

# Choice of Problem

As I went into the first newsagents they said that they had no Information technology Equipment such as computers in their shop so I went into the next newsagent and explained to them I was in year 10 and was in the middle of doing a GCSE Coursework and was to update a system. I then said to them I would like to help them and update their system, they said they would be more than happy if I would do that for them because they did not know how much profit they were making or even loss. I then went into an off-licence that was near to where I lived on Cranbrook road. I told them what I was doing and explained that I was doing an Information technology Project, I then asked them if they would let me update their system so it would save them time and money on their business. They said, “ yes ok, as it would help me as well”. Now that I had one choice I had then started to make my way to the Gants hill library, they said that their system was already up to date but said thank you for the offer. I still had 2 offers but unfortunately had to choose. I decided by thinking of who would have the most benefit of the system and I thought in the end that a newsagent would not really need a system as much as an off licence, as an off-license has a lot more stock and is much bigger than newsagents, I also thought it would be more challenging than a newsagents and hope to find out the profit/loss made by my clients and also hope they benefit from me. This was my final decision.

# Description of Problem

## **Description of Problem:**

An off-licence called Cranbrook Food & wines situated on Cranbrook road sells stock of food, drinks and sweets and other grocery items. The problem is that my client knows if he is making a profit or loss but he doesn't know how to work it out on a P.C. As for the last 5 years he has been doing it manually and Manual systems cannot keep up and they are much slower than P.C.'s. So he has I asked me to help him using the information he provides me with such as Income and Expenditure. They have a system but were not using it for Microsoft Excel, they told me they have hardly any idea how to use Microsoft Excel, and said they used their computer only to write

letters on Microsoft Word and use the Internet for e-mail. Now it is up to me to show them how to work Microsoft Excel and update their system by making profit and loss account and a cash flow showing them their rates of profit so they now how much profit they will make when they see their closing balance. I will also be using formulas and teaching them to use Microsoft Excel and will also help them by showing them some strategies which will help them run their business better. One of their incomes is selling the stock and Expenditure is buying the stock. These will go into their profit and loss account using the figures that they supply me with and there will also be more such as, Electricity bill, Gas bill, Water bill etc for Expenditure, and Photocopier etc for Income. I will use formulas to total each of them up and use formulas to find out the closing balance. I will set-up a cash flow for them, as it is very easy to use, as they are new users. I will also put in formulas so if they wished to change anything such as change the price of the photocopier it will also change all the incomes and outcomes as well as the closing balance.

To find a bit more about my client, I asked some questions so I could know how much knowledge he had about computers.

1) How long have you run a business?

A) I have run a business for 5 years now.

2) What do you do in your business?

A) In my business I have to stand behind the counter-serving people for about 11 ½ Monday-Saturday, I also have to send my wife or sister to the cash and carry to buy our stock then I have to set-up all the stock and label the price on all the stock.

3) Do you use your system for any record of your business or financial work?

A) No, I only use the computer for my e-mail and to write letters to people.

4) Have you employed any staff?

A) No, my family and me run our business.

5) What do you know anything about computers, do you have any knowledge?

A) Yes I know how to work on the Microsoft word processor and the Internet.

6) Would any of your business partners have trouble using the computer, and are they all familiar with Microsoft excel?

A) My business partners are my family and they have no knowledge of Excel but as soon as I learn I will be able to teach them it won't be a problem.

# Analysis of Problem

## **General Specification:**

My client has a very good knowledge of Personal computers but does not have a good knowledge when it comes to Microsoft excel. I had checked his computer and I could see he has windows 2000 and this is good, as it is the latest out. As he has very little knowledge of Microsoft Excel I will have to make this system very easy to use and I will also be installing a help wizard, which he does not have so if I'm not there he can rely on the help wizard to help him. The system I will input will also be flexible and quick so he won't waste any time. I am very sure that the software I will install will be fully compatible with my client Computer as I checked all the system files in their CPU. I have to also install Microsoft excels on his computer as his computer only came with Microsoft word, works, money and autoroute. My targets are benefit both of us, me by being successful and getting a good grade and my client, by helping his business by making it easier for him and much more efficient. When my system is finished it will be time saving, which will allow my client to either do personal things or expand on his business more. So my targets are to help my client have a better and more efficient business. By creating spreadsheets, which will show him the profit, he is making and will allow him to see what to decrease on, e.g. if Electricity bills are £500 then he will know to turn of light and save electricity. This will also save a lot of his time. The new system I will be installing must be able to automatically change the corrections as my client is unfamiliar with excel. It must also be very easy to use, and must have a help wizard to guide my client. The information that he would want to store, would need to be stored in an organised way-I could do this by using tables to present the information in a more clearer way to my client I.e. A spread sheet. The system would also have to be user friendly as I was saying before and needs to be able to follow simple instructions so that everyone could use it easily and effectively.

## **Specific Specification:**

After I had discussed some things with my client, we had both decided to include:

- Profit and Loss- To show if he is making enough profit or not.
- Formula's- so if he changed one of the outcomes e.g. water bill is £200 to £500 the total outcome will also change which will save quite a lot of time.
- Validation checks- to check a computer to carry out when data is input.
- Security- to make sure no one can tamper with the information, which is inputted with the exception of my client, and people who he wishes to share his password with.
- The system is easy to use- to make sure my client can use the system with no trouble so he can change information and input it easily and so he can understand the system.

We have also acknowledged that my client does not know much about spreadsheets so he would like me to make it an easy system. The information I am going to use should be put under suitable heading; I have made some up for my client;

- Stock
- Photocopier
- Selling Price
- Retail price
- Expenses

The system must allow the information to be organised into certain orders e.g. the Stock could be put in numbers and the quantity sold could be put into alphabets. The system must also be able to save the information. As my client is going to need to store a lot of information on his system it will need to be stored efficiently. The new system must also be able to perform accurately so the system will need to be able to do many important calculations by using formulas if needed. The system must perform rapidly- the system must be able to calculate all the different prices when the quantity sold is changed. This will prevent my Client of having to waste time and tired of it. My client has not just started his business in fact he has been running it for 10 years now. He has also asked me to put a password on all the systems as it will save him from his files being deleted or being viewed by any other person which he doesn't want to do.

# Design of Solution

## Design of Solution:

I have now got to choose which software my client would want to use; and which is most suitable for this assignment, we can choose any of the following choices:

- **Data base package** (Microsoft Access & Microsoft Pinpoint)
- **Word Processing package** (Microsoft Word & Microsoft Word perfect)
- **Microsoft Desktop Publishing (DTP)** (Microsoft Publisher & Adobe PageMaker)
- **Presentational package** (Microsoft PowerPoint)
- **Spreadsheet Packages** (Microsoft Excel & Lotus 1-2-3)
- **Graphics Package** (Corel draw & Microsoft paint)
- **Computer aided design (CAD)** (Auto CAD)

After thinking about the problem, I decided we could definitely not use all of this software so I have narrowed it down by choosing to use Microsoft Word and Microsoft Excel. I did not choose The Data base packaging as my client had no access to it as he did not have the software installed on his computer, but this did not matter as Microsoft access is one of the programs we could do without. We did not use the

Presentational or Graphics Project as this is a GCSE project and we will not need a lot of presentation in our work. We also did not use it as the presentational package is not very confidential and all the information I will be storing for my client will have to be confidential so no one can change it without him knowing. These are also the same reasons why we did not use Microsoft Desktop Publishing.

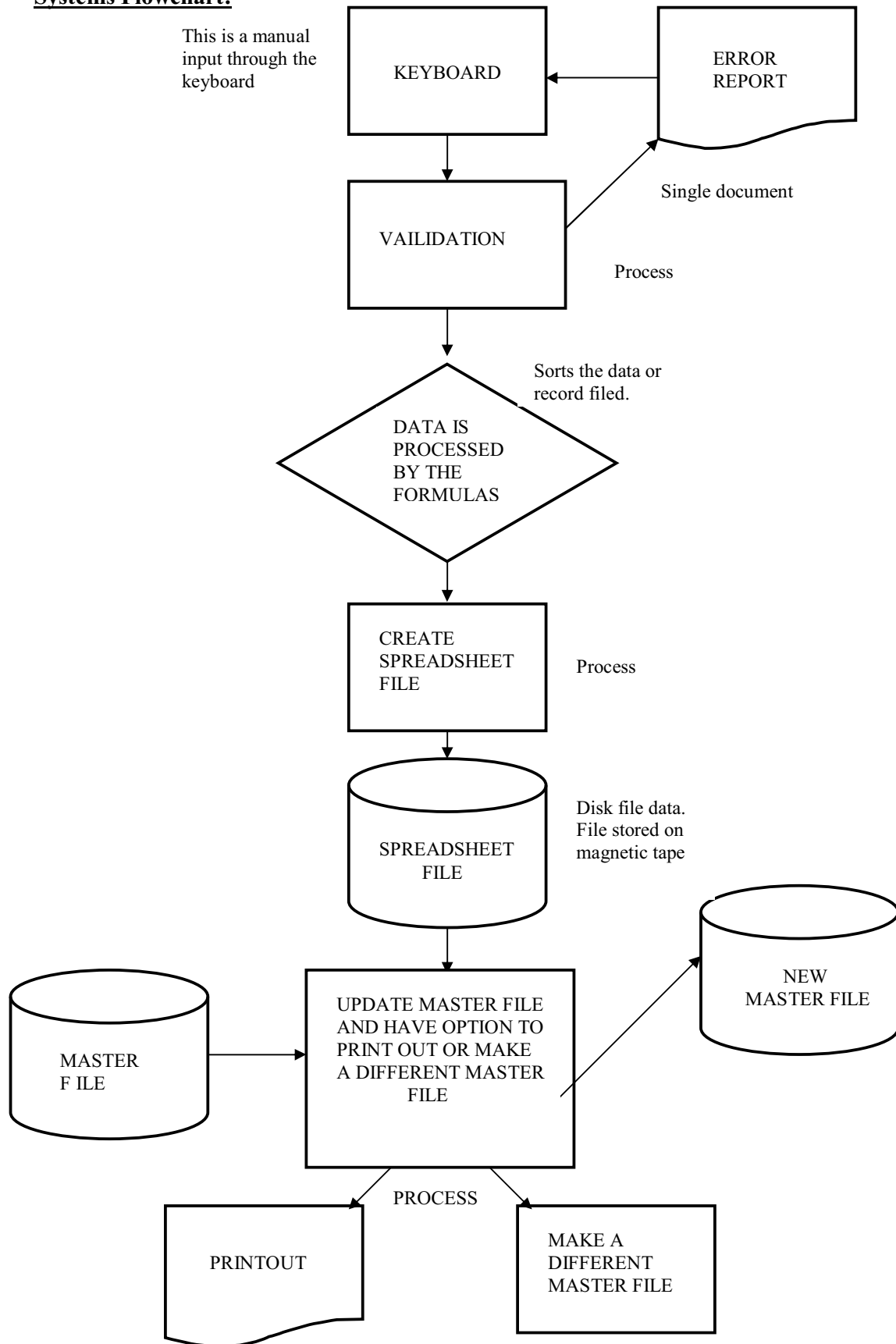
I chose the word processor as it can be used in letters, essays, *projects*, CV's etc. In my list I wrote Projects and as I'm doing one right now I thought it would be a good idea to use word. I also chose word as there is a very big advantage to it, it can be edited if mistakes have been made and can also be formatted in many ways such as, Letters can be Bolded, made Italic, and underlined. The word processor also gives you the advantage of making a word art, as you can see I have used this a number of times, and you can also choose between a ranges of clipart. I will mainly use this program to write out my GCSE coursework project and say what how and when I did to help my clients business.

Microsoft excel is a spreadsheet made up of a grid into where numbers are entered. The program it self is used for mathematic calculations, statistical and *financial* calculations. I mainly chose it for the financial calculations as I am going to help my clients business. Even though my client does not have access to Microsoft excel, instead he has Microsoft works spreadsheet, I fell that Excel is better so I have a disk, which has Excel on it, and I will be happy to install it for him. I will use excel to put all of the Income and expenditure (PROFIT & LOSS) into a table, this will show how Much profits my client gets and how much of it he spends.

**Field Design for Cash flow**

<b><u>FIELD NAME</u></b>	<b><u>DATA TYPE</u></b>	<b><u>REQUIRED DATA ENTRY</u></b>	<b><u>REASON</u></b>
<u>Opening Balance</u> The opening balance of cash flow	Formula	No	Opening balance is brought over from the closing balance at the end of the month the number is produced by formula so you do not need to type it manually
<u>Revenue</u> This is the sales that the company receives when selling their products	Number	Yes	This is a figure and changes from month to month so it needs to be typed in manually
<u>Overheads</u> The utilities in this are the Electricity, gas and water bills. Another overhead is the raw materials, this is when they buy the products that they are selling	Number	Yes	This also varies from month to month so it will need to be typed in Manually.
<u>Total Overheads</u>	Formula	No	The Total Overheads are brought from the overheads so at the end of the month if the overheads were changed the total overheads would also change automatically.

### Systems Flowchart:



# Implementation of Resources

## **RESOURCES:**

I have now installed the help wizard on his computer, which should be able to help him, whenever I am not there to assist him. I have also installed Microsoft excel. I am now going to show you the hardware and software I am going or not going to use.

## **Hardware:**

The hardware that I am using to create this system are Intel powered Pentium machines which have PII 266 systems, containing 2 GB of hard Drive, 32 Megs of RAM and a 8 Meg Video Card. The server that windows use is NT. My client Pc is very different it is a Gateway PC, Intel inside Pentium 3 PC with Windows 98. It contains 32 Megs of RAM, 20 GB of Hard drive, DVD and 20 Meg video drives.

## **Software:**

The software packages that I am going to use are Word Processing, Desktop Publishing and Spreadsheet.

A Word Processor can be used to write letters, reports, essays, projects, memos, curriculum vitae, theses and basically any form of written work. When text is entered at the keyboard, the characters and words are displayed on the screen and held in the computer's memory. This work can be saved to hard drive or disk and can also be printed out. The advantage of using a Word Processor is that the text can be changed or edited onscreen and reprinted if mistakes are made. I will be mainly using Word Processor to do my project, which is listed above.

A Desktop Publishing Program allows users to look at the page of the document as a whole and design the layout by marking areas for text and graphics. Text can be typed directly into the Desktop Publisher package or it can be imported from a word processing package. The text can be arranged in columns with large titles or headlines heading the columns. Images can be imported from graphics packages, scanned or taken from clipart. I will mainly be using this program to do my user documentation.

A Spreadsheet is a computer program which is designed to display and process numbers. It is made up of a grid to which numbers are entered. The program contains many mathematical, statistical and financial calculations, which can be applied to the numbers. Many Spreadsheets can also show the numbers in the form of graphs. I will be using this program to show my profit and loss and cash flow for my client.

The software packages I am not going to use are Presentation, Database and Graphic packages.



A Presentation Package allows users to prepare and give presentation to using the computer. The information being presented is made into a set of slides. Each slide can contain text, clipart, graphics, video, sound and animation. A salesman might use the program to demonstrate a new product; a teacher, to give a lesson or lecture; a pupil might use the software to prepare a talk or a school assembly.

A Database is a collection of related data items, which are linked and structures so that the data can be accessed in a number of ways. A simple database consists of only one set of data. This is called a flat file. An example of a flat file is pinpoint or Microsoft works. A relational database is more complex. Relational Databases are very powerful as they allow the data to be accessed in many different ways. An example of a relational database is Microsoft Access.

I am now going to show you the advantages and disadvantages of a manual system (File base system) and see which one I chose and why?

### **ADVANTAGES:**

- Do not have to waste electricity when using CPU
- The financial cost for a file base system is not around £1000 where as it does to buy computer
- If the electricity goes out you wont have to worry about your business, as you would have it all on paper.
- The computer may crash and you could loose all your data if not saved.

### **DISADVANTAGES:**

- Computer saves time as writing takes to long
- It is easier to work out profits more easily
- If you need to change something, the computer will adjust the changes to everything else it affects automatically
- If you make a mistake the computer would detect it and notify you by underlining it or correct it automatically.
- You can produce graphs and charts by using the Popular Microsoft Excel whereas you would have to spend time calculating and drawing it if you had no computer
- You can store up to hundreds of pages on one simple disk.

The above argument tells you that you would benefit more from having a P.C Computer system than you would with a manual system. I will go with the results of this argument and use a computer to do my project.

I am going to use a spreadsheet over a database because for this particular coursework, a spreadsheet is more appropriate than a database. This is because the information I will be inputting is not relational or linked e.g. Library books are linked in some way therefore it maybe put into a database. A spreadsheet is also good for financial use as it is good with mathematical equations this is another reason why I am using it instead of Database.

## **Data Collection, Data Capture and Input:**

The data that my client wishes me to put into his system are; sales from stock; sales from photocopier; electricity bill; Gas bill and buying stock, other than that my client does not mind what information I input. The information will be given to me by my client which he will get from his Bills and from his invoices that he holds which has a record of his shops sales records and how much he spends to buy the stock.

### **Input Devices:**

The input devices are will be using are as follows:

#### **Keyboard:**

The most common way of entering data into a computer is through the keyboard. Modern Keyboards often have a support at the front of the keyboard as a rest for the typist's wrist's and some manufacturers have designed keyboards with a more curved key layout in an attempt to make typing faster and more comfortable, even though this maybe, the keyboard is very slow even for today's typing experts.

#### **Mouse:**

The pointer on the screen is called the mouse; you may move the pointer by the user moving the mouse, which will move the pointer. Under the mouse is a ball, which rolls as the mouse is moved. When the screen pointer is over an icon or a menu selection the mouse can be double-clicked to activate the program. This is a standard device like the keyboard.

The Input devices I will not be using are;

#### **Scanners:**

Scanners enable both pictures and text to be input to a computer. Scanning text in order to recognise the words and letters requires special software. The most common type of scanner is the flatbed but smaller and cheaper hand-held scanners, which are rolled over the document/picture, are also available. Although the scanner is available to me I have no need to use it.

#### **Touch screen:**

A touch screen is when there are beams of infrared light just in front of the glass on the computer monitors. When a user touches the screen or glass with their finger, the infrared light recognises it and co-ordinates the points. The computer can detect the position of the finger and respond accordingly. I am not using touch-screen because it is not available to me.

## **Processing:**

### **Validation and Verification:**

I will need to have some validation checks as a mistake may happen and this prevents this, a mistake that could happen and is very likely to is writing in the number with text rather than numerical symbols, that is eight instead of 8. The range checks are very liable to read editing with time as the company grows. So they too should be easy to modify. However it is important not to over use the validation only but to only have the item in suitable areas, as people find going error messages very annoying.

Verification is the checking of a mistake manually. It involves either printing of your work to look at it or looking at it on the monitor screen, another way is double-checking your work twice or you may make a mistake such as writing the instead of the or in figures such as 394 instead of 934.

There are certain types of validation; they are Picture check, Character count, Range check, Presence check and file lookup. Presence check means the cell or field cannot be empty, if there is nothing inside the cell or field it will read error. Character count would make sure there is only a limited amount of characters that can be typed into a cell. Range check, checks the range of numbers that is typed. E.g. the number can be equal to, less than, greater than or between parameters, picture check, checks that the data entered in this field is as expected, i.e. TTTNNTTT (where T=text and N=number) so it would be something like this, GFD77GGG. Finally File Lookup, V PATEL, here the persons code (first three characters) and the subject code, (last three characters) can be checked by opening separate files and ensuring the codes do exist in a valid list.

## **Output Format:**

### **Output Devices:**

The output devices I am going to use are:

#### **Monitor:**

The computer monitor screen or VDU is the most common output device. The most common size of monitor screens are 15 inches, others are 17 and 19 inch, which are much bigger. Computer monitors are similar in many ways to the television. They use a device called cathode ray tubes which contains an electron gun at the back the tube which fires electrons at phosphor dots coating the inside of the screen.

#### **Laser Printers:**

Laser printers work on the same principle as photocopiers. The toner, which is powered in, is transferred to the paper where it is fused by the action of heat and pressure. Lasers are very quiet printers and give high quality print. Laser Printers can print 8-10 pages per minute, which is much faster than other printers.

The output devices I will not be using are;

#### **Liquid Crystal Displays (LCD's):**

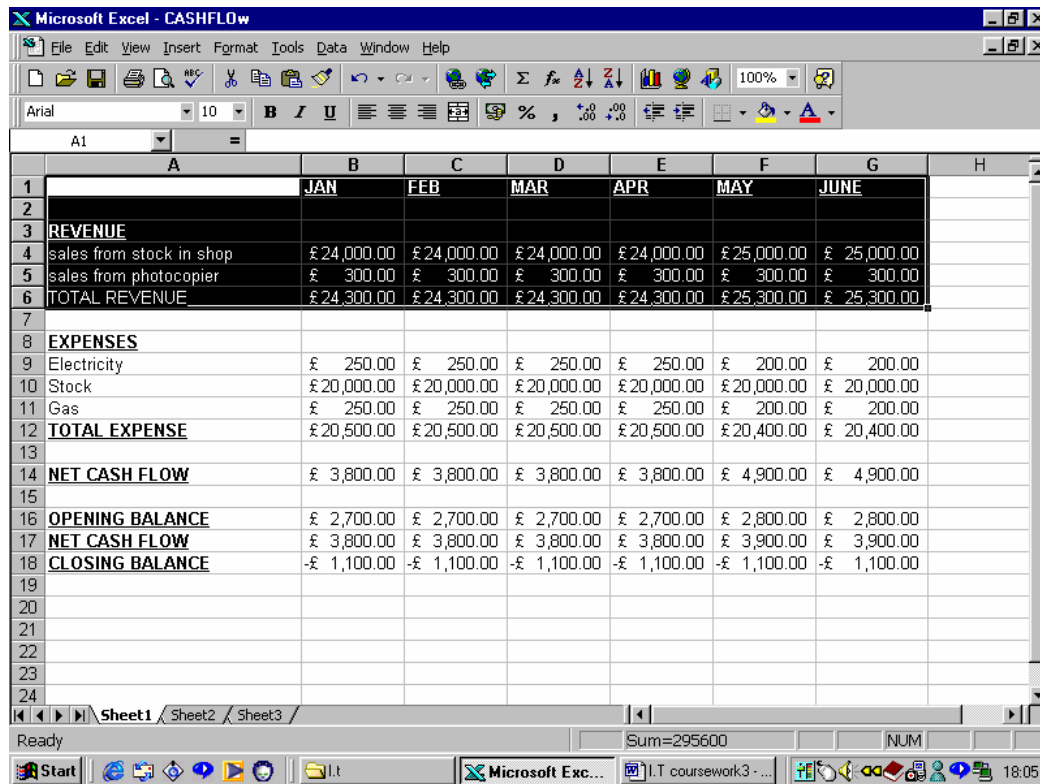
Liquid Crystal Displays utilise tiny crystals which, when a charge is applied across them, polarise the light passing through them. Used in combination with special filters, this means that light will not pass through when an electrical charge is applied. LCD's are also used in watches and calculators.

### Thin Film Transistor Screen:

A more advanced type of display, giving a full colour and high quality output, is the TFT active matrix screen. Each pixel on the screen is controlled by its own transistor. This provides a higher resolution and more contrast.

# Program Structure

I am now going to show you how my cash flow works and also show you part of a cash flow.



The screenshot shows a Microsoft Excel spreadsheet titled "CASHFLOW". The spreadsheet is organized into columns for months (JAN, FEB, MAR, APR, MAY, JUNE) and rows for different financial categories. The revenue section (rows 4-6) shows sales from stock in shop and sales from photocopier, with a total revenue calculated using a SUM formula. The expenses section (rows 9-12) lists electricity, stock, gas, and a total expense. The net cash flow section (rows 14-18) shows the opening balance, net cash flow, and closing balance. The closing balance is calculated as the net cash flow plus the opening balance.

	JAN	FEB	MAR	APR	MAY	JUNE
<b>REVENUE</b>						
sales from stock in shop	£ 24,000.00	£ 24,000.00	£ 24,000.00	£ 24,000.00	£ 25,000.00	£ 25,000.00
sales from photocopier	£ 300.00	£ 300.00	£ 300.00	£ 300.00	£ 300.00	£ 300.00
<b>TOTAL REVENUE</b>	£ 24,300.00	£ 24,300.00	£ 24,300.00	£ 24,300.00	£ 25,300.00	£ 25,300.00
<b>EXPENSES</b>						
Electricity	£ 250.00	£ 250.00	£ 250.00	£ 250.00	£ 200.00	£ 200.00
Stock	£ 20,000.00	£ 20,000.00	£ 20,000.00	£ 20,000.00	£ 20,000.00	£ 20,000.00
Gas	£ 250.00	£ 250.00	£ 250.00	£ 250.00	£ 200.00	£ 200.00
<b>TOTAL EXPENSE</b>	£ 20,500.00	£ 20,500.00	£ 20,500.00	£ 20,500.00	£ 20,400.00	£ 20,400.00
<b>NET CASH FLOW</b>	£ 3,800.00	£ 3,800.00	£ 3,800.00	£ 3,800.00	£ 4,900.00	£ 4,900.00
<b>OPENING BALANCE</b>	£ 2,700.00	£ 2,700.00	£ 2,700.00	£ 2,700.00	£ 2,800.00	£ 2,800.00
<b>NET CASH FLOW</b>	£ 3,800.00	£ 3,800.00	£ 3,800.00	£ 3,800.00	£ 3,900.00	£ 3,900.00
<b>CLOSING BALANCE</b>	-£ 1,100.00	-£ 1,100.00	-£ 1,100.00	-£ 1,100.00	-£ 1,100.00	-£ 1,100.00

As you can see in the highlighted section is the revenue, the formula I had inputted in the total revenue cell=SUM (B4:B5) pending on which total I wanted. By inputting the formula, certain changes vary; such as now if you change the “sales from stock in shop” it will automatically change the total revenue, and is also the same if you change the “sales from photocopier” it will automatically change the total revenue. For example if you higher your price of the photocopier you will make more money, so my client will need to change the figures in the photocopier section. For instance if he changes it from £300.00 to £400.00 the total revenue will automatically change to £2,400.00 that would not happen if the total were typed in manually.

	A	B	C	D	E
1		JAN	FEB	MAR	APR
2					
3	REVENUE				
4	sales from stock in shop	24000	24000	24000	24000
5	sales from photocopier	300	300	300	300
6	TOTAL REVENUE	=SUM(B4:B5)	=SUM(C4:C5)	=SUM(D4:D5)	=SUM(E4:E5)
7					
8	EXPENSES				
9	Electricity	250	250	250	250
10	Stock	20000	20000	20000	20000
11	Gas	250	250	250	250
12	TOTAL EXPENSE	=SUM(B9:B11)	=SUM(C9:C11)	=SUM(D9:D11)	=SUM(E9:E11)
13					
14	NET CASH FLOW	=SUM(B6-B12)	=SUM(C6-C12)	=SUM(D6-D12)	=SUM(E6-E12)
15					
16	OPENING BALANCE	2700	2700	2700	2700
17	NET CASH FLOW	3800	3800	3800	3800
18	CLOSING BALANCE	=SUM(B16-B17)	=SUM(C16-C17)	=SUM(D16-D17)	=SUM(E16-E17)
19					
20					
21					
22					
23					
24					

As you can see, there is a formula to work out the total revenue; it does this by adding the cells B4 and B5 together.

I have several formulas and different formulas are used for different things. For instance if I wanted to know the total revenue I would use a formula which looked something like this; =SUM (C3:C4), and then it would give me the total of the two cells. This is the same for total expenditure, but if I wanted to know the net cash flow I would have to minus the total revenue from the total expenditure, it would look something like this; =SUM (C5-C6), then it will give me the total amount left over. The formulas used in the spreadsheet above are as follows:

#### **=SUM (B4: B5)**

This formula adds up the total revenue for the particular month, it does this by adding up all the revenues. This formula varies throughout each month, as business may be better or lower.

#### **=SUM (B9: B11)**

This formula adds up his total expenditure or expenses for the particular month. The expenses vary throughout each month.

#### **=SUM (B6-B12)**

This formula shows the net cash flow by subtracting the total revenue from the Expenditure resulting in the profit/loss.

#### **=SUM (B16-B17)**

This formula works out the closing balance by subtracting the Opening balance from Net cash flow resulting in the closing balance.

# Testing Of Solution

## Introduction:

Now that I have finished creating a system I have to test it, to see if there are any problems.

## Strategy:

There are to different ways I could test my system.

Test1- I could test it with the current figures. Check if the formula works and see if the validation is accurate.

Test2- I could test it with last year's figures, and see if the totals agree. I will then again see if the validation checks are accurate.

I have chosen to do test 1 and I will do this by doing it in a Test plan & results table.

The results table will consist of three columns the first is "Test" for what I'm going to test e.g. If the Validation works. The second is "Prediction" e.g. if I put the validation check in Cell C4 that  $9 > 500$ , it would print error if there was more than 500. The last column is the "Results". It is where you put in the results of your test and to see if your predictions are correct.

## Test, plan and results table:

Test	Prediction	Results
Enter data, 250000 into cell C3	<u>Validation Rule!</u> <u>If (20&gt;4000000) it would</u> <u>Print "error" in cell C3</u>	After inputting data in cell C3, C3 prints "error". My theory was right.
Enter data =Sum (B6-B12) into cell B14	<u>Formula</u> After tapping enter in cell B14 and inputting formula cell B14 will print £3.800	After inputting formula and tapping enter in Cell B14, it prints £3.800
Enter data, 65422 into cell C5	<u>Validation Rule!</u> <u>If (40&gt;40000) it would</u> <u>print "error" in cell C5</u>	Cell C5 Prints "error"
Leave field "Stock" blank	<u>Presence check:</u> <u>Required entry. The Cell</u> <u>Would print "enter value</u> <u>in field."</u>	Cell prints "enter value in field."
Enter data =Sum (C4:C5) into cell C6	<u>Formula</u> After pressing enter in Cell C6 and inputting formula cell C6 will print £24.300	After inputting formula and tapping enter cell C6 prints £24.300