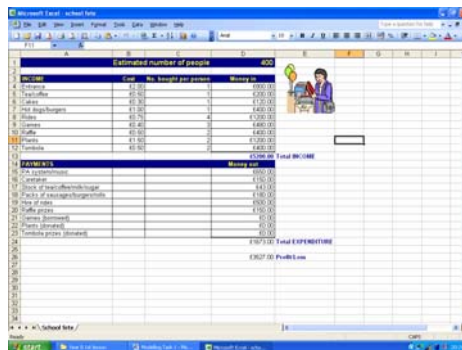


KEY SKILLS

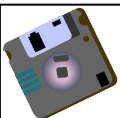
DATA HANDLING: TASK 1



	Estimated number of people	Cost per person	Money spent
4			
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100			

DATA HANDLING : TASK 1 - CONTENTS

- Creating a simple database
- Creating & using tables
- Using data fields, records, data types, field sizes, primary key
- Importing data
- Validation



Wherever you see this symbol, make sure you remember to save your work!


DATA HANDLING : TASK 1

Before you begin this task you should create a new folder in your user area. Call it 'Data Handling'.

Within this folder create another named 'Database Task 1'.

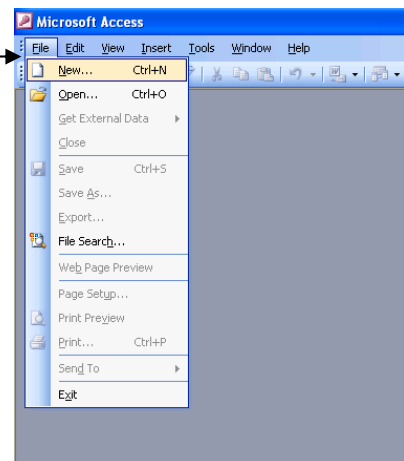
CREATING A DATABASE

We will now set up a simple database...

To do this you will need to open Microsoft Access. 

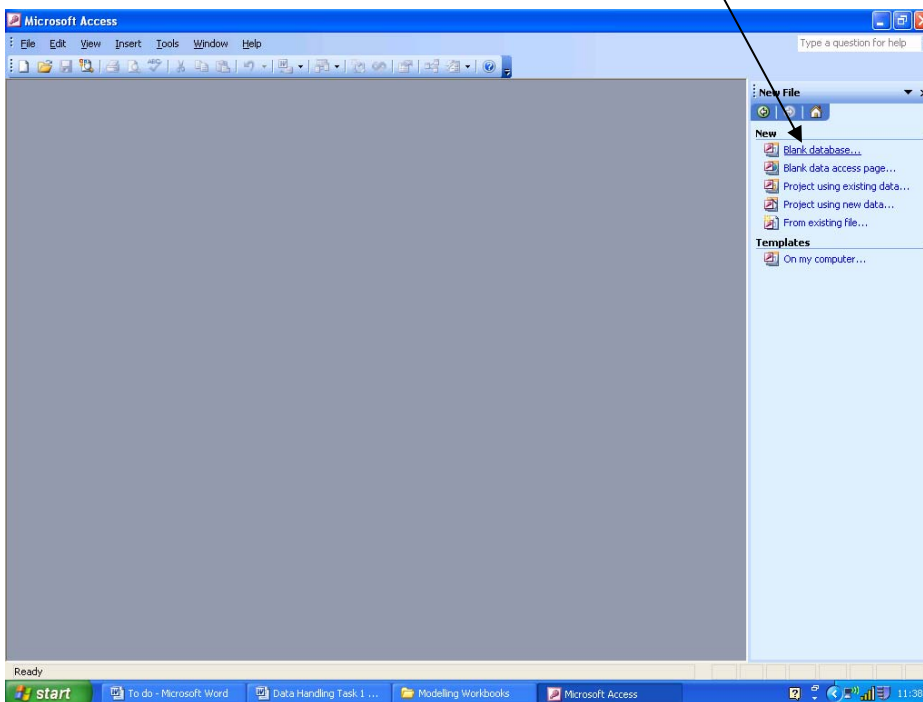
Unlike most applications, when you open Access a new document is not automatically created for you. In Access you need to save your database and name it, before you can work on it. You need to do the following:

- Select 'File'
- Select 'New'



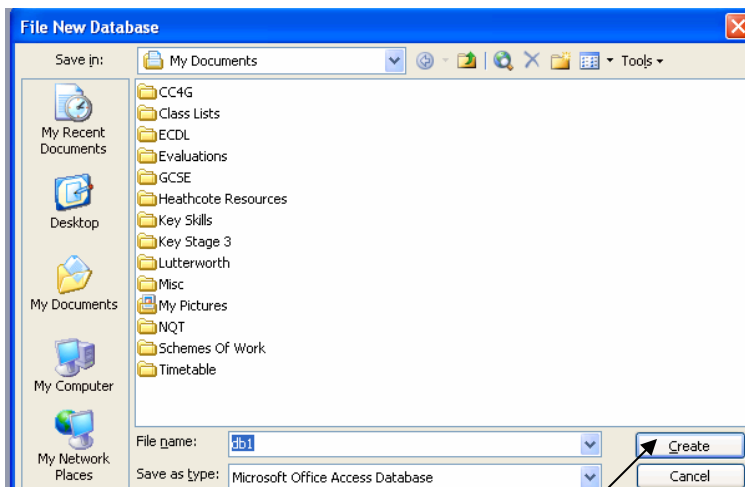
A window will be displayed on the right hand side of the screen, asking you what you want to create.

You should select 'Blank database...' from the list.



The window below will appear, requesting a name for your database.

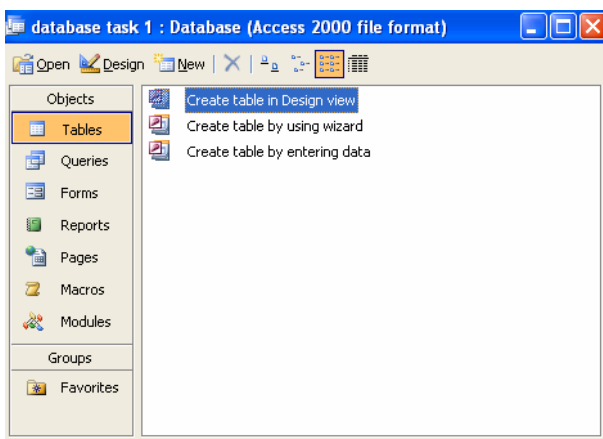
Enter 'database task 1' as the file name for the database, making sure that you save the database in the 'Data Handling' > 'Database Task 1' folder that you created at the beginning of this workbook.



After entering a file name, select 'Create'.

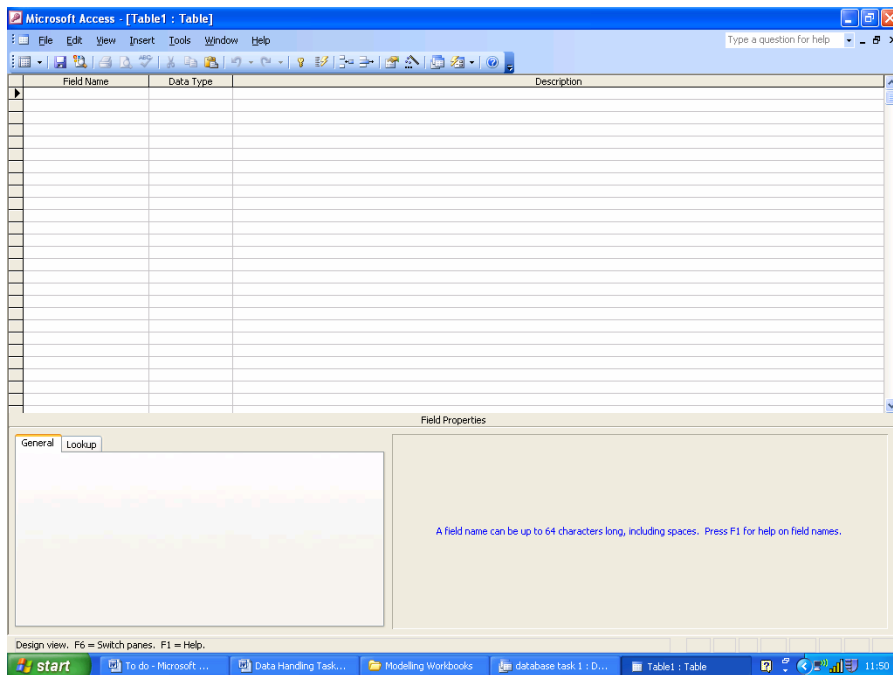
SETTING UP THE DATABASE - TABLES

After saving the database, the following window will appear. This is the main option box that you will use to set up everything within the database.



The first thing that we need to do is create a *table*. A table is a collection of data about a specific topic. This will form the foundation to our database and the information that it will contain.

- Double-click (or select and then click 'Open') on 'Create table in Design View'
- The following window will be displayed:



Tables organise data into columns (called *fields*) and rows (called *records*). For example, in a database containing details about customers, examples of *fields* would be: forename, surname, address, telephone number. Each customer in the database would be a *record*.

FIELDS

We need to set up a table by entering the field names that we require. The easiest way to do this is in 'design view' layout (shown in the image above - you should have this displayed on your screen now).

In the field name column type the following fields:

- Title
- Forename
- Surname
- Road
- Town
- County
- Postcode
- Home telephone number
- Mobile telephone number
- Age

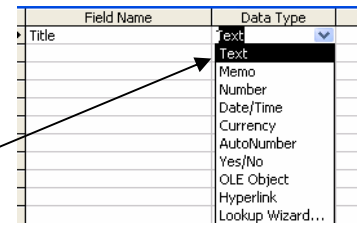
DATA TYPES

Now that we have entered the fields that we require, we need to set up the *data type* for each field. The data type determines what type of data a field can hold, for example number or text.

TASK 1

For each of the fields that you have entered you need to decide what type of data the field will hold.

You need to click in the 'data type' column next to the field you want to set the data type for and select the most appropriate type from the drop down menu.



Field Name	Data Type
Title	Text
	Memo
	Number
	Date/Time
	Currency
	AutoNumber
	Yes/No
	OLE Object
	Hyperlink
	Lookup Wizard...

Answers to Task 1

Check that you have title, forename, surname, road, town, county and postcode set with data type text. Age should be number.

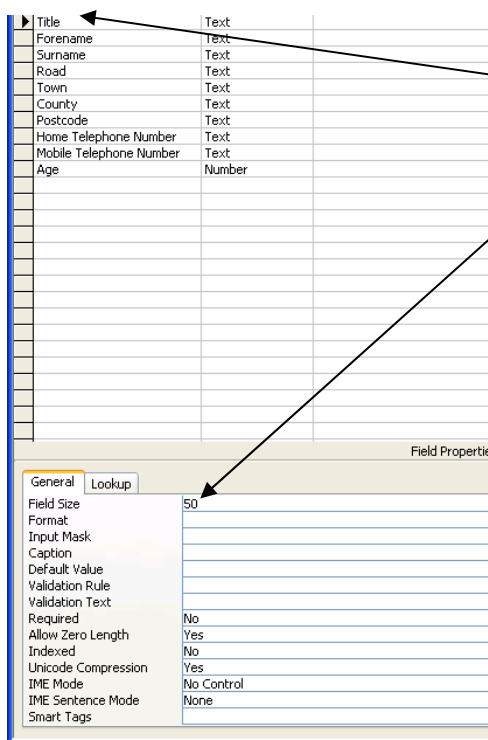
Note: If text is chosen, this includes numbers and letters e.g. an address would contain both so text is the most appropriate option.

Telephone numbers are more complicated! You would think that they should be set with number as the data type - actually they need to be text! This does not sound logical as there are only numbers entered. However, if the data type is set to number, when the user tries to enter a number that will begin with 0 (e.g. 01926 for the area code), the 0 is automatically taken away from the beginning, as strictly a number does not have a 0 before.

The rule is therefore: for a telephone number use text as the data type.

FIELD SIZES

We now need to think about field sizes. Field sizes are used to set the maximum number of characters that can be entered into a field. This helps reduce the amount of storage space required to save the database. To set up field sizes you should do the following:



Title	Text
Forename	Text
Surname	Text
Road	Text
Town	Text
County	Text
Postcode	Text
Home Telephone Number	Text
Mobile Telephone Number	Text
Age	Number

Field Properties

General

Field Size: 50

Select the Title field - you will see that an arrow points to it to show that it is selected

You will now see that the default field size is set to 50.

You need to change this to a more appropriate size. 'Miss' is possibly the largest value that would be entered so a field size of 4 would be appropriate.

Type in 4, to replace 50.

TASK 2

Select each field in turn and set an appropriate field size. Remember that spaces count!

Answers to Task 2

The values you have chosen in Task 2 do not have to be exactly the same as I suggest, but should be around the same values:

Field Name	Field Size
Title	4
Forename	15
Surname	15
Road	25
Town	15
County	15
Postcode	7
Home Telephone Number	11
Mobile Telephone Number	11
Age	3

PRIMARY KEY

In a database it is very important to set a primary key. A primary key is just simply a field that will uniquely identify a record.

Example: If we are thinking about a school database, each pupil in the school will be a record. To identify a pupil it is not possible to use any of the fields we have set in our database already, as there is no single field that will identify a pupil. We cannot use forename or surname, as often more than one pupil has the same.

In this school an office number identifies each pupil. No two pupils will have the same office number - it is unique to the pupil.

This is all a primary key is.

It is possible to set up your own primary key (i.e. office number / customer number) or Microsoft Access can set up one automatically for you.

You need to set up a new field called 'Customer Number' to act as the primary key - the field that will identify each customer in the database. To do this, follow these steps:

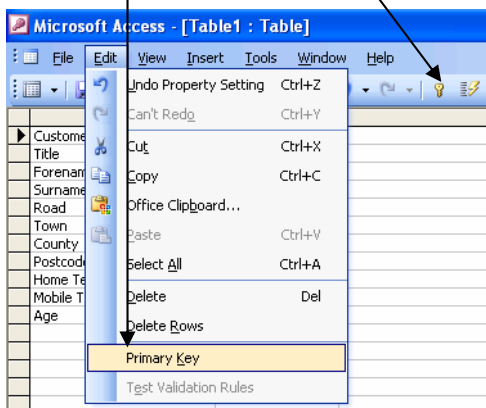
- Make sure that the title field is selected
- Select 'Insert' from the main menu bar

- Select 'Row' - this will insert a blank row at the top of your list
- Give the field the name 'Customer Number'
- Instead of choosing text, number etc. for the data type, select 'AutoNumber' from the drop down box (in the data type column)


AutoNumber will automatically insert a number into this field on each record. The number will be unique to each record.

Now that you have the field set up you need to identify it as the primary key:

- Make sure that the Customer Number field is selected
- Click on the key icon on the toolbar
- Or, select 'Edit'
- Select 'Primary Key'



You will see that a key is placed next to the field name, to identify the field as the primary key.

Field Name	Data Type
 Customer Number	AutoNumber

ENTERING DATA INTO YOUR TABLE

You have now set up your table! Before you do anything else you need to save it:

- Select 'File'
- Select 'Save'
- Give the table the name 'Customer Table'

The next step is to enter data into the table.

To enter data:

- From the toolbar, select the arrow next to the view icon
- From the drop-down box, select 'Datasheet view'



Customer Num	Title	Forename	Surname	Road	Town	County	Postcode	Home Telephone	Mobile Telephone	Age
(AutoNumber)										

You will see the table set out as above. Each column represents a field and each row represents a record.

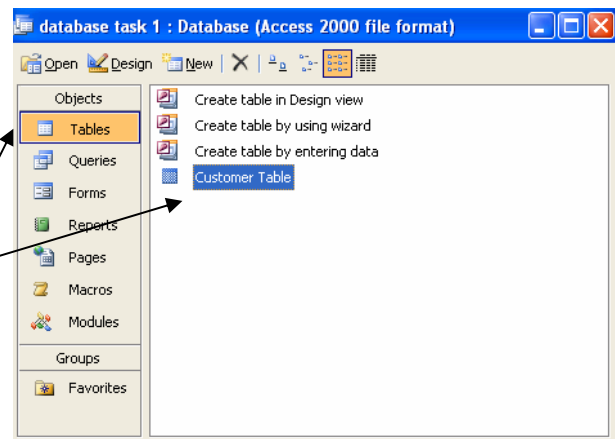
Add 3 records to your table. Remember Customer Number is automatically generated for you so you do not need to enter anything into this field.

Customer Num	Title	Forename	Surname	Road	Town	County	Postcode	Home Telephone	Mobile Telephone	Age
1	Miss	L	Blachford	Smith Street	Rugby	Warwickshire	CV22 5HT	01788123456	07970123456	
2	Mr	Peter	Robinson	Leamington Ro	Leamington Sp	Warwickshire	CV21 7WJ	01926453467	07967546282	
3	Mrs	Susan	Fredrick	Dury Street	Warwick	Warwickshire	CV21 2SJ	01926345242	07792020191	

Your table should look similar to the one shown above. Every person is a record (with a unique number to identify each) and every column is a field to record the details. Each record in a table has the same fields.

You should now SAVE your database:

- Select 'File'
- Select 'Save'
- Close the table - 'File' > 'Close'
- You will now see that your Customer table has been added to your list of tables on the main menu



TASK 1

Now it's your turn....

1. You need to create a new *database* of DVDs that are in stock at a rental shop. Save the database as 'DVDs'
2. Create a new *table* in the database that has the following *fields*. You should call the table DVDs in store.
 - o DVD title e.g. Pretty Woman
 - o Director e.g. Randal Kleiser
 - o Classification e.g. PG
 - o Genre e.g. Musical
 - o Starring e.g. John Travolta, Olivia Newton-John
 - o Number of discs e.g. 1
 - o Main Language e.g. English
 - o Product Code e.g. 123456
3. Select appropriate data types for each of the fields you have created
4. Select appropriate field sizes for each of the fields
5. Select or insert an appropriate primary key
6. Make sure the table is saved
7. Add 3 records to the table

IMPORTING DATA

In the exam it is more likely that you will be asked to import data into a database that has already been saved for u. The data that you will use will not be stored in a database. You will need to import it from another file (probably saved as a text file).

To save the data into your user area:

- Use the link on teach-ict.com to find the 'Key Skills Data Files' on the QCA website.
- Find the 'Ice Cream' file
- Save this file to your area. You should save it in the Data Handling > Database Task 1 folder you created.
- You will be using the .txt file called 'stock' within the 'Ice Cream' folder which you just saved

To create a new database:

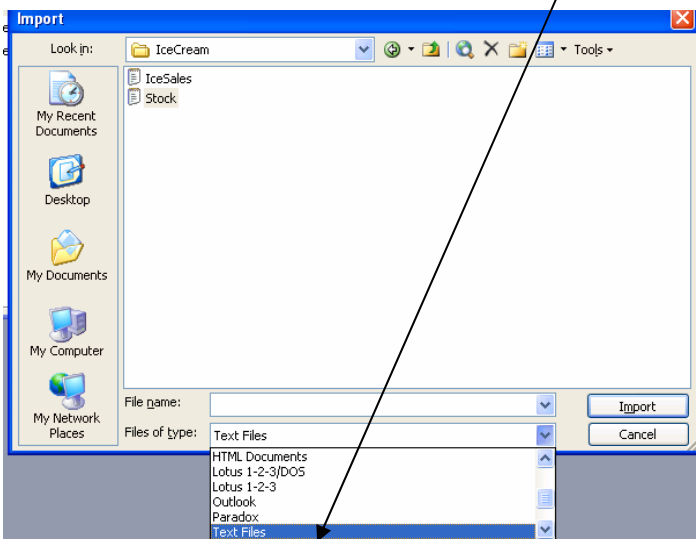
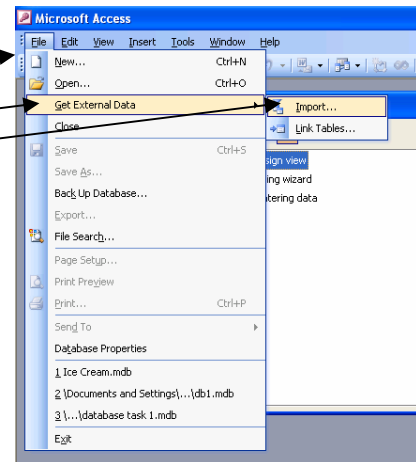
- Open Microsoft Access
- Select 'File' > 'New'
- Choose 'Blank Database'
- Call the database Ice Cream - save it into your Data Handling > Database Task 1 folder

To import the data:

- Select 'File'
- Select 'Get External Data'
- Select 'Import'

You will now need to find the 'Stock' file that you previously saved into your user area (contained in the ice cream file)

- You must ensure that in the 'files of type' selection box, you have selected 'Text Files'



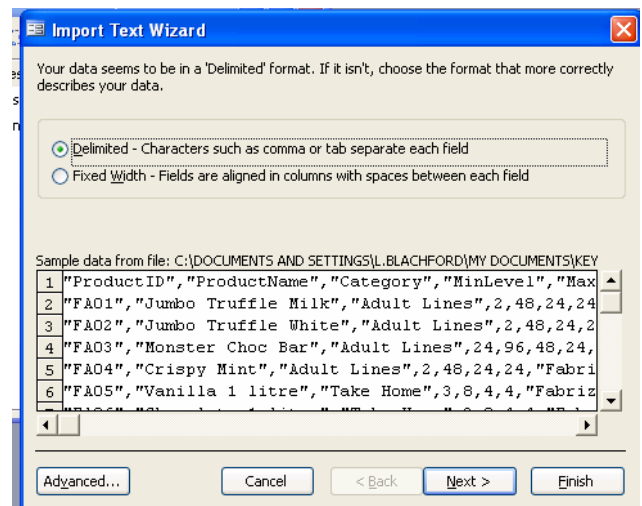
- Now select the 'Stock' file you saved in the Data Handling > Database Task 1 folder
- Click 'Import'

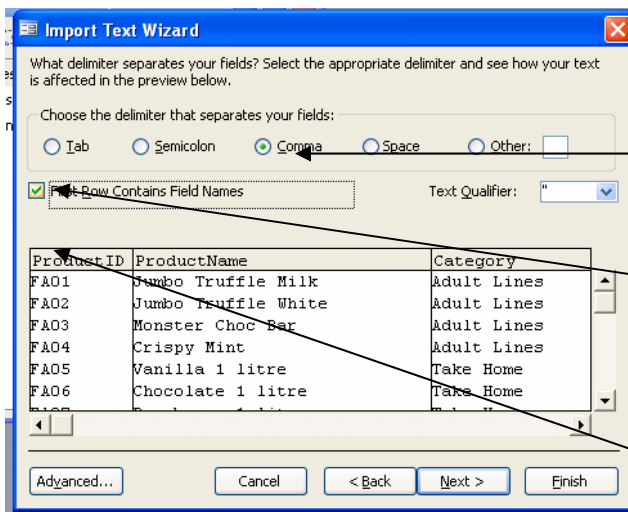
This is the next window that will be displayed.

Step 1

The way that the data has been saved means that each field is separated by a comma, with each record displayed on a separate row.

- Make sure that the Delimited option is selected, which means that the fields are separated by commas, or similar.
- Click 'Next >'



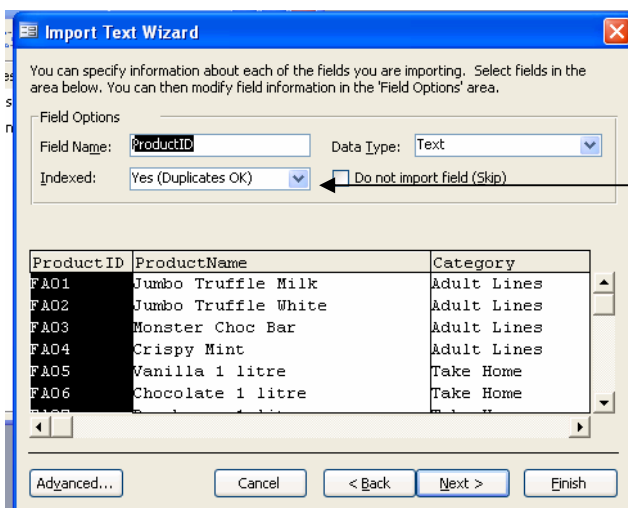
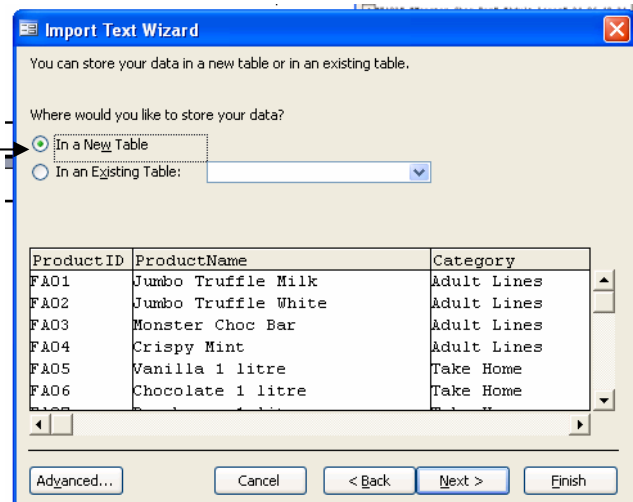


Step 2

- In the next window, make sure that 'comma' is selected as the character that separates the fields.
- Select the check box next to 'First row contains field names'. If you do not do this you will not have any field names, the field names will become a record in the database.
- You will notice that the field names are highlighted at the top.
- Click 'Next >'

Step 3

- You want to save this data in a new table. Make sure that that option is checked.
- Click 'Next >'

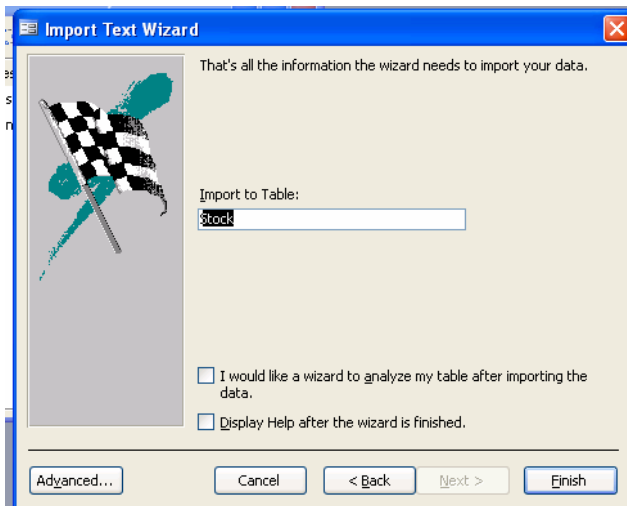
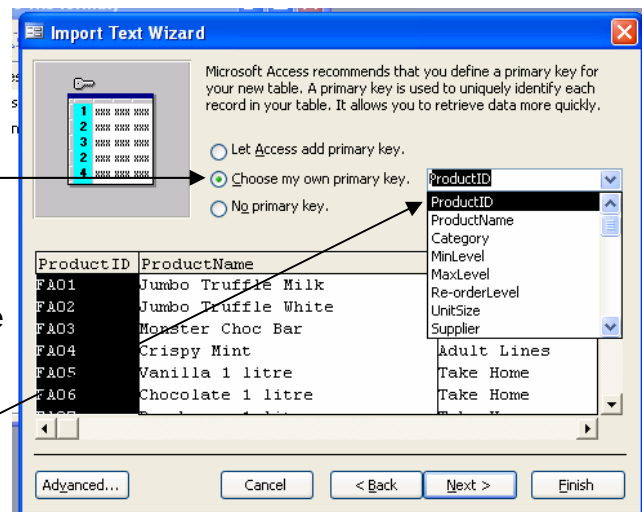


Step 4

- Here change the indexed option to 'Yes(No Duplicates)'. We will want this field to be our primary key so we will not want any duplicates.
- Click 'Next >'

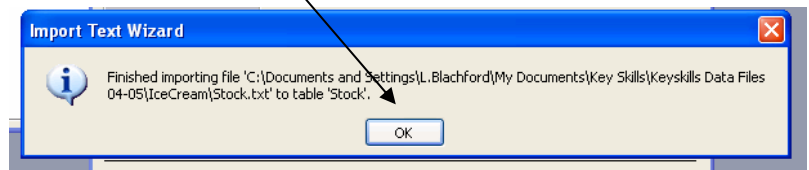
Step 5

- This step is where you set the primary key
- Select the 'choose my own primary key' option. (With this data set it is possible to use an existing field as the primary key. Remember that this is not always the case - you may need Access to create one for you sometimes)
- Select the ProductID field from the drop-down list
- Click 'Next >'



Step 6

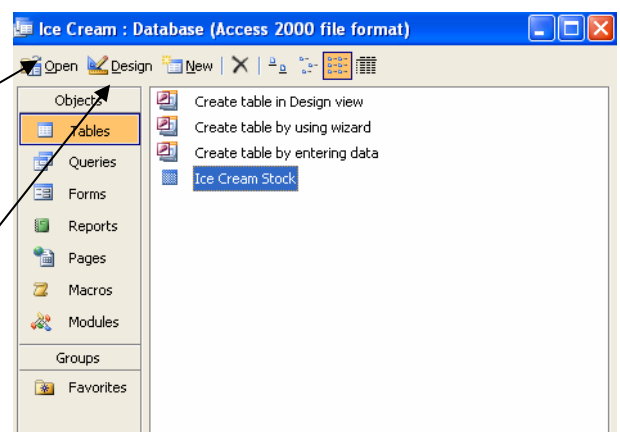
- You now need to name your table
- Call it Ice Cream Stock
- You have now finished importing!
- Select 'Finish'
- In the window that pops up to tell you that you have finished importing, select 'OK'



In the main menu, you should now see the new Ice Cream Stock table that you have created.

You can open this to view all the ice creams that are in stock.

To open the table so that you can edit it:



- Ensure that the table is selected
- Click on 'Design'

ADDING/CHANGING DATA TYPES & FIELD SIZES

You now need to check that the data types and field sizes that are currently set for this table are correct.

You need to open the Ice Cream Stock table in 'Design' mode.

Check the data type and field size for each field. Where necessary make changes.
Note: The field sizes will need to be changed.

(Remember, if you are unsure about how to do this check the instructions in the tasks above)

You should also check that the primary key is set correctly - as you set up when importing the data set.

Save the table and the database. Close this database.

TASK 2

Your task now is to import a data file into a new database.

The first thing you need to do is to copy the data file into your user area:

- Use the link on teach-ict.com to find the 'Key Skills Data Files' on the QCA website.
- Select the 'Club' data file and save it to your area
- You should save it in the Data Handling > Database Task 1 folder you created.
- You will be using the .txt file called 'players' inside the 'club' data file folder

Now you need to open a new database and save it as 'Club'.

Then import the data file that you have just saved into your user area.

Note: Follow the steps above if you are not sure about how to do this.

Remember to set a primary key and set the first row to be the field names.

After you have imported the table and saved it as 'Players Table', you need to open the table in 'Design' mode and check the data types and field size of all fields.

VALIDATION

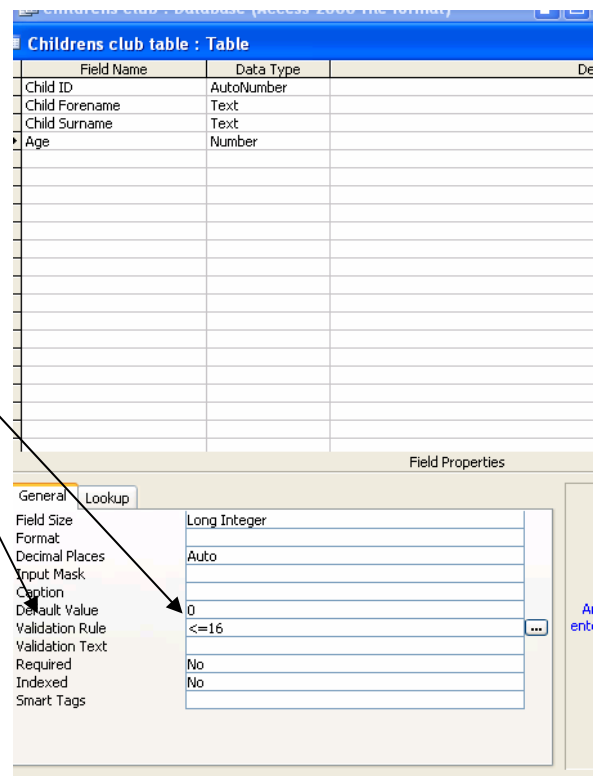
We use validation to control the data that can be entered into the database. For example, if you were setting up a database for a club that only allowed children aged 16 and under, we could make sure that only children of this age can be entered into the database.

For this example we will create a very simple database.

- Create a new database called 'Childrens Club'.
- Create a new table in 'Design' mode.
- Add the following fields:
 - Child ID - set as primary key - Data Type: AutoNumber
 - Child Forename
 - Child Surname
 - Child Age
- Set the data types of these fields.
- Set the field sizes of these fields.
- Save the table as 'Childrens Club table'.

Now we are going to add a validation rule to make sure that only children of 16 and under can be added. This will also help to prevent mistakes with data that is entered into the database.

- Make sure that you have the age field selected
- At the bottom of the table design, you will see a tab that is labelled 'General'
- You will set the validation in the validation rule box
- You need to type '<=16'
It is important that you get the < and = signs this way round otherwise the rule will not work.
If we only wanted children under the Age of 16, you would not need the = sign



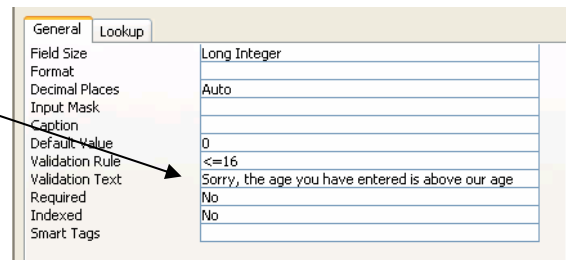
The next thing that we can do is to write a message to be displayed if someone tries to enter incorrect data, in this case a value that is greater than 16. It is important to make

people aware of what is wrong with the value that they have entered so that they know what to do to fix the problem.

In the box underneath the validation rule, there is a box labelled 'validation text'. This is where you can write a comment that will be displayed if incorrect data is entered.

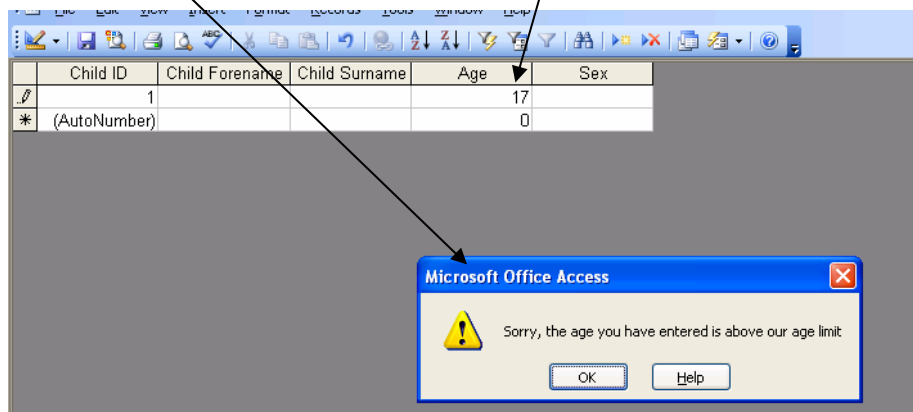
The error message written here says 'Sorry, the age you have entered is above our age limit'

You can of course write whatever you want to.



Just as the validation rule works for greater than, it will also work with less than (< or <=).

SAVE the table. Now open it in 'Datasheet' view. Enter a forename and surname into the first record. Now enter an age that is greater than 16. When you move away from this field, the error message should be displayed.



Now enter values that are less than 16 to check that these are accepted.

TASK 3

Add a new field to your table called 'Gender'. Make sure that the data type and field size are set appropriately.

We want to add a validation rule here to say that only the values 'Male' or 'Female' can be entered. There is no other possibility and we do not want anything else written in this field.

Field Name	Data Type
Child ID	AutoNumber
Child Forename	Text
Child Surname	Text
Age	Number
Sex	Text

Property	Value
Field Size	10
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	"Male" Or "Female"
Validation Text	Sorry, you have not entered Male or Female
Required	No
Allow Zero Length	Yes
Indexed	No
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Smart Tags	

- In the general type, validation rule box type the following:

Male OR Female

- Access will automatically put quotation marks around the text values "Male" / "Female", as these text values are acceptable
- You now need to enter a message to be displayed if incorrect data is entered
- Save the table
- Now test this out by viewing the table in Datasheet view and trying to enter a value other than 'Male' or 'Female'
- You should also try entering Male / Female to check that these values are accepted.
- Save the database

END OF WORKBOOK

You may:

- Guide teachers or students to access this resource from the teach-ict.com site
- Print out enough copies to use during the lesson

You may not:

- Adapt or build on this work
- Save this resource to a school network or VLE
- Republish this resource on the internet

A subscription will enable you to access an editable version and save it on your protected network or VLE