Data Handling Coursework Report

Choice of Problem

When asked to think of ideas to base my ICT course work on I came up with the following;

- Make over salon
- Modelling agency
- School health centre
- Job centre
- A tracing family trees agency

I decided on the job centre for a number of reasons;

- This idea was original; no one else in my year was basing her coursework on a job centre.
- A job centre would require a number of specific pieces of information. As I needed to think of at least fifteen different fields for my course work I decided it would be easier for me to think of the field titles I would need.
- There would be a lot of information concerning job agencies available, making it easier if I needed to research something for my course work.
- A variety of different people would apply to my job agency I would not have to be typing the same information in repeatedly making it more interesting to create a database on.

Job centre data base

I was struggling to keep track of all the clients' records so I decided to use a database to sort these. I had less need for a database, which held my clients looking for employees than I did for those clients looking for employers as I would not be looking to find information quickly and easily as urgently. If the database I was going to set up for my clients looking for jobs was successful I would also set one up for those searching for employees. Setting up a database meant I would be able to find information for prospective clients instantly so I could tell those looking f or employees whether I had someone suitable for them quickly. I could find records quickly to update them; for example if someone had a change of address I could easily find the old one and bring it up to date. I would be informed when I need to change information such as a clients age by a program called 'macro' which without a database I would not be able to use.

Description of the problem

Before I started running my Job agency without the use of IT I was using a paper-based system, which is what my information for clients searching for employees is stored on at the present. All my clients' information had to be hand written on small cards and filed in alphabetical order into filing cabinets. It took a considerable amount of time to find my clients ca rd. As the cards were hand written I often found them hard to read; I was in danger of not being able to get in touch my clients.

In addition to this, because I did not have the use of macro there was no way of my knowing when information such as my clients age, changed. So I had the choice of going through all my clients files and checking if they needed updating or checking every time the information was brought out because we needed to use it.

Investigation and Analysis

Before starting on my database I decided to research some other Job centres to see how they functioned, the easiest way to do this would be through a search engine on the net. Here are some of the other ways I found to run your Job centre;

This is a Japanese Job centre, run by the government. Although it is similar to my company in the way it uses computers this Job centre does not use a database, anyone has access to any file. With the help of my database I am able to give my clients the information they are looking for faster, and I can supply information as to which Job would be best suited to them.

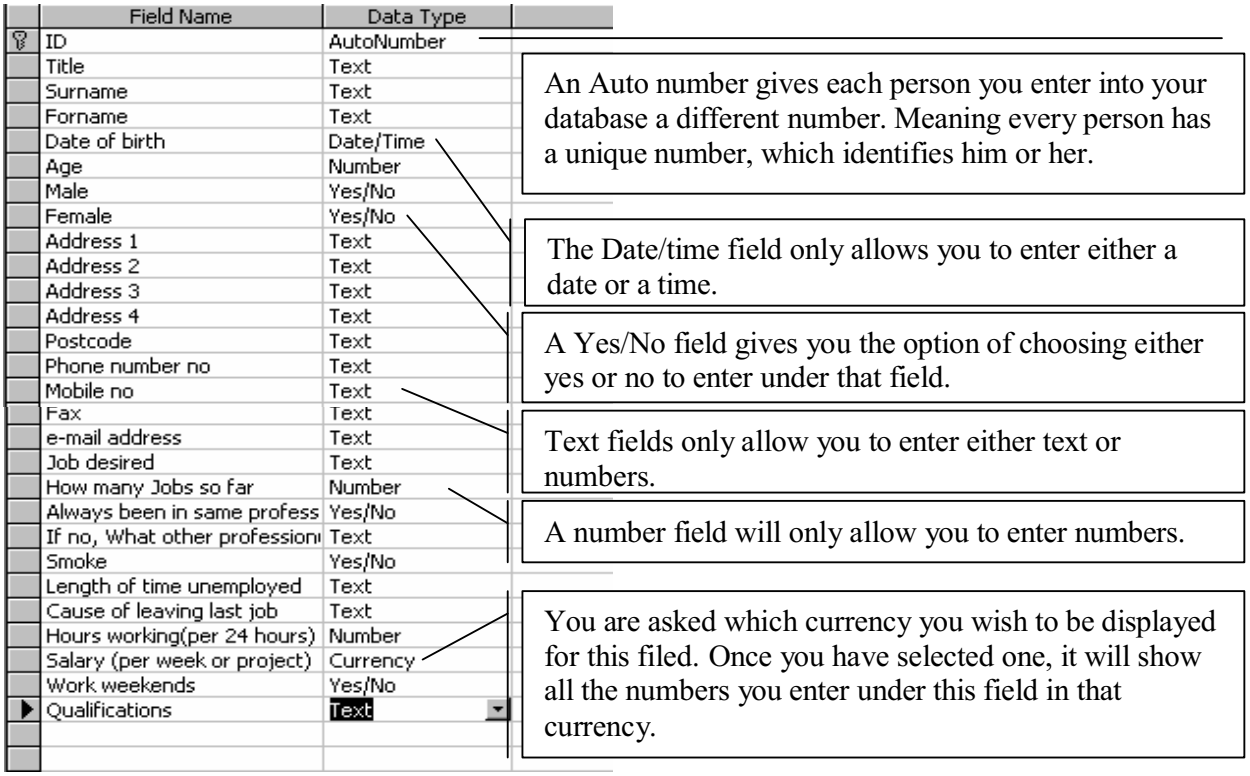
This is an example of a paper-based system, the way I used to run by Job centre. This picture is evidence enough that having the use of a database will have made a huge improvement to the way my company is run. My clients will now receive the information they are looking for with the touch of a button instead of spending minutes looking through small hand written cards.

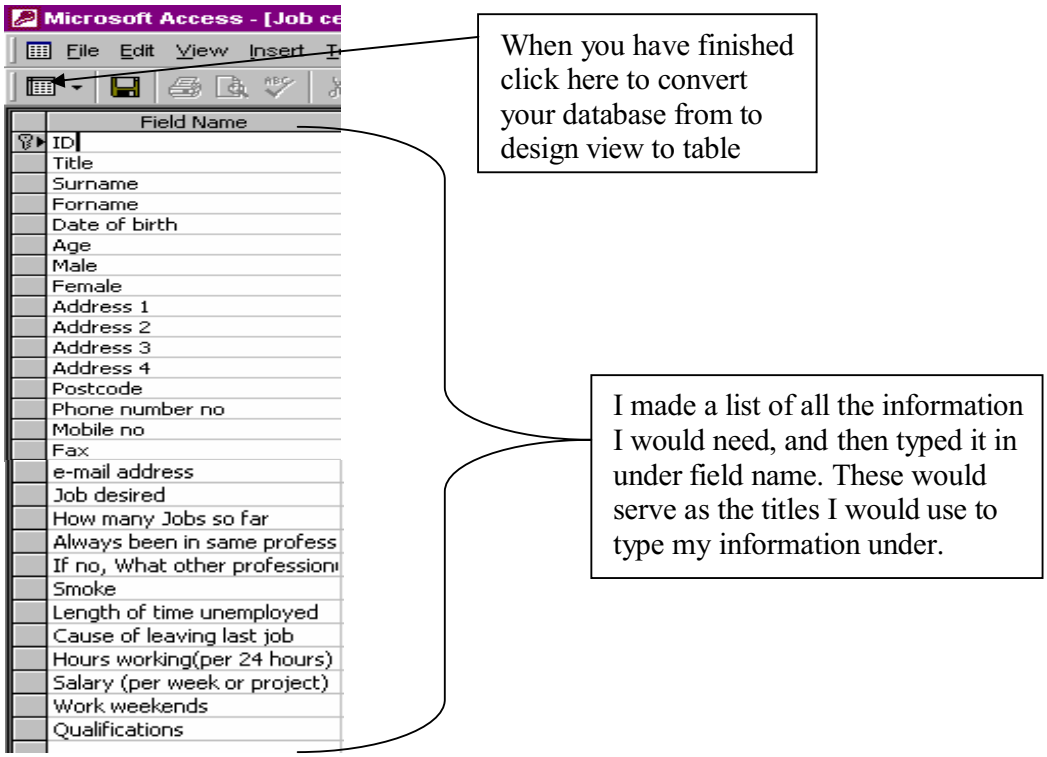
Running my Job centre is much easier with the help of ICT and a database, I am now able to;

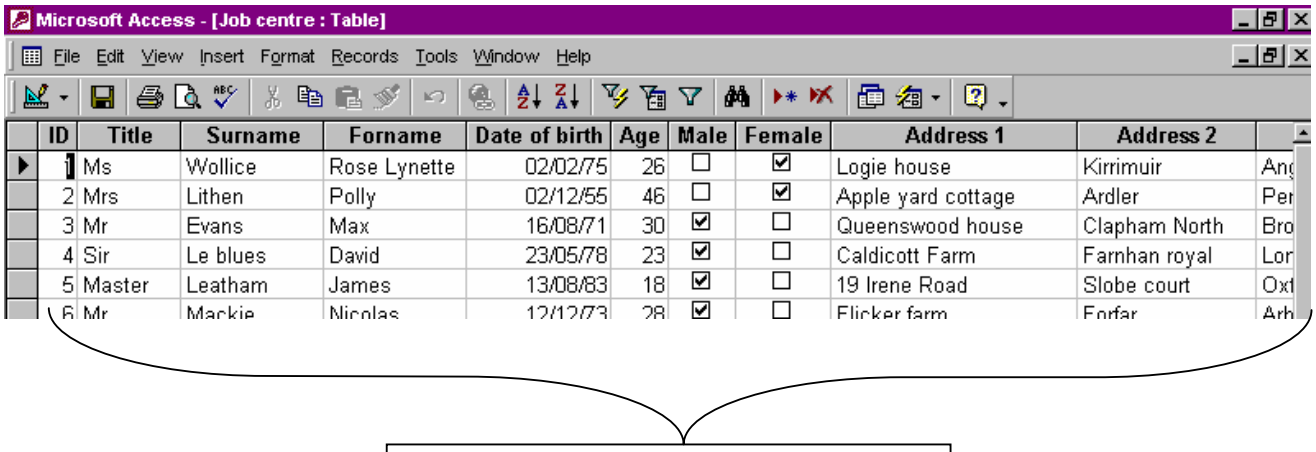
- Quickly find out which clients are available for which Jobs.
- See which clients are appropriate for what Jobs.
- Quickly look up someone on the database.
- Cross-reference a client with Jobs requirements.
- Check whether a customer is fit for the job in question
- Check customer details and contact phone numbers
- Place adverts in local newspapers if there is a need.

To begin my database I needed to make a list of the inf ormation I would need to know about my clients. I then enterd these into my database (open in

design vew) under ‘field names.’ Each of the Clients pay for the use of my Job centre in advance so there was no need for a field asking whether they had paid or not. I then needed to decide what ‘Data type’ I should enter each field under. The data type enabled me to enter what I wanted the information in the field to be shown as. For instance I could write a number into a currency field and it will automaticaly b e shown in the currency I have chosen; £, $ etc





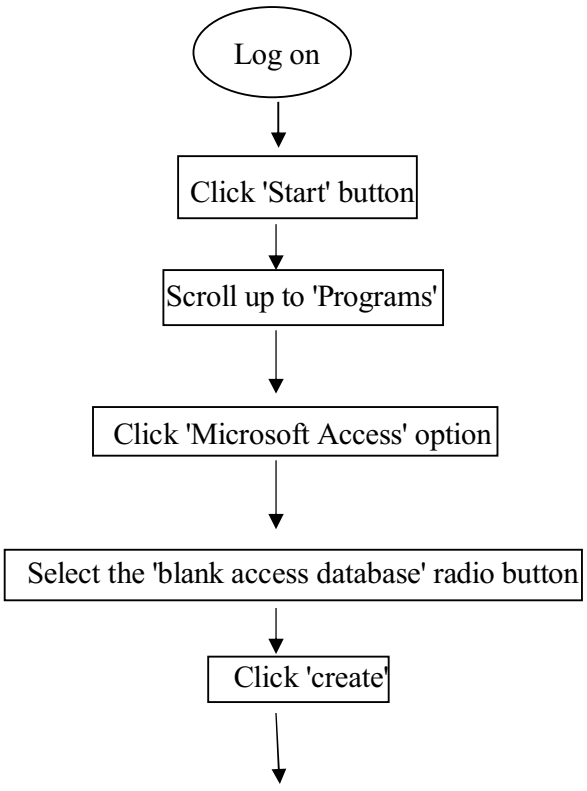


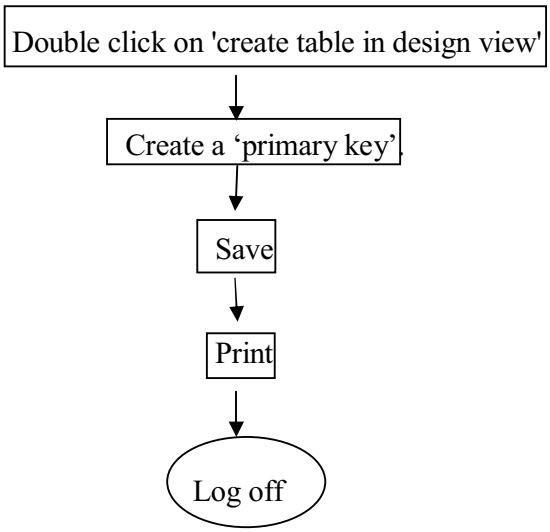
After you have finished your database in design view and have clicked on the 'view' button your database in table view will appear blank. You can then begin to fill in your database with the data you require.

This Investigation and anylis, if followed correctly should lead up to having a succesful data base.

Design of the solution

Below is shown a data flow diagram. A data flow diagram could be 'summed up' as a list of instructions or directions, which enable you, do something. In this case it is on how to set up a database. I might use one for instance if I were going to employ someone who had had no experience of a database, I would give them a data flow diagram so that they would know how to use a database.

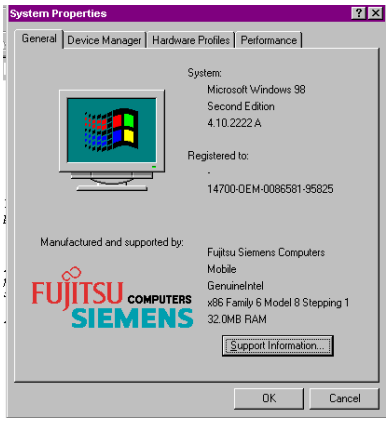




Resources

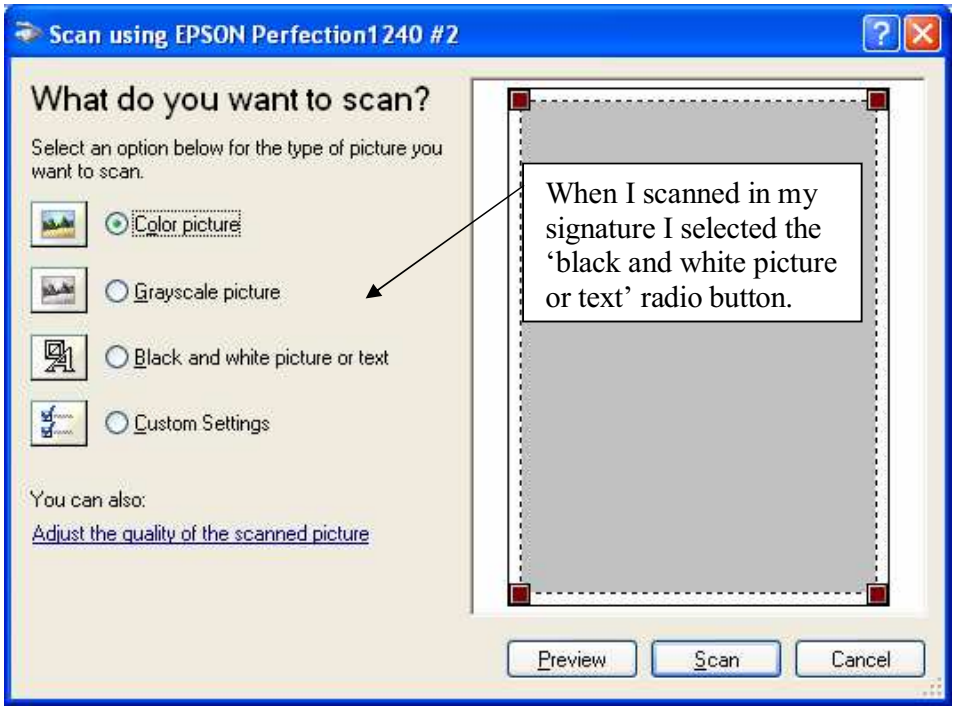
The hardware used to set up my database and course work;

- I worked on my laptop; a 'Fujitsu computers siemens series C laptop' as shown is the screen dump bellow;

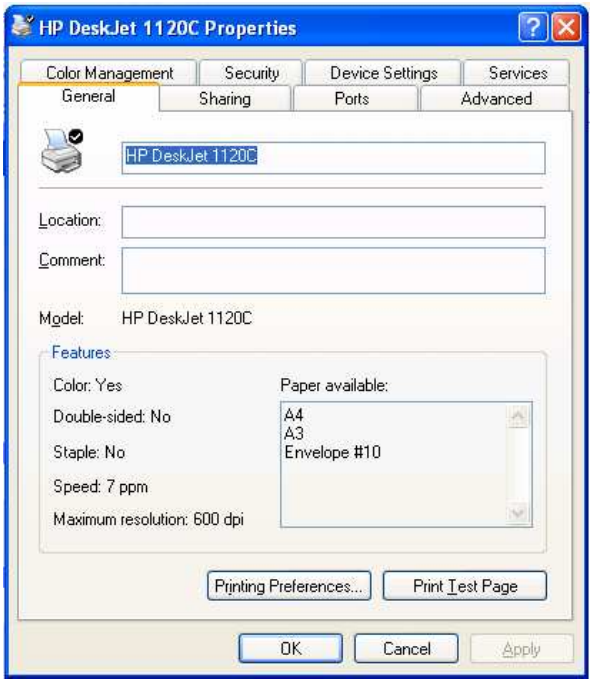


- To include my signature in my mail merged letters I needed to use the scanner, which was attached to an 'Hewlett Packard Vectra XE310,' I needed to work on this in order to use the scanner. I will also print this write up on this computer;

- So that I could include my signature in my mail merged letters I used an ‘Epson perfection 124OU’ scanner;



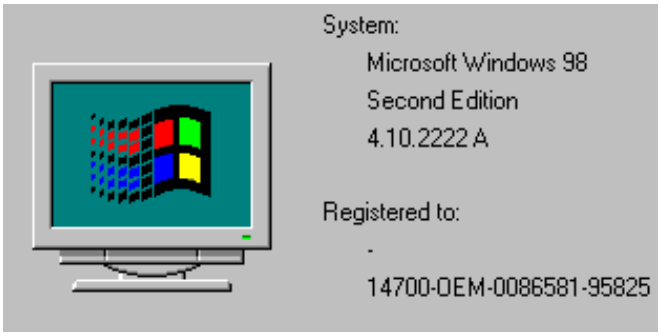
- The printer I used to print off my signature a ‘Hewlett Packard Desk jet 1120C,’ and that I will use to print off my write up i s shown below;



- The printer I used to print everything else from, is a ‘Lexmark Optra S1255.’ It is shown bellow;

The <u>software</u> used to set up my data base course work;

- The operating system was ‘Windows 98’

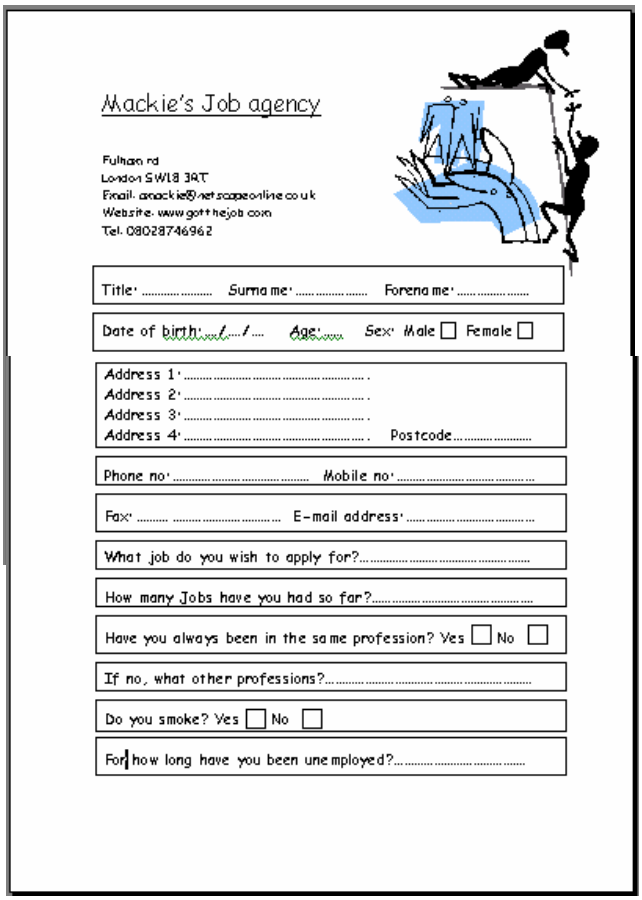


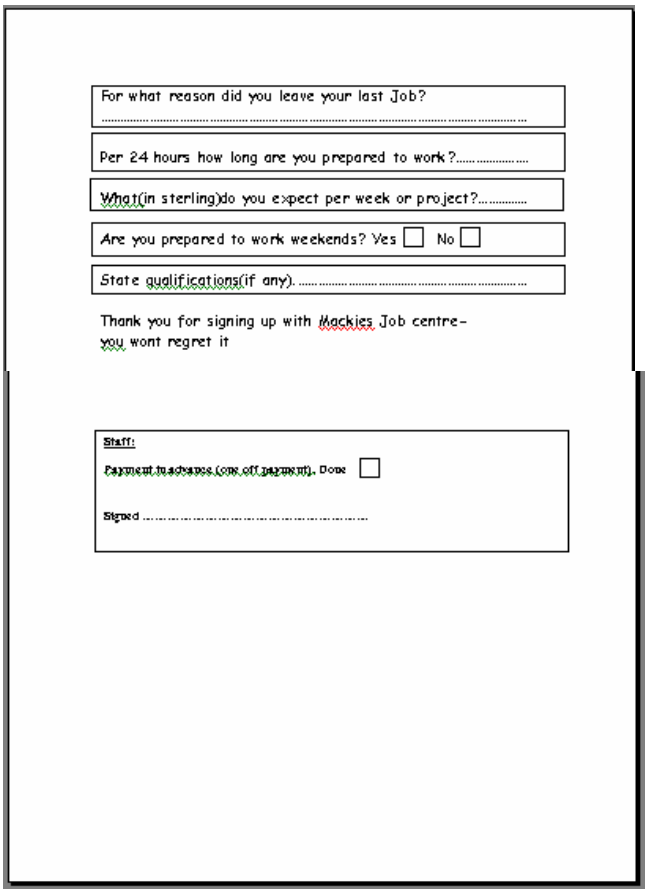
- I program I used to write my data base was ‘Microsoft access’

- Within the Microsoft office software suite is the facility to import pictures directly from the scanner. I used this program to scan in my signature.

Data Collection, data capture and input

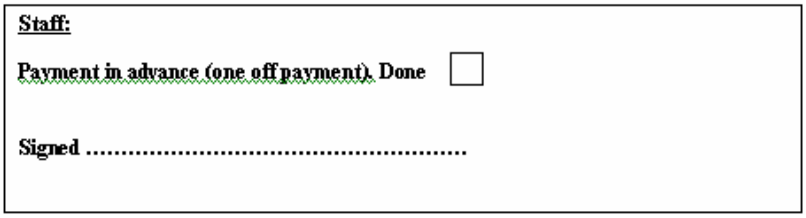
I needed to collect data for my data base, I decided that the most efficient way of doing this would be to use a data capture sheet, more commonly known as a questionnaire. Using this method meant I would receive the information directly from my customers, meaning it would be unlightly for any errors to occur. If I stated the information I wanted clearly, then my clients could easily fill out a data compare sheet, meaning the information would not needed be attained through phone con versations. I would have less need to employ people for my company phones and would therefore lose less money. As well as this, the information I attained would be more accurate; things such as spellings would not need to be corrected, as the information w ould have come directly from the customer. Bellow you can see the data capture I used to collect my information;





The questions I used corresponded with the information I need for my database. I laid out my data capture sheet so that it would be as simple as possible to fill in. I did not make the questions long, and I simplified them so the sheet could be filled in quickly. Putting each question in a separate box made it easier to read as the questions were s eparated and more spaced out. Using tick boxes also made the task of filling it in quicker as the person filling it in would not have to write. Having tick boxes would also make the input of information into my database quicker as the answer is very plain ly 'Yes' or 'No'.

Having my logo and address makes the data capture sheet look professional and neat. It also supplies the customer with means of contact, in case they need to get in touch with my company. They may of course need to send off their data capture sheet, even though it will not be submitted until a fee has been paid. To insure the fee was paid I added a small box (also shown above);



The information in my data capture sheet would not have been submitted into my database unless the 'payment tick box' had been ticked and it had been signed by a member of staff to ensure it had been paid.

Data Verification and Validation

It is always possible that the data entered into my database is incorrect. In this case it must be corrected, if data is incorrect it can cause problems. If something such as a phone number is incorrect, I may be unable to contact my client. Or even worse; if for instance I typed a job other than the one my client was looking for allot of time would be wasted finding them a job that they had not asked for. Clients may also be disappointed that we had not lived up to the standards, which are expected of a company and leave, asking for their money back and giving my company a bad reputation.

There are several different ways of checking whether the data entered is correct, they are stated below;

The data can be checked manually, this insures the data is accurate. It is called Data Verification; this can be done in two ways;

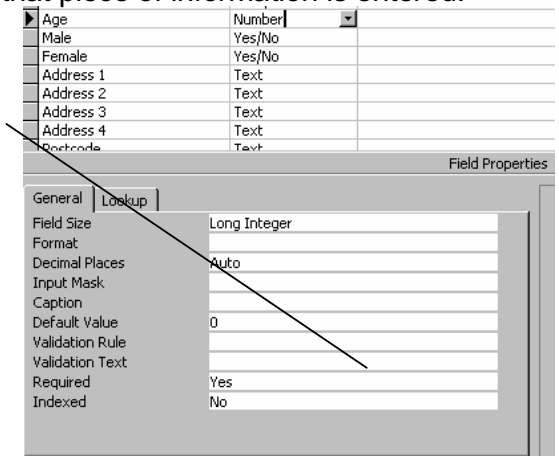
- **Proof reading**: This is when a second person goes over the data and compares it with the original; any incorrect information then found will then be corrected.
- **Double entry**: This is when two different people enter the data twice separately. The computer then compares the data a nd any errors found are corrected. It is extremely un -lightly that both people will type the data in wrong so the data is bound to be correct.

There are of course problems with using Data Verification; Double entry is time consuming meaning it will be expe nsive to employ people to do it. Proof reading is also time consuming, it is also not always accurate; it is quite possible for a mistake to be overlooked.

The Data can also be checked with the use of a computer. It is called Data Validation; this type of check ensures the Data is of the correct type. There are four ways this can be done;

- **Range check**: This check ensures that the data entered is within a specific range. If a date of birth is entered in as 31/04/72 an error message will appear because it is impossible to be born on the 31 st of April, it only has 30 days. For April the computer will only allow numbers between 1 and 30.
- **Presence check***:* To obtain a piece of information may be vitatal, with the use of a presence check you can set your comput er so that it will not continue unless that piece of information is entered.

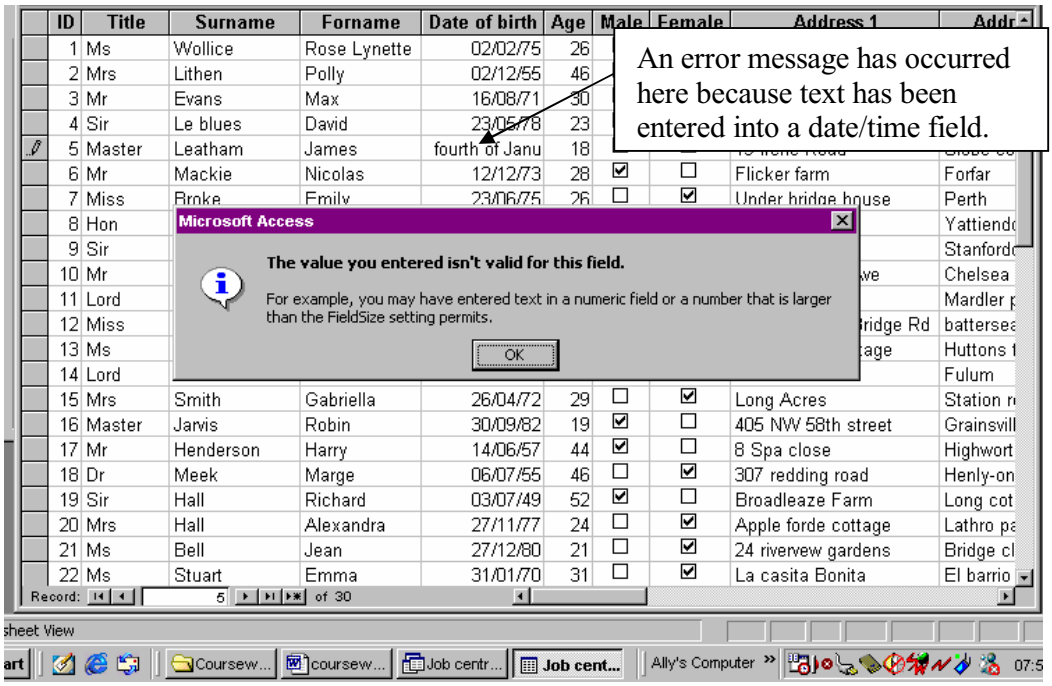
If you chose to make it compulsory to enter information into a field; click on the field then type yes into this box.



- **Check digit**: This checks the numerical has been entered accurately. The last digit of the number entered is determined by a formula, which will use all the previou s digits. So if the number entered is incorrect the computer will realise that the check digit is incorrect and an error message will appear.
- **Data type check**: This ensures that the data entered is the correct type. So it will not allow you to enter text i nto a number field or vice versa.

Data Validation is quick and easy as it is automatic but it is unable to detect mistakes in data verification so mistakes can be allowed if the data is not accurate.

If the Data Validation check picks up some data which is not the correct type an error message, such as the one shown on bellow will appear and you will not be allowed to continue.

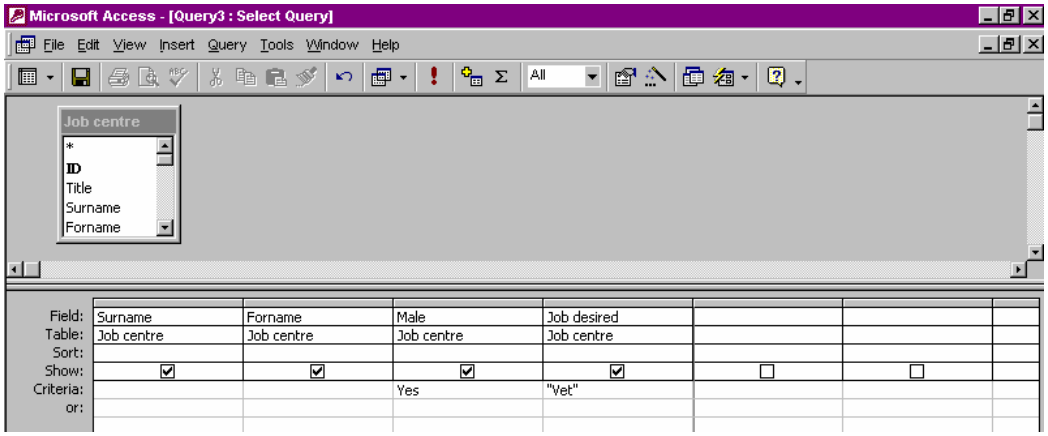


Data and Program Structure

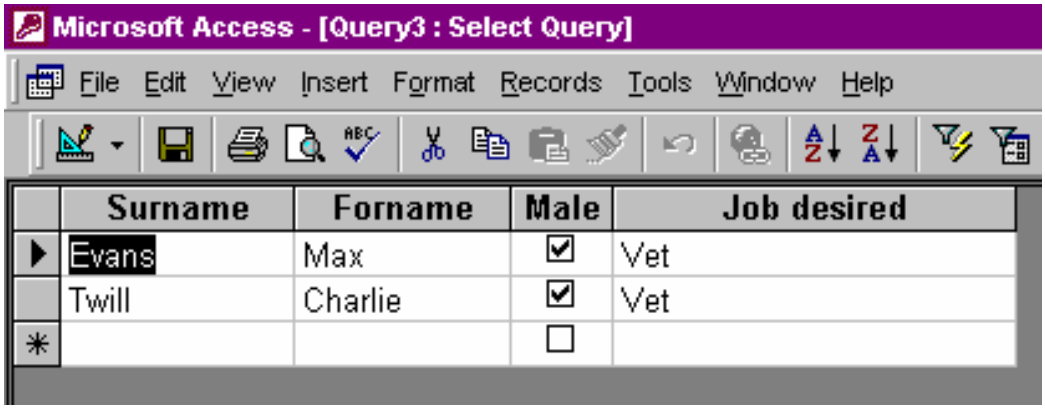
This has been done already under 'Investigation and Analysis'.

Testing the solution

It vital for most companies that their database functions without fault. To be certain that it is functioning properly a number of tests can be run in which the results of sorts, filters e.t.c are checked manually to insure they are done correctly by the computer. It can also detect mistakes which have been make while the data was being entered, spelling mistakes for instance Some of these are shown bellow;



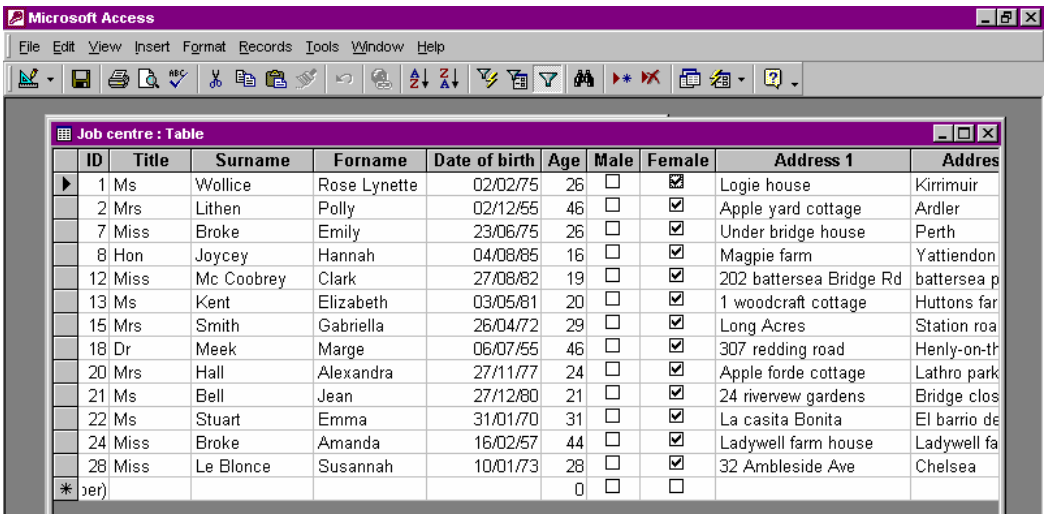
The above query statement is asking for Males wishing to f ind a job as a Vet. It will, if working correctly it will also show the forename and surname of the person in question. Bellow is a screen dump can be seen of the result of this query statement.



Surname	Forname	Male	Job desired
Evans	Max	☑	Vet
Twill	Charlie	☑	Vet
		☐	

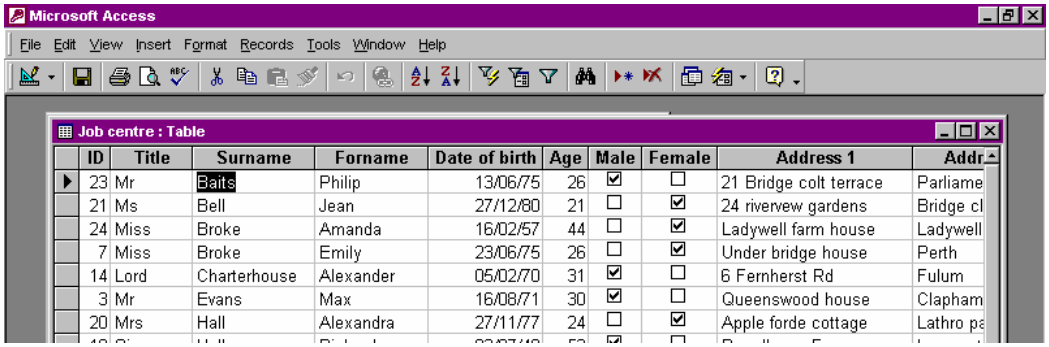
To check that the software is working correctly the database should then be checked over manually to insure that all the correct data has been included in the query result. It is advisable to do this when your database has no more than fifteen records so that checking it over doesn't not take up too mu ch of your time. If your data base software works correctly when you have fifteen records it is highly lightly it will also be working correctly when you have fifteen hundred records on your data base.

There are of course other ways of carrying out this sort of check; other ways of doing this are using things like filters and sorts;



ID	Title	Surname	Forname	Date of birth	Age	Male	Female	Address 1	Addres
1	Ms	Wollice	Rose Lynette	02/02/75	26	☐	☑	Logie house	Kirrimuir
2	Mrs	Lithen	Polly	02/12/55	46	☐	☑	Apple yard cottage	Ardler
7	Miss	Broke	Emily	23/06/75	26	☐	☑	Under bridge house	Perth
8	Hon	Joycey	Hannah	04/08/85	16	☐	☑	Magpie farm	Yattiendon
12	Miss	Mc Coobrey	Clark	27/08/82	19	☐	☑	202 battersea Bridge Rd	battersea p
13	Ms	Kent	Elizabeth	03/05/81	20	☐	☑	1 woodcraft cottage	Huttons far
15	Mrs	Smith	Gabriella	26/04/72	29	☐	☑	Long Acres	Station roa
18	Dr	Meek	Marge	06/07/55	46	☐	☑	307 redding road	Henly-on-th
20	Mrs	Hall	Alexandra	27/11/77	24	☐	☑	Apple forde cottage	Lathro park
21	Ms	Bell	Jean	27/12/80	21	☐	☑	24 rivervew gardens	Bridge clos
22	Ms	Stuart	Emma	31/01/70	31	☐	☑	La casita Bonita	El barrio de
24	Miss	Broke	Amanda	16/02/57	44	☐	☑	Ladywell farm house	Ladywell fa
28	Miss	Le Blonce	Susannah	10/01/73	28	☐	☑	32 Ambleside Ave	Chelsea
ber)					0	☐	☐		

Above you will see an example of a filter, you can use this to test that the software is working correctly. By first running a filter and then chec king the results with the original database to see that the filter has come up with the right information, has been missed out and no mistakes have been made.

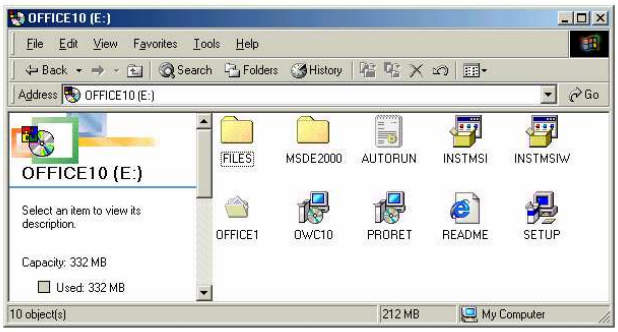


ID	Title	Surname	Forname	Date of birth	Age	Male	Female	Address 1	Addr
23	Mr	Baits	Philip	13/06/75	26	☑	☐	21 Bridge colt terrace	Parliame
21	Ms	Bell	Jean	27/12/80	21	☐	☑	24 rivervew gardens	Bridge cl
24	Miss	Broke	Amanda	16/02/57	44	☐	☑	Ladywell farm house	Ladywell
7	Miss	Broke	Emily	23/06/75	26	☐	☑	Under bridge house	Perth
14	Lord	Charterhouse	Alexander	05/02/70	31	☑	☐	6 Fernherst Rd	Fulum
3	Mr	Evans	Max	16/08/71	30	☑	☐	Queenswood house	Clapham
20	Mrs	Hall	Alexandra	27/11/77	24	☐	☑	Apple forde cottage	Lathro pa

Sorts can also be used to test software; the one shown above is a sort in alphabetical order. To test whether or not the software is working correctly you can go through the sort manually checking that it is in the correct order.

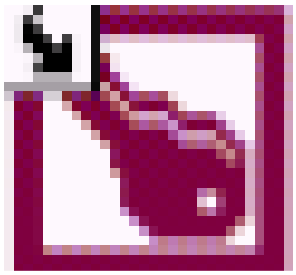
User Documentation

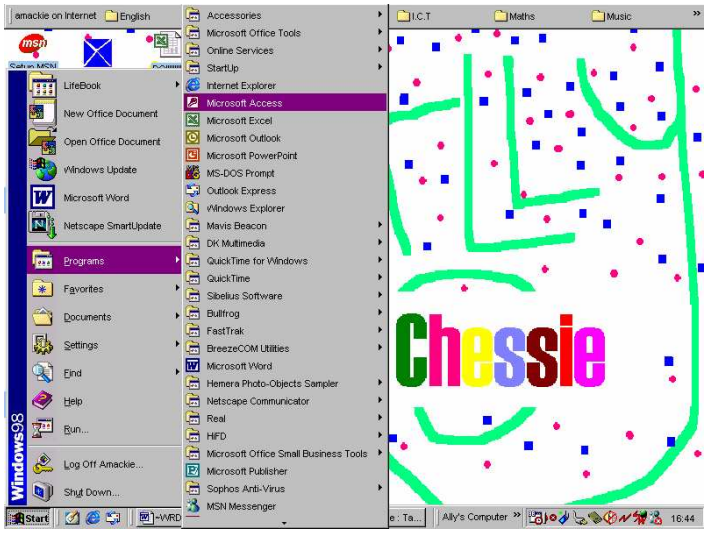
To be able to use the system outlined in my report you will have use MS Office. To install Office follow these step-by-step instructions. Insert the Office disc in the computer's CD-ROM and select set up as shown in the picture below.



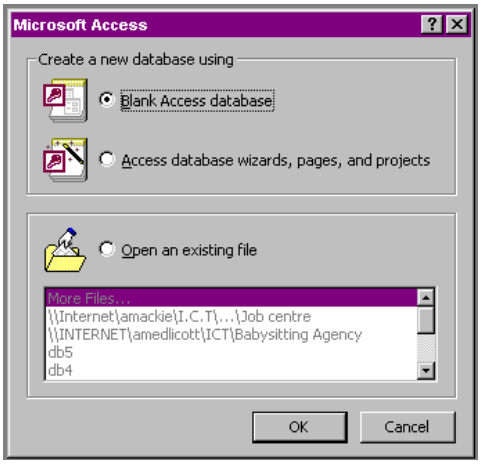
When the CD plays you will need to enter the Product Key located on the back of the jewel case. Once this has been entered correctly you can decide between a full install of Office of just the components required. MS Word and MS Access are needed for this solution.

IN order to create a database you will ne ed to launch Access. This is done by selecting Programs from the Start button on the taskbar and then, then select Microsoft Access icon.



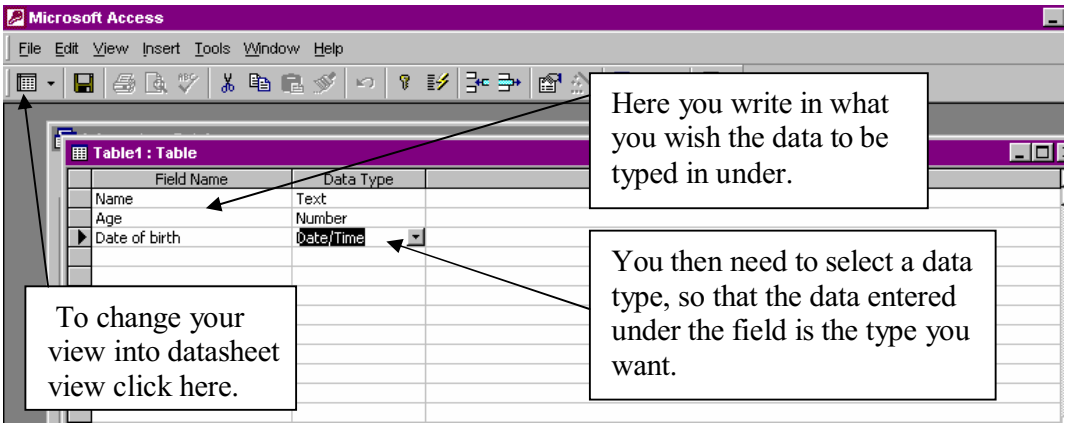


This will open up Access, if you are starting a new data base select the 'create a blank database' radio button and if you wish to open a data base which has already been started select the 'open an existing file' radio button.

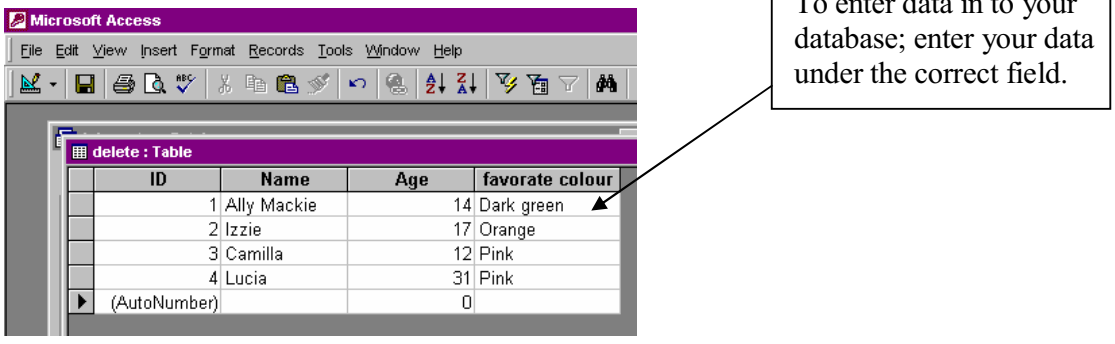


If you are beginning a new database, select 'open an existing file' and then click okay. You will then need to save the database so that you may begin.

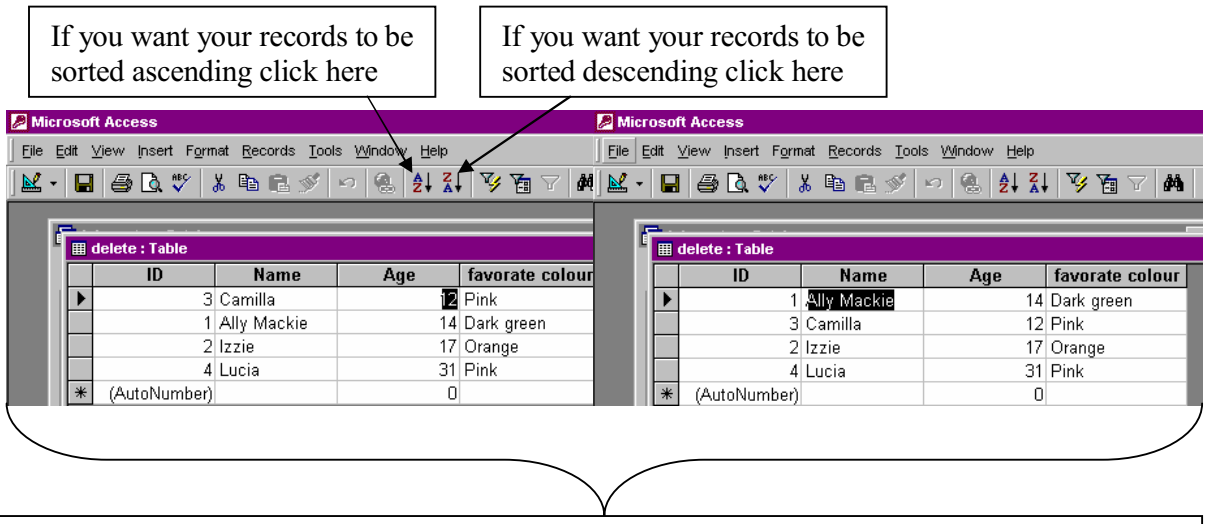
You will then need to create fields for your database. To do this your database must be open in design view. In the screen dump below you can see how this is done.



To create an ID number just click 'okay' when the dialog box asking if you wish to create an ID field appears after you have clicked on the 'datasheet view' button.

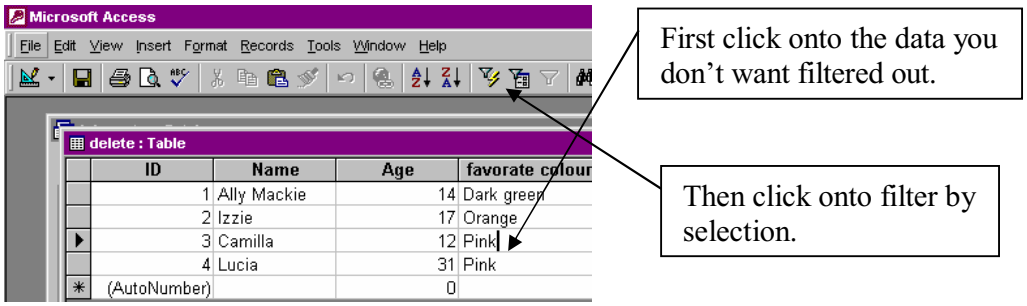


You can sort your database by putting the records into any order you wish.

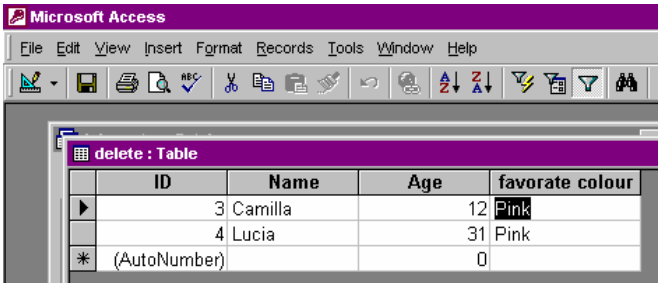


Both of these records have been sorted in an ascending order. One is sorted ascending according to the Age and the other in alphabetical order. You do this by clicking into what you want the database to be sorted by and then select whether you want it to be sorted ascending or descending.

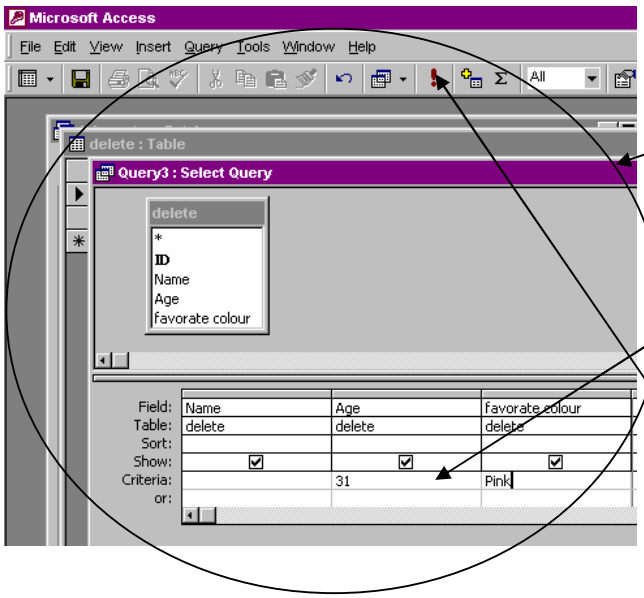
You can also filter out things from your database do you only get the information you want.



The on your computer monitor you will then see the results of your filter.



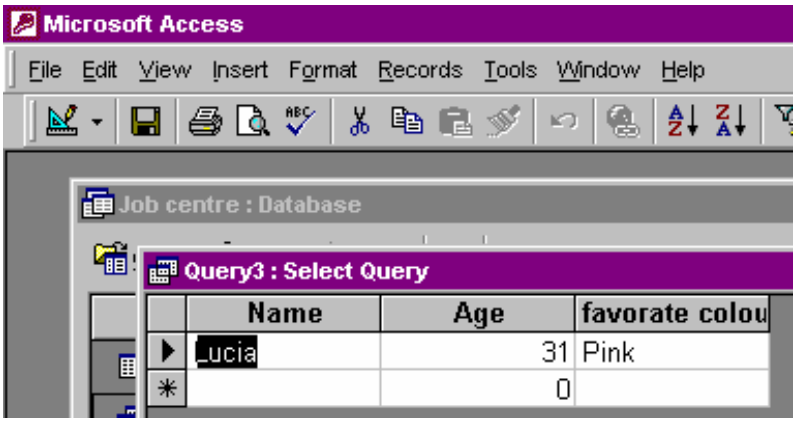
Another thing you can do to obtain specific in formation is a query, which is very similar to a filter but more detailed.



This is a query asking for a thirty-one year old whose favourite colour is pink. It is also requesting that the name of the person is shown when the results appear.

What you want your query to be sorted according to is typed in here.

To put your query 'into action' click here.



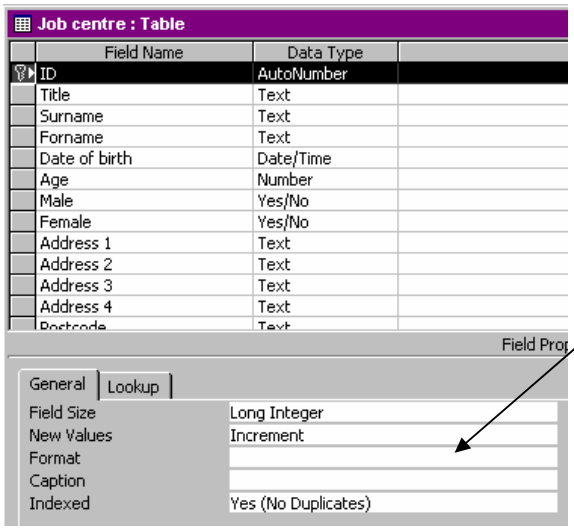
The result of the query.

Technical Documentation

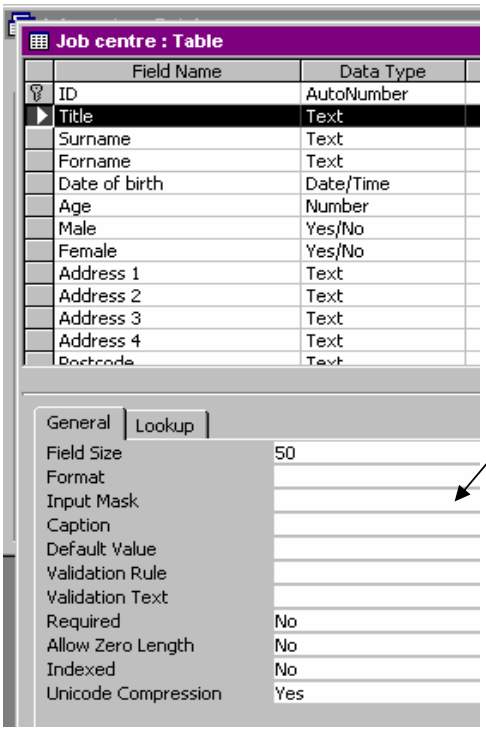
To run the solution illustrated on the previous pages you will need a computer with a minimum specification as follows: -

Celeron 450 MHz Processor
32Mb RAM
24* CD-ROM
1.44Mb FDD
4.3Gb HDD
Keyboard & Mouse
15" Monitor
Windows'98

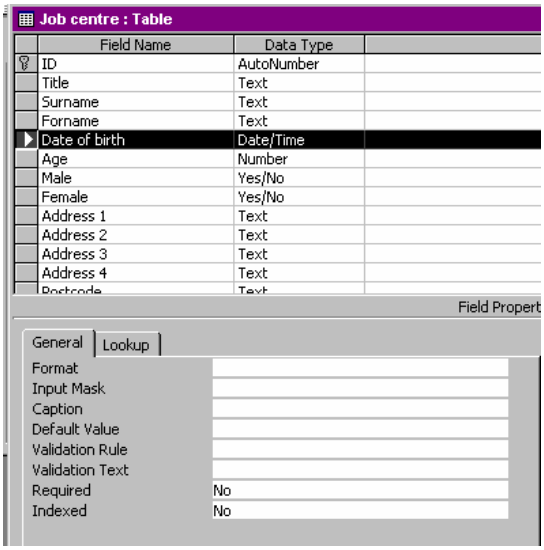
There is of course technical information required to 'set up' a database. It is required for instance for the construction of fields. If the information is not required but there is still a text box then it is your decision whether or not the field does a particular thing or not. A Technical documentation would be needed to help a computer engineer what is wrong and how to fix it if the computer crashes. It would also be required if the system was to be upgraded, the computer engineer would need to know how this is done. Below there can be seen some examples of the technical inform ation needed for text fields;



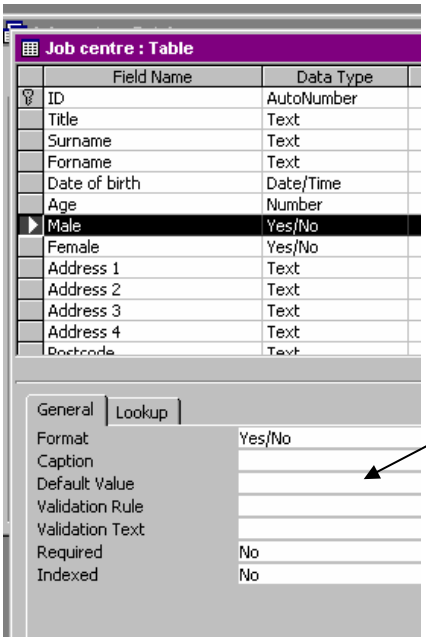
Information required for an ID field is shown here.



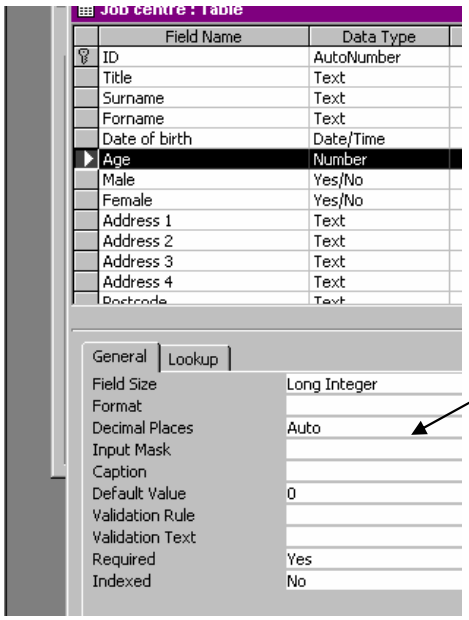
A text field requires this information



The information required for a Date/Time field is shown here.



The information required for a Yes/No field is shown here.



The Number 'field' requires the information shown here.

Although I am positive that in many ways the coursework report I have produced is in many ways user friendly and well presented but , it like all other things, does in turn have it's flaws and drawbacks.

Having a tendency to spell incorrectly I found the thought a large coursework report slightly daunting. But I soon found that with the aid of Microsoft's spell check I had little need to worry about spelling things correctly as I could go through my work with the spell check. This also applied to my database; I was delighted to find that there was also a spell check available on Microsoft Access. The spell checker however is not faultless and I found when going over the printed out version of my database some spelling errors (such as spelling 'forename', 'forname'), which more lightly then not had been brought to my attention by the spell check but I had disregard it as I was probably checking the spelling very quickly. However in the interest of saving precious time and paper I corrected what I could of the spelling mistakes I found at the time but left minor ones discovered at a later date. If my database were real they would of course all be recognised and corrected promptly through Data Verification.

Another thing, which was brought to my attention, was the way the ages of my clients are stored on my database. As it stands I have got two fields to store data about the age of my clients. One for the date of birth and another for just the age so that a person seeking the age of someone on my database does not need to spend time working out the age. This alone has many drawbacks; someone would frequently have to check that the ages were still up to date. This would be time consuming, probably more so than working out the age from the date of birth. I did however with the help of Microsoft excel create a sort of 'age check' which meant I could check the date of birth to the age quickly. Even this was not ideal; I endeavoured to find an easier way of keeping the ages of the clients in my database correct. I then discovered 'Macro' software designed to help with this sort of problem. Macro would alert me using a dialog box to the fact that the age of my client had changed.