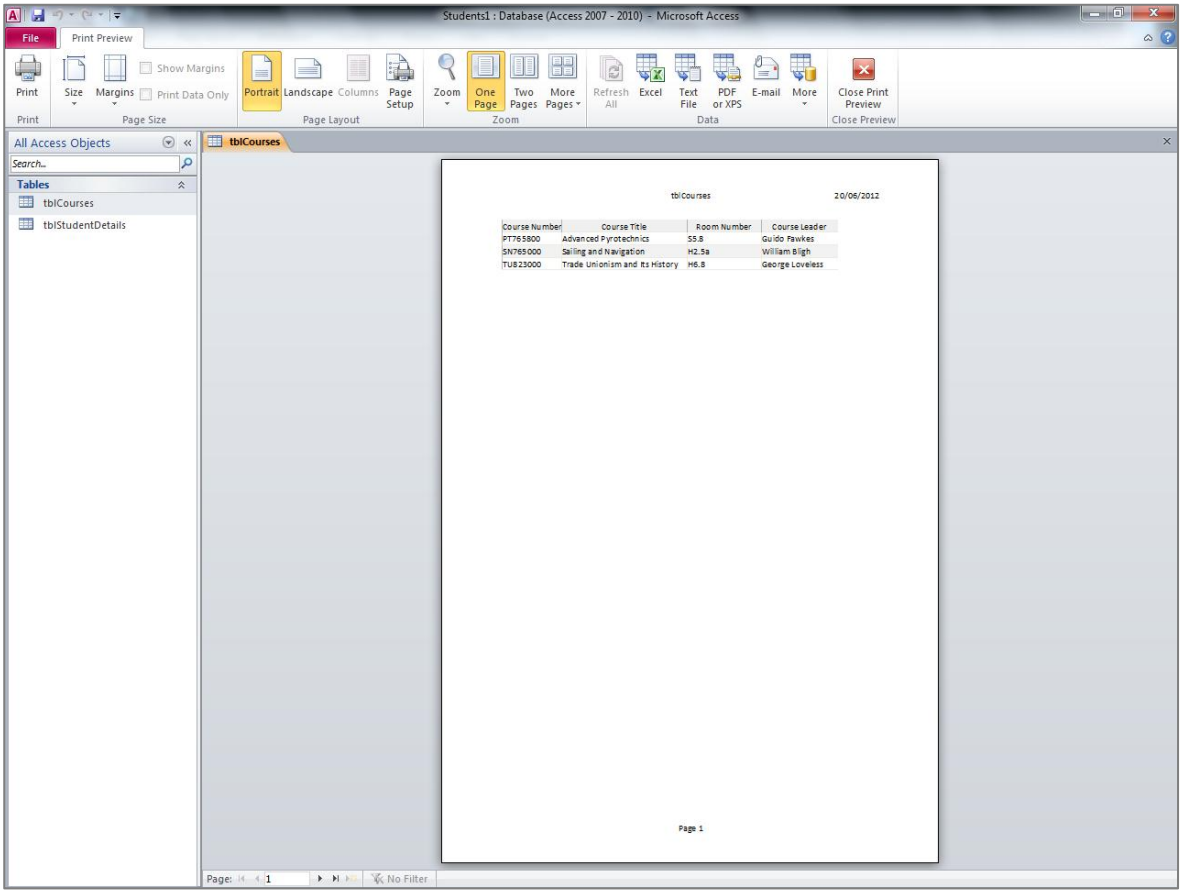
Using either of the methods above, ensure that all of the current data, including the column headings, are displayed in full. If you add more records later, you may need to readjust the column widths.

PRINTING A TABLE

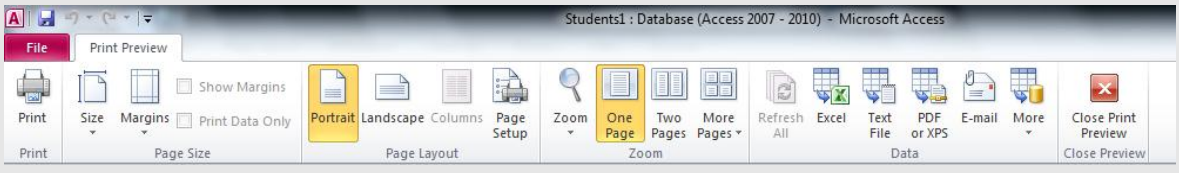
Before printing, it is always a good idea to use Print Preview to see how the page will look when it is printed.

- Click the **File** tab
- Click **Print**
- Click **Print Preview**

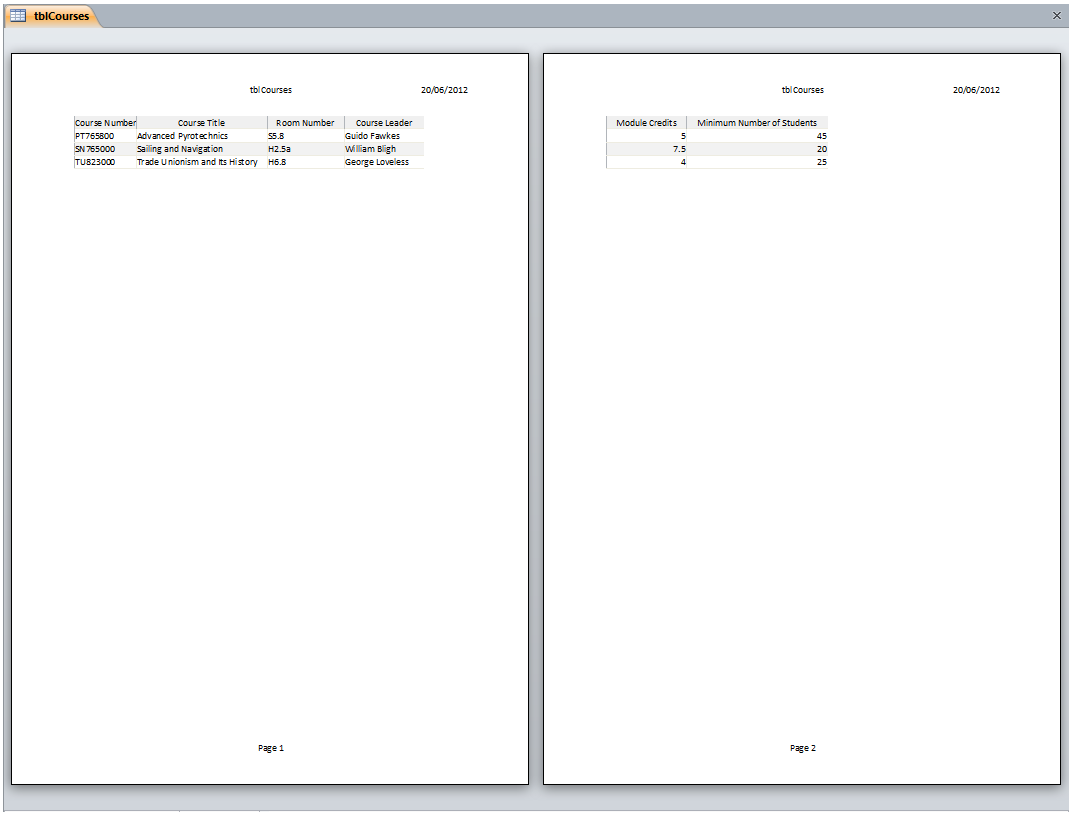
The table is displayed in portrait orientation and you can see that it is too wide to fit on the page and so has overflowed on to a second page.



Notice that in Print Preview, only the **File** and **Print Preview** tabs are available.



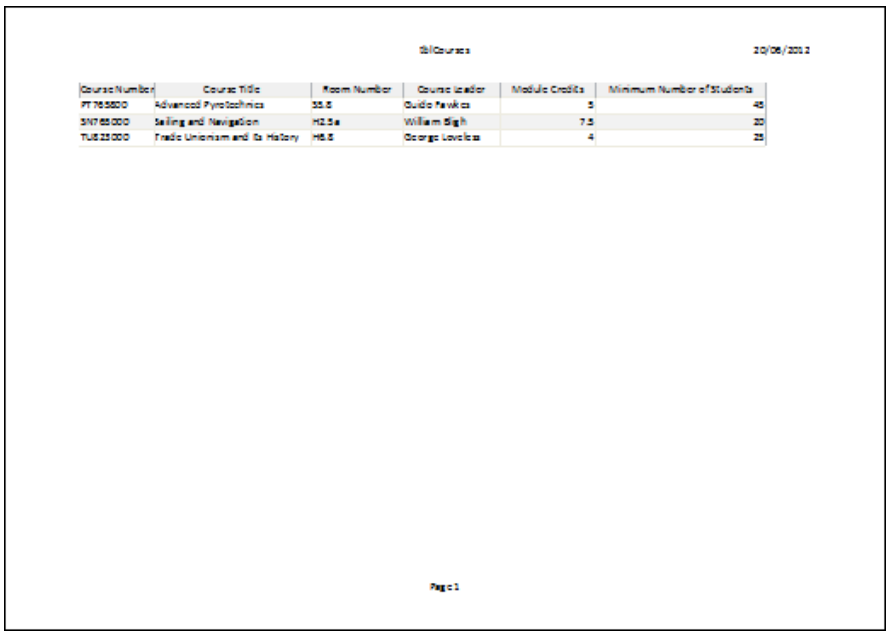
- To see both pages, select the **Two Pages** button in the **Zoom** group of commands



To change the page orientation from portrait to landscape so that all of the columns are displayed on a single page:

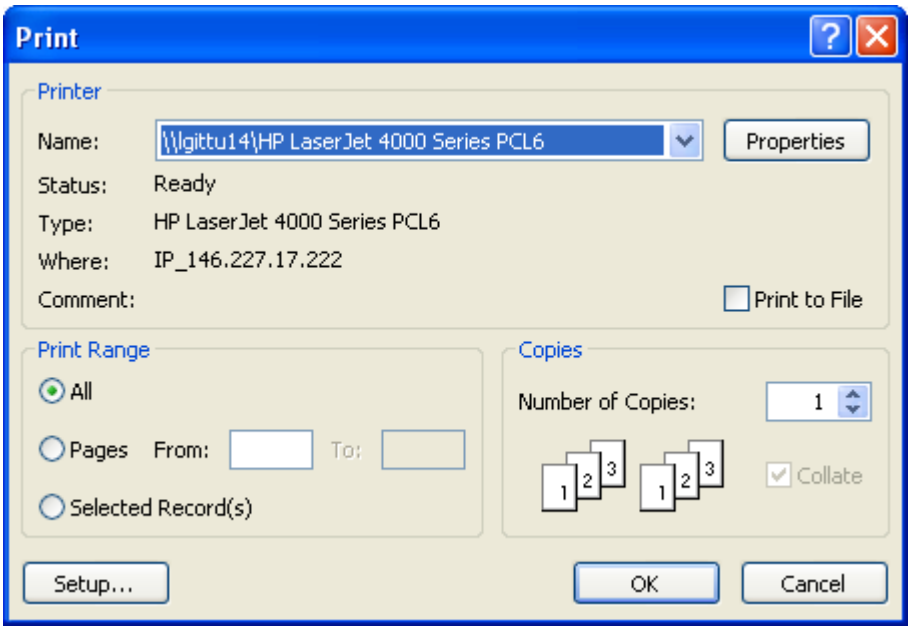
- Click **Landscape** in the **Page Layout** group of commands

The table fits onto one page.



➢ Click the **Print** button on the ribbon 

The Print dialog box is displayed.



➢ Click **OK**

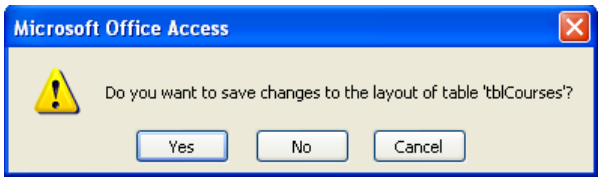
The table is printed.

➢ Click the **Close Print Preview** button on the ribbon

You are returned to the datasheet view of the table.

➢ Close the table

Further changes were made since you last saved the table, so a pop-up window asks if you wish to save the changes to the layout.



➢ Click **Yes**

Next you will enter the records into the student details table.

➢ Open **tblStudentDetails** using the Navigation Pane

➢ Enter the records listed on the next page (the Student ID is an AutoNumber so the values for this field will be set automatically)

Title	First name	Last name	Address line1	Address line2	Town	Telephone Number	Date of Birth	Driving Licence	Course Number
Mr	Francis	Tresham	56 Parliament Street	Fulham	London	2987009	05-Nov-1953	Yes	PT765800
Mrs	Roberta	Catesby	5 November Road	Peckham	London		02-Apr-1971	No	TU823000
Mr	Thomas	Percy	Flat 7	Rocket House	Birmingham		24-Feb-1968	Yes	TU823456
Mr	Christopher	Wright	Plot 64	Banger Lane	London	2652462	13-Apr-1976	Yes	PT765800

Observe that when you entered the Course Number **TU823456** in record number 3, an error message was displayed. This is because Access has checked the integrity of the data and since that course does not exist in the table tblCourses the error message is produced.

- Change the Course Number for record number 3 to **TU823000**
- Close the **Students1** database
- Open the database **Students** from the location **C:\AccessIntroduction**

If you are using this guide for self-study then you will need to continue with the Students1 database and enter additional data before continuing further.

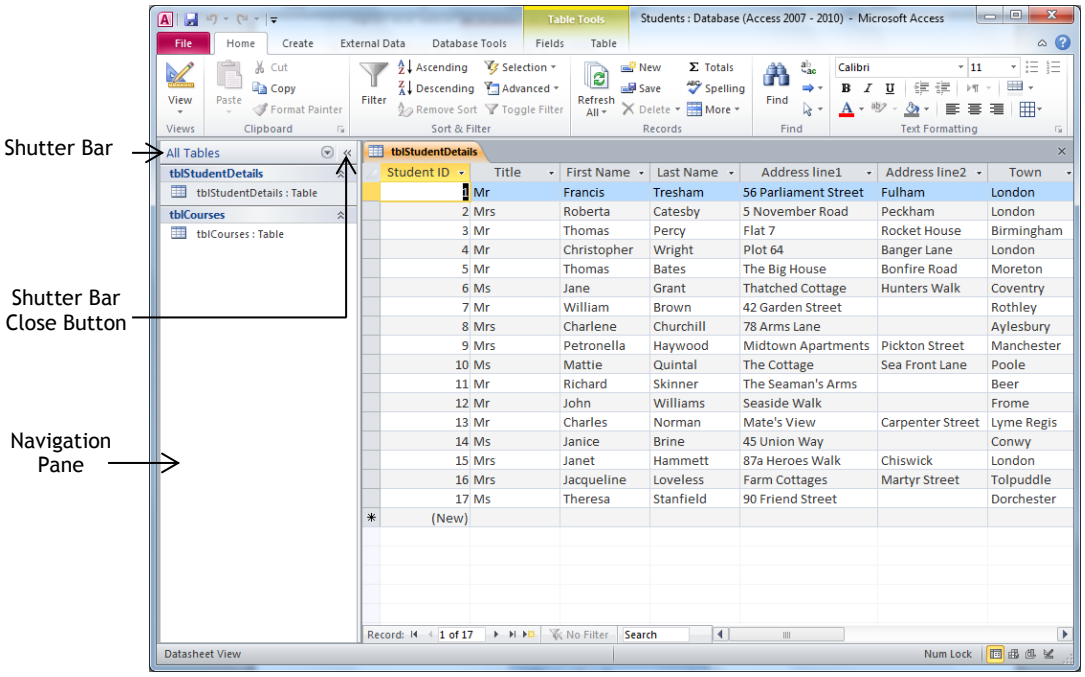
- Open your **Students1** database
- Open the table **tblStudentDetails** and enter the data displayed in **Appendix 2** (page 123)

- Open the table **tblStudentDetails**
- Ensure that all of the data is visible

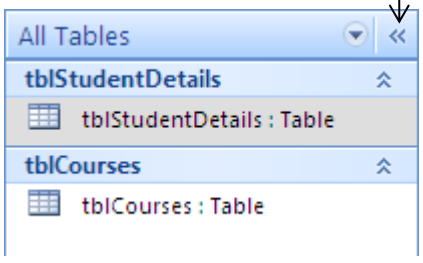
The table does not need to be saved after adding or editing data, because it updates continually and automatically. However, because you have changed the column widths you need to save the table.

- Click the **Save** button on the Quick Access Toolbar to save the changes

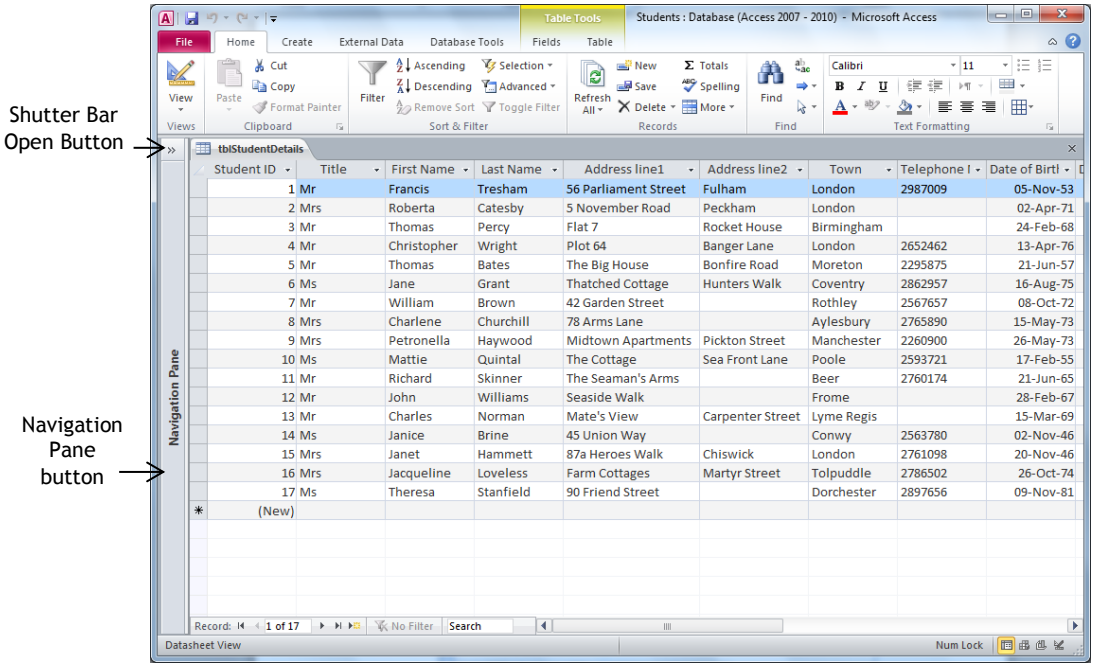
The Navigation Pane on the left can be minimised in order to see more of the table.



- Click the Shutter Bar Close Button



The table fills the window.



To restore the Navigation Pane:

- Click the Navigation Pane button

Or

- Click the Shutter Bar Open Button 

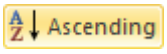
SORTING THE DATA

By default the data in the table is sorted on the primary key field, if one has been set.

If there is an indexed field but no primary key field in the table, then, by default, the data will be sorted on the indexed field.

However, irrespective of whether or not a primary key is set or a field is indexed, it is possible to sort the data on any field.

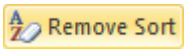
To sort the data by Last Name in ascending order:

- Click into the **Last Name** column of any record
- Ensure that the **Home** tab is selected
- Click the **Ascending** button in the **Sort & Filter** group 

The data is immediately sorted by Last Name.

Once sorted, the table may be saved with the data in this order if desired.

To remove the sort order that you applied to the data:

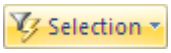
- Click the **Remove Sort** button in the **Sort & Filter** group 

The data returns to the default sort order based on Student ID, since this is the primary key field.

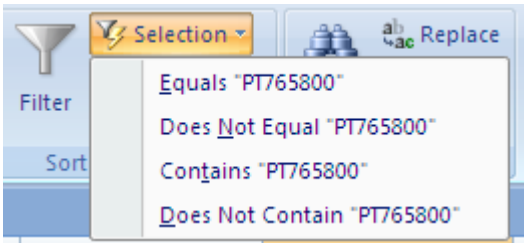
FILTERING THE DATA

If you have a large table, and you want to view the records for a particular course for example, you can narrow the records displayed by creating a filter. A filter simply shows you the records that you want to see and hides the rest.

You want to see only those records for the delegates on course number PT765800.

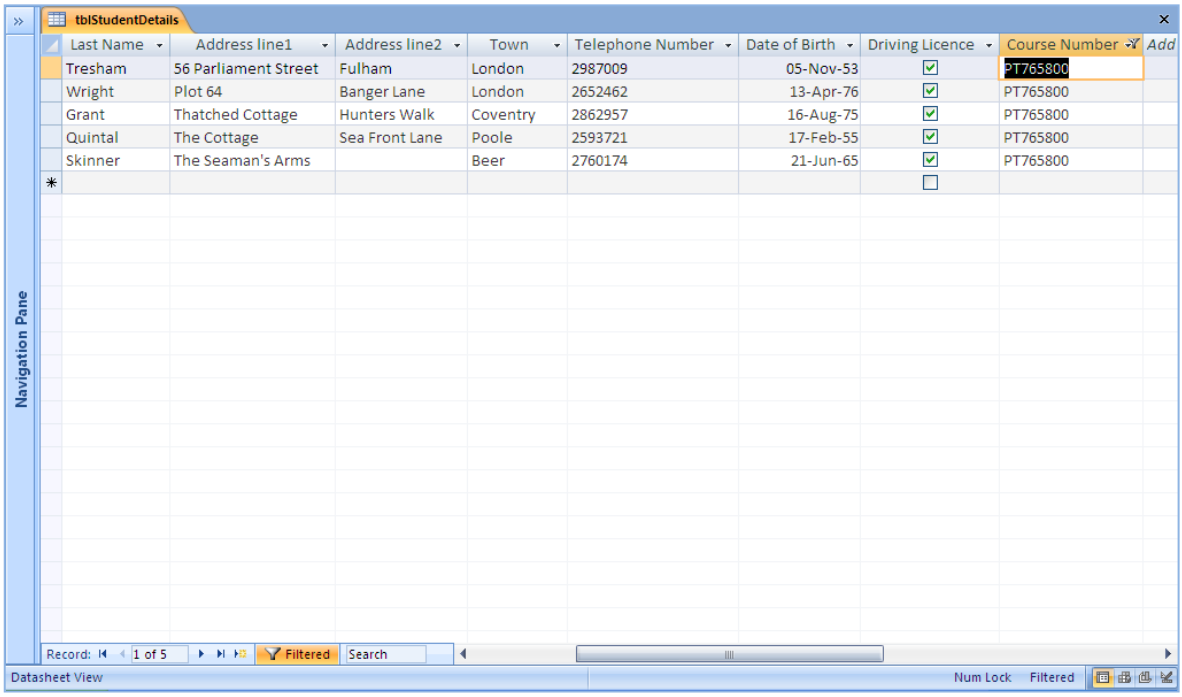
- In the Course Number column, click into a record that displays the course number PT765800
- Ensure that the **Home** tab is selected
- Click the **Selection** button in the **Sort & Filter** group 

A list of options is displayed.



➢ Select **Equals "PT765800"**

The data is filtered to show the five records with that course number.



To remove the filter:

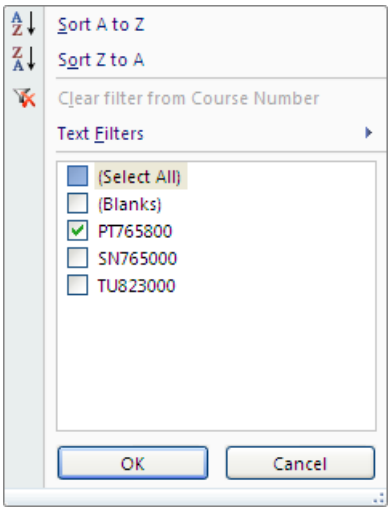
➢ Click the **Toggle Filter** button in the **Sort & Filter** group 

All of the records in the table are displayed again.

Alternative method for filtering the data to show only the records with course number PT765800:

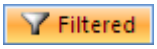
- Click into the Course Number column for any record
- Click the **Filter** button in the **Sort & Filter** group 

- Click the **Select All** tick box to remove all ticks
- Select the **PT765800** tick box

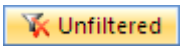


- Click **OK** to apply the filter

Alternative method for removing the filter:

Notice that next to the navigation buttons at the bottom of the table, the filter status button is highlighted and displays the text **Filtered** 

- Click the filter status button to remove the filter

The button now indicates that the data is unfiltered. 

➢ Close the table

➢ Save the changes to the design of the table if asked

INTERROGATING THE DATABASE

Once you have entered data into one or more tables, you need to be able to interrogate the database to locate the information you require.

A query lets you find the records that you are interested in. Once the query is saved, you can use it to produce a report.

You can create every aspect of a query in design view, or use the Query Wizard to guide you through the initial steps.

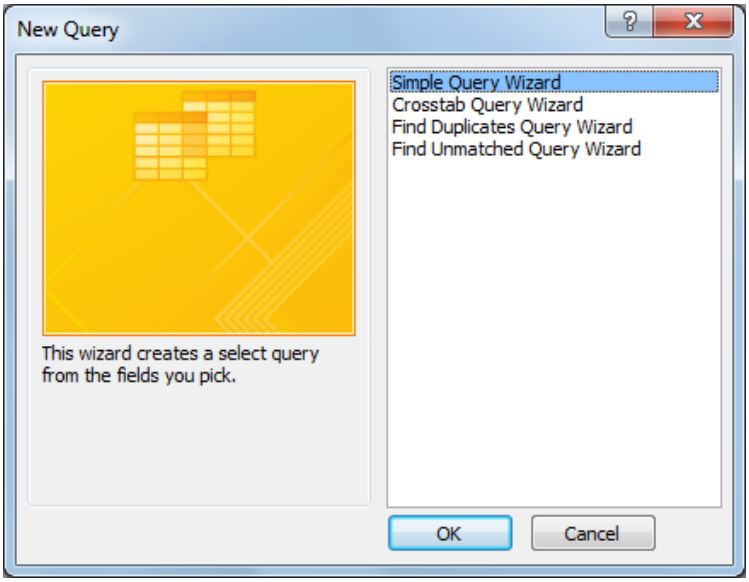
CREATING A QUERY USING THE QUERY WIZARD

A wizard is a sequence of dialog boxes that guide you through a step-by-step process. It will usually provide you with prompts and selectable options.

For this first exercise, you will create a query to find all of the students who live in London.

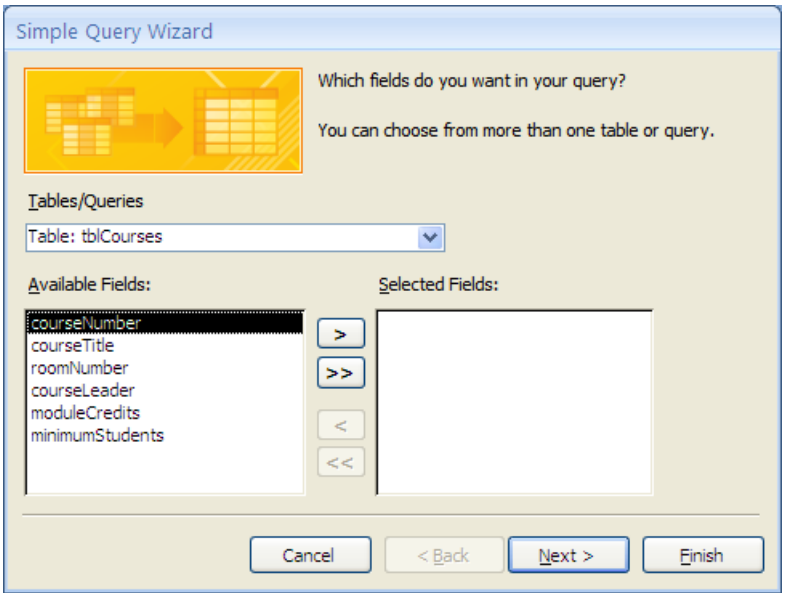
- Select the **Create** tab
- Click the **Query Wizard** button from the **Queries** group of commands

The New Query dialog box is displayed.

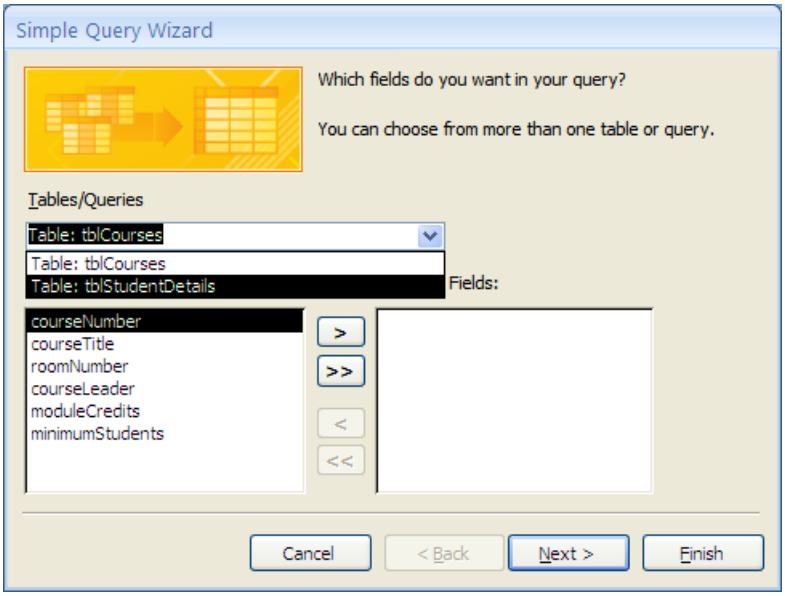


- Ensure that **Simple Query Wizard** is selected
- Click **OK**

The wizard helps you to identify and select the table(s) and field(s) you want to use in the query.



- Click the down arrow in the Tables/Queries box

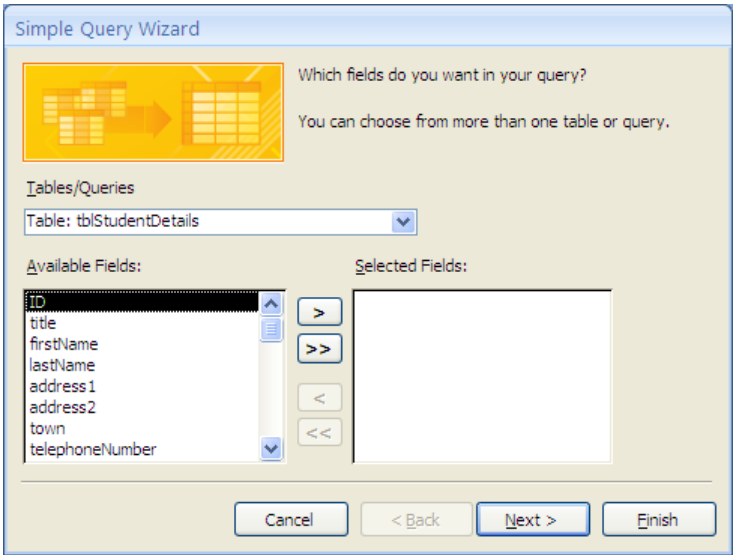


The two tables in the database are listed.

The information you want to locate is held in the table containing the student details.

- Select **Table: tblStudentDetails**

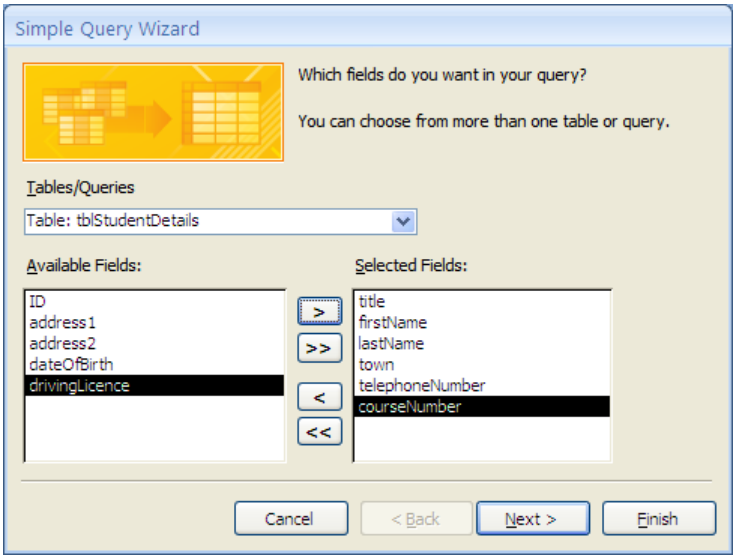
The table is selected and the fields within it are listed.



For this exercise we will choose just a few of the available fields.

- Select **title** from the Available Fields list
- Click the > button to move the title field to the Selected Fields box
- Highlight each of the following fields in turn and click the button to move them to the list of selected fields:

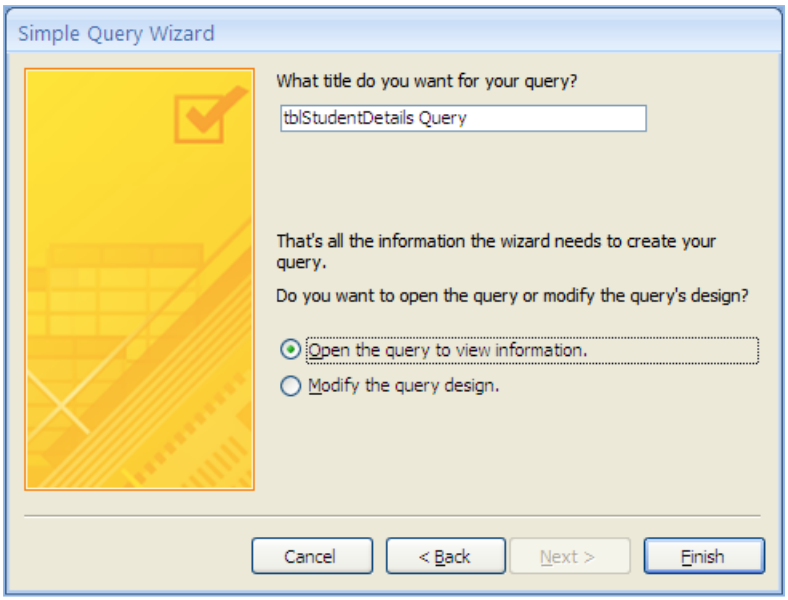
  - **firstName**
  - **lastName**
  - **town**
  - **telephoneNumber**
  - **courseNumber**



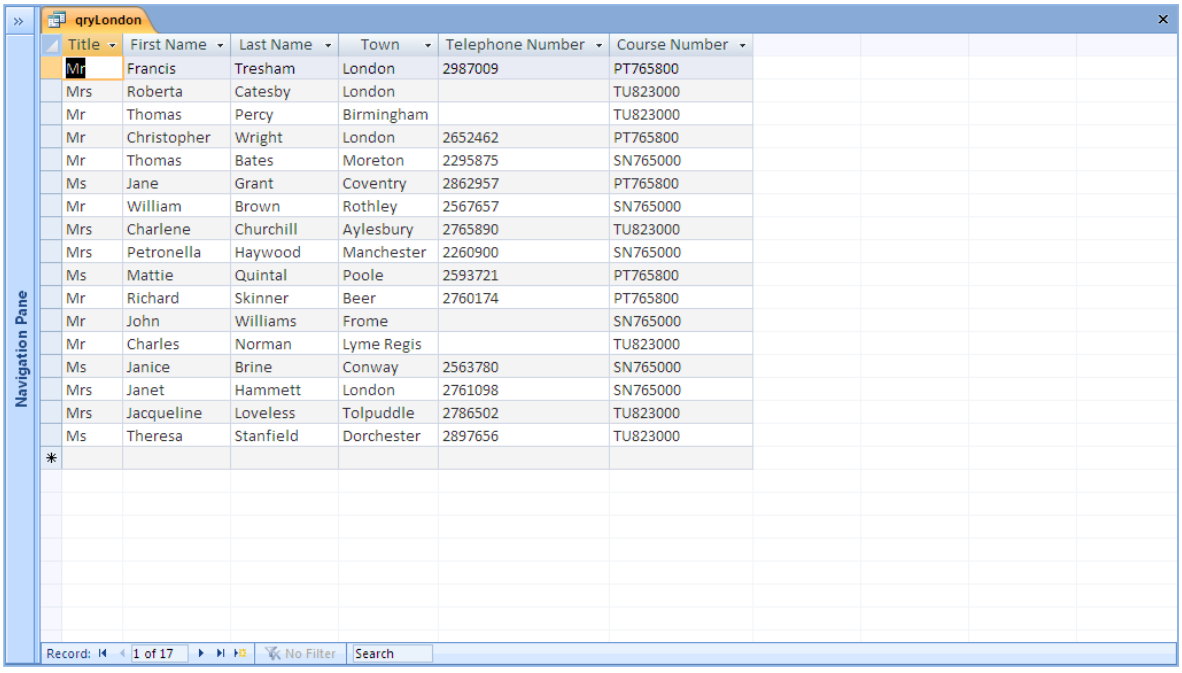
To include all of the fields in the query click the >> button.

- Click the **Next** button

The wizard suggests a name for the query.



- Replace the suggested name with **qryLondon**
- Click **Finish** to see the data picked out by the query



Title	First Name	Last Name	Town	Telephone Number	Course Number
Mr	Francis	Tresham	London	2987009	PT765800
Mrs	Roberta	Catesby	London		TU823000
Mr	Thomas	Percy	Birmingham		TU823000
Mr	Christopher	Wright	London	2652462	PT765800
Mr	Thomas	Bates	Moreton	2295875	SN765000
Ms	Jane	Grant	Coventry	2862957	PT765800
Mr	William	Brown	Rothley	2567657	SN765000
Mrs	Charlene	Churchill	Aylesbury	2765890	TU823000
Mrs	Petronella	Haywood	Manchester	2260900	SN765000
Ms	Mattie	Quintal	Poole	2593721	PT765800
Mr	Richard	Skinner	Beer	2760174	PT765800
Mr	John	Williams	Frome		SN765000
Mr	Charles	Norman	Lyme Regis		TU823000
Ms	Janice	Brine	Conway	2563780	SN765000
Mrs	Janet	Hammett	London	2761098	SN765000
Mrs	Jacqueline	Loveless	Tolpuddle	2786502	TU823000
Ms	Theresa	Stanfield	Dorchester	2897656	TU823000

The fields that you specified are the only ones displayed.

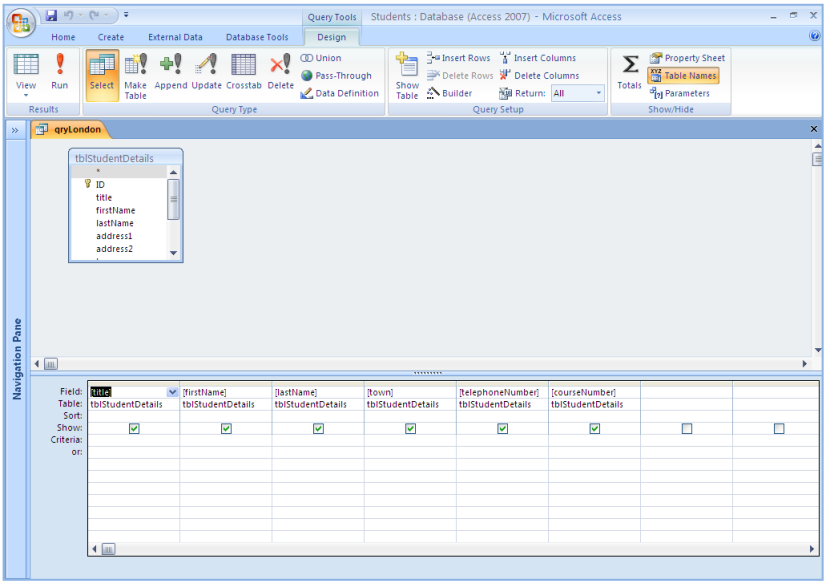
MODIFYING A QUERY

You want the query to select the students who live in London. You therefore need to modify the query to pick out only the relevant records.

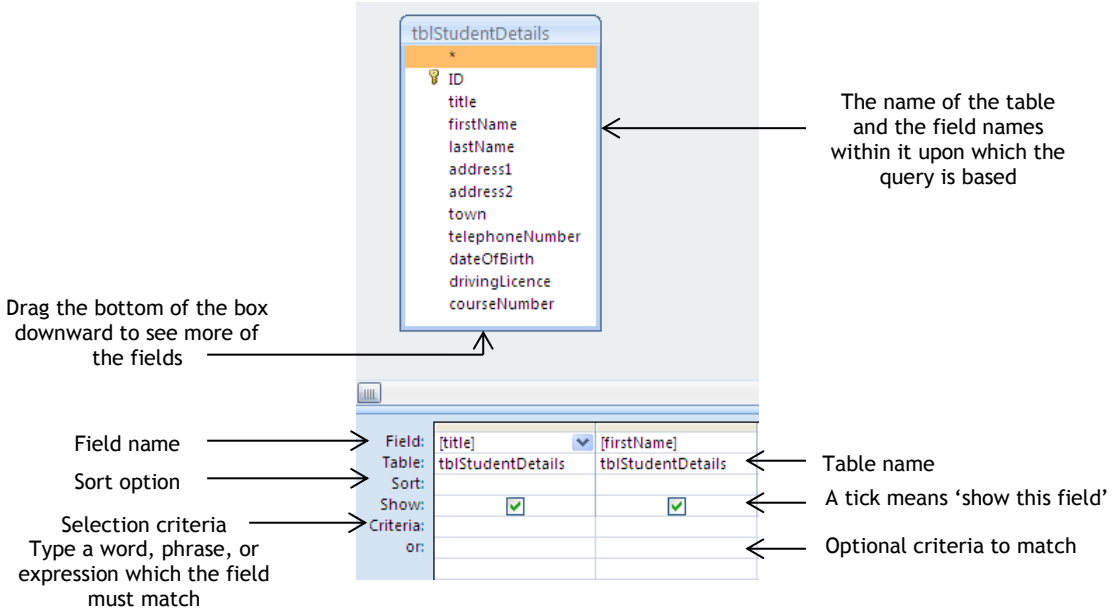
To modify the query you need to use the design view.

- Select the **Home** tab
- Click the **Design View** icon in the **Views** group of commands 

The query design grid is displayed.



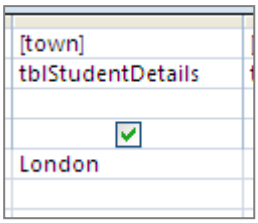
Have a look at what the boxes in the grid are used for.



You want to select the students who live in London.

The town field is the one holding the information that you will use to decide which records to choose.

- In the town field, click into the Criteria box and type **London**



If you click into another field you will see that Access automatically encloses the text in quotes.

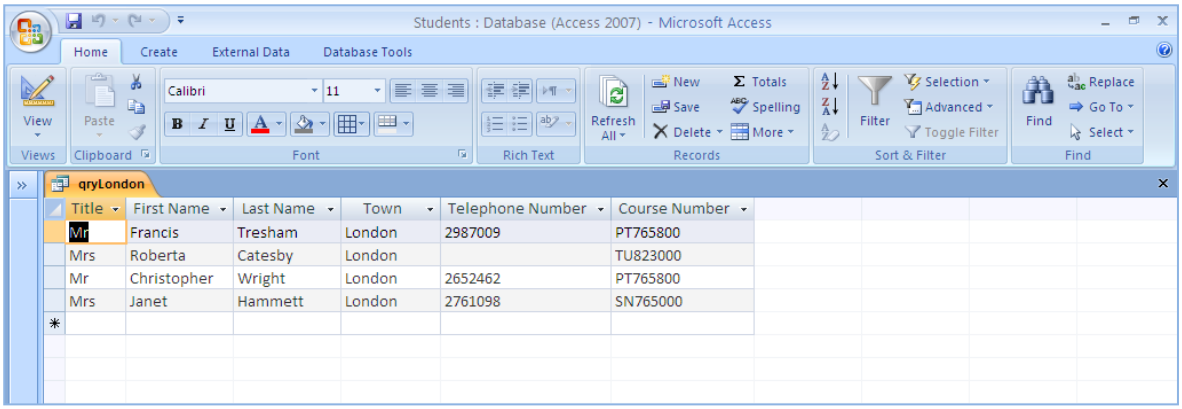
To view the results of this amendment:

- Click the **Datasheet View** button 

The Datasheet View button can be found at the far left of the ribbon when you choose either the Home tab or the Query Tools Design contextual tab.

The results of a query can also be viewed by clicking the Run button which is located in the Results group of commands on the Design contextual tab. 

The resulting list shows only those records where the Town field equals London.



- Click the **Design View** button to return to design view 

Logical operators

You can use the operators **Or** and **And** to combine criteria.

You use the logical operator **Or** in a field to find those records where either one criterion or another is matched.

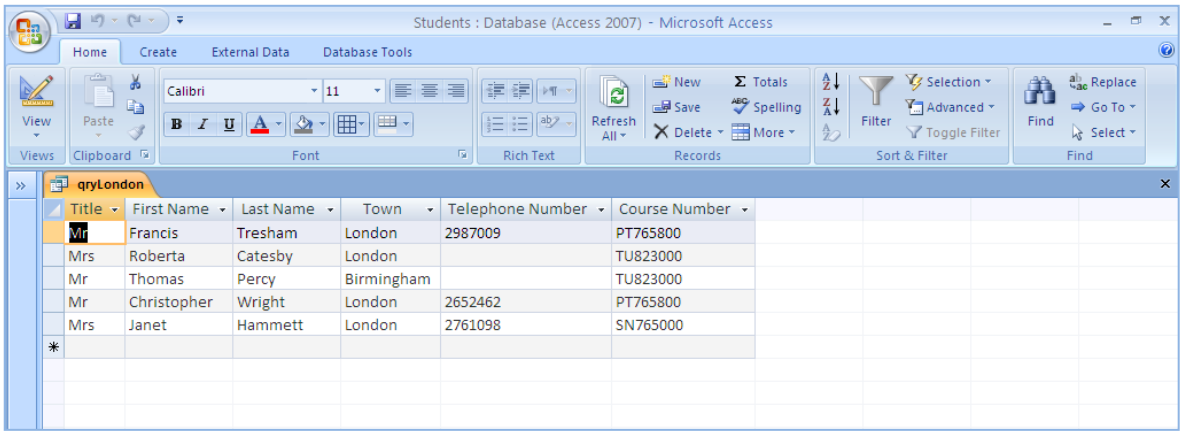
To select the students who live in either London or Birmingham:

- In the **Or** row below "London" type **Birmingham**

Alternatively you can type **"London" Or "Birmingham"** in the criteria box.

[lastName]	[town]	[telephoneNumber]
tblStudentDetails	tblStudentDetails	tblStudentDetails
☑	☑	☑
	"London"	
	Birmingham	

- Click the Datasheet View button to view the results



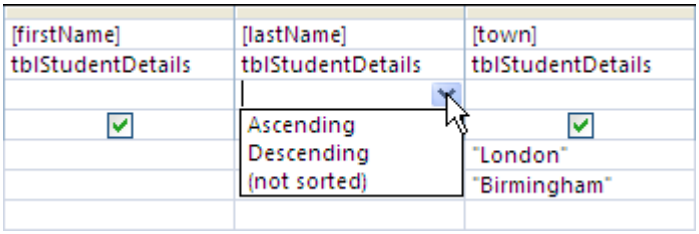
Title	First Name	Last Name	Town	Telephone Number	Course Number
Mr	Francis	Tresham	London	2987009	PT765800
Mrs	Roberta	Catesby	London		TU823000
Mr	Thomas	Percy	Birmingham		TU823000
Mr	Christopher	Wright	London	2652462	PT765800
Mrs	Janet	Hammett	London	2761098	SN765000

- Return to Design View

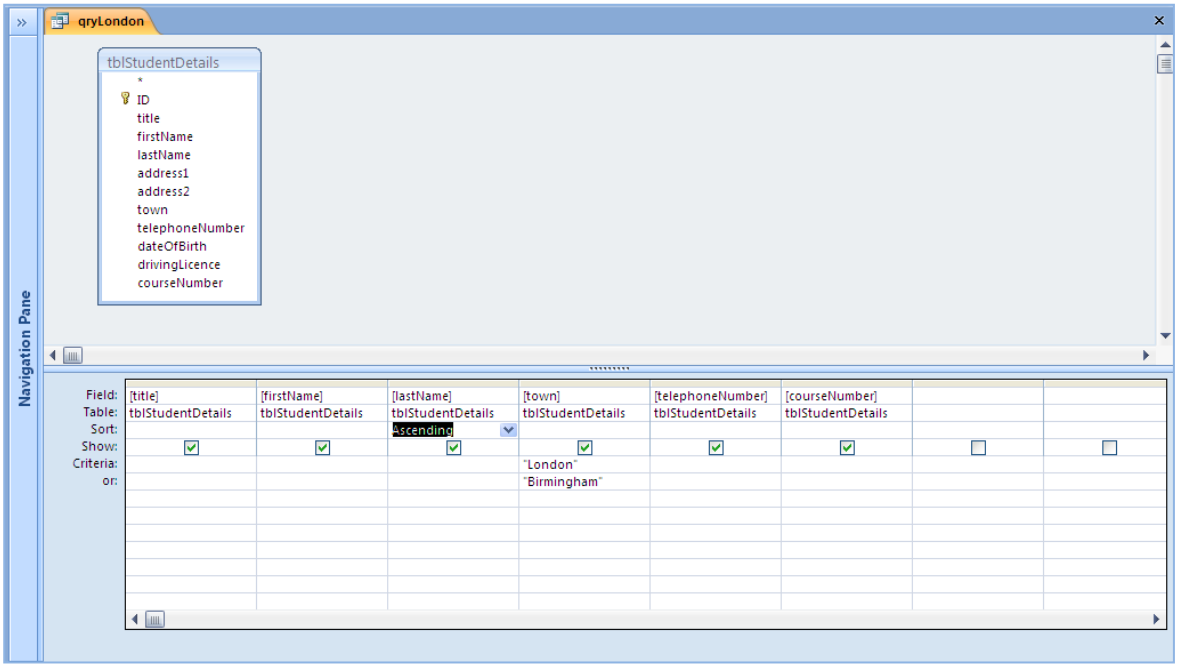
Sorting a field

Next you will sort the results of the query into ascending alphabetical order of the Last Name.

- Click into the **Sort** box of the **Last Name** field
- Click the down arrow to see the available choices



- Select **Ascending**

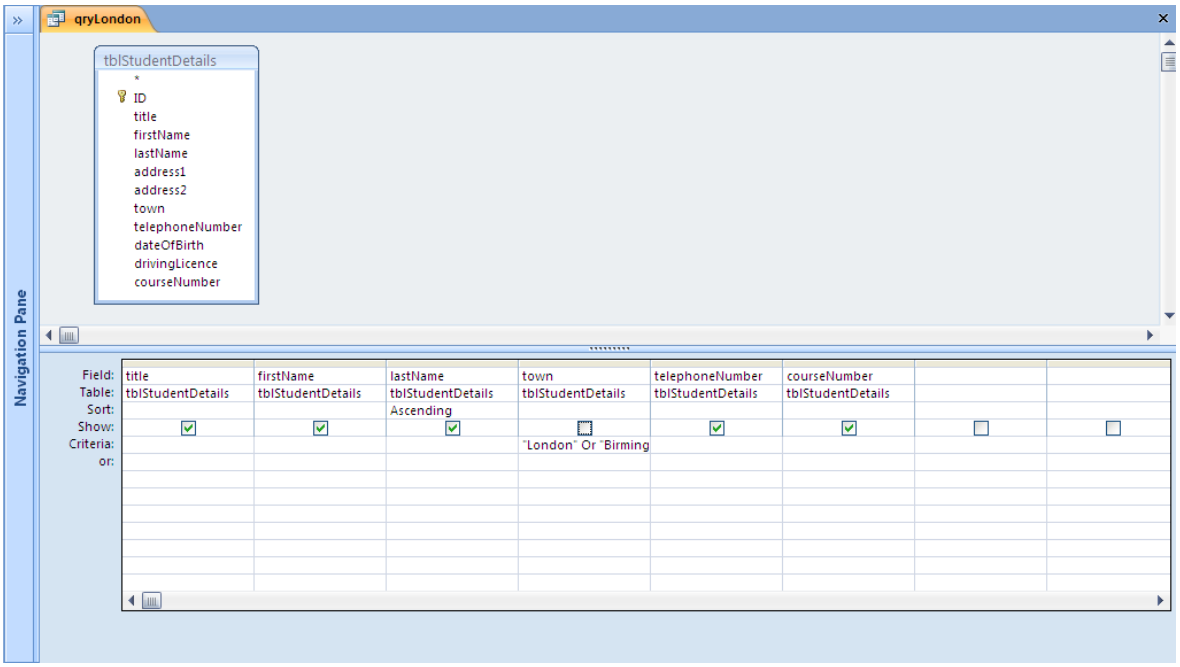


- Click the Datasheet View button
- Verify that the records are sorted alphabetically by last name
- Return to design view

Hiding a field

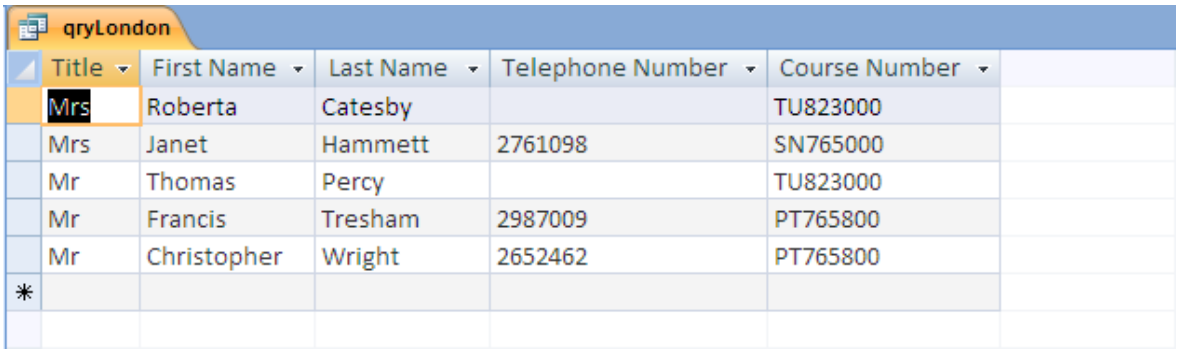
You can hide a field so that it does not show in the results of a query. You do this by removing the tick from the Show box in the field that you want to hide.

➢ Point to the tick in the **town** field and click to remove it



➢ Click the Datasheet View button

The results of the query are displayed – the students are shown in alphabetical order of last name, and the Town field is not visible.



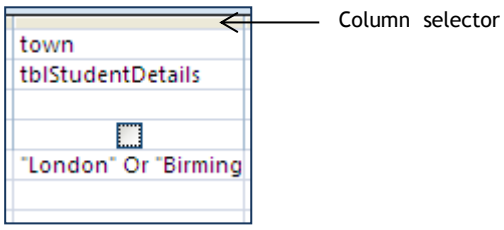
Title	First Name	Last Name	Telephone Number	Course Number
Mrs	Roberta	Catesby		TU823000
Mrs	Janet	Hammett	2761098	SN765000
Mr	Thomas	Percy		TU823000
Mr	Francis	Tresham	2987009	PT765800
Mr	Christopher	Wright	2652462	PT765800

➢ Click the Save button on the Quick Access Toolbar

Removing a field

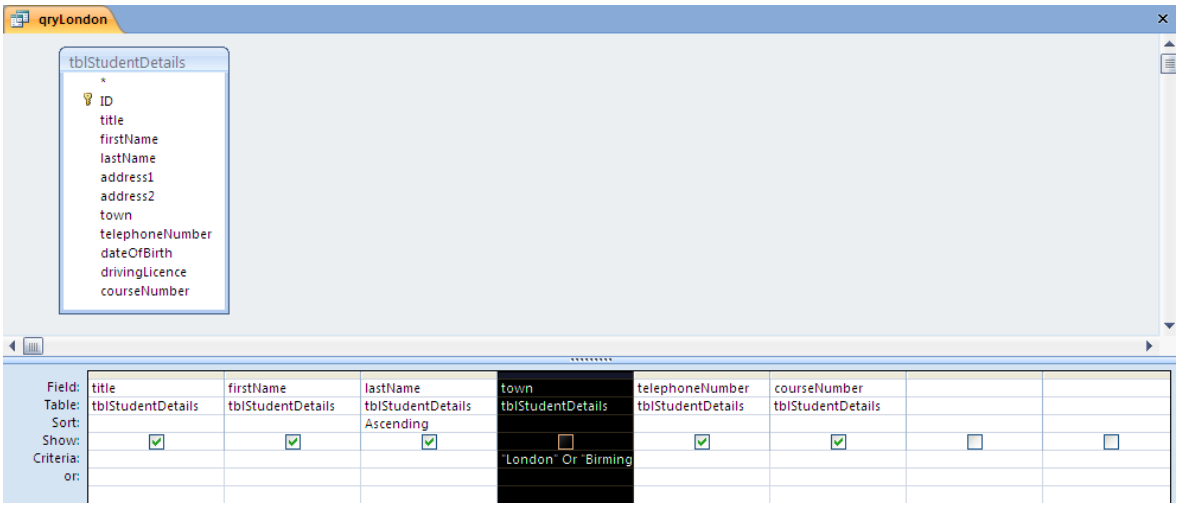
You are going to remove the town field from the query.

- Ensure that you are in design view
- Point to the town field's column selector (the narrow grey box at the top of the field)



As you point at this area, the mouse pointer changes to ⬇

- Click once to select the field



- Press the **Delete** key

The field is removed from the query but not from the underlying table.

- View the results of the query

The students are shown in alphabetical order of last name, since that criterion is still set in the query.

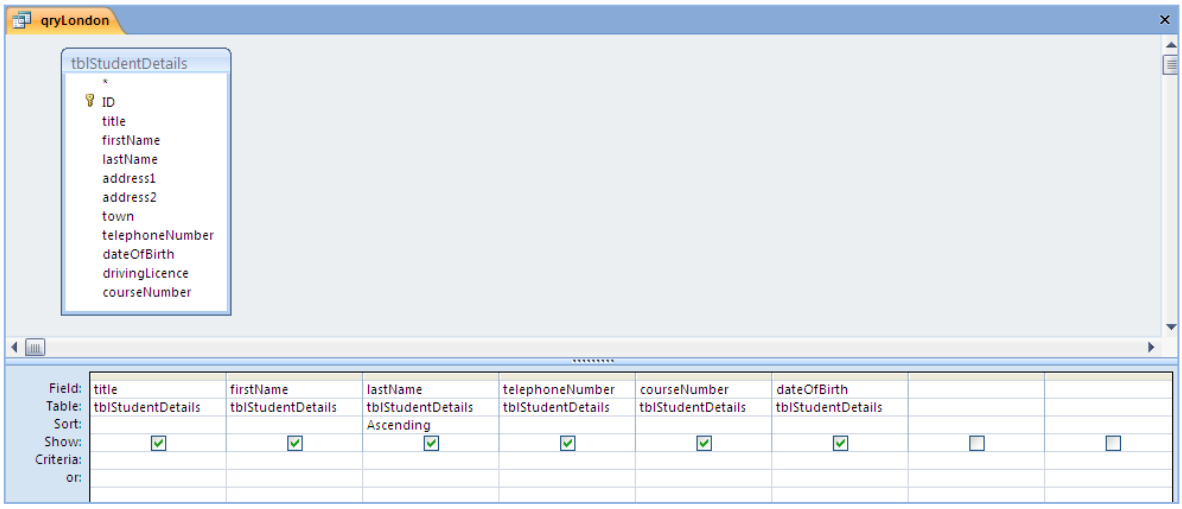
However, because the town field has been deleted, the 'London or Birmingham' criteria have also been deleted from the query. Therefore all of the records are now displayed.

Adding a field

You will add the Date of Birth field to the query.

- Ensure that you are in design view
- Double-click **dateOfBirth** from the list of fields shown in the top section of the Design window

The field is added to the grid in the next available column.



Moving a field

You are going to move the courseNumber field, so that it is the first field in the query.

- Click the column selector box above the courseNumber field

The field is selected.

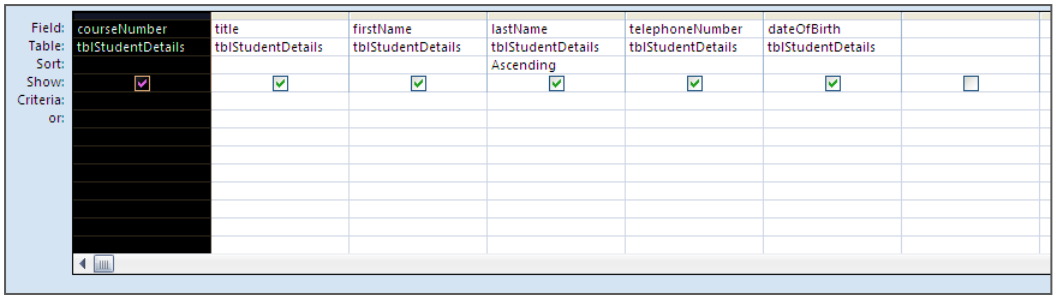
- Point to the column selector box again

The mouse pointer changes to a white arrow 

- Click and hold down the mouse button
- Drag the courseNumber field to the left along the grid

As you move the field, a bold vertical line appears between two fields on the grid. This shows you where the field would be positioned if you released the mouse button.

- Release the mouse button when the vertical line reaches the far left of the grid



- View the result in datasheet view

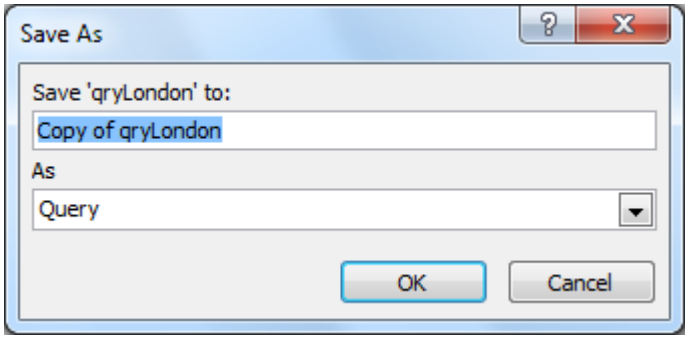
qryLondon

Course Number	Title	First Name	Last Name	Telephone Number	Date of Birth
SN765000	Mr	Thomas	Bates	2295875	21-Jun-57
SN765000	Ms	Janice	Brine	2563780	02-Nov-46
SN765000	Mr	William	Brown	2567657	08-Oct-72
TU823000	Mrs	Roberta	Catesby		02-Apr-71
TU823000	Mrs	Charlene	Churchill	2765890	15-May-73
PT765800	Ms	Jane	Grant	2862957	16-Aug-75
SN765000	Mrs	Janet	Hammett	2761098	20-Nov-46
SN765000	Mrs	Petronella	Haywood	2260900	26-May-73
TU823000	Mrs	Jacqueline	Loveless	2786502	26-Oct-74
TU823000	Mr	Charles	Norman		15-Mar-69
TU823000	Mr	Thomas	Percy		24-Feb-68
PT765800	Ms	Mattie	Quintal	2593721	17-Feb-55
PT765800	Mr	Richard	Skinner	2760174	21-Jun-65
TU823000	Ms	Theresa	Stanfield	2897656	09-Nov-81
PT765800	Mr	Francis	Tresham	2987009	05-Nov-53
SN765000	Mr	John	Williams		28-Feb-67
PT765800	Mr	Christopher	Wright	2652462	13-Apr-76

Saving a query under a new name

You are going to save a copy of this query under a different name.

- Select the **File** tab
- Click **Save Object As**



- In the Save As dialog box, delete the suggested name and type **qryLastName**
- Click **OK**

Sort order

You may want to view the data sorted into groups. For example, you could have a sorted list of last names grouped by course number. In this case you would sort on two fields: Course Number and Last Name. If there is a possibility of several students with the same last name, it would be a good idea to also sort on the First Name field.

You need to ensure that the first field that you want to sort by is positioned to the left of the second field you want to sort by on the query design grid.

- Select the **Home** tab
- Ensure that you are viewing qryLastName in design view

You have already set Sort Ascending on field: lastName. You have also moved the courseNumber field so that it is the leftmost field on the grid.

- In the Sort box of the field: courseNumber, select **Ascending**
- Move the field: lastName so that it is to the left of the field: firstName
- In the Sort box of the field: firstName, select **Ascending**
- Hide the other fields so that only courseNumber, lastName and firstName will be displayed
- View the result

qryLastName

Course Number	Last Name	First Name
PT765800	Grant	Jane
PT765800	Quintal	Mattie
PT765800	Skinner	Richard
PT765800	Tresham	Francis
PT765800	Wright	Christopher
SN765000	Bates	Thomas
SN765000	Brine	Janice
SN765000	Brown	William
SN765000	Hammett	Janet
SN765000	Haywood	Petronella
SN765000	Williams	John
TU823000	Catesby	Roberta
TU823000	Churchill	Charlene
TU823000	Loveless	Jacqueline
TU823000	Norman	Charles
TU823000	Percy	Thomas
TU823000	Stanfield	Theresa

- Save the query
- Close the query

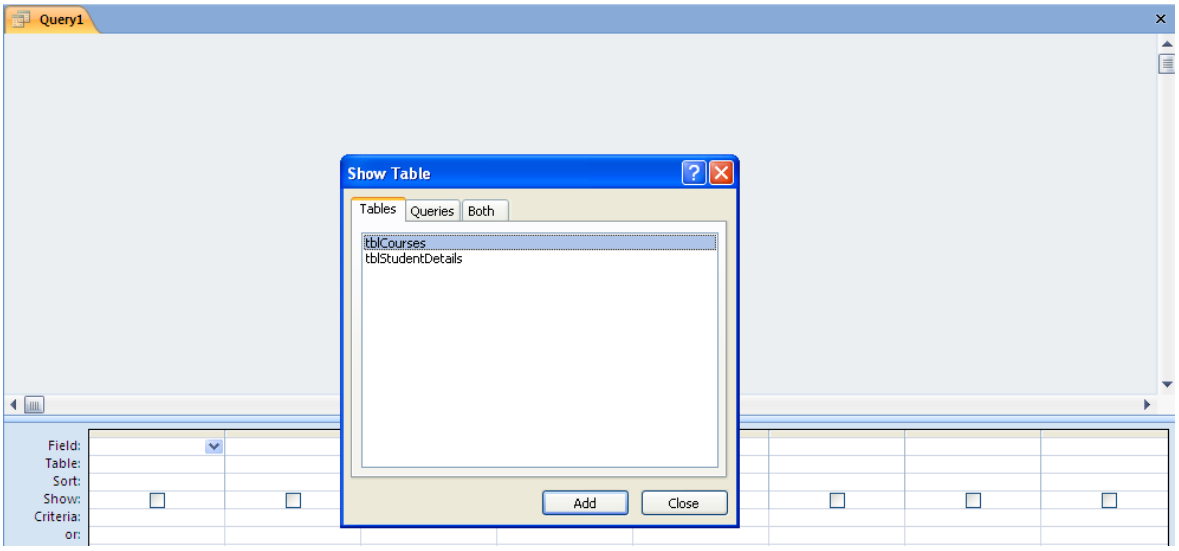
CREATING A QUERY WITHOUT THE WIZARD

You will use both tables to produce a query that locates those students whose course leader is William Bligh.

For this example, instead of using the wizard you will create the query in design view.

- Select the **Create** tab on the ribbon
- Click the **Query Design** button in the **Queries** group of commands

The query design grid is displayed.

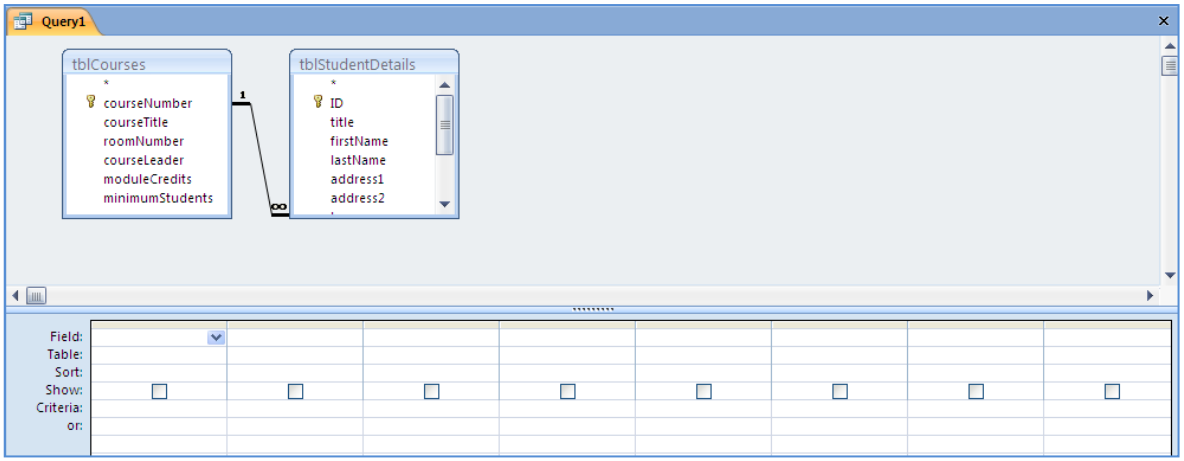


The first requirement is to use the Show Table dialog box to specify which table(s) or query(s) you want to base this new query on. In other words, where are the fields that you require?

- Select **tblCourses**
- Click **Add**

As each table is chosen it is added to the query window.

- Select **tblStudentDetails**
- Click **Add**
- Click the **Close** button to close the Show Table dialog box



Once you have added the tables to the query, you can then select individual fields from each table to define the criteria for the query.

Adding field names to the grid

There are several ways of adding field names to the grid:

- Double-click an individual field name

Or

- Click on a field name and, using the mouse, drag it to the grid

Or (if you want to use all of the fields in the query)

- Double-click on the title bar of the table, then click the selected field names and drag them all on to the grid together

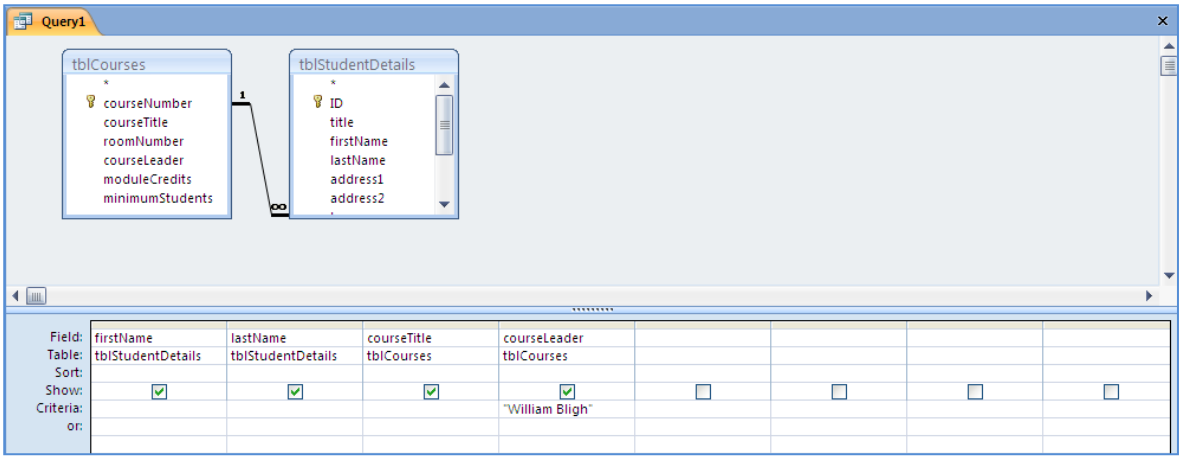
From the **tblStudentDetails** list of fields:

- Select **firstName** and add it to the grid
- Select **lastName** and add it to the grid

From the **tblCourses** list of fields:

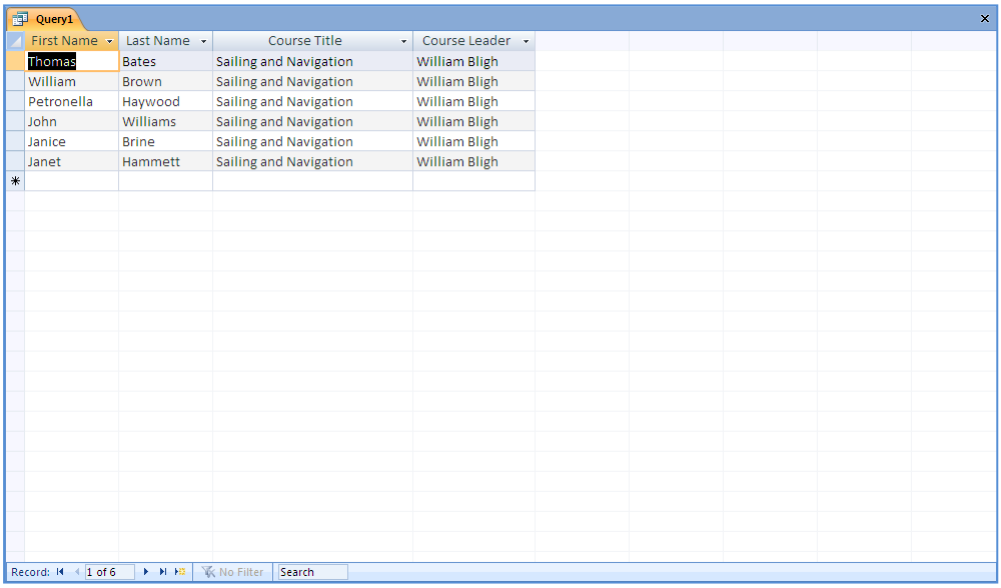
- Select **courseTitle** and add it to the grid
- Select **courseLeader** and add it to the grid

- In the courseLeader **Criteria** box, type **William Bligh**



When you click outside of the criteria box Access automatically encloses the text in quotes.

- View the result



You can see that the information has been taken from both tables and combined to produce the required result.

You will be adapting this query later to allow you to select any course leader and see the students who are on the course for which that course leader is responsible.

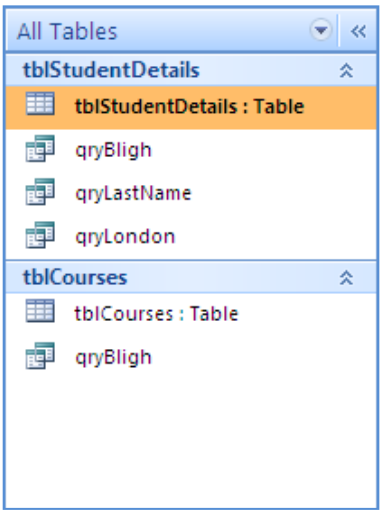
- Save the query with the name **qryBligh**
- Close the query

CHANGING THE NAVIGATION PANE VIEW

You can change what is displayed in the Navigation Pane and the way in which the objects are arranged.

- If the side Navigation Pane is minimised, click the Navigation Pane button to restore it

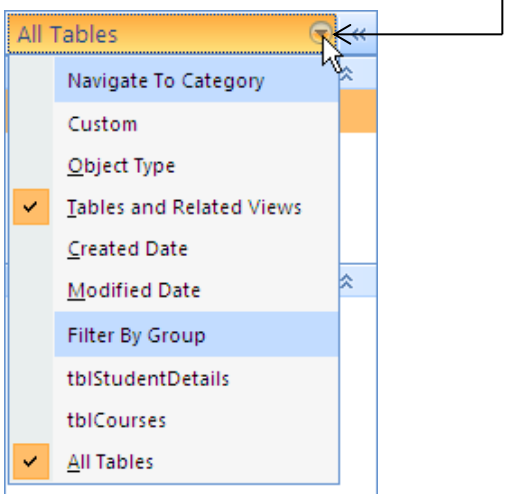
The Navigation Pane shows a list of all tables with their related queries.



The query qryBligh takes data from both of the tables so is related to both. Therefore, in this view, it is listed under both tables. This can sometimes cause confusion so you will change the view in the Navigation Pane.

To change the way that the objects are arranged:

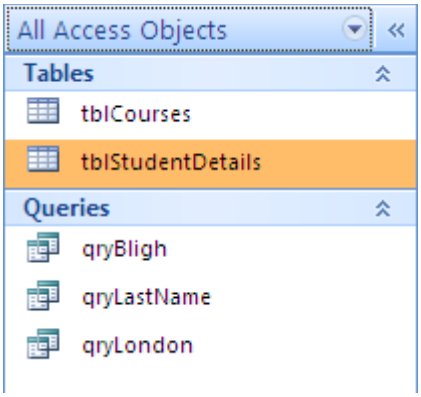
- Click the down arrow on the Navigation Pane's title bar



Notice that in the Navigate To Category options the current selection is **Tables and Related Views**

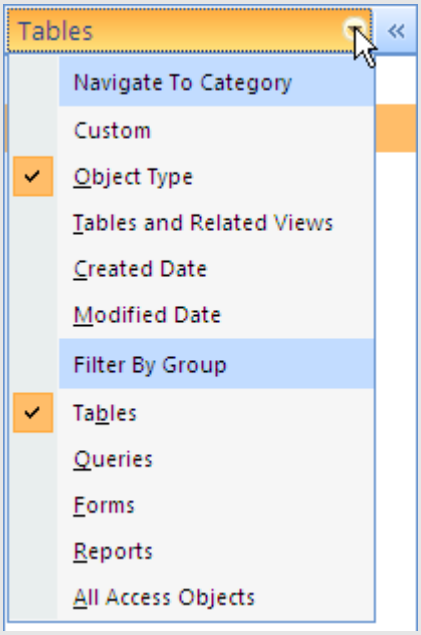
➢ Select **Object Type**

The Navigation Pane now shows the names of all the database objects grouped according to the object type.



If the Navigation Pane is only showing a list of tables, then follow these steps to display the queries also:

- Click the down arrow on the title bar of the Navigation Pane



- Choose **All Access Objects** from the **Filter By Group** options

COPYING A QUERY

Sometimes it is much easier and quicker to create a new query by copying an existing one and modifying it.

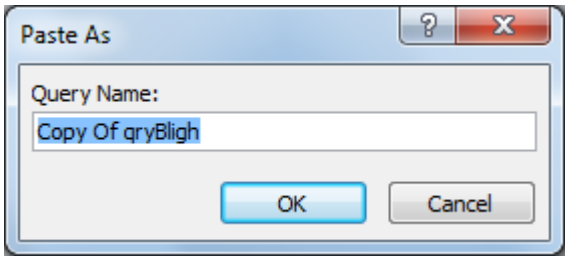
For the next exercise you are going to create a new query by copying qryBligh.

- Select **qryBligh** in the Navigation Pane
- Click the **Copy** button in the **Clipboard** group of commands on the **Home** tab 

To paste the copy into the same database:

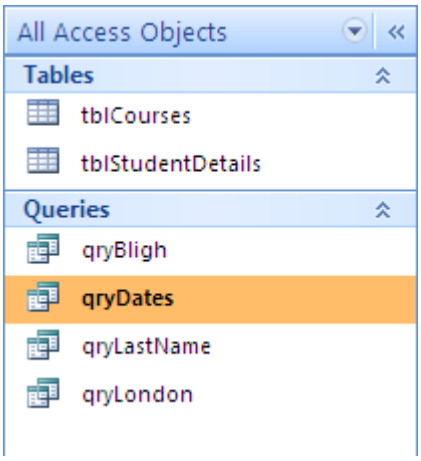
- Click the **Paste** button in the **Clipboard** group 

Access suggests a name for the query.



- Delete the suggested name and type **qryDates**
- Click **OK**

The query is added to the list.

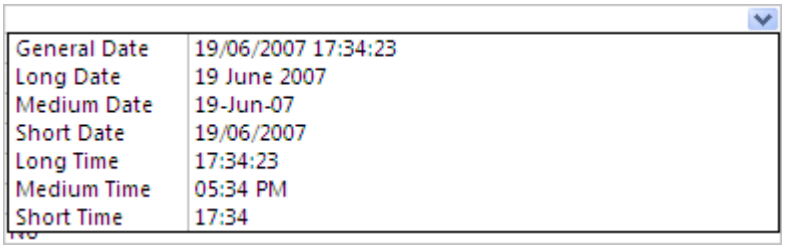


- Open **qryDates** in **Design View** (right-click on qryDates and select Design View)
- Delete the **courseTitle** and **courseLeader** fields and add the **dateOfBirth** field
- Drag the **dateOfBirth** field so that it is the leftmost field in the grid

You will be setting criteria on the dateOfBirth field, but before you do that there are some things worth noting about querying a date field.

USING DATES IN A QUERY

When you set up a date field in a table, you have the option of displaying the date in several different formats.



It is important to remember that choosing a date format does not change the way that Access stores the date, nor does it stipulate the way in which the date must be entered into the database. It just affects the way the date is displayed. In other words, Access shows you the date in the format you choose to see it.

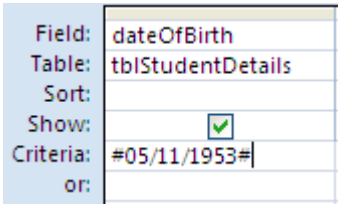
The way that Access stores dates means that retrieving data is not quite as straightforward as, say, entering criteria in a text field. We do know, however, that the format is numeric – the month names, for example, are only part of the field format.

What follows are examples of common criteria that you can use when selecting dates.

Selecting a specific date

If you know the exact date you are looking for, you simply type it in the Criteria box enclosing it in hashes (#).

- In the Criteria box of the dateOfBirth field, type **#05/11/1953#**



It is also possible to type the criteria as 5/11/53 then click into a different cell. Access recognises the criteria as a date and puts the hash marks in automatically.

- View the result

qryDates

Date of Birth	First Name	Last Name
05-Nov-53	Francis	Tresham
*		

You can use the greater than (>) and less than (<) symbols in the criteria.

For example, to find the students who were born after 5 November 1953:

- Amend the criteria to **>#05/11/1953#**
- View the result

qryDates

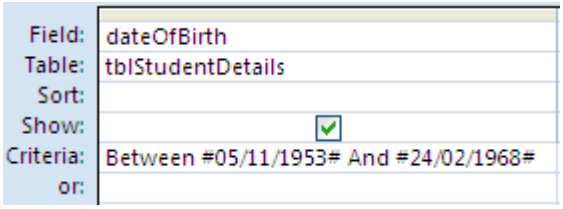
Date of Birth	First Name	Last Name
02-Apr-71	Roberta	Catesby
24-Feb-68	Thomas	Percy
13-Apr-76	Christopher	Wright
21-Jun-57	Thomas	Bates
16-Aug-75	Jane	Grant
08-Oct-72	William	Brown
15-May-73	Charlene	Churchill
26-May-73	Petronella	Haywood
17-Feb-55	Mattie	Quintal
21-Jun-65	Richard	Skinner
28-Feb-67	John	Williams
15-Mar-69	Charles	Norman
26-Oct-74	Jacqueline	Loveless
09-Nov-81	Theresa	Stanfield
*		

However, note that you cannot, for example, type '1953' to find all students born in that year, because all parts of the date must be included in the criteria.

Selecting a range of dates

You use the **'Between…And'** operator to specify a range of dates.

- Amend the criteria to **Between #05/11/1953# And #24/02/1968#**



If you cannot see all of the text in the box, drag the border to make it wider.

- View the result

qryDates

Date of Birth	First Name	Last Name
05-Nov-53	Francis	Tresham
24-Feb-68	Thomas	Percy
21-Jun-57	Thomas	Bates
17-Feb-55	Mattie	Quintal
21-Jun-65	Richard	Skinner
28-Feb-67	John	Williams
*		

Six records satisfy the given criteria.

Note that 'Between #05/11/1953# And #24/02/1968#' means 'from 5/11/1953 to 24/2/1968 inclusive'.

Using expressions to query a date field

It's easy to assume that the date format will always be shown as dd/mm/yy. However, the default date format specified within Windows is mm/dd/yy.

If the regional settings on the computer you are using are set to English (United States) rather than English (United Kingdom), you could accidentally select incorrect records.

To overcome this problem, you use functions to select individual parts of a date.

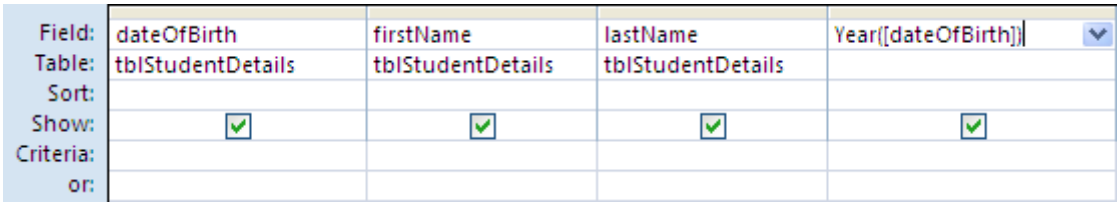
- Delete the criteria in the dateOfBirth field

As the date is divided into three parts (day, month, year), Access has built-in functions: Day(), Month(), and Year() that can be used to pick out any one of these three components of a given date.

You are going to find students who were born prior to 1970, so will need to use the Year() function to select the year component from the rest of the date.

You also need to identify the field that holds the date.

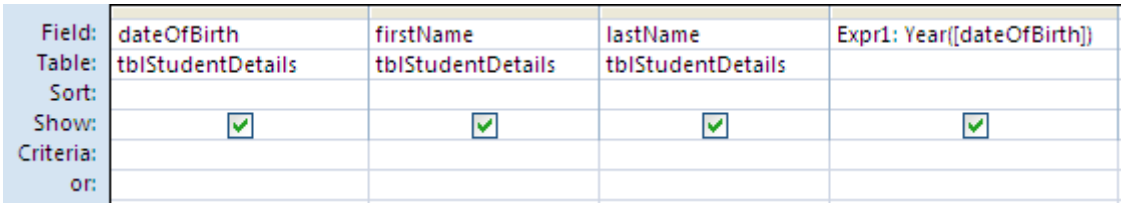
- In the first blank column, type **Year([dateOfBirth])** in the Field box



Observe that the field name dateOfBirth is enclosed within two different types of brackets. Access uses square brackets [ ] to signify that what is within them is a field name. This then goes within parentheses ( ) to indicate that it is to be taken as the parameter of the Year() function.

- Click away from the cell

Access gives the field a default name by adding the text Expr1:



- In the Criteria box of the **Expr1** field type **<1970**

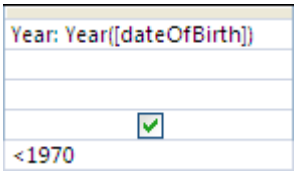
- View the result

qryDates

Date of Birth	First Name	Last Name	Expr1
05-Nov-53	ancis	Tresham	1953
24-Feb-68	Thomas	Percy	1968
21-Jun-57	Thomas	Bates	1957
17-Feb-55	Mattie	Quintal	1955
21-Jun-65	Richard	Skinner	1965
28-Feb-67	John	Williams	1967
15-Mar-69	Charles	Norman	1969
02-Nov-46	Janice	Brine	1946
20-Nov-46	Janet	Hammett	1946

Notice that the field name is shown as Expr1. To change this name:

- In Design view, delete **Expr1** from the field box (do not delete the colon (:))
- Type **Year** instead



- View the result

qryDates

Date of Birth	First Name	Last Name	Year
05-Nov-53	ancis	Tresham	1953
24-Feb-68	Thomas	Percy	1968
21-Jun-57	Thomas	Bates	1957
17-Feb-55	Mattie	Quintal	1955
21-Jun-65	Richard	Skinner	1965
28-Feb-67	John	Williams	1967
15-Mar-69	Charles	Norman	1969
02-Nov-46	Janice	Brine	1946
20-Nov-46	Janet	Hammett	1946

The field now has an appropriate name displayed in datasheet view.

- Return to design view
- Delete the criteria from the Year field

- In the next empty column type **Month:Month([dateOfBirth])** in the field box
- In the Criteria box for this field type **5 Or 6**

lastName	Year: Year([dateOfBirth])	Month: Month([dateOfBirth])
tblStudentDetails		
☑	☑	☑
		5 Or 6

- View the results of the query

qryDates

Date of Birth	First Name	Last Name	Year	Month
21-Jun-57	omas	Bates	1957	6
15-May-73	Charlene	Churchill	1973	5
26-May-73	Petronella	Haywood	1973	5
21-Jun-65	Richard	Skinner	1965	6

- Return to design view
- Delete the criteria from the Month field
- In the next empty column type **Day:Day([dateOfBirth])** in the field box
- In the Criteria box for this field type **26**

lastName	Year: Year([dateOfBirth])	Month: Month([dateOfBirth])	Day: Day([dateOfBirth])
tblStudentDetails			
☑	☑	☑	☑
			26

- View the results

qryDates

Date of Birth	First Name	Last Name	Year	Month	Day
26-May-73	tronella	Haywood	1973	5	26
26-Oct-74	Jacqueline	Loveless	1974	10	26

- Save and close the query

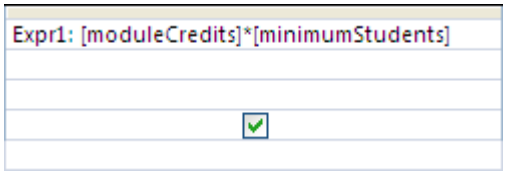
USING A CALCULATED FIELD

A database table is designed simply to hold data, and it is not possible to perform a calculation in a table. However, you can use a query to find totals, averages, minimum or maximum values in the records that the query has identified, and you can then include these values in a report.

You are going to create a calculated field which will multiply the minimum number of students by the module credits.

- Create a new query in design view
- Add the **tblCourses** table to the query design grid
- Add the **moduleCredits** and **minimumStudents** fields to the grid
- Click into the next empty Field cell on the grid
- Type **moduleCredits*minimumStudents** in the Field box
- Click into another cell

Access adds the default name **Expr1** to the column and puts square brackets [ ] around each of the field names.



- Delete the default name **Expr1** and type **Total** in its place
- View the result

Query1

Module Credits	Minimum Number of Stu	Total
5	45	225
7.5	20	150
4	25	100
*		

- Save the query with the name **qryCalculated**
- Close the query

FORMS

There are different types of forms, including Detail forms, Split forms, Sub forms, and Navigation forms. This course deals mainly with Detail forms. A Detail form is used to enter, edit, or display data from a table or query. Instead of opening a table to view data, you can design a form that spreads the data out on the page, or limits the number of fields displayed.

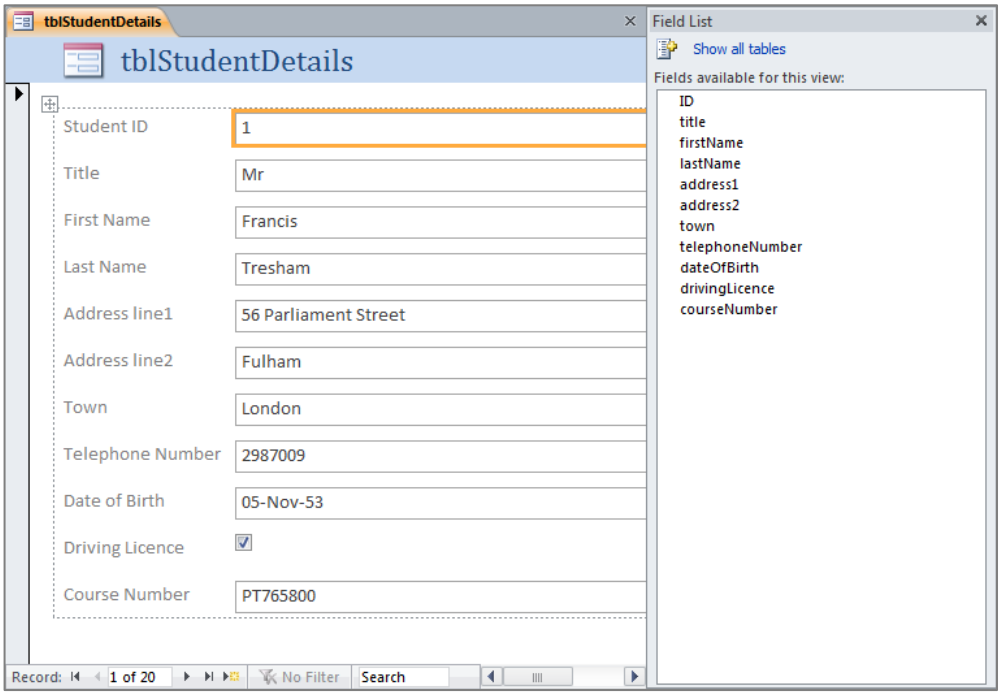
It is also much easier to enter data into a form rather than into a table, especially when the form is designed to show one record at a time.

CREATING A STANDARD DETAIL FORM

Access can automatically create a standard form that includes all the available fields. All you need to do is indicate which table or query you want the form to be based on.

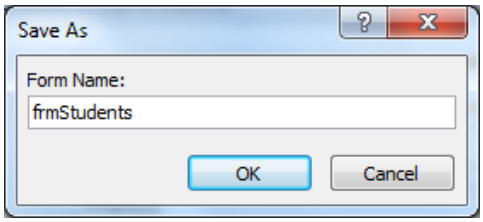
- Click the **tblStudentDetails** table in the Navigation Pane to select it
- Select the **Create** tab
- Click the **Form** button in the **Forms** group of commands

A form is created based on the selected table.



- Click the Save button on the Quick Access Toolbar

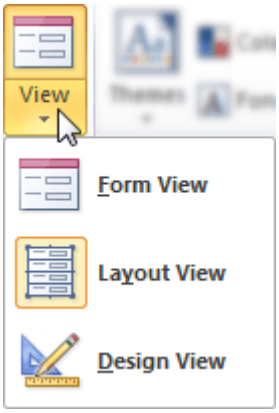
- Delete the suggested name and type **frmStudents**



- Click **OK**

- In the Views group of commands on the ribbon, click the bottom half of the **View** button

Observe that three different views are available for a form object.



Form View is used to interact with the data. In this view you can view the data, edit existing records and add new records.

Design View, like in the previous objects discussed, is used to edit the design of the form. It enables you to change the formatting and to reposition, resize, delete or add different controls to the form. In addition, Design View is used to customise other aspects of the form.

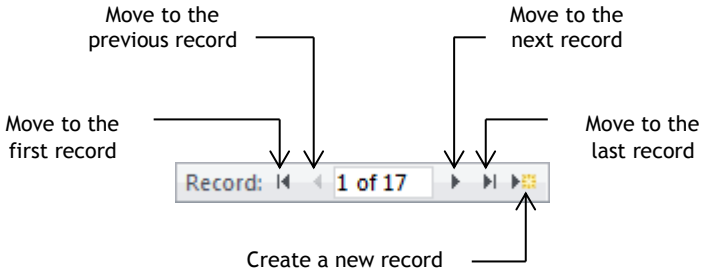
Layout View is an intermediate view between Form View and Design View. This view closely resembles the Form View and displays the data, but you cannot interact with the data. The purpose of this view is to enable you to make changes to the layout of the form and see immediately how the changes affect viewing the data. It is therefore ideal for changing the size of the fields to ensure that all data is displayed, but it also enables you to remove or add fields to the form, re-order the fields and edit the title of the form.

- Select **Form View**

Using the navigation buttons

The form shows the information in the first record of the table tblStudentDetails.

The navigation buttons at the bottom of the form enable you to view and edit other records.



- Scroll through the first few records by clicking a few times
- Click to move directly to the last record
- Click to move to the first record
- Click into the box showing **1 of 17**
- Delete the current number
- Type **14** and press Enter

The form displays record 14.

To edit the displayed record you click into the appropriate field (or use the tab key to move to the field) and make the necessary change to the data.

- Make the following changes to record 14:
  Title: **Mrs**
  Last Name: **Jones**
- Click the button to create a new record (see the diagram above)
- Add the following three records using the form:

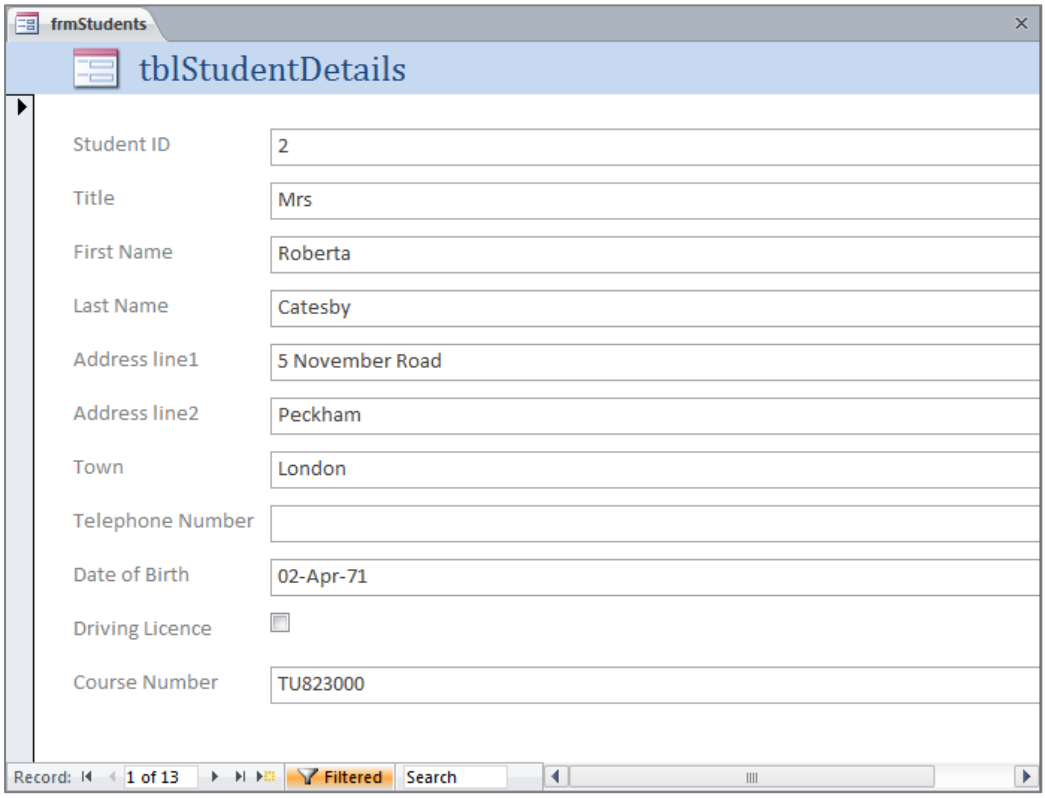
Ms	Beryl	Hollins	32 New Street		Rochester	2540874	23/10/62	No	TU823000
Mrs	Celia	Blair	8 Plain Walk	Fulham	London	2987431	10/03/50	Yes	PT765800
Mr	Jason	Armitage	99 Fairview Way		Dundee	2396566	13/12/74	No	PT765800

Applying a filter in a form

You can add a filter to a form so that you see only those records that fit a particular criterion.

- Click to return to the first record
- Click into the **Course Number** field
- Ensure that the **Home** tab is selected
- Select the **Selection** button in the **Sort & Filter** group of commands
- Choose **Does Not Equal "PT765800"**

The filter is applied, filtering out all records with course number PT765800 and therefore only showing records with a different course number.



A button at the bottom of the form reminds you that you are viewing a filtered set of records.

- Scroll through the records

To remove the filter:

- Click the **Toggle Filter** button Toggle Filter in the **Sort & Filter** group of commands

Finding a record

You use the Find command to search for a particular record.

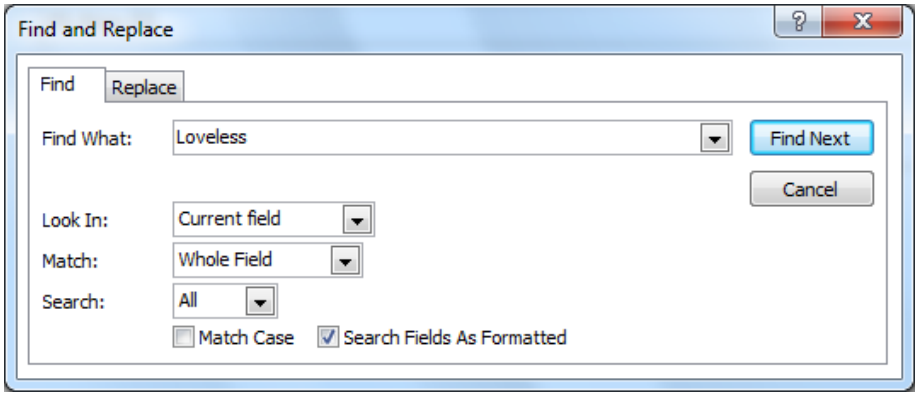
To find the record for Jacqueline Loveless, since Jacqueline is stored in the First Name field and Loveless is in the Last Name field, you can use either of these fields and search for the corresponding part of the name.

To search for the Last Name:

- Click into the Last Name field of the current record
- Ensure that the **Home** tab is selected
- Select the **Find** button in the **Find** group of commands

The Find and Replace dialog box opens.

- In the **Find What** box type **Loveless**



Observe that 'Current field' is the option displayed in the Look In box, so it is necessary to first select the field that you wish to search.

- Click **Find Next**

The first record that meets the criterion you selected is presented.

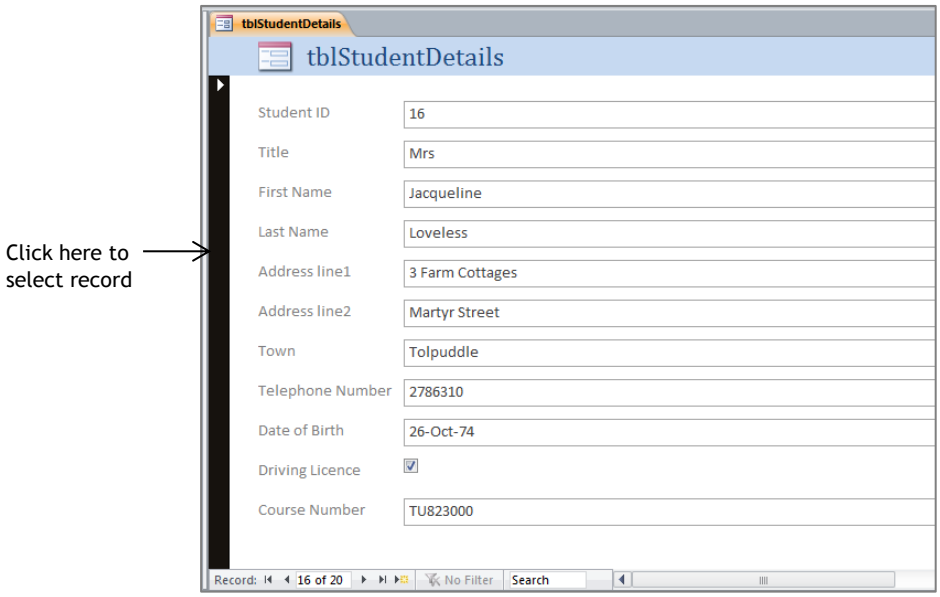
As this is the correct record:

- Click **Cancel** to close the dialog box
- Amend Address line1 to **3 Farm Cottages**
- Amend the Telephone Number to **2786310**

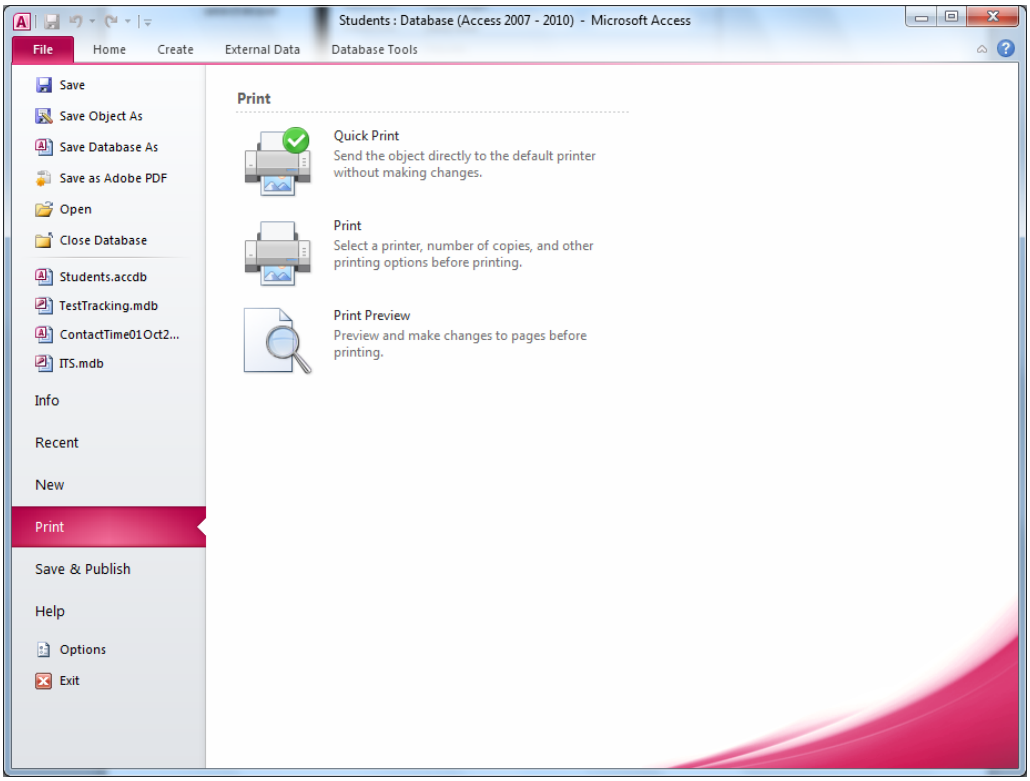
Printing a record

To print this record, you need to select it.

- Click on the selection bar to the left of the record details



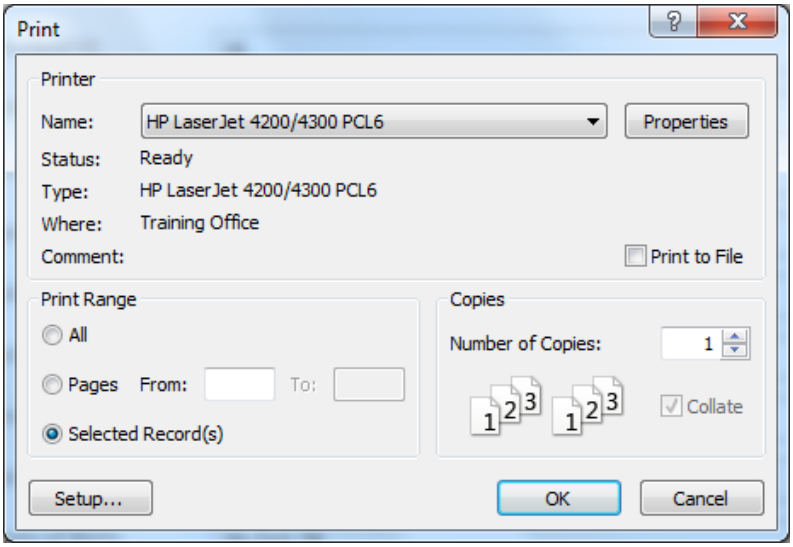
- Click the **File** tab to display the file management tools
- Click **Print**



- Select **Print** from the list of options

The Print dialog box is displayed.

- In the Print Range section, choose **Selected Record(s)**



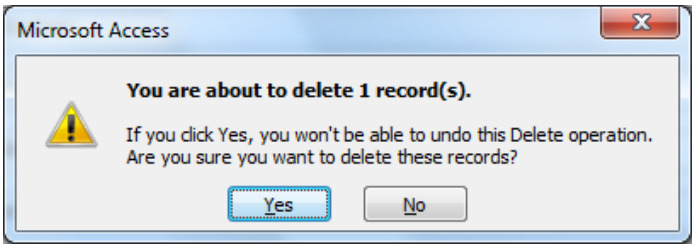
- Click **OK**

The record is printed.

Deleting a record

- Find the record for **Thomas Percy**
- Click on the selection bar to the left of the record details
- Press the **Delete** key

Access shows you a warning message requiring you to confirm that you do want to delete the selected record.



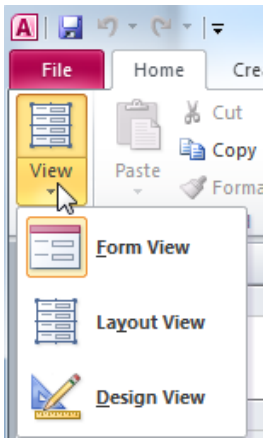
- Click **Yes**

The record is deleted.

- Display the first record in preparation for the next section

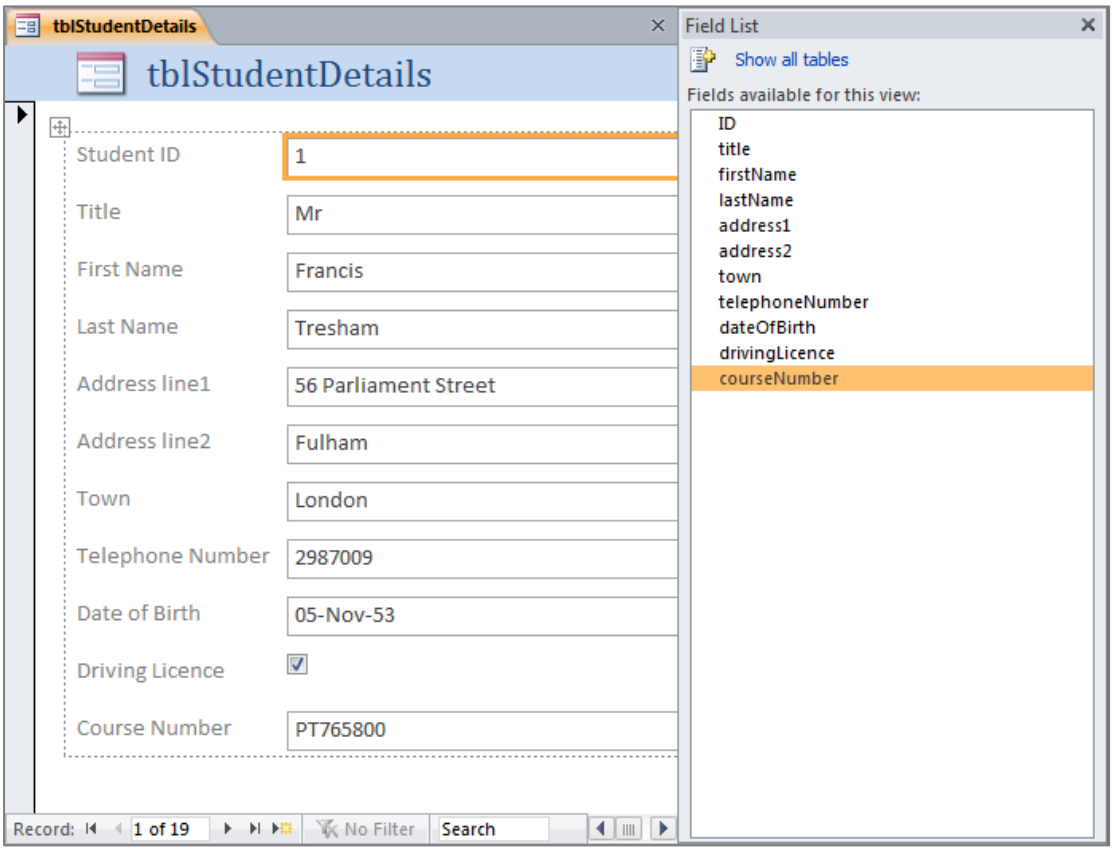
MODIFYING A FORM IN LAYOUT VIEW

- In the Views group of commands on the Home tab click the bottom half of the **View** button



- Select **Layout View**

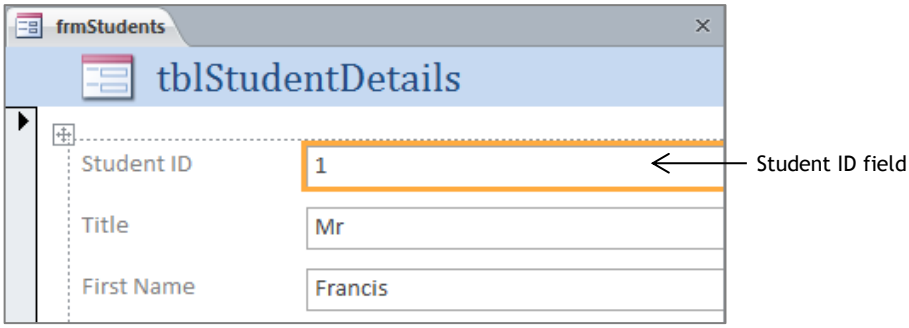
The form is shown in layout view and a Field List pane is also displayed.



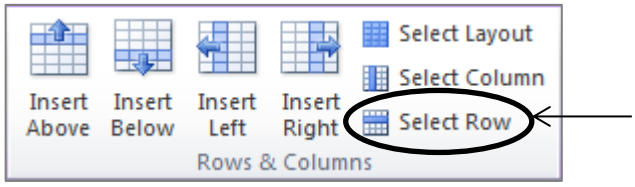
Deleting a field

You have decided that you do not need to see the Student ID number on the form.

- Ensure that the **Student ID** field is selected on the form



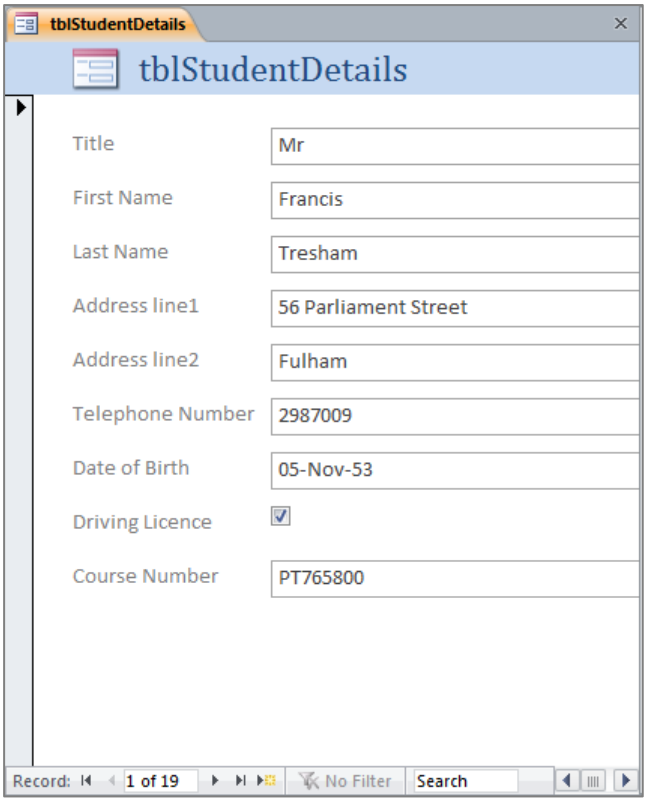
- Select the Form Layout Tools **Arrange** tab
- Click **Select Row** in the **Rows & Columns** group of commands



The data is arranged in a table structure and this selects a row in the table.

- Press the **Delete** key

The Student ID row is removed and the other rows move up.



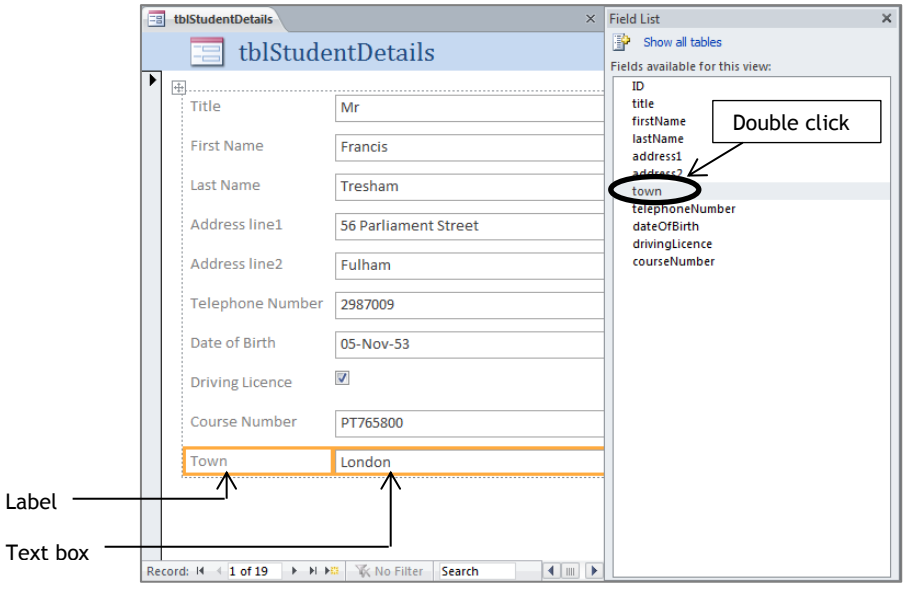
- Delete the **Town** field from the form

Inserting a field

To insert the Town field into the form:

- Double-click **town** in the Field List

The field is inserted at the bottom of the form.



Notice that two boxes are inserted into the form. The box on the right contains data from the field and is called a **text box**. The box on the left contains a description of the data that is being displayed and is called a **label**. The text for the label is taken from the Caption property of the field if one is set, otherwise the label will display the field name.

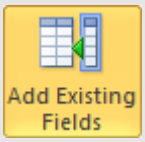
By default the label is linked to the text box and both can be manipulated at the same time.

You will see later that all the text boxes can be modified together and all the labels can be modified together.

Displaying and Hiding the Field List

- Select the Form Layout Tools **Design** tab

The **Add Existing Fields** option in the **Tools** group of commands



is used to toggle the Field List On and Off.

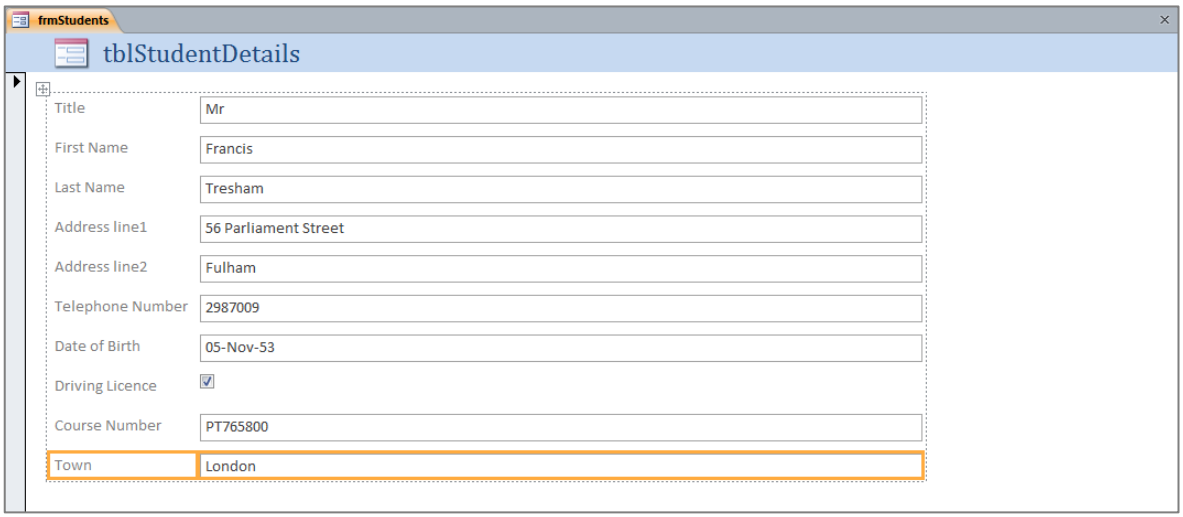
- Click **Add Existing Fields**

If the Field List was displayed, it would now be hidden.

- Click **Add Existing Fields** again

The Field List is displayed once more.

➢ Hide the Field List to display the full form



Changing the order of the fields

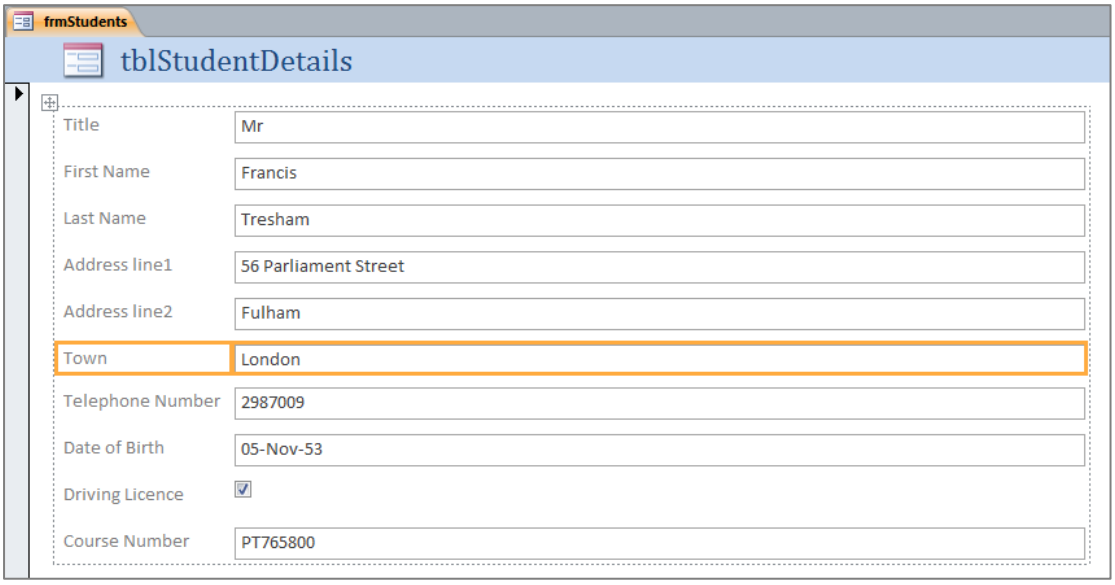
To position the Town field immediately below Address line2:

- Point to the newly inserted text box
- Hold down the left mouse button and drag upward

As you move the mouse upward, a horizontal line moves up the list of fields.

- When the line reaches the point between Address line2 and Telephone number, release the mouse button

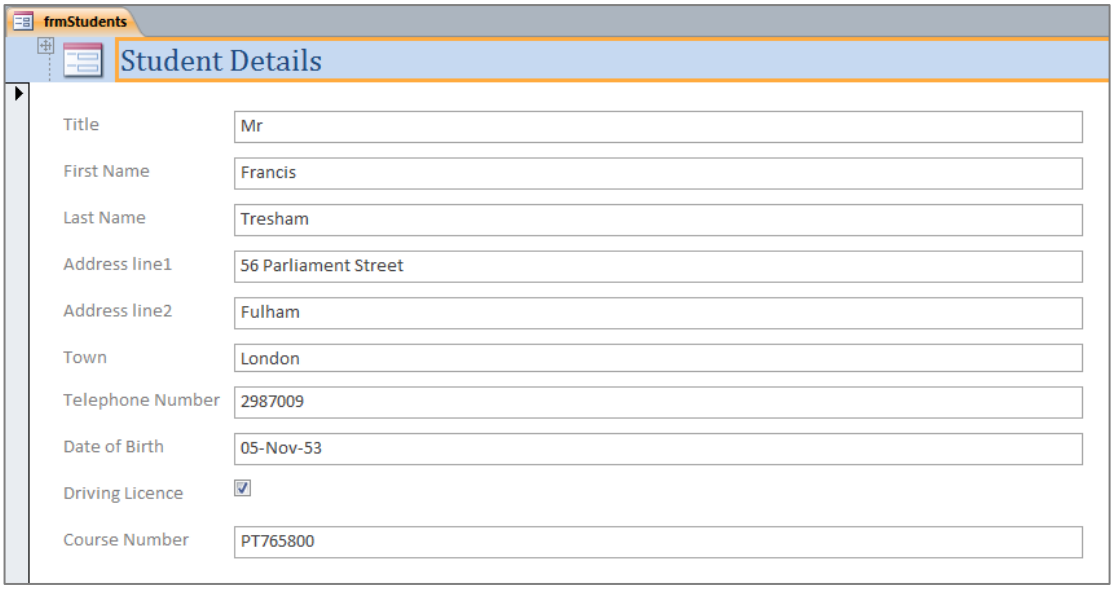
Both the label and text box are moved to the new position.



Editing the form heading

The name of the form was inserted at the top as a default heading. You will change the heading to something more suitable.

- Ensure that you are still in layout view
- Double-click the heading **tblStudentDetails**
- Edit the heading to **Student Details**
- Press Enter



The orange rectangle around the heading indicates that it is still the selected item.

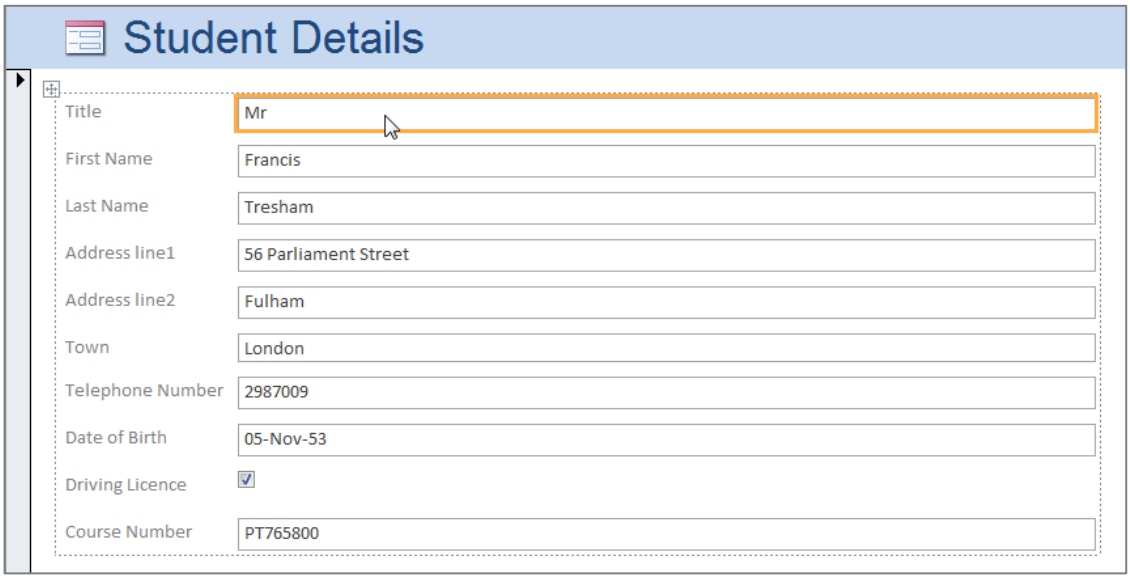
- Select the Form Layout Tools **Format** tab

Using the Font group of commands,

- Change the font and size to **Arial 26pt**
- Change the font colour to a colour of your choice

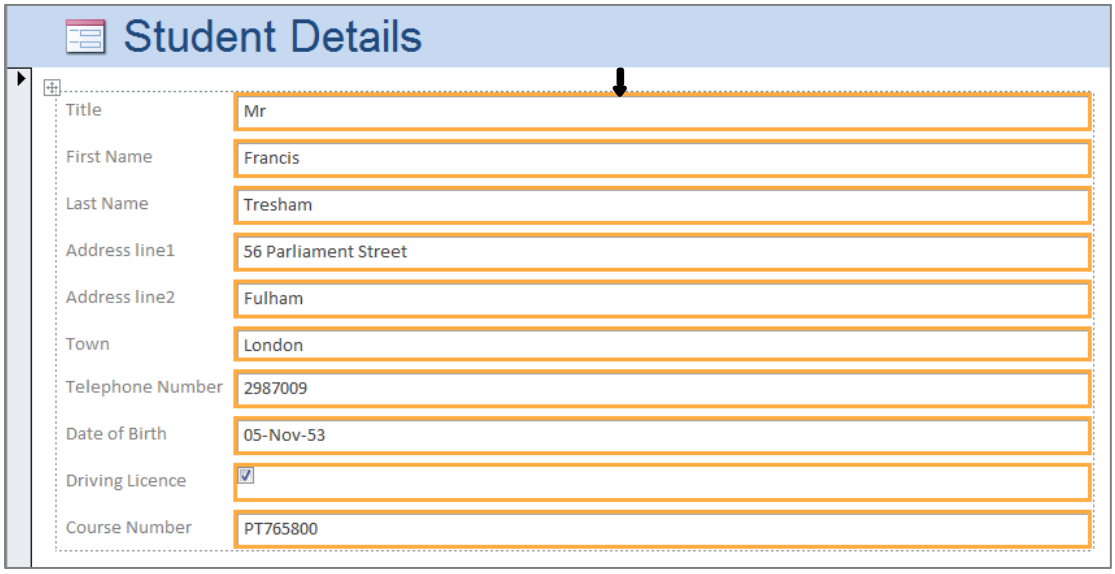
Editing the format of the displayed data

- Click the title field text box to select it

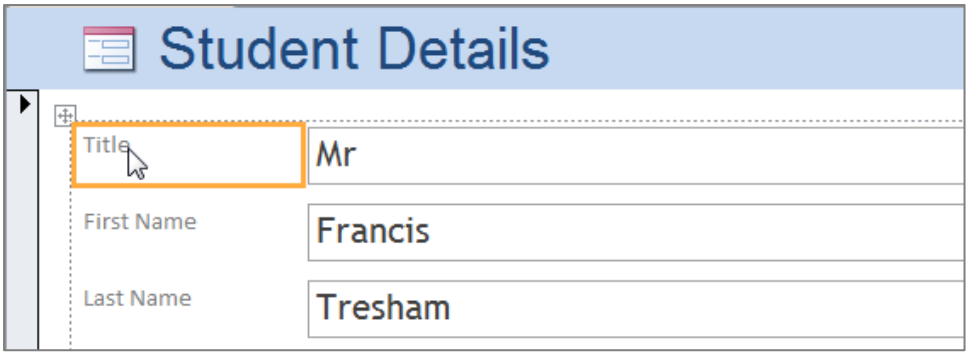


- Move the mouse pointer just above the highlighted text box so that the pointer changes to a black down-arrow ⬇ and click the mouse button

All the text boxes for the fields are selected.

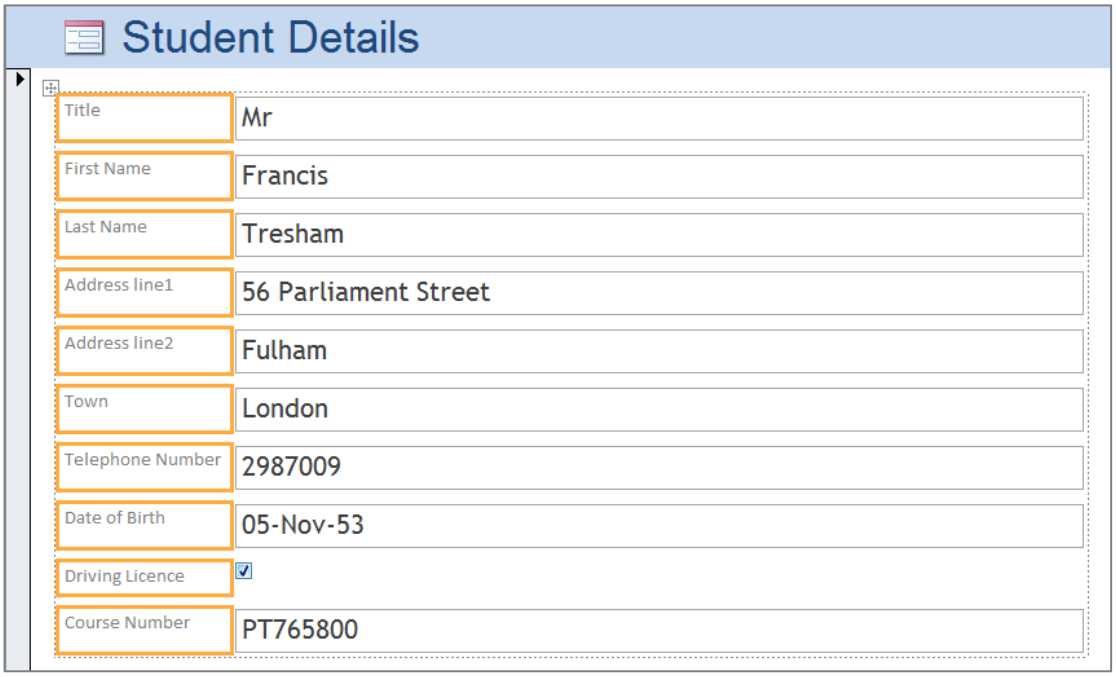


- Change the font and size to **Trebuchet MS 16pt**
- Click the title field label to select it

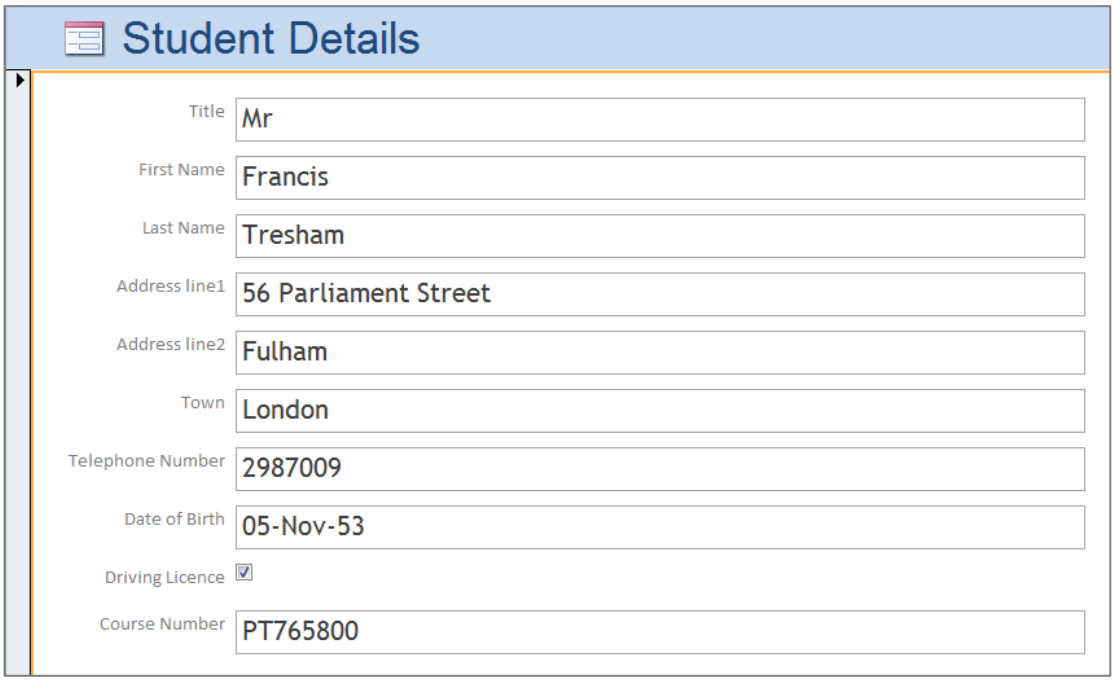


- Move the mouse pointer just above the highlighted label so that the pointer changes to a black down-arrow ⬇ and click the mouse button

All the labels are selected.



- Click on the **Align Text Right** button 
- Click on a blank area of the form to deselect the labels



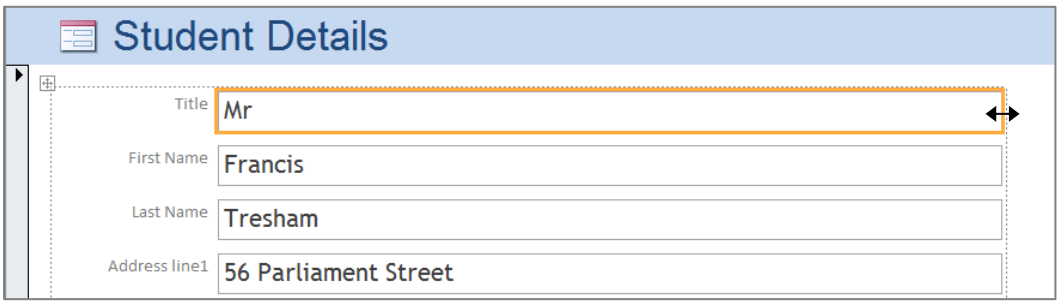
Resizing text boxes

The text boxes displaying the data from the fields are unnecessarily long.

To reduce the width of the text boxes:

- Click in the title field text box to select it
- Move the mouse pointer to the right-hand border of the selected text box

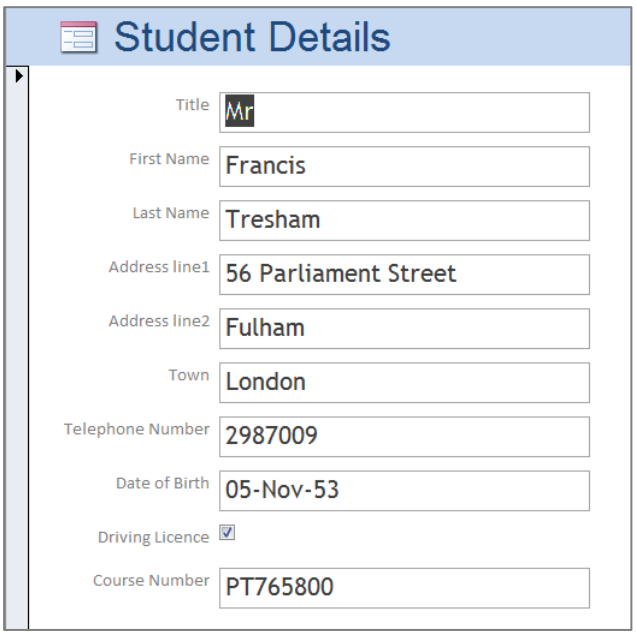
The pointer changes to a double arrow ↔



- Hold down the left mouse button and drag the border to the left (drag to approximately half the original width)
- Release the mouse button

The text boxes for all the fields are resized to the new smaller width.

- View the form in form view



- Save and close the form

SPLIT FORMS

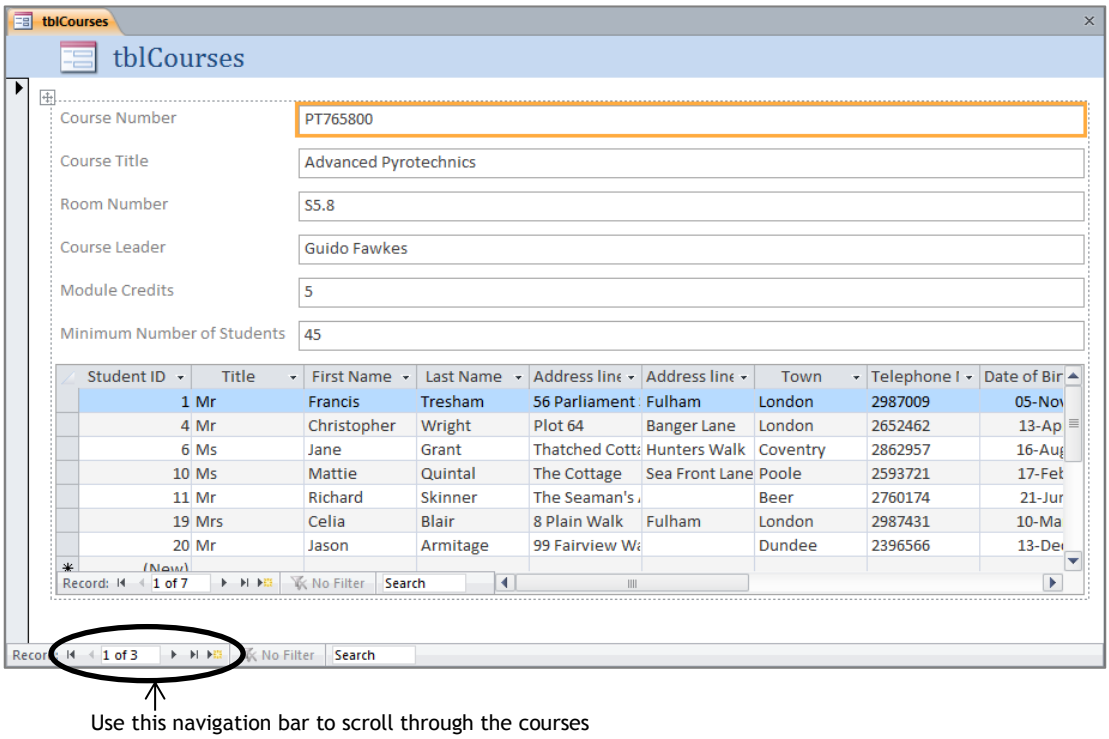
Access will automatically create a split form if the table selected has a one-to-many relationship with another table.

- Click the **tblCourses** table in the Navigation Pane to select it
- Select the **Create** tab
- Click the **Form** button in the **Forms** group of commands

A form is created based on the selected table.

- Save the form with the name **frmCourses**

The table tblCourses is linked to tblStudentDetails with a one-to-many relationship where each course is linked to many student records. Access therefore creates a split form.



Use this navigation bar to scroll through the courses

The top part of the form looks similar to the detail form created earlier and displays data from one record in tblCourses.

The second part of the form displays data from tblStudentDetails. The records shown are the students who have enrolled on the displayed course.

- Use the navigation bar at the very bottom of the form window to scroll through the three courses
- Close the form

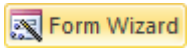
CREATING A FORM USING THE FORM WIZARD

Access has a wizard that walks you through the process of creating a form. You will use this method to create the next form.

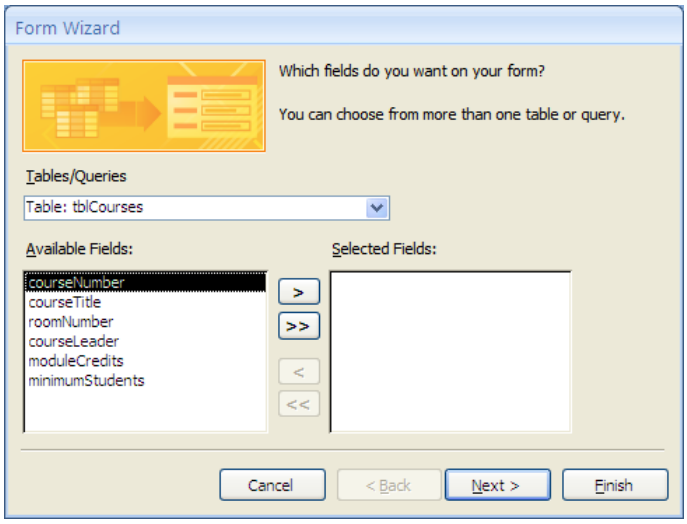
A form can be based on either a table or a query. Basing a form on a query restricts the display to the records and fields picked out by the query.

This next form will be based on the qryBligh query and will demonstrate that by changing the query, you also change the records that you see in the form.

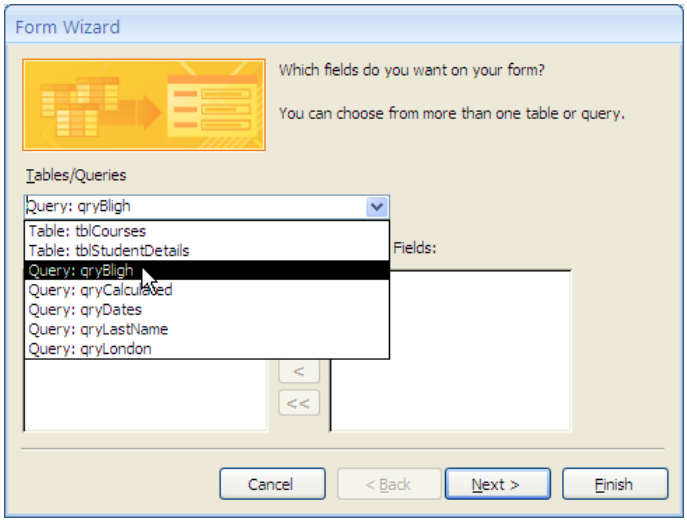
- Select the **Create** tab
- Select the **Form Wizard** button from the **Forms** group of commands



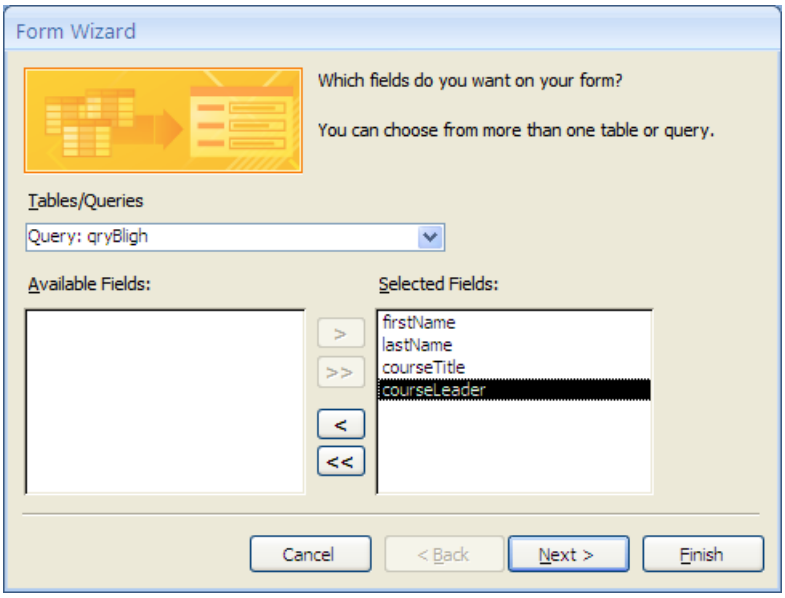
The Form Wizard opens.



- In the Tables/Queries box, select **Query: qryBligh**

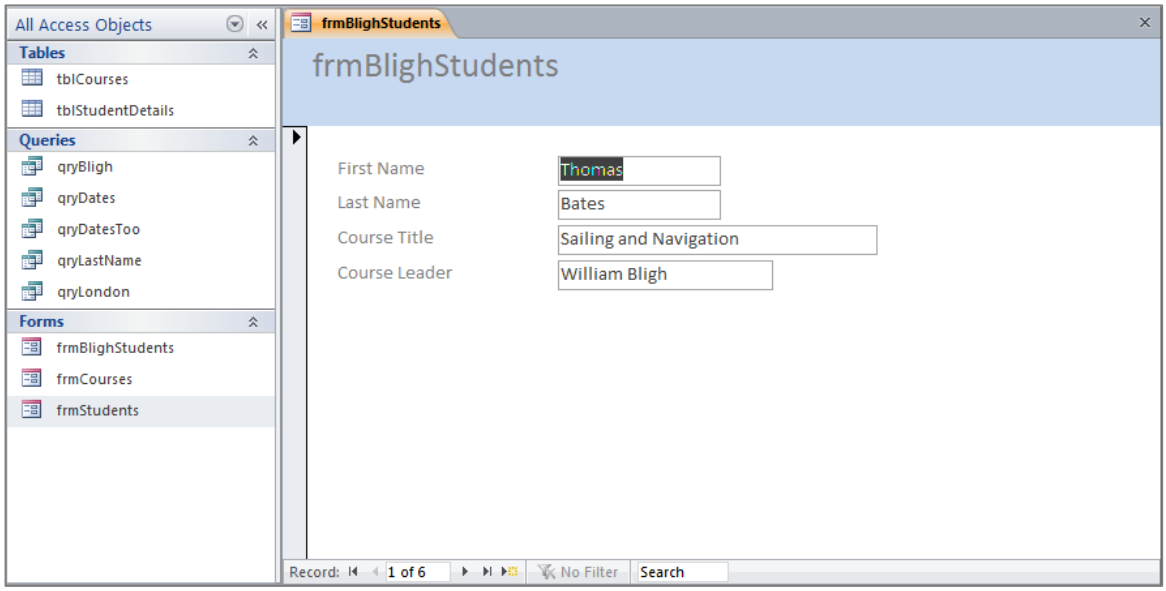


- Using >>, move all the Available Fields into the Selected Fields box



- Click **Next** to accept the selected fields
- Click **Next** to accept the default layout
- In the **What title do you want for your form?** box, delete the suggested name and type **frmBlighStudents**
- Click **Finish**

The completed form is displayed.

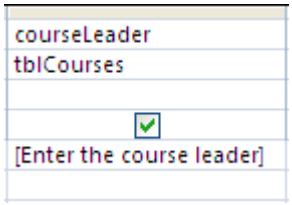


Using a parameter in a query

The present form is based on the qryBligh query which searches for students who have William Bligh as their course leader.

You are going to return to the query and amend it so that it can be used to pick out the students for any of the course leaders.

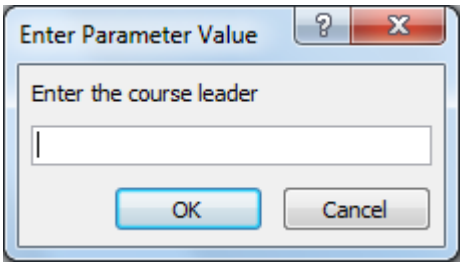
- Close the form
- Open the **qryBligh** query
- In design view, delete the criteria "William Bligh" from the courseLeader field
- Replace it with the text **[Enter the course leader]**



This 'parameter query' is useful in that it lets you specify the criteria the query will use to find the records when the form is opened.

- Click the Datasheet View button

You are asked to enter the parameter value.



You can see that the text that you included in the square brackets is displayed as a reminder of the information you need to enter in this box. Without this prompt, it would be difficult to remember exactly what you are expected to key in.

- Type **Guido Fawkes**
- Click **OK**

The records for Guido Fawkes are displayed.

qryBligh

First Name	Last Name	Course Title	Course Leader
Francis	Tresham	Advanced Pyrotechnics	Guido Fawkes
Christopher	Wright	Advanced Pyrotechnics	Guido Fawkes
Jane	Grant	Advanced Pyrotechnics	Guido Fawkes
Mattie	Quintal	Advanced Pyrotechnics	Guido Fawkes
Richard	Skinner	Advanced Pyrotechnics	Guido Fawkes
*			

- Save and close the query
- Open **frmBlighStudents**

As this form is based on qryBligh, any amendments you make to the query are reflected in the form, therefore you are asked to enter the name of the course leader whose records you wish to view.

- Type **George Loveless**
- Click **OK**

Only the records relating to George Loveless are shown.

- Scroll through the records
- Change the form heading to **Course Bookings** with a font size of **36**
- Save and close the form

REPORTS

You use a report to present data in a format more suitable for printing. You have control over everything you see on a report and so may customise it to your own requirements. You can create a variety of reports in Access ranging from the very simple to the very complicated.

A report also lets you summarise data, so you can, for example, not only list all of the students enrolled on a course, but also have the report print a total.

CREATING REPORTS USING THE REPORT WIZARD

You are going to produce two reports using the wizard. Both will list the students by courses. The first will be based on a query which must now be created.

- Using the Query Wizard, create a new query containing the following fields:

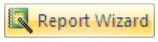
  Table: tblCourses
  courseTitle

  Table: tblStudentDetails
  firstName
  lastName
  dateOfBirth

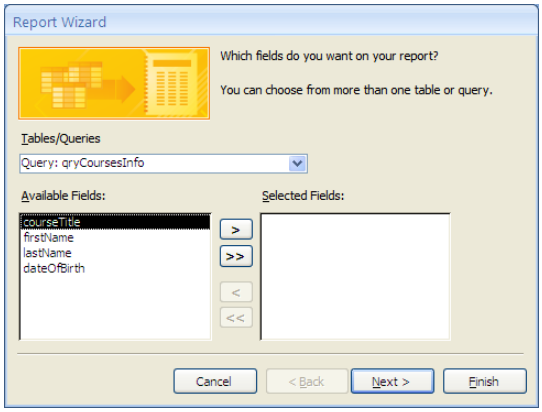
- Save the query with the title **qryCoursesInfo**
- Close the query

You are now ready to create a report based on this query.

- Select the **Report Wizard** button from the **Reports** group of commands on the **Create** tab

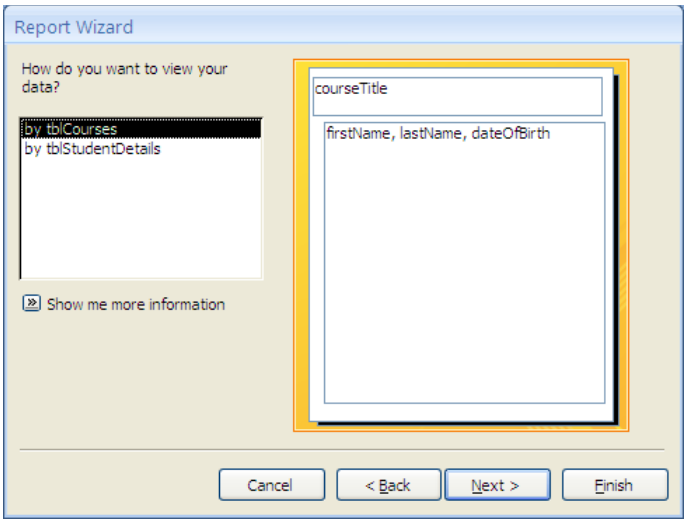


- In the Tables/Queries box, click the down arrow and select **Query: qryCoursesInfo**



- Move all the Available Fields into the Selected Fields box
- Click **Next**

This step in the wizard asks you to specify how you want to view the information.



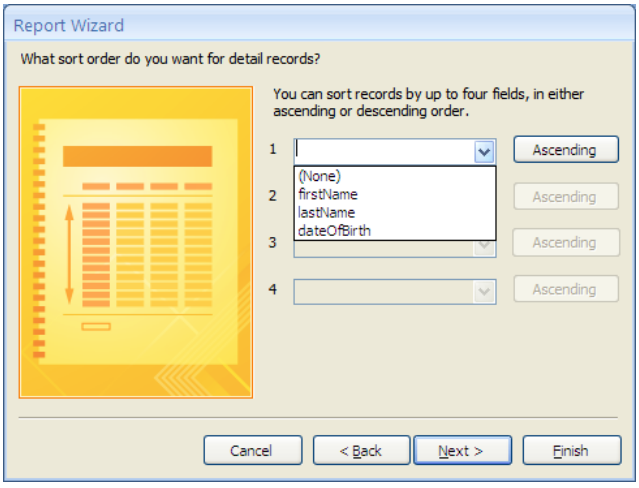
The pane on the right shows you an example of how the fields will be laid out on the report, depending upon whether you choose 'by tblCourses' or 'by tblStudentDetails'.

- Ensure that **by tblCourses** is selected
- Click **Next**
- Ignore the grouping prompt and click **Next**

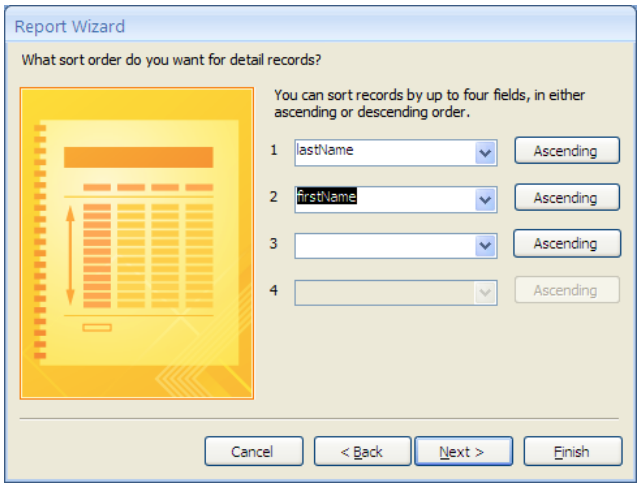
The records can be sorted in ascending or descending order.

You will sort the students into alphabetical order of last name.

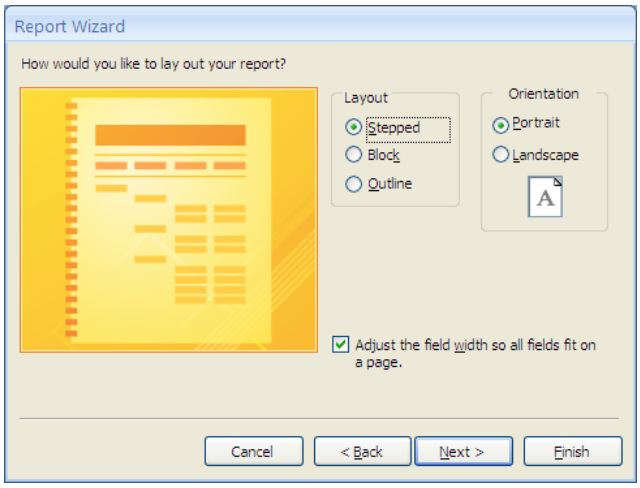
- Click the down arrow to select the first field to be sorted



- Select **lastName**
- Select **firstName** as the second field to be sorted



- Click **Next**



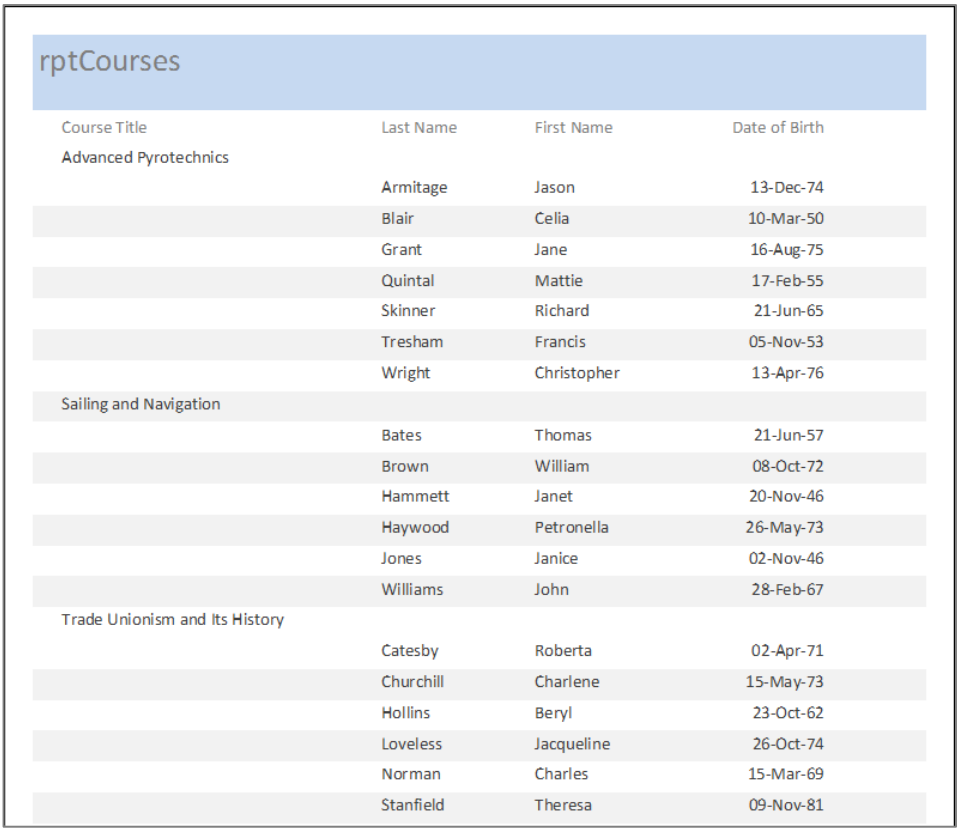
This step asks you about the report layout. Notice the tick box that provides the option to adjust the field width so that all fields can fit on the page.

- Click **Next**

The wizard suggests a title for the report.

- Change the title to **rptCourses**
- Click **Finish**

The report is displayed in Print Preview.

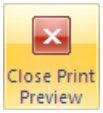


rptCourses

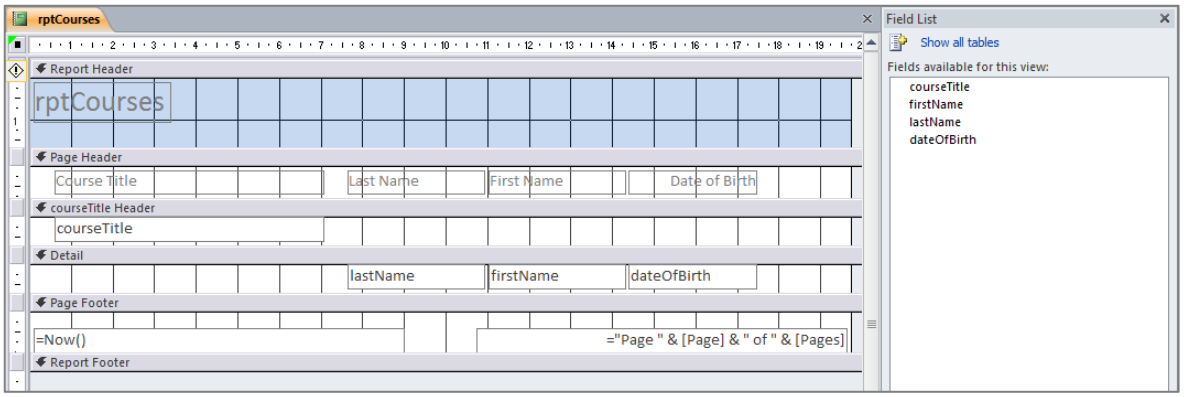
Course Title	Last Name	First Name	Date of Birth
Advanced Pyrotechnics			
	Armitage	Jason	13-Dec-74
	Blair	Celia	10-Mar-50
	Grant	Jane	16-Aug-75
	Quintal	Mattie	17-Feb-55
	Skinner	Richard	21-Jun-65
	Tresham	Francis	05-Nov-53
	Wright	Christopher	13-Apr-76
Sailing and Navigation			
	Bates	Thomas	21-Jun-57
	Brown	William	08-Oct-72
	Hammett	Janet	20-Nov-46
	Haywood	Petronella	26-May-73
	Jones	Janice	02-Nov-46
	Williams	John	28-Feb-67
Trade Unionism and Its History			
	Catesby	Roberta	02-Apr-71
	Churchill	Charlene	15-May-73
	Hollins	Beryl	23-Oct-62
	Loveless	Jacqueline	26-Oct-74
	Norman	Charles	15-Mar-69
	Stanfield	Theresa	09-Nov-81

To close the print preview:

- Click the **Close Print Preview** button



The report is displayed in Design View.



- Close the report

Including summary data in a report

In the previous exercise, you created a query to use as the record source before using the report wizard.

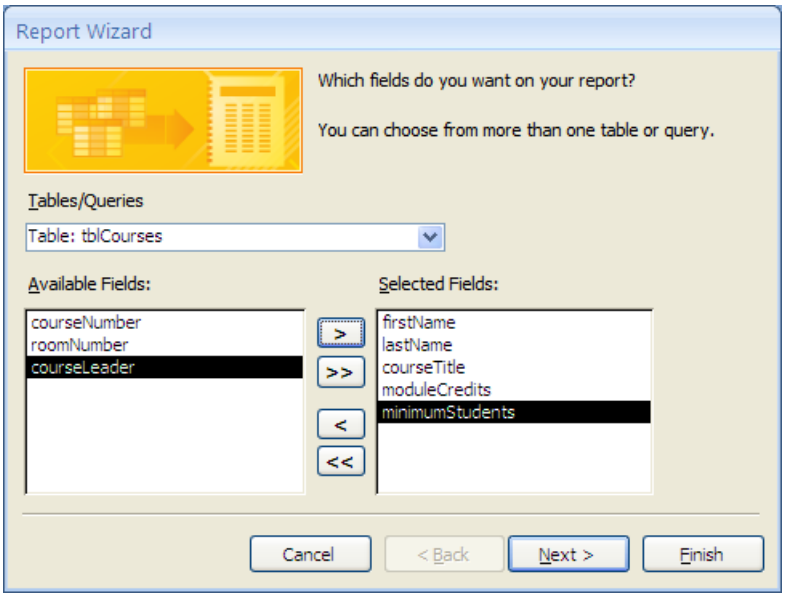
For this exercise, you will select fields directly from the two tables as you proceed through the wizard.

- Start the **Report Wizard**
- From **Table: tblStudentDetails** select the fields:

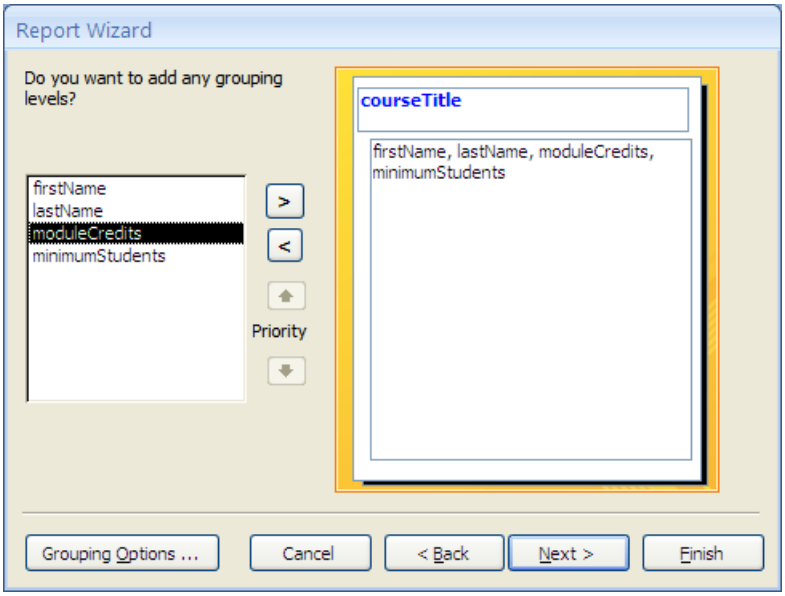
  firstName
  lastName

- From **Table: tblCourses** select the fields:

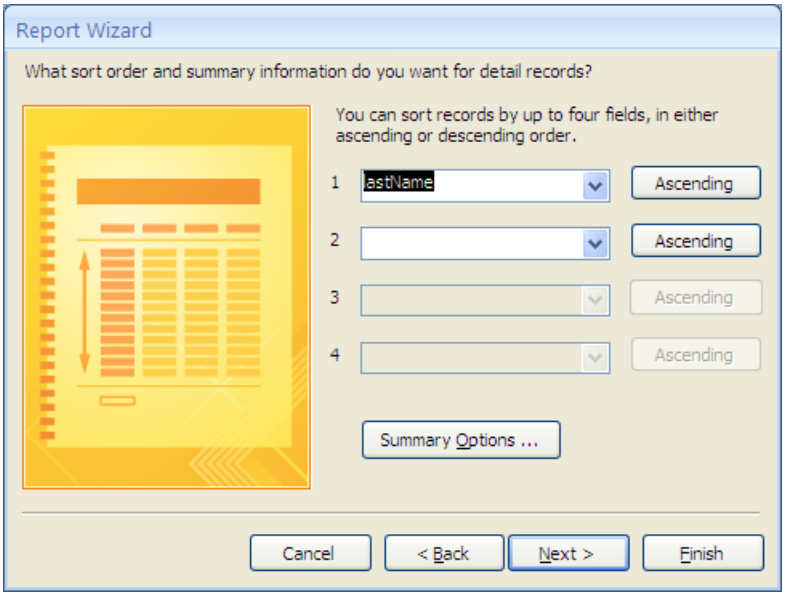
  courseTitle
  moduleCredits
  minimumStudents



- Click **Next**
- View the data by **tblStudentDetails**
- Click **Next**
- For group levels select **courseTitle**
- Click 



- Click **Next**
- Sort by **lastName**

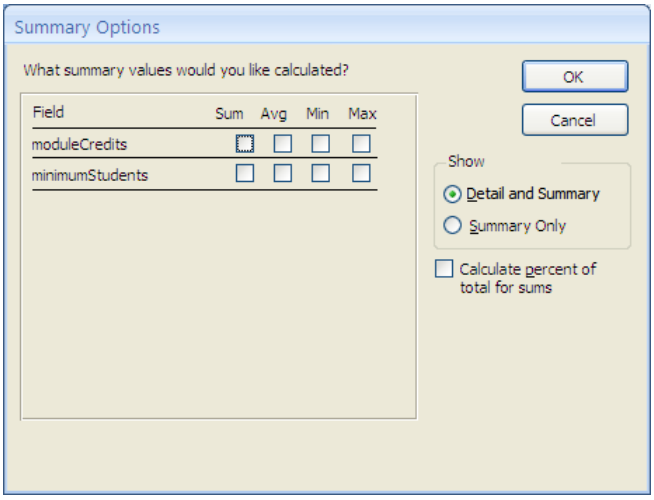


'Summary Options' enable you to include totals and averages on your report, for fields that contain numerical data.

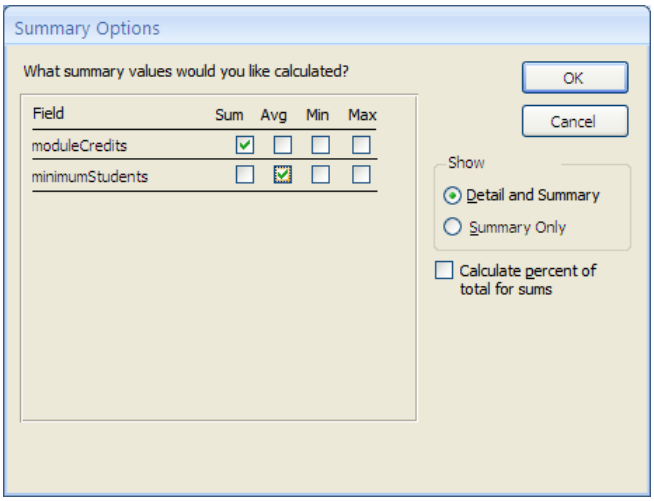
- Click the **Summary Options** button

The Summary Options dialog box is displayed.

All the numeric fields that you selected are listed in the dialog box.



- For the field **moduleCredits** select **Sum**
- For the field **minimumStudents** select **Avg**
- Ensure that **Detail and Summary** is selected in the Show section

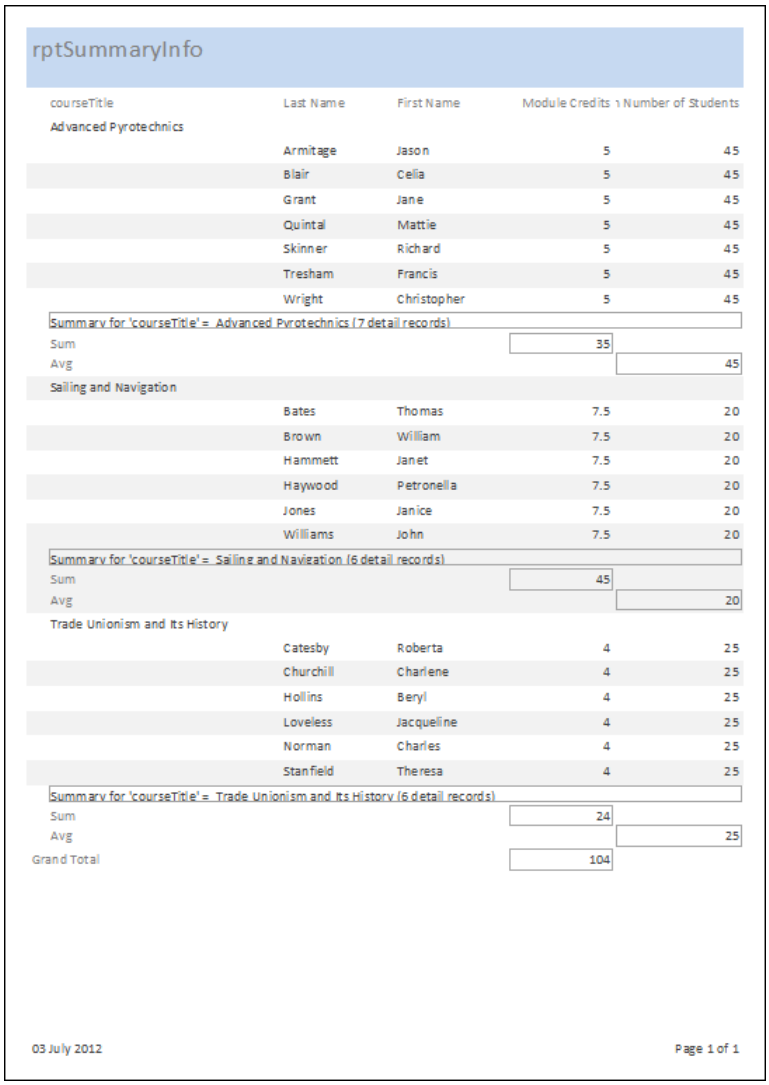


- Click **OK**
- Click **Next**
- Accept the default layout and orientation. Click **Next**
- Change the report title to **rptSummaryInfo**
- Click **Finish**

The report is created and opened in Print Preview.

- In the Zoom group of commands, click the **One Page** button

The text may be too small to be read, but you can see what the layout of the entire page looks like.



rptSummaryInfo

courseTitle	Last Name	First Name	Module Credits	Number of Students
Advanced Pyrotechnics				
	Armitage	Jason	5	45
	Blair	Celia	5	45
	Grant	Jane	5	45
	Quintal	Mattie	5	45
	Skinner	Richard	5	45
	Tresham	Francis	5	45
	Wright	Christopher	5	45
Summary for 'courseTitle' = Advanced Pyrotechnics (7 detail records)				
Sum			35	
Avg				45
Sailing and Navigation				
	Bates	Thomas	7.5	20
	Brown	William	7.5	20
	Hammett	Janet	7.5	20
	Haywood	Petronella	7.5	20
	Jones	Janice	7.5	20
	Williams	John	7.5	20
Summary for 'courseTitle' = Sailing and Navigation (6 detail records)				
Sum			45	
Avg				20
Trade Unionism and Its History				
	Catesby	Roberta	4	25
	Churchill	Charlene	4	25
	Hollins	Beryl	4	25
	Loveless	Jacqueline	4	25
	Norman	Charles	4	25
	Stanfield	Theresa	4	25
Summary for 'courseTitle' = Trade Unionism and Its History (6 detail records)				
Sum			24	
Avg				25
Grand Total			104	

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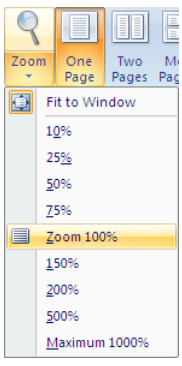
- Click the bottom half of the **Zoom** button in the Zoom group of commands



- Select **Zoom 100%**

MODIFYING A REPORT IN LAYOUT VIEW

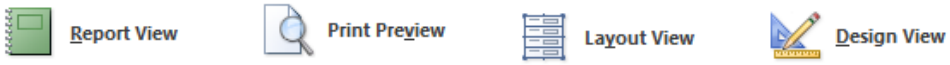
There will usually be a few modifications that you will want to make to your reports.

- Close Print Preview

The report is displayed in Design View.

- In the **Views** group of commands on the ribbon click the bottom half of the **View** button

There are four different views available for a report object:



Similar to editing forms, you make changes to reports in Layout view or Design View. There are some changes that you will make in Design View, but first you will look at Layout View.

- Select **Layout View**

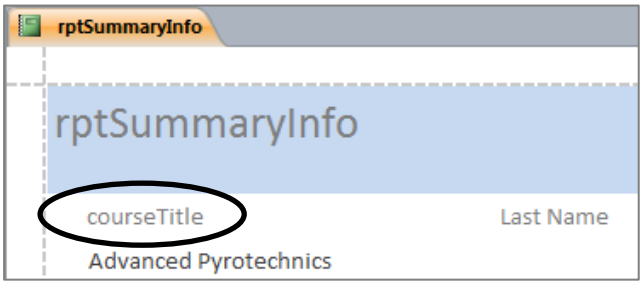
To provide more working space:

- Minimise the Navigation pane
- Close the Field List pane

Editing labels and text boxes

To edit the courseTitle label:

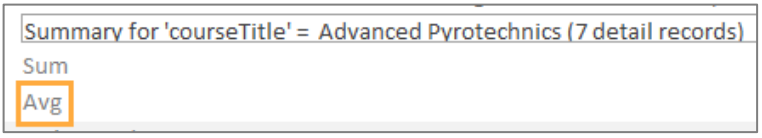
- Double-click the **courseTitle** label (heading)



- Change the heading to **Course Title**
- Change the title at the top of the report to **Summary Information**

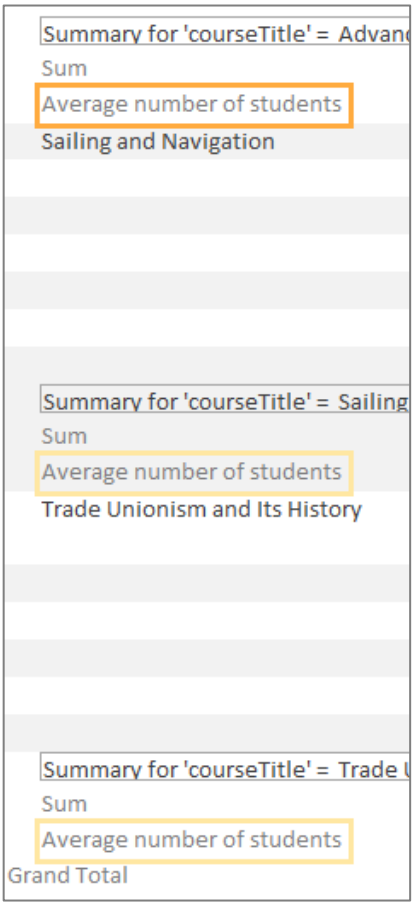
To change the text **Avg** on the report:

- Double-click the text **Avg** for any of the three courses on the report



- Replace Avg with the words **Average number of students**
- Press Enter

All the Avg labels display the text that you typed.



- Scroll down to the bottom of the report

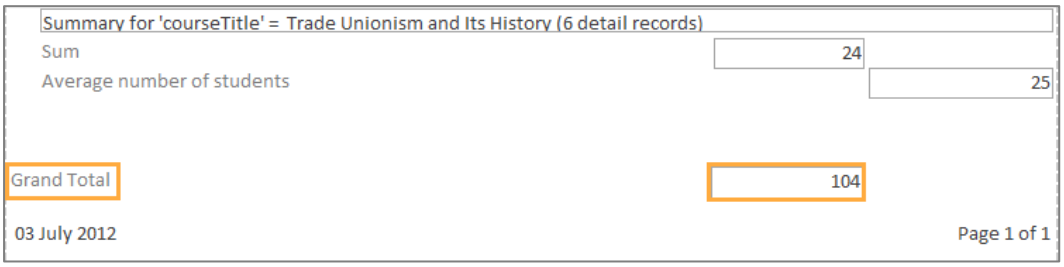
The Grand Total at the bottom will stand out better if it is separated from the other information.

- Click on the text **Grand Total**
- Hold down the Shift key and click the grand total value (**104**)

The Grand Total label and text box are both selected.

- Point to one of the selected boxes, hold down the mouse button and drag the boxes downward to leave a larger gap below the other text, and then release the mouse button

The Grand Total now stands apart from the other information.



Alternatively

The arrow keys on the keyboard may be used to nudge labels or text boxes in any direction.

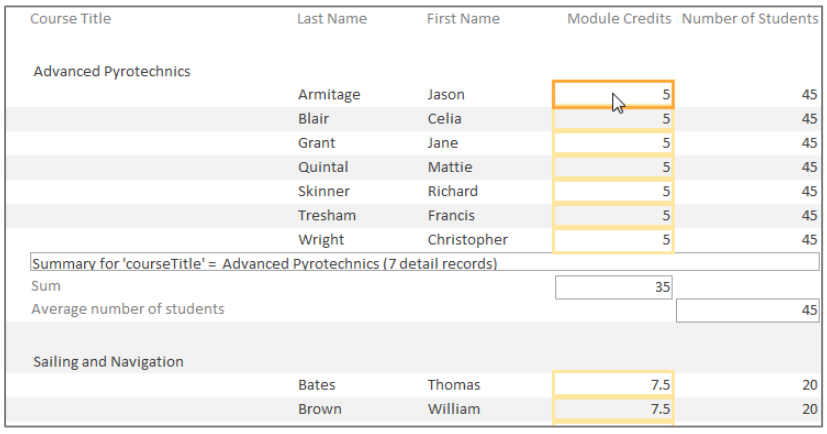
A larger gap between the different group lists would improve the design.

- Select one of the course titles text boxes (eg Sailing and Navigation)
- Use the down arrow key repeatedly to nudge the text boxes downward until you are satisfied with the look

By default numerical values are right aligned in text boxes. To centre align the Module Credit values:

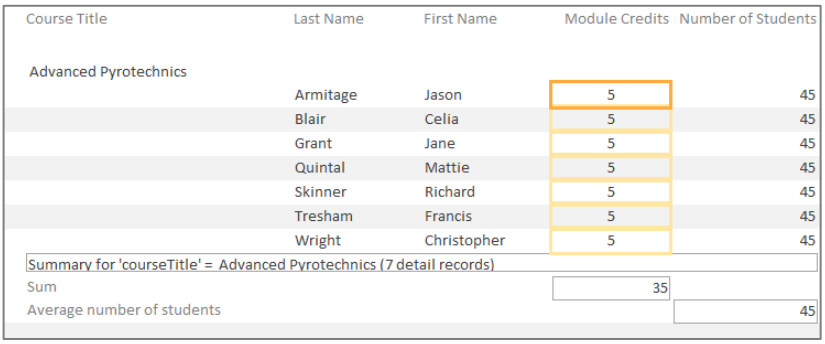
- Select any one of the Module Credit text boxes

All the Module Credit text boxes are highlighted.



- Select the Report Layout Tools **Format** tab
- Click the Centre Align button in the Fonts group of commands

The values are centred in the text boxes.



Course Title	Last Name	First Name	Module Credits	Number of Students
Advanced Pyrotechnics				
	Armitage	Jason	5	45
	Blair	Celia	5	45
	Grant	Jane	5	45
	Quintal	Mattie	5	45
	Skinner	Richard	5	45
	Tresham	Francis	5	45
	Wright	Christopher	5	45
Summary for 'courseTitle' = Advanced Pyrotechnics (7 detail records)				
Sum			35	
Average number of students				45

- Centre align the other numerical values on the report
- Save the changes to the report

Removing and Inserting page numbers

A page number in the format **page n of m** was inserted in the report's footer by default. You will delete this and replace it with a page number in the format **page n**.

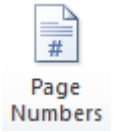
- Scroll down to the bottom of the report
- Click the text **Page 1 of 1** to select the text box

- Press the **Delete** key

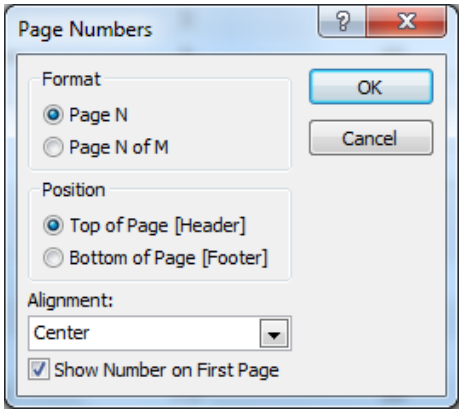
The page number is removed from the report.

To insert a replacement page number:

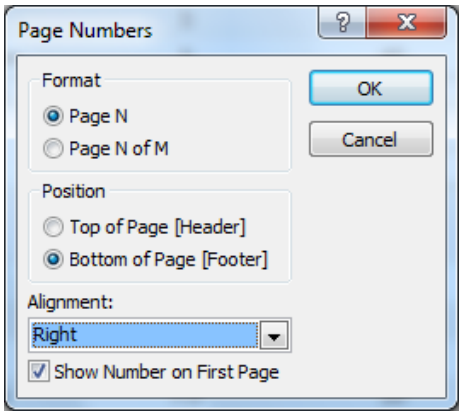
- Select the Report Layout Tools **Design** tab
- Click **Page Numbers** in the **Header / Footer** group of commands



The Page Numbers dialog box is displayed.



- In the Format section, ensure **Page N** is selected
- In the Position section, select **Bottom of Page [Footer]**
- In the Alignment section, click the down arrow and select **Right**



- Click **OK**

A page number with the selected format is inserted into the footer of the report.

The new page number is not in line with the date. You will use the alignment tool in Design View to fix this.

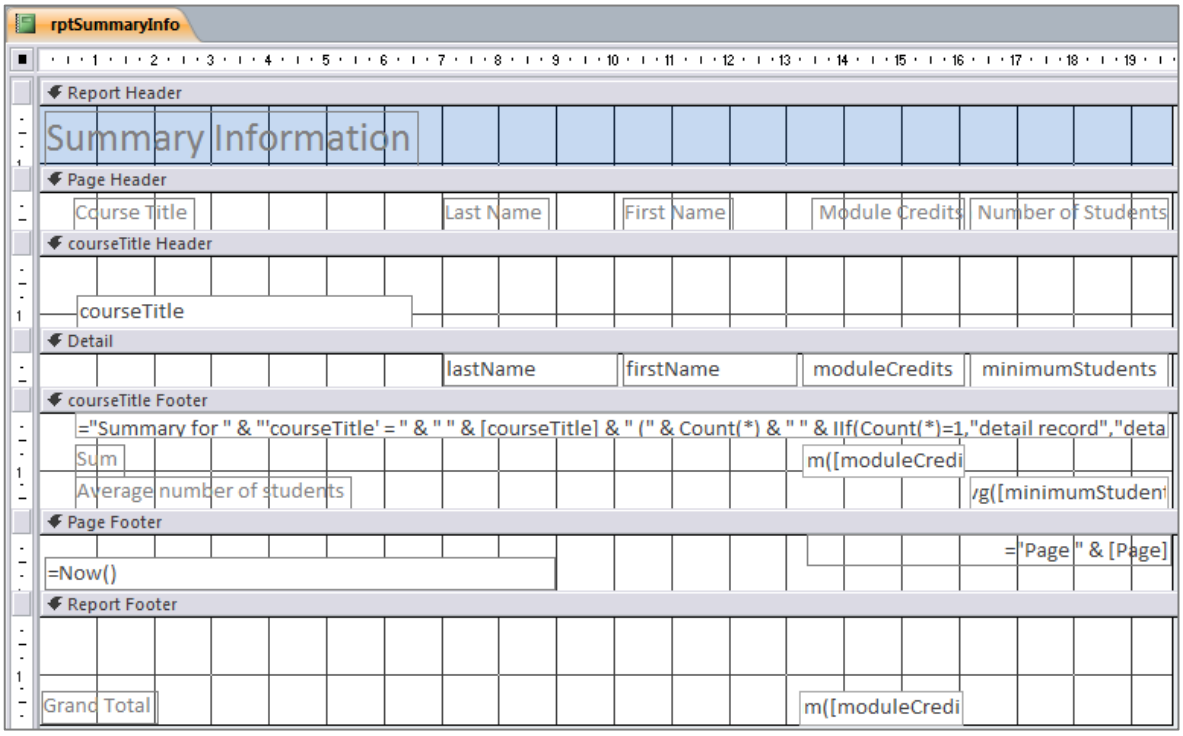
At present the report shows the average number of students for each course separately. However you want to display the average for the whole report.

This type of modification will have to be done in Design View also.

- Save the changes to the report

MODIFYING A REPORT IN DESIGN VIEW

- Click the bottom half of the **View** button on the **Design** tab
- Select **Design View**

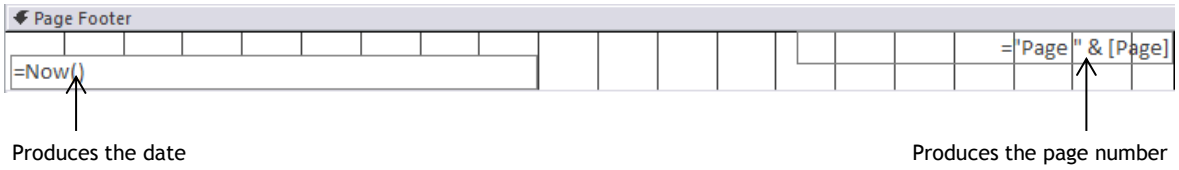


At first glance this looks very complicated and bewildering. Notice, however, that the design is split into various sections: Report Header, Page Header, courseTitle Header, Detail, courseTitle Footer, Page Footer and Report Footer.

- Switch between design view and report view a few times and try to identify which part of the report each section of the design produces

Aligning control boxes

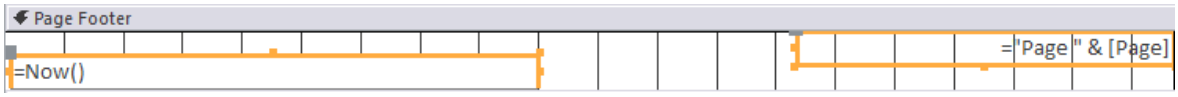
There are two text boxes in the Page Footer area. The one on the left produces the date and the one on the right produces the page number.



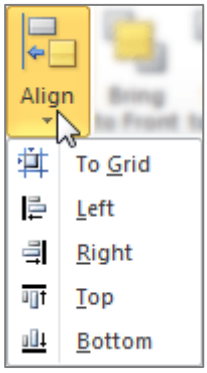
You want the page number to be horizontally in line with the date.

- Click in the date text box to select it
- Hold down the Shift key and click in the page number text box

Both text boxes are now selected.



- Select the Report Design Tools **Arrange** tab
- Click the **Align** button in the **Sizing & Ordering** group of commands



- Select **Bottom**

The higher of the two text boxes moves down so that the bottom borders align.

Moving summary information

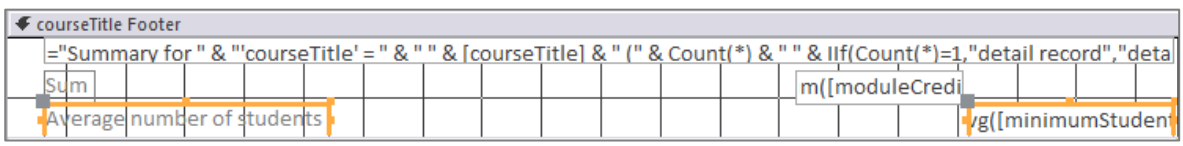
You will now edit the report to display the average number of students for the whole report instead of showing it for each group.

The label and text box for the average number of students are located in the courseTitle Footer section. In other words, the footer for each course title. This therefore produces an average value for each course title group.

To show an average value for the whole report, you need to move the appropriate label and text box into the Report Footer section.

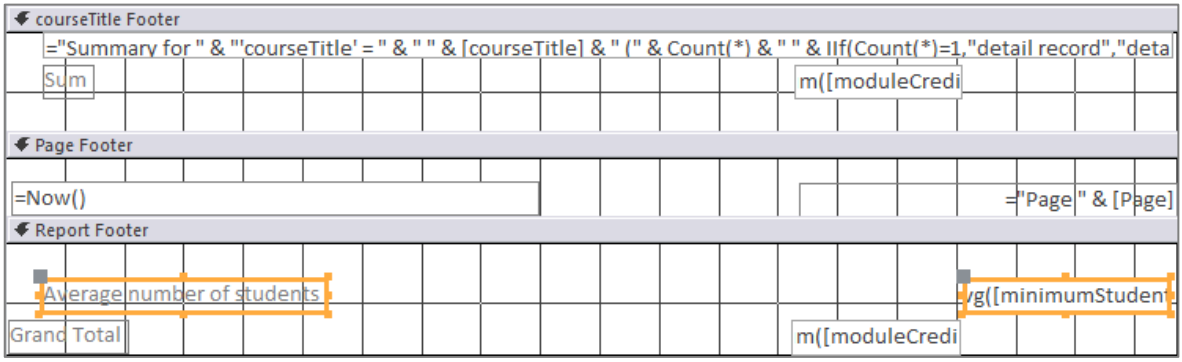
- Click **Average number of students** to select the label
- Hold down the Shift key and click **=Avg([minimumStudents])** to select the text box

Both label and text box are selected.



- Move the mouse pointer over one of the selected boxes

- Hold down the left mouse button and drag downward
- Release the mouse button when the Average number of students label is just above the Grand Total label in the Report Footer

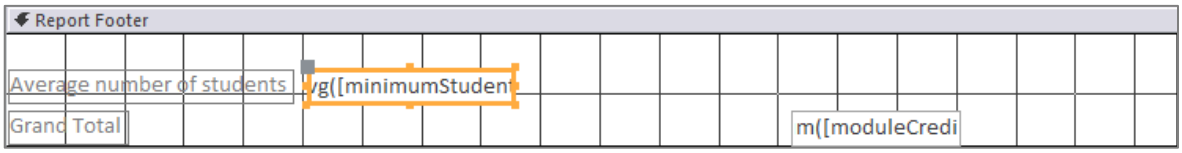


To vertically align the two labels in the footer:

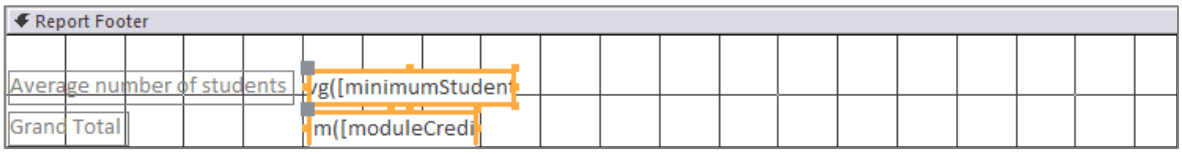
- Select the **Grand Total** label
- Hold down the shift key and select the **Average number of students** label
- Click the **Align** button on the **Arrange** tab
- Select **Left**

You will make the footer information more readable by moving the text boxes closer to their respective labels.

- Select the text box that calculates the average number of students
- Move it to the left so that it is close to the Average number of students label



- Select both text boxes in the report footer and align them left



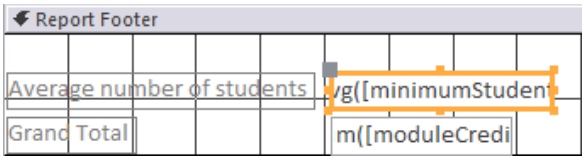
- View the report in Report View

Notice that the value of the average number of students is given to a large number of decimal places. The next section uses Design View to change the display to a whole number, but the same method can be used in Layout View.

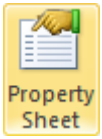
Using the Property Sheet to set formatting and dimensions

To format the average value to display as a whole number:

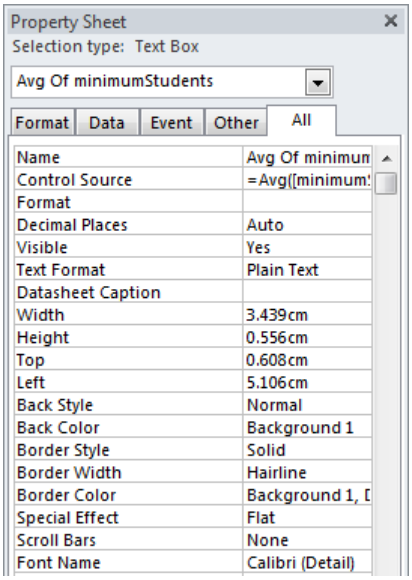
- Switch to Design View
- Select only the text box that will display the value of the average number of students



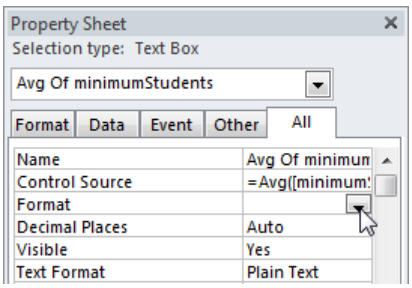
- Ensure that the Report Design Tools **Design** tab is selected
- Click **Property Sheet** in the **Tools** group of commands



The Property Sheet pane is displayed on the right of the window.



- Check that the **All** tab is selected
- Click the **Format** property in the Property Sheet task pane
- Click the down arrow for the Format property



- Choose **Fixed** from the list of available formats
- Select **0** for the **Decimal Places** property
- Check in Report View that the value is now displayed as a whole number and return to Design View

To ensure that both text boxes in the Report Footer are the same size you will use the Property Sheet to set the dimensions.

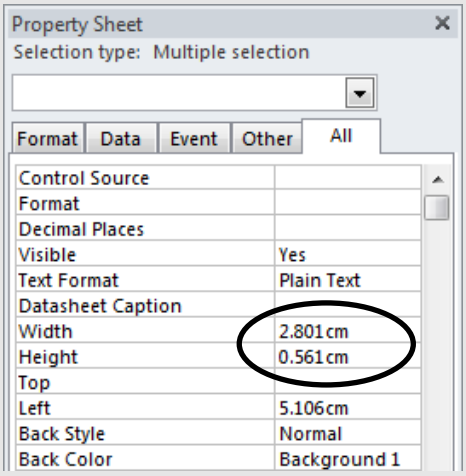
- Select both text boxes in the Report Footer

On the Property Sheet,

- In the **Width** property type the value **2.8 cm**
- In the **Height** property type **0.56 cm**
- Press Enter

Access usually displays dimension values to 3 decimal places.

You may also notice that the values displayed are slightly different from the values that you typed.



This would not be a problem since both boxes are set exactly the same.

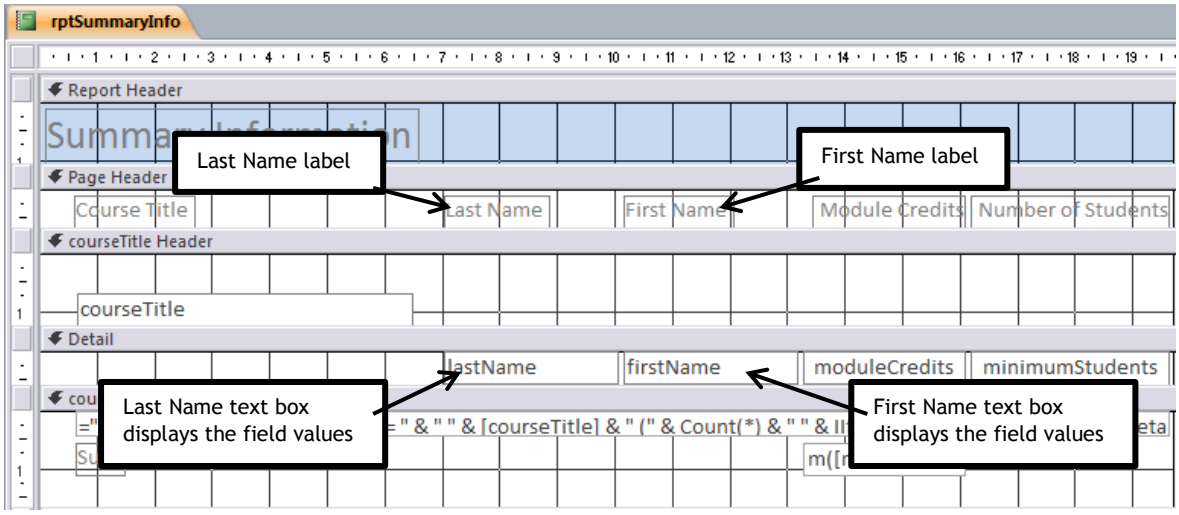
- Close the Property Sheet
- Switch to Report View and scroll to the bottom of the report to see the effect of the changes

Moving columns

To illustrate how columns of data are moved, you will swap the Last Name and First Name columns so that the first names are displayed to the left of the last names.

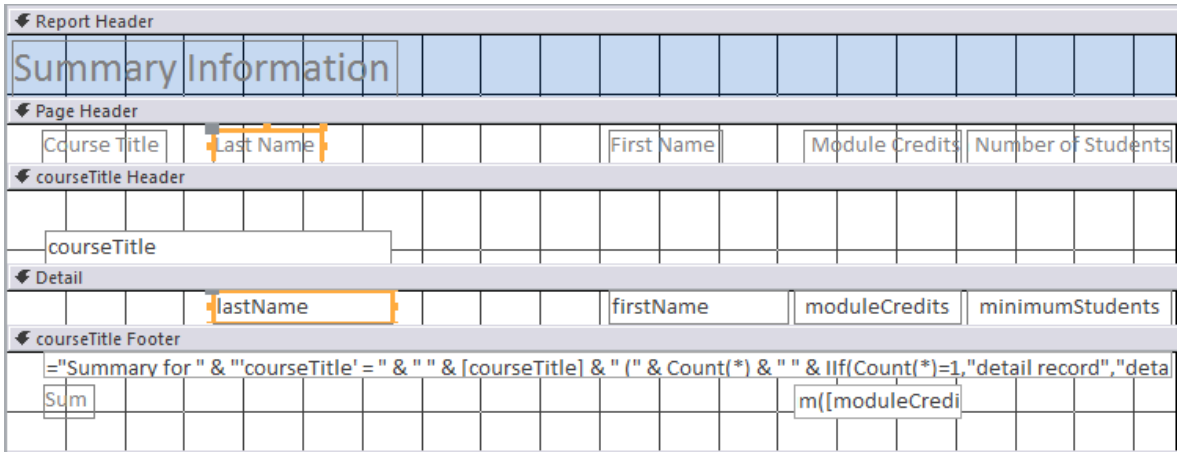
- Display the report in Design View

The text box for the firstName field and corresponding column label must both be moved and must swap places with the text box and column label for the lastName field.



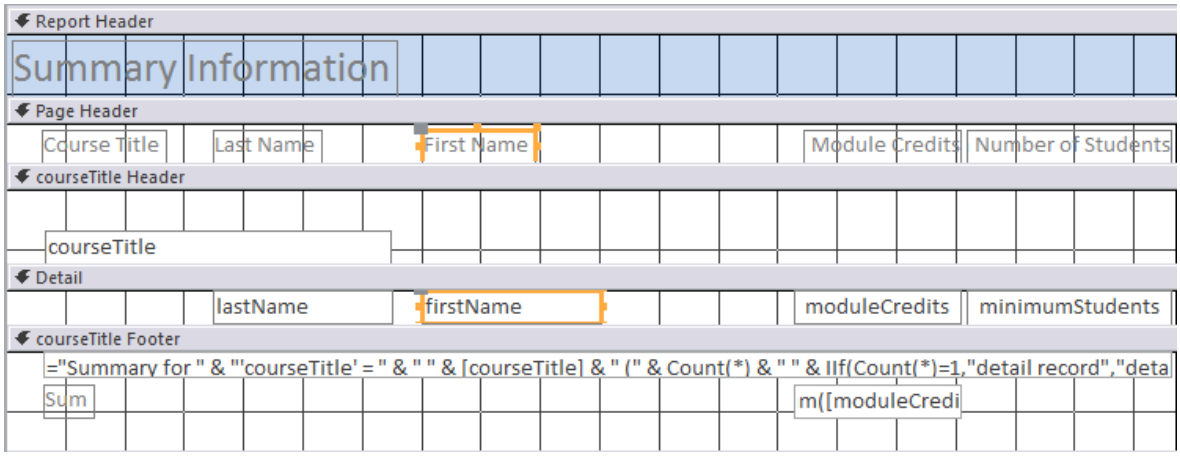
We will first move the lastName field out of the way so that the firstName field can take its place.

- Select both the text box and column label for the lastName field
- Use the left arrow key on the keyboard repeatedly to move the selected controls over to the left leaving the original position clear



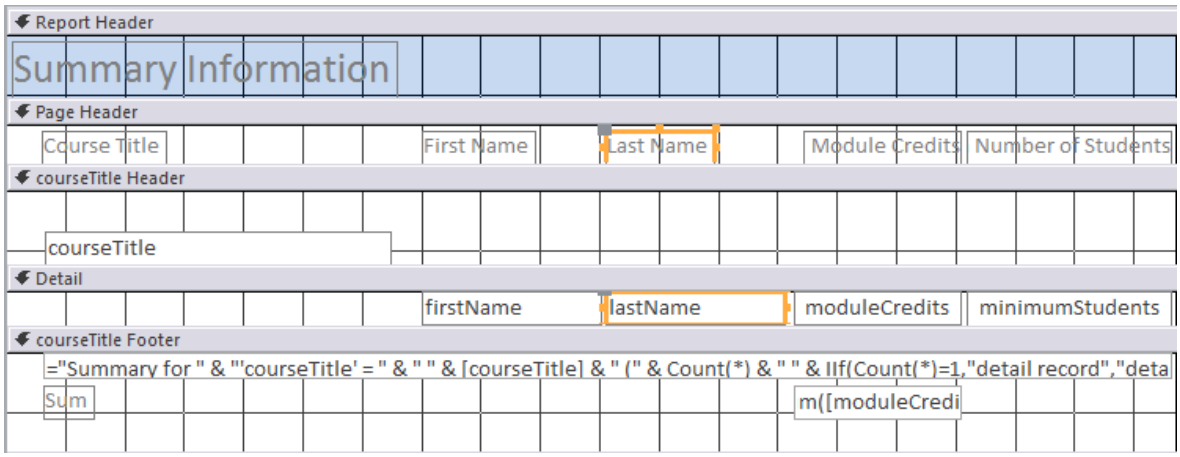
- Select both the text box and column label for the firstName field

- Use the left arrow key to move the selected controls to the position vacated by the lastName field



- Select the text box and column label for the lastName field

- Use the right arrow key to move the selected controls to the position vacated by the firstName field



The swap is now completed.

- Switch to Report View to check the display

- Save and print the report

- Close the report

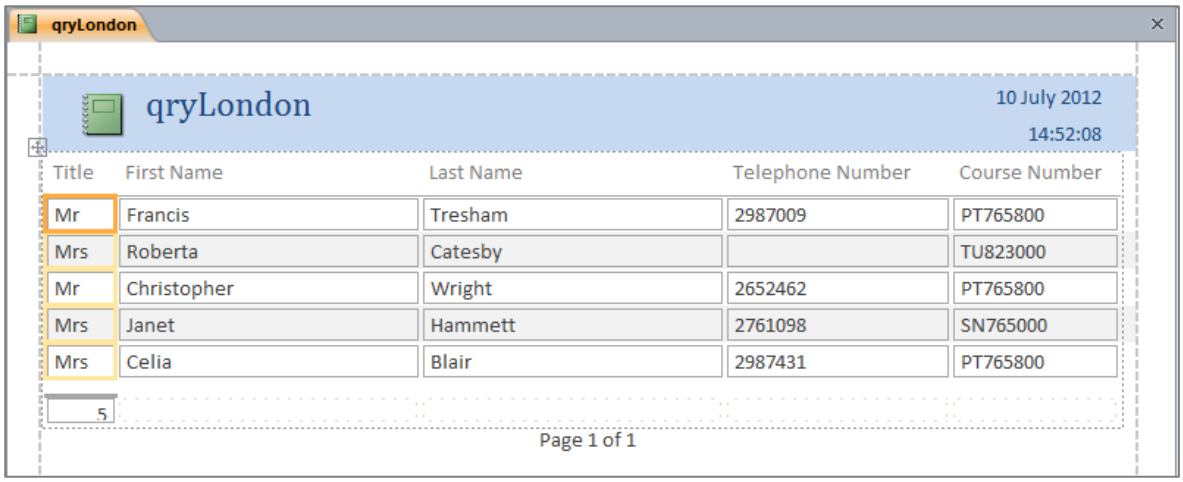
CREATING REPORTS AUTOMATICALLY

You saw earlier (page 73) that a form can be created automatically. Using a similar method you can create a simple, table-like report automatically. All you need to do is indicate which table or query the report must be based on.

You will create a report based on the query qryLondon.

- Select **qryLondon** from the list of queries in the Navigation Pane – there is no need to open the query
- Select the **Create** tab
- From the **Reports** group of commands, select **Report**

After a short delay, a report is created and displayed in layout view.



- View the report in Print Preview
- Close the report without saving it

PRODUCING LABELS

You are going to create a set of address labels using the Label Wizard.

- Select **tblStudentDetails** from the Navigation Pane

The fields from the selected table will be available to the Label Wizard.

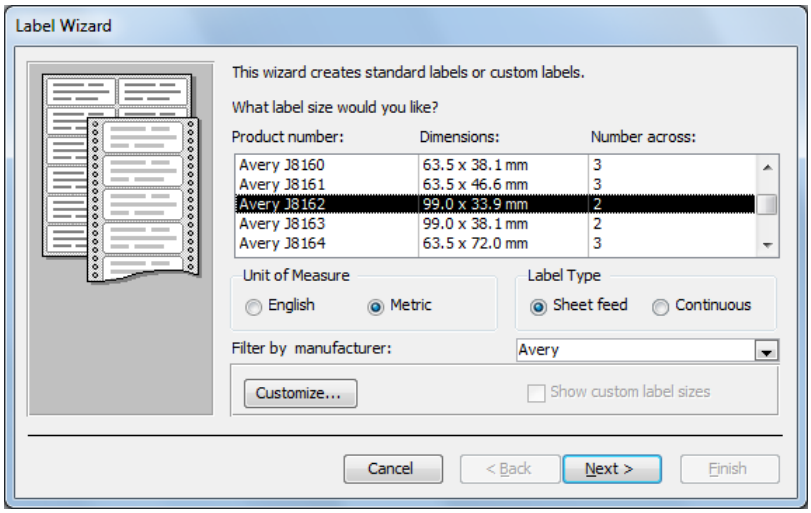
- Ensure that the **Create** tab is selected

- From the **Reports** group of commands, select the **Labels** button 

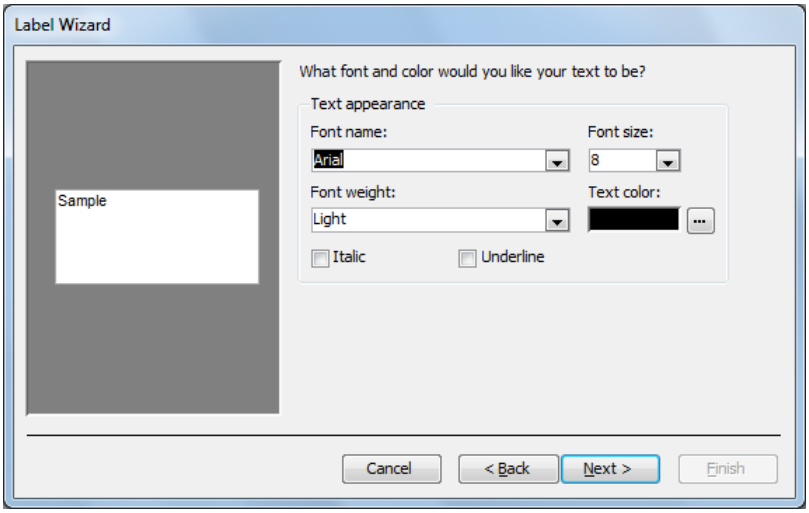
The Label Wizard is displayed, and you are asked to choose the label size.

- Ensure that **Avery** is selected as the manufacturer and that the unit of measure is **Metric**

- Select Product number **Avery J8162**

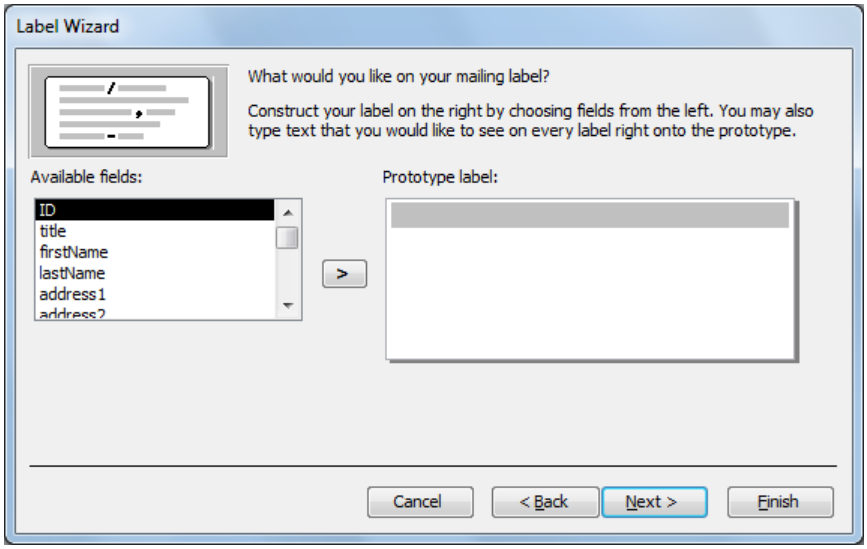


- Click **Next**



- To accept the text appearance offered, click **Next**

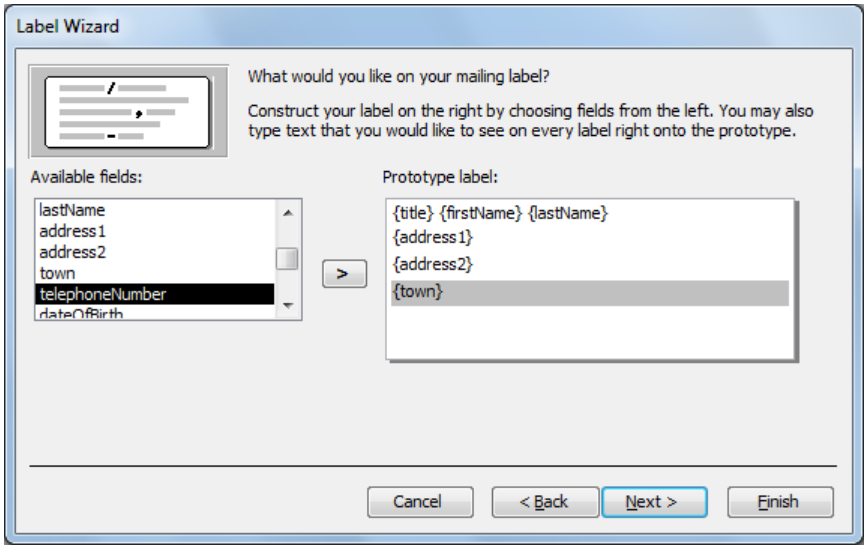
You next need to indicate which fields you want to include on the label, and also how they should be displayed.



You want to put the title, first name and last name on the first line with a space between each word.

- From the Available fields list, select **title** and click >
- Press the spacebar once to put a space between the title and the next field
- Select **firstName,** click > and press the spacebar
- Select **lastName,** click > and press Enter

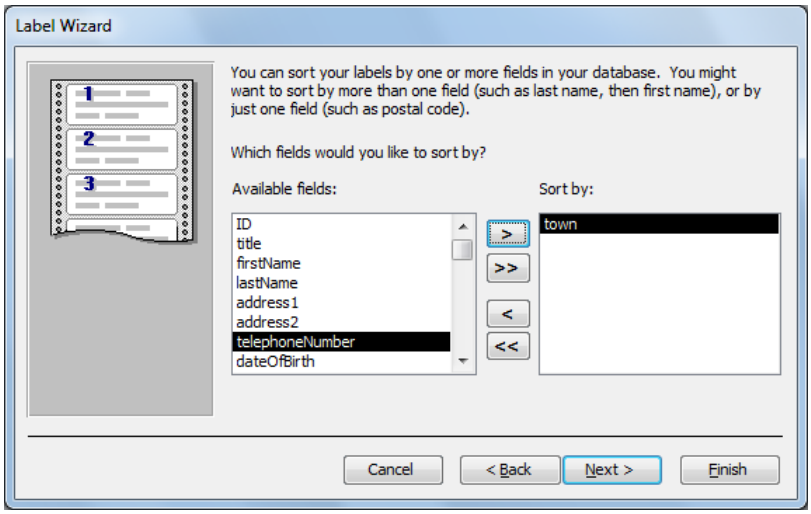
- Add **address1**, **address2** and **town** on separate lines



- Click **Next**

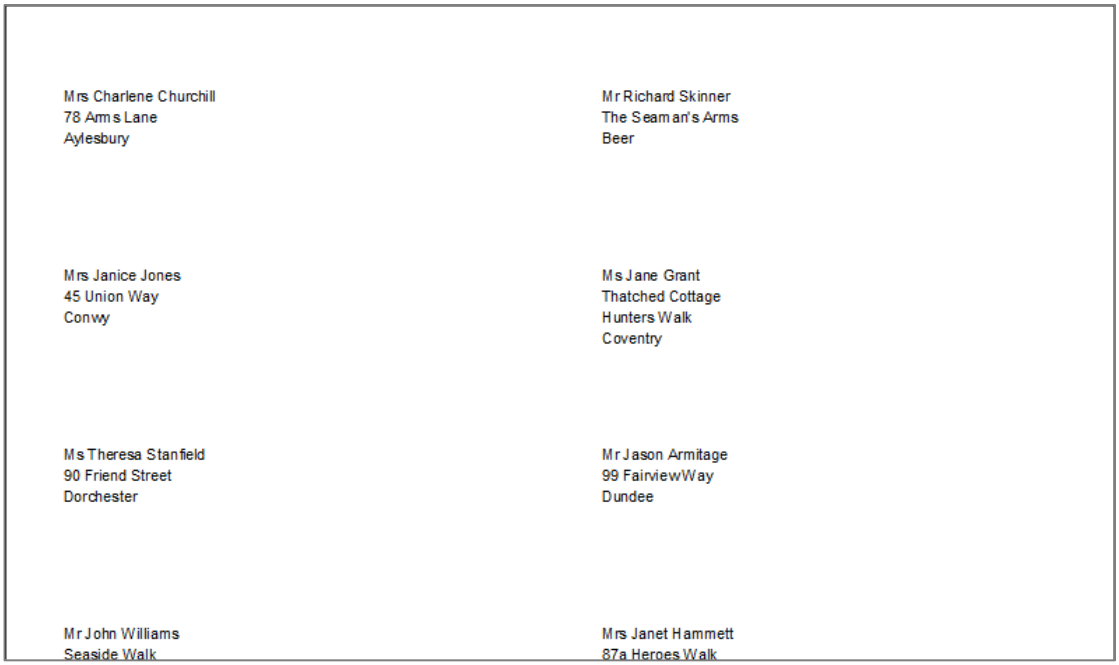
To sort by the **town** field:

- Select **town** and click [>]



- Click **Next**
- Accept the default report name
- Click **Finish**

The labels report is displayed with the data in alphabetical order of town.



- Close the report
- Close Access

APPENDIX 1

FIELD PROPERTIES

Field Properties are used to determine how Access handles and stores data, for example a date. When you create a field, a list of properties is displayed. The list of properties available is dependent on the data type chosen.

Field size

When a field has been specified as a text field, you can adjust the size from 1 to 255 characters. When the field is a number, then the following values apply.

Setting	Range	Decimal Places	Storage Size
Byte	0 to 255	No decimal places	1 byte
Integer	-32,768 to 32,767	No decimal places	2 byte
Long Integer	-2,147,483,648 to 2,147,483,647	No decimal places	4 bytes
Single	-3.4E38 to 3.4E38	Up to 7	4 bytes
Double	-1.797E308 to 1.797E308	Up to 15	8 bytes
Decimal	-9.99E27 to 9.99E27	Up to 28	12 bytes
Replication ID	Unique ID required for replication	n/a	16 bytes

Format

When using number fields, the data is displayed depending on the property chosen.

Display Layout	Format General Number	
	How data is entered	How data is displayed
General number	1234.56	1234.56
Currency	1234.56	£1,234.56
Fixed (2 places default)	1234.56	1234.56
Percent	0.1234	12.34%
Scientific	0.001234	1.234E-3

Date Format		
	How you might enter data	*How data is displayed*
General Date	18/4/98	18/04/98 23:39:00
Long Date	18/4/98	18 April 1998
Medium Date	18/4/98	18-Apr-98
Short Date	18/4/98	18/04/98
Long Time	10.15	10:15:00 PM
Medium Time	10.15	10:15 PM
Short Time	10.15	10:15

Text Format		
	How data is entered	*How data is displayed*
>	>uppercase	UPPERCASE
<	<LOWERCASE	lowercase

Decimal places

With numeric fields you can set the number of decimal places to between 0 and 28.

If you choose Auto, the number of decimal places will be allocated according to the field size.

Input mask

Use an input mask to ensure that values entered into a field are in the correct format. The input mask uses a special character to represent each character entered into a field.

For example, an input mask of LL0 indicates that a field must contain two letters and one number.

Input Mask	What it means
0	Enter a Digit (required)
9	Enter a Digit (not required)
#	Digit, + or - sign or space
L	Letter (required)
?	Letter (not required)
A	Letter or digit (required)
a	Letter or digit (not required)
&	Any character or space (required)
C	Character or space (not required)
.,:;-/	Decimal point, data & time separators
<	Convert characters to lower case
>	Convert character to upper case
!	Fill from right to left
\	Characters shown as literal

Caption

When creating default labels for reports and forms, Access uses the text set in the caption property. If no caption is set, Access uses the field name. It is therefore necessary to set a caption if the field name is not appropriate for a label on a report or form.

Default value

A default value is the value entered into a field if there is no alternative.

For example, say you are creating a database containing information on car drivers. As a licence is not issued until a person is 17 years old, then the default value could be 17.

Date() enters the current date.

Validation rule

This property limits the values entered into the field.

For example, a validation rule of “Mr” or “Mrs” or “Miss” or “Ms” would mean that only one of these four words would be accepted.

Validation text

Used in conjunction with the validation rule. If the rule is not met, then the validation text is displayed as a message to the user.

Required

Used on any field to indicate that a value must be entered.

Allow zero length

Used with a text or memo field to ensure that an entry appears in every field, even if it is left empty by the user.

A value of “” is entered into an empty field. In this case the Required property for this field must be set to ‘Yes’.

Indexed

Used on any field to speed up searching the database. Similar to an index in a book, if an indexed field is used in a search or query, Access will search the index which is much quicker than searching the whole database.

However, indexing a field will slow down entering and editing data as, not only is the data updated, so is the index. Use indexing wisely to get the best performance from your database.

Index setting	Meaning
NO	No index
YES (Duplicate OK)	Create an index on this field - there may be duplicates
YES (No duplicates)	Create a unique index on this field - no duplicates allowed (useful for information such as a National Insurance number where there should be one only)

APPENDIX 2

The page opposite displays the data needed in the table tblStudentDetails for page 42. This data is saved in the Students database, but if you are working through this guide on your own you will need to input this data before continuing.

Title	First name	Last name	Address line1	Address line2	Town	Telephone Number	Date of Birth	Driving Licence	Course Number
Mr	Francis	Tresham	56 Parliament Street	Fulham	London	2987009	05-Nov-1953	Yes	PT765800
Mrs	Roberta	Catesby	5 November Road	Peckham	London		02-Apr-1971	No	TU823000
Mr	Thomas	Percy	Flat 7	Rocket House	Birmingham		24-Feb-1968	Yes	TU823000
Mr	Christopher	Wright	Plot 64	Banger Lane	London	2652462	13-Apr-1976	Yes	PT765800
Mr	Thomas	Bates	The Big House	Bonfire Road	Moreton	2295875	21-Jun-1957	Yes	SN765000
Ms	Jane	Grant	Thatched Cottage	Hunters Walk	Coventry	2862957	16-Aug-1975	Yes	PT765800
Mr	William	Brown	42 Garden Street		Rothley	2567657	08-Oct-1972	No	SN765000
Mrs	Charlene	Churchill	78 Arms Lane		Aylesbury	2765890	15-May-1973	Yes	TU823000
Mrs	Petronella	Haywood	Midtown Apartments	Pickton Street	Manchester	2260900	26-May-1973	No	SN765000
Ms	Mattie	Quintal	The Cottage	Sea Front Lane	Poole	2593721	17-Feb-1955	Yes	PT765800
Mr	Richard	Skinner	The Seaman's Arms		Beer	2760174	21-Jun-1965	Yes	PT765800
Mr	John	Williams	Seaside Walk		Frome		28-Feb-1967	Yes	SN765000
Mr	Charles	Norman	Mate's View	Carpenter Street	Lyme Regis		15-Mar-1969	No	TU823000
Ms	Janice	Brine	45 Union Way		Conwy	2563780	02-Nov-1946	Yes	SN765000
Mrs	Janet	Hammett	87a Heroes Walk	Chiswick	London	2761098	20-Nov-1946	Yes	SN765000
Mrs	Jacqueline	Loveless	Farm Cottages	Martyr Street	Tolpuddle	2786502	26-Oct-1974	Yes	TU823000
Ms	Theresa	Stanfield	90 Friend Street		Dorchester	2897656	09-Nov-1981	Yes	TU823000

