Task 1 System requirements analysis

My software needs to have a menu page with macros working appropriately, for example the macro taking you to the appointments page and/or posting appointments record appointments, store patient records, working dropdown menus/combo boxes which have a valid index form.

The health centre needs to have a booking software that is done on computer rather that by paper. This is because it Is quicker and more efficient. the booking software needs to have valid, up-to-date patient records with their doctors. It needs to have a valid date and time for booking an appointment. The software needs to also be protected to ensure that outsiders do not obtain these records and/or change details.

1.1 Identifying Problem and Solution

a) Identify the problem to be solved (A02.11)

There are several problems, which need to be solved. The centre does not have the correct hardware of software that should be used. The health centre requires an electronic system rather than one on paper. The receptionist cannot keep writing out appointments, as it is very time consuming. It is hard to correct invalid date and the receptionist's handwriting may not be legible. This is why computer-based software is better and more efficient. The software that will be used also needs to be a new one as it is difficult using the older, less developed software. The health centre do not have a lot of money, the directors has decided to adopt Windows XP as the operating system used. The centre has a deal for office 2003 for a 10-computer licence. The centre will need to be viewed from a local hospital computer system via a WAN of internet link. The centre also needs a high definition monitor that should be 19" minimum. It is better if the centre used a LED or a TFT monitor to reduce eyestrain. The centre also needs to have a printer that can print out prescriptions and is quite quick.

b) How does your software solve the problems identified above (A02.11, A02.15)

The software that I have designed fulfils many of the centres needs. It is created using Microsoft excel 2003. This software creates appointments and is not handwritten. This ensures that everyone can read it. It is quicker and easier to book appointments. The receptionist can book an appointment whilst talking on the phone to the patient. The use of macros ensures that the receptionist can navigate easily from page to page.

1.2 Input, Processing and Outputs

a) System inputs (A02.13, A01.41, and A04.41)

the patient records were imported from the database to the software. These records were put into a new tab/ excel worksheet which I then renamed to 'patients'.
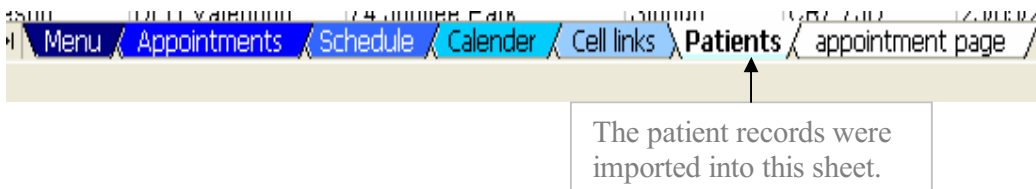
The patient records were imported into this sheet.

	Med. No.	title	First Name	Surname	Doctor	Address 1	Address 2	Post Code	D.O.B	Tel.
1										
2	BS00001	Ms	Blue	Peter	Dr.K.Swiss	12 Vincents path	Slough	UB5 5SN	27-08-1965	1753522767
3	BS00002	Mrs	Redi	Peter	Dr.A.Kon	13 arnold road	Slough	NW2 4JX	09-09-1999	1753353877
4	BS00003	Mr	Romeo	Dunn	Dr.B.Valentino	65 southpark close	Slough	LI7 7MK	14-09-1989	1753553877
5	BS00004	Mr	Humpti	Dumpti	Dr.G.Yoonit	77 Cedar bank	Slough	SL2 9RC	05-05-2005	1753753877
6	BS00005	Mr	Rusta	Fari	Dr.K.Swiss	56 Queens ave	Slough	UB6 OLD	28-04-1979	1753573877
7	BS00006	Miss	Pretti	Fayce	Dr.A.Kon	76 Sheep Close	Slough	UB4 2XC	26-08-1994	1753552877
8	BS00007	Mr	Nica	Tene	Dr.B.Valentino	23 Cambelle st	Slough	UB4 2XZ	13-12-1952	1753553847
9	BS00008	Mr	Hugh	Jass	Dr.G.Yoonit	87 Newpark Way	Slough	UB1 4RC	06-08-1957	1753433877
10	BS00009	Miss	Yuri	Yakov	Dr.K.Swiss	32 Sheep Close	Slough	UB6 5BE	31-03-1987	1753954277
11	BS00010	Mr	Pat	McRotch	Dr.A.Kon	76 Coninsten Ave	Slough	NW2 4AH	22-09-1991	1753559562
12	BS00011	Ms	Felia	Balls	Dr.B.Valentino	56 Sylvester Road	Slough	SL6 3ER	29-02-1984	1753559577
13	BS00012	Mr	Chris	Peacock	Dr.G.Yoonit	54 Carr Rd	Slough	NW3 4RT	07/07/1861	1753684647
14	BS00013	Mrs	Igotta	Gobad	Dr.K.Swiss	12 Crowe Street	Slough	UB5 5FG	30-08-1952	1753553777
15	BS00014	Ms	Ivana	Tinkle	Dr.A.Kon	87 Lambs Rd	Slough	MA1 4RC	09-10-1992	1753744577
16	BS00015	Mr	Ivan	Offlcockitch	Dr.B.Valentino	11 Vincents Path	Slough	LF4 4VG	16-11-1987	1753556877

The names above are a few of the names that were imported from the database. This data includes, the medical number, the patient's name(s), their doctor, their address and the telephone numbers. If a patient's records need to be altered, the receptionist can easily change it, this process of changing details would have been very inefficient if the booking software was on paper.

This is an example of the data that will be put in. in the screenshot above there are nine combo-boxes/drop-down menus. The medical number, first name, surname, date of birth, doctor and the postcode of the patient all work according to each other. For example, if one was to change the postcode in the combo box, all of the mentioned would change accordingly. The day, and the date in which the appointment would be booked also works in the same manner.

The screenshots below show how an appointment is made with the use of combo boxes and the concatenate function. First the receptionist will need to put in the patients name, the receptionist will then need to put in the time and the date. After the he/she has done this they will need to check if there is a valid slot for that particular time. If there is, the receptionist will need to fill in this slot with the patients name. the receptionist will then need to book the actual appointment by clicking on the macro that is called 'post appointment.'

Patient's name will be an input through the drop-down menus.

The date and the time will also be an input.

This is another example of data being inputted through the concatenate function.

b) System processes (A02.13, A04.41)

The processes that the system has, are the macros that are recorded, which takes the receptionist from one page to another. The macros also book the appointments and print the appointments. The macro that is found on the menus page takes the receptionist to the appointments page of the doctor he/she clicked.

Howard Health Centre

Appointments Menu

Dr. K. Swiss.........................
Dr. A. Kon...........................
Dr. B. Valentino....................
Dr. G. Yoonit......................

Receptionist clicks here

1st

The Receptionist will click on the image next to the doctor's page that he/she wishes to go to and the macro quickly goes to the required page.

2nd

Taken to the doctors appointments page

The macros also post and print appointments. The 'post appointment' macro records the details that the receptionist inputted into the schedule page. This schedule page can be viewed by the doctors.

This macro posts an appointment which is recorded on the schedule page.

Doctors Schedule

Date	Time	Patient No.	D.O.B	Firstname	Surname	Doctor
05/10/2006	17:20	BS01027	31/03/1996	Winifred	Thomas	Dr.A.Kon
26/09/2006	11:50	BS01022	28/02/1993	Wendy	Norman	Dr.A.Kon
27/09/2006	09:00	BS00005	28/04/1979	Rusta	Fari	Dr.K.Swiss
25/09/2006	08:00	BS00605	31/07/1989	Teresa	Pell	Dr.K.Swiss
13/11/2007	17:00	BS00604	31/10/1993	Toby	Isaac	Dr.G.Yoonit
09/11/2007	17:30	BS00600	31/08/1996	Tracy	Gale	Dr.G.Yoonit
13/11/2007	18:00	BS00580	30/09/1993	Rosalind	Shearer	Dr.G.Yoonit
26/09/2006	10:40	BS00041	18/06/1958	Claire	Inman	Dr.K.Swiss

This macro prints out appointments.

This macro also prints out the appointment letter that is found on the 'Appointment Letter' page.

03 January 2007

Dear   Winifred Thomas

You have an appointment on the 05/10/2006 at 17:20
with doctor Dr.A.Kon

Yours Sincerely,

Bhairavi Saravanamuthu
Practice Manager

Output it appears on the monitor and can also be printed out.

c) System outputs (A02.13, A01.51, and A04.41)

The outputs from the system are the monitor which the software appears on. Certain aspects of the booking software may need to be printed out. The doctor will need to print out prescriptions and the receptionist may want to send a letter to a patient who has an upcoming appointment. in addition to this, the software can be built up more so that doctors and patients can receive letters informing them about forthcoming events. Later on when the health centre is more developed, they can even send out emails to the patients and doctors instead of sending them letters (which are time consuming).

d) Master or stored data (data which does not change very often) (A02.13, A04.41)

	Time	Day	Date
1	Time	Day	Date
2	08:00	Mon	25-09-2006
3	08:10	Tue	26-09-2006
4	08:20	Wed	27-09-2006
5	08:30	Thu	28-09-2006
6	08:40	Fri	29-09-2006
7	08:50	Mon	02-10-2006
8	09:00	Tue	03-10-2006
9	09:10	Wed	04-10-2006
10	09:20	Thu	05-10-2006
11	09:30	Fri	06-10-2006
12	09:40	Mon	09-10-2006
13	09:50	Tue	10-10-2006
14	10:00	Wed	11-10-2006
15	10:10	Thu	12-10-2006
16	10:20	Fri	13-10-2006
17	10:30	Mon	16-10-2006
18	10:40	Tue	17-10-2006
19	10:50	Wed	18-10-2006
20	11:00	Thu	19-10-2006
21	11:10	Fri	20-10-2006
22	11:20	Mon	23-10-2006
23	11:30	Tue	24-10-2006
24	11:40	Wed	25-10-2006
25	11:50	Thu	26-10-2006
26	12:00	Fri	27-10-2006
27	12:10	Mon	30-10-2006
28	12:20	Tue	31-10-2006

The data that the system needs to store in order to perform the processes required is the patient's personal data such as their full name, their birth date, their personal history etc. Also the system needs to store the staff's data such as their full name, their salary, their age etc. Also the system needs to store all the staffs and doctors that work in the health centre as well as any other links that the hospital has with any other health centres that are linked with the centre. The calendar that is shown above shows all the data that the system stores such as the data and the days etc. Also I can have data protection if I have more time. Data protection ensures that the data cannot be deleted and it cannot be viewed unless you have specific instructions to do so. Also data protection gives the patients privacy as well.

1.3 Alternative approaches to building the system

- What software and hardware would be involved (**A01.14**)

    - The software and the hardware that could be involved in the system is Microsoft Access which is a database management system (DBMS) that functions in the Windows environment and allows you to create and process data in a database.
    - Another software that could be used is Microsoft Outlook. This could be used to communicate to the staff and patients via email. Outlook is a personal information manager; it includes additional features such as a calendar.

- The health centre would need to also ensure that minimal damage (caused by the computer) is done to the receptionist. They should reduce eye strain, this would result in the centre purchasing more expensive monitors such as 19" LCD (liquid Crystal Display) monitor. The centre would need computers that worked quite fast and high capacity. They could also use a TFT monitor (thin film transistor) which is as effective as a LCD monitor.

- A brief assessment of the advantages and disadvantages for the different types output devices which could be used (**A01.53)**

The different types of output devices that could be used are a printer and a monitor. There are many different types of monitors that could be used by the health centre to view the outputs of the system. Different types of monitors that can be used in the Howard Health Centre are two main types and these are LCD's TFT's and CRT's

Before that, I shall be discussing VDU's, which stand for Visual Display Units, and there are two ways in which they can differ from each other and this from size and resolution. The size is measured diagonally in inches and a typical PC monitor is about 17 inches. Laptop screens are 12 inches. The resolution is measured in pixels or dots and the main sizes are (800x600) medium or a low (640x480) or a high (1024x768) and the resolution for laptops are usually medium.

Firstly I shall be discussing the advantages and the disadvantage of using an LCD in the Howard Health Centre. LCD's are used mainly in laptops and desktops and PC's. LCD's stand for liquid crystal displays and it is made up of two polarizing transparent panels and a liquid crystal surface sandwiched in between. Voltage is applied to certain areas, causing the crystal to turn dark. A light source behind the panel transmits through transparent crystals and is mostly blocked by dark crystals.

The advantages of using an LCD are that the image that is shown on the screen is perfectly sharp and clear and the brightness is very good as well especially for bright images. Also the screens are perfectly flat and use less electricity so the cost of the electricity is kept at a minimum. As it uses less electricity it also produces less heat as well.

The disadvantages of using an LCD however is that the resolution of various different images is not as good as different images need rescaling of resolution however LCD's have a fix resolution that cannot be changed. Also another disadvantage is that when you view the screen from different angles then the image is not at all clear. Also another main disadvantage is that the cost of having an LCD is much more than having a CRT.

The next type of monitor that the hospital could use is a CRT. A CRT stands for cathode ray tube and the advantages of having a CRT is that you can view

images of any resolution as the CRTs can operate at any resolution. They are also very good according to costs as they are much cheaper than LCD's.

The disadvantage of using a CRT monitors are that they consume a lot of space and they are also quite heavy. CRTs are not as bright s LCD's and are not as sharp. CRTs also emit electrical, magnetic, and electromagnetic fields, which are harmful for not only the patients but also the receptionist. It may also interfere with hospital equipment.

The next output device that I shall be discussing is the printer. There are three types of different printers and I shall be discussing advantages and the disadvantages of each one of them.

 The first type is the dot matrix printer (also known as impact printers). They are the cheapest printers both to buy and operate. The advantages of having a dot matrix printer are that they are cheap and they have low operating costs. They can also print continuous copies again and again. The disadvantages of having a dot matrix are that they have low resolution and they can be very low and they are very noisy as well and they cannot be used near a phone. The dot matrix is very slow and it can print less than 100 characters per minute, which is a very small amount, and it is very slow.

The next type of printer that I shall be discussing is a laser printer and the advantages of this type of printer are that they have very high resolution and that are very fast and they are very quiet. However the disadvantages of a laser printer are that they are very expensive to buy and to repair and also they cannot be used continuously. It is very fast printing approximately 10 pages a minute and the resolution is very high being typically 600 dots per minute and this means they can print high quality documents.

The next type of printer is the ink jet printer. The advantages of an ink jet printer are that they have a very good resolution and they are small and cheap to buy as well. The disadvantages of having an ink jet printer are that they are quite slow and the cartridges are expensive to buy. The resolution is between 300 to 600 dots per inch and the cheapest ones are well under a £100 and also they are quite small. However they are quite slow printing 4 pages per minute and expensive to run.

- **Which output devices would you recommend and why (A01.54)**

Intel Celeron D 351 Processor, 32MHz, 533MHz FSB, Genuine MS Windows XP Home Edition, 256MB DDR RAM, 80GB Hard Disk Drive, CD Rom Drive, Integrated Graphics, 6 USB Connections, 1 PCI Slot, 15" TFT Monitor and it is £150.

I think a 14.1" XGA (1024x768) TFT monitor with built in Ethernet capability and 56Kbps built in v.90 modem with I. LINK (IEEE1394) PORT. This has 800 MHz Mobile AMD Duron Processor with 128MB SDRAM and a huge 10 GB hard disk drive to save all the information about the hospital it's patients and it's doctors. For example it would need to be able to save patients' personal data(there are many patients), which would include, birth date, their personal history etc. It would also need to store staff's data such as their full name, their salary, their age etc.

HP Business Inkjet 2800 Printer, set-up roadmap, 4 ink cartridges [black (26 ml), colour (28 ml)], 4 print heads, getting started guide, power cord, driver CD HP Jet direct (EIO) internal print servers, HP Jet direct external print servers, HP Jet direct 802.11b wireless (EIO) internal print server, HP Jet direct connectivity cards £46,50

I think a HP Business Inkjet 2800 Printer is most suitable for the health centre. The resolution is between 300 to 600 dots per inch and the cheapest ones are well under a £100 and also they are quite small. they are quite slow printing 4 pages per minute and expensive to run however the hospital does not need this as much as other things.

Task 2 Interviews and research

2.1 Summary of research findings (AO2.12),
2.2 Interview and research notes (AO2.12)

The system that is used in the hospital does a number of things that make it more effective and easy to use as well as less time consuming. The system has a fairly big memory system to store number of things such as each patient's personal details such as their full name, age, birthday, as well as their medical history. The system also stores each of the staff's details a well such as their name and the job that they do in the hospital as well as their salary and the amount of salary that they get paid and also the number of hours that they have worked in the hospital every day and the system uses all of this data about the staff and it uses it to work out their salary at the end of each month and the system also creates a payslip for each of the staff members in the hospital.

The system also carries a number of different jobs for the receptionist to make her job a little bit easier as it uses combo boxes/drop down menus for information such as the time of the appointment, the patients full name and the doctor that they need to meet so that the nurse only needs to use the mouse to enter these vital pieces of information and the chances of her making a human error such as spelling or having a poor handwriting are instantly solved. The only piece of typing that the receptionist has to make is to enter in the patient's problems or their symptoms that they then send to the doctor to see so that the doctor is aware of this and they have an ides of the problem of the patient and this reduces the amount of time that the patient has to spend in the hospital and also this saves the doctor time so that they can see as many patients as they can in a day. The receptionist sends this

information to the doctor via an e-mail system in which the doctor has access to very easily. The e-mail system is Microsoft Outlook and it is very easy to use.

In my interview with the receptionist I asked her if she found it easy to use the system and she replied that she had found it quite difficult to use in the beginning but as she progressed with it she got used to it and soon she found it quite easy to use and she said that it really shortens the amount of time that she spends on the phone as she does not have to write a lot. Also one of the main things that she found quickened her speed was the fact that she had an ear phone and this meant that both her hands were free to type on the computer and this really sped her up as her typing quickened and it was easier for her to write and it was not as awkward as it would have been if she did not have the earphone as she would only have one hand free to type slowing her down. Also I asked her if she had received any kind of training to use the system and she said that yes she had received a three hour training about how to enter the data into the system that the hospital paid for and now if a new receptionist joins then she is to teach them as well to save the cost of the training for the new receptionist.

The system that the receptionist uses is one that was especially designed for the hospital and it came with all the data saved onto it so that it could be used straight away. The system has been in use for three years so it is fairly modern and it has a memory of three gigabytes, which is a very significant amount. All the data is saved onto two computers every day and only one of the computers are used and the second one is used a back up if there is a problem with the system or if some of the data gets destroyed or lost by the system then the second computer can be used.

The doctors, nurses and the receptionists of the hospital can only view the system. Each one of these members has their own account login and password and they can only view the files that are relevant to them. For example a doctor can only view their patient's history but not another doctor's patient's history. The important files such as patient history and salary are password protected to enter and view and only the receptionist can view them.

Research

The aim of this research is to compare what inputs are needed in a medical centre and a travel agency. Below, I have shown different screen shots of both travel agent bookings and health centre bookings. By doing this I hope that I will able to recognise the differences between them and understand and know what is relevant to a health centre.

Booking tickets for travel.

Advertisements, extra links that customers may want to use.

Tick boxes

Drop- down menus

This is an example of a booking software for a travel agency. Most of these input details will not be needed for Howard health centre, but the input forms, e.g. Drop-down menus and tick-boxes may be useful to create a software for the health centre. Howard health centre will need the name of the patient, address, date of birth, illness, doctor, location, etc.

Below are a few examples of a hospital booking software:

This is how the patients file in the hospital looks like and it contains a picture of the patients face as well as details such as name, age, birthday as well as the things that they have been operated against.

This shows how much money the patient has cost them and the treatments that they have had as well previously as well as how much it has cost them as well as the equipment that they had used for that patient.

This is the daily scheduler that the doctors have access to and it shows them all the patients that they will need to see every day well as details of the patient.

This print screen shows the patients file and it shows the doctors that are treating the patient all the details of the patient such as personal details as well as the treatments that the patient has received.

This is the physician's file and it shows the details of all the doctors that are employed in the hospital and their details such as the name the salary as well as others such as their address and their phone number.

Having a software like the example shown above would benefit the doctors and the receptionists. This software is designed specifically for booking software and medical use. This software has data base for storing patient records, to book appointments and to also view a doctors schedule. Having a software like this would make the doctors and the receptionists work load a lot less than if it were a non-electronic software. This software is not as time consuming and it is not complicated, the receptionist and/or the doctor would learn how to use the software quite quick.

The problem with the software that I have created is that it is very limited in its use. Software like 'softaid' are designed for hospitals. I have designed a booking software with excel which is not the best software to use for a booking software. My software does not automatically save, so if there is a sudden power cut, then all the data that was

not stores will be deleted. The doctor and/or receptionist would have to save every time the made changes to the software; this is not a reliable technique as they may forget to do so. Another drawback to the software that I have created is that it is not very secure, the security level is quite low. There is no password to protect the file but it the file is protected in such a way that it cannot be altered. Although I have protected it so that it can not be altered, it is very easy to take this protection off as there is no password to secure it.

Saying this, my software can be protected with a password, but I am limited to do so. The booking software is very easy to use and the layout is quite clear. 'Excel' comes with the 'Microsoft office' package and it comes quite cheaply. This would be ideal for the health centre as it has only just opened and has a low budget.

Task 3 System design specification

3.1 Master or stored data (A01. 32 , A01.33,A01.42, A01.43, A01.44, A01.45, A02.24, A02.25, A02.26, A02.27)

The health centre could use a number of different software, these include:

1. **'Go Bookings Systems'**
   (SOURCE: http://www.go-bookingssys.ems.com/casched=go-ware-sys.em.htm)

   This is an American/Australian based software that can be used for many purposes. These include, health care centres, office desks, work stations, design centre scheduling, hospitals, training scheduling, appointment scheduling, etc. I think that this software would be very suitable for the health centre after it has developed a little more and has more patients. This software has a range of features that would be needed for the Howard Health Centre. Here is a list of The features that would be needed for the health centre, that the company claim to offer:

- Provides improved internal and/or public access to services and assets for customers and/or staff
- 'Off the shelf' - proven reliable, ready to configure and customize for immediate implementation
- Deassign and reassign resources to departments or locations
- Multi-booking capability option for a single time slot
- Search mechanisms for customers and owners - numerous
- Web friendly - can be accessed by Intranet or Internet/Intranet or Internet
- Ability to have regular or irregular times on the one day
- Protection of sensitive data is by 128 bit SSL encryption, Cisco firewall technology
- No double bookings security feature
- Option to connect Agents with rules-based access permissions, tracking and reporting tools
- Call centre enablement can be configured for centralized bookings and reporting with multi permission access levels
- Archives audit logs automatically with easy retrieval and viewing
- Restriction controls re time forward for bookings, sessions, IP activit y logged
- Customizable email, confirmation and reminder messages for customers
- Upload own images and data (also html)
- Add unlimited resources any time with your admin controls

I have taken the features that would be needed for the health centre. The health centre allows the patients, the staff, the technicians and the owners to have some sort of access to the booking software. Here is a screenshot of these features,
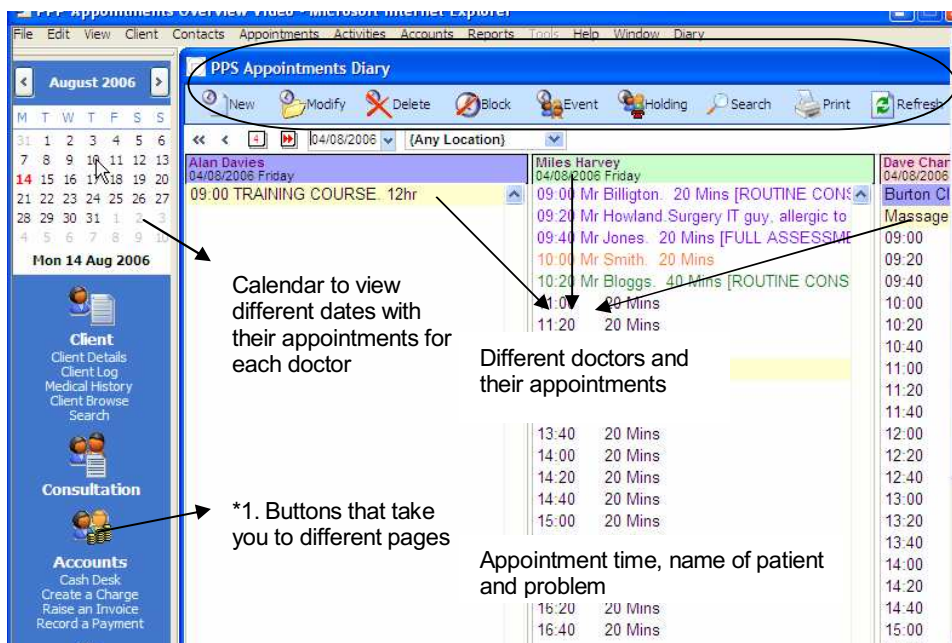

I think this software would have been suitable for the health centre as it provides a range of different characteristics that would be ideal for the health centre. The disadvantage is that it would be very expensive and that it is an Australian/American based software.
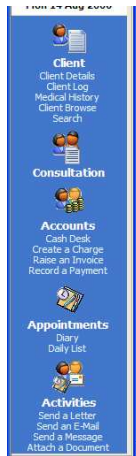
2. **Patient and Practice Management Software for Windows™**

This is more suitable software that is perfect for the health centre. It has many qualities that are necessary for the health centre. The appointments page allows you to navigate from page to page by the click of a button. It easily books and deletes appointments and the layout of the page is very clear.

[*1] Here is a screenshot of all the buttons that one can navigate to. This toolbar is on the left hand side of the page and the doctor/receptionist does not need to look for the page that she/he are looking for. They will just need to click onto the button and a quick description of what the page contains is also included. This makes the software more easy to use. New receptionists and doctors can easily learn how to function the software which will save time. This software adds and removes appointments very easily. The doctor can view the appointments page and will know who his/her patient is and prepare (if necessary) themselves. The doctor will also be aware of their break and will know how long to spend with the patients.

Booking an appointment

Searching patients name to book appointment

Tick-boxes; quick & easy

Different view options

Different view; Diary style

As you can see from the screen shots above, this software provides the ideal functions that Howard health centre would need. This software functions easily and they also provide a step-by-step guide to use this software. But it would be quite a lot of hassle if there was something wrong with the software, you would have to contact a technician to sort out the problem.

3. MedicsElite™
(*http://www.adsc.com/me_details.asp*)

Here is an example of a successful American booking software that could be used by Howard health centre. It has many features, these include:
 (Quotes from website- http://www.adsc.com/me_details.asp)

Patient Information Management

- **Comprehensive patient information** including demographics, insurance, appointments, contacts, referrals, notes, case management details, and more
- **Fast patient registration** with alert messages including duplication warnings
- **Case specific records**: insurance plans, hospital stays, A/R classes
- **Patient and guarantor account retrieval** by numerous search criteria including patient and/or guarantor name, date of birth, social security number, phone number, insurance policy number, account number, transaction number, medical record number, and user-definable fields
- **Procedure and diagnosis code tracking** with auto recall for immunizations, mammography, annual check up, etc.
- **Patient and insurance company balances** displayed in *every* patient-related view
- **Budget billing plan** specific to the individual patient
- **Custom fields** available for user-defined information
- **Automatic computation of all managed care data**
- **Easy viewing of managed care issues** such as capitation, referral tracking, copayments, number of allowable visits, utilization and outcomes

- **User-defined reports** generated by procedure, A/R class, location, referring doctor, date range, service or posting date, insurance, department, provider, credit type
- **Patient referral tracking** warns when patients approach referral service limits
- **Analysis of capitated fees compared to non-capitated fees**
- **Next post-operative date for reimbursement**

As you can see this software provides a range of different features. This is just a part of the many features that the software provides.
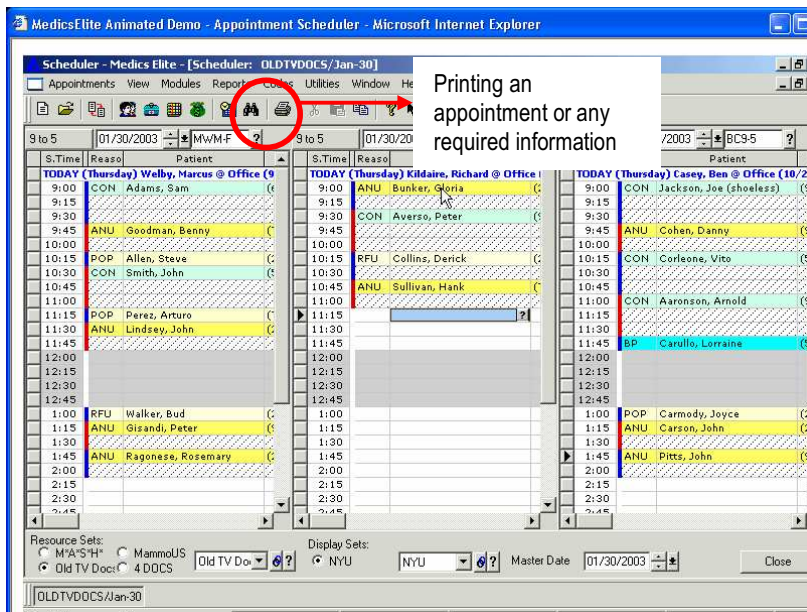
This software has a simple yet effective one. The screenshot above shows the doctors' scheduler. It has been split into three different screens with each of the doctors' appointments. It is very easy to print out an appointment or any required information by clicking on the icon near the top of the screen that has a small image indicating a printer.

Below is a screen shot that shows the patients records:
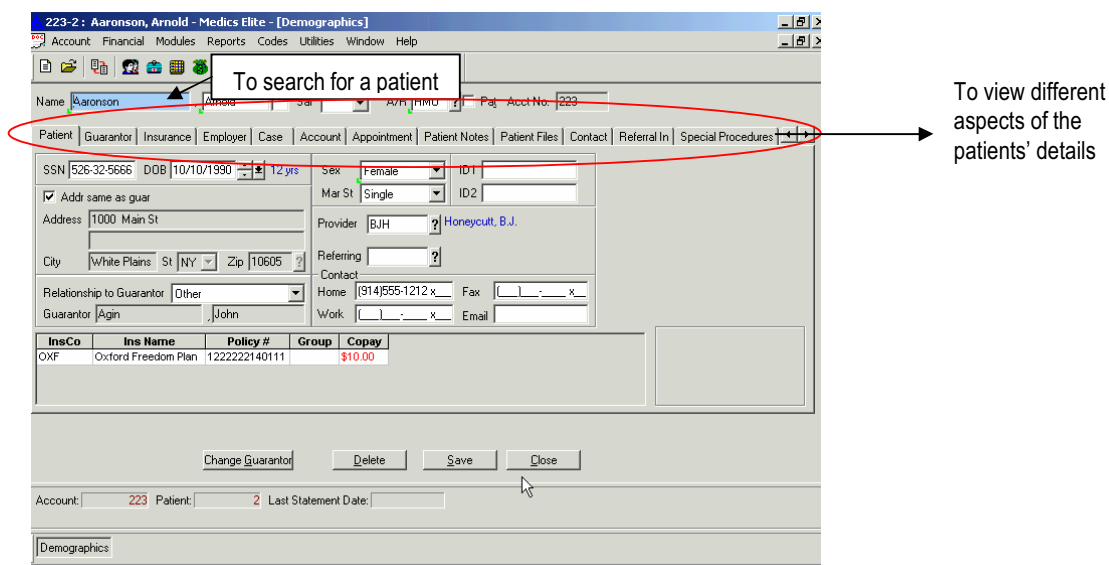
The software allows you to view different aspects of the patients' details. The doctor can search for a patient by typing in their surname or their first name. Having a small search engine like this would save the doctor a lot of time and it makes it easier for a doctor to look for a patient and their details. This software allows the doctor to view contact details so that the doctor is able to contact the patient. It has the contact details of the patient's guardian (if they have one) as the patient may not be in a state in which they can be contacted.
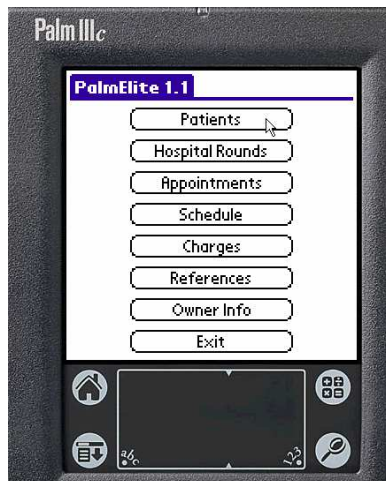
Medics On-call™ - Mobile PalmPilot™ Access

As you can see, the company also allows the doctor to view the system with a PalmPilot. The doctor can be on his/her way to the health centre and they are able to see what forthcoming appointments they have. The doctor can view the patient records and sort them in whatever way he/she wishes. The doctor can transfer any additional data that he/she may have entered by connecting it to the computer and using the 'sync' function.

Map of Software- Spider diagram
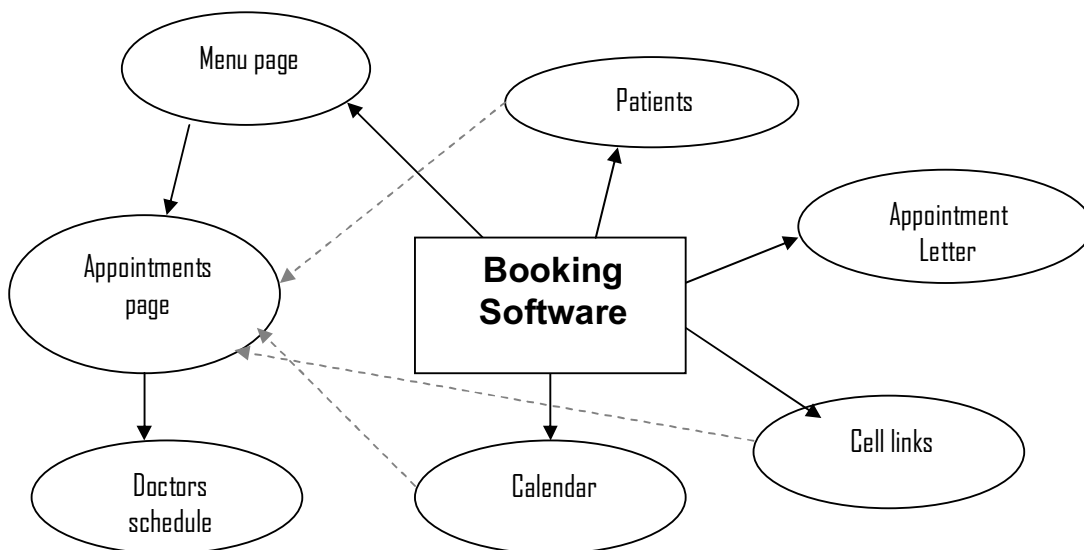
Map of Software-contents of booking software

at the bottom of the booking software, the tabs (shown above) are found. These help the doctor/receptionist navigate from page to page. But certain tabs such as, the 'cell links', will not be relevant to them. If there are any problems, then the technician will check this page and see if there are any errors.

This is the menu page. When you click on the small image next to the desired doctor's name, it will take you to that doctors schedule page. The schedule page includes that appointments, drop-down menus that allow the doctor/nurse to select the patients' name, D.O.B, etc, to book an appointment, and more.

In this screen shot, you can see that the macro takes you to the required doctor's page and you can view the appointments. you will have to check in the diary slot if it is available, and you will then insert the patients details using the drop-down menus and then you click on 'post appointment'. This will then post the appointment into the appointments page.
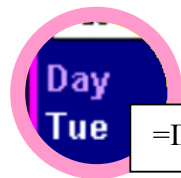
=INDEX(Day,'Cell links'!G2)

The cell links page is used for the index formula, which is on the menu page. The screen shots above show that under the drop down menu, the index formula is used. This should change when the data that is inputted with the drop-down menus is altered. It should be the same as the data in the drop down menus and the drop down menus should work according to each other. For example, if I was to change the date of birth then all of the drop down menus that have the patients details should change to which

ever patient that was born on that date, or if I was t change the medical number then the other dropdown menus with that patients data should change.

	A	B	C	D	E	F	G	H	I	J	K	L	M	
1	Med. No.	title	First Name	Surname	Doctor	Address 1	Address 2	Post Code	D.O.B	Tel.			Concatenate	
2	BS00001	Ms	Blue	Peter	Dr.K.Swiss	12 Vincents path	Slough	UB5 5SN	27-08-1965	1753522767			Blue Peter	
3	BS00002	Mrs	Redi	Peter	Dr.A.Kon	13 arnold road	Slough	NW2 4JX	09-09-1999	1753353877			Redi Peter	
4	BS00003	Mr	Romeo	Dunn	Dr.B.Valentino	65 southpark close	Slough	LI7 7MK	14-09-1989	1753553877			Romeo Dunn	
5	BS00004	Mr	Humpti	Dumpti	Dr.G.Yoonit	77 Cedar bank	Slough	SL2 9RC	05-05-2005	1753753877			HumptiDumpti	
6	BS00005	Mr	Rusta	Fari	Dr.K.Swiss	56 Queens ave	Slough	UB6 OLD	28-04-1979	1753573877			RustaFari	

Here is a screen shot of the Patient's records. It has the patients medical no., name, address, doctor, etc. the concatenate fiction is also here. These records (including the concatenate function) are all needed in the appointments page. The name, date-of-birth, etc is, unmistakably used in the appointments page, but the concatenate function is not. The concatenate function is made use in the diary slots. When you click on any of the diary slots a drop down menu is present, with a list of the patients names. Instead of using this function, a VB code could be used, but I have used a concatenate function. The VB code method does not list the patients' names in the diary slot but fills them up with a different colour.

To insert the patients' records into my booking software I had to 'import' the data form a database that was provided. The following screen shots show the process of importing data.
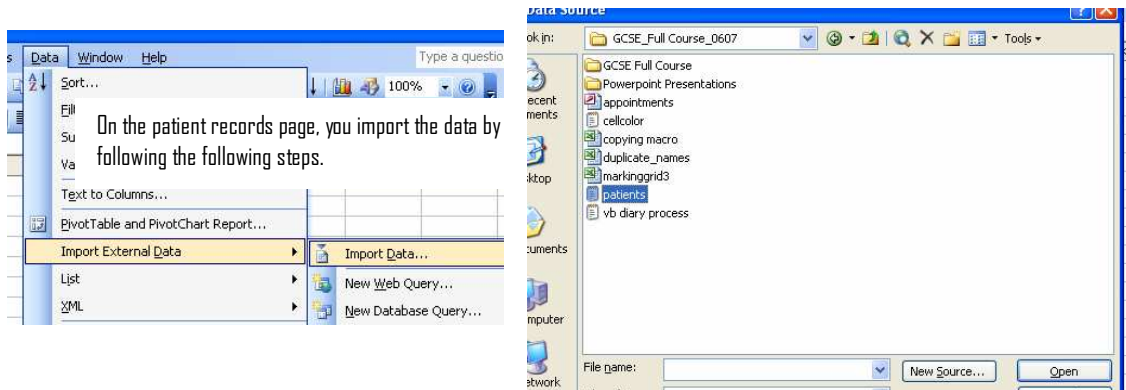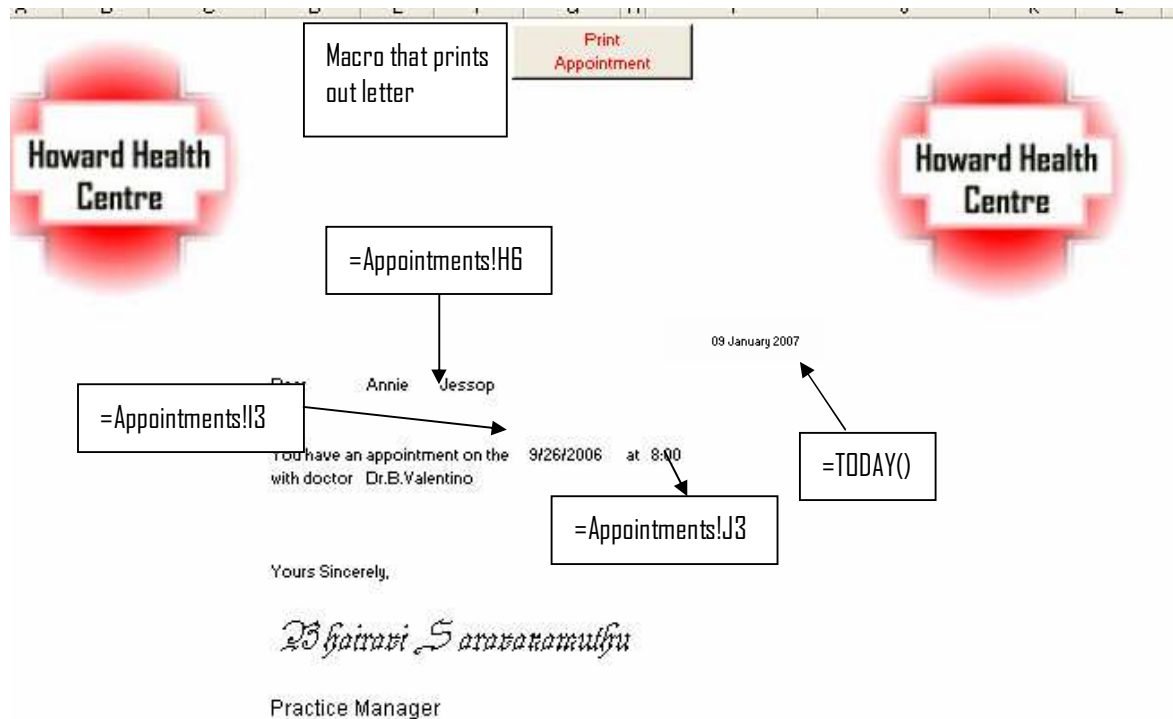
Here is the appointment letter. It changes according to the data that has been inputted on the appointments page. There is a macro on the top of this page that prints out the appointment letter when someone clicks on it. This letter is ideal to send out letters to the patients that have forthcoming appointments.

I now move on to the final aspect of my software: the calendar. The tab that is called 'calendar' takes you to a page that has a list of the date, day and time. As you can see, the column with the days, ranges form Monday to Friday only. This is because the health centre will not be open over the weekends. Similarly, the time varies from 8 am to 6 pm and has 10-minute intervals each time. To ensure that all of the data that I have entered is correct and accurate, I 'Validate' them.

Validation Techniques

Validation is when only 'data' is entered into the database. Different techniques to validate a database include:

- *Format checking*- this is when you check that all data is in the correct form. For example, the date and the tiem can be written as (just one of the several forms), DD-MM-YYYY and HH:MM.
- *Lookup Table*-   this takes the entered data item and compares it to a list of valid entries that are stored in a database table. If the entry is in the list of valid entries then it is allowed, otherwise it is rejected.
- *Presence check*-   A presence check can be used on any field in a database and simply checks that some data has been entered into the field, i.e. that the field has not been left blank
- *Range check*-   This checks the data for it's quantity (whether it is too high or too low. There is an upper and lower boundary for sensible values specified. Any values that exceed or are lower that these ranges will be rejected (name ranges).
- *Length check*-   ensures that the data entered is no longer than a specified maximum number of characters. This is particularly important if a fixed length field is being used to store the data. If this is the case then any extra characters typed that made the data longer than the space available to store it would be lost. Here are some example field names and appropriate maximum lengths.
- *Spell check*-   checks whether the spelling and grammar is correct. The software looks up words and corrects them with the dictionary.
- *Data validation*-   this function allows you to use an error message that informs the user that they have typed in incorrect data. Below is a screen shot of this error message:

This screen shot shows that if a non-numerical or data that falls out of the ranges that were given, the system does not allow it and rejects it.

To ensure that the data is not lost or altered (and valid), it is vital that backup copies are made. The software needs to be protected so no changes are made without authorisation.
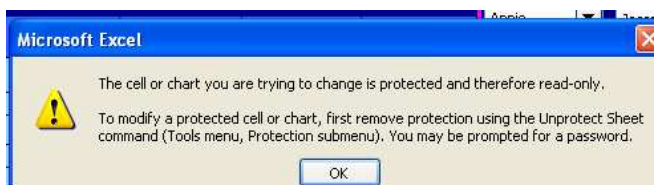
As you can see I have protected my booking software, to un-protect the software, a password should be entered. The disadvantage of this is that the password cannot be retrieved or reset if the user forgets the password. The password can be altered but not modified if it is forgotten. This booking software, like most electronic, computer-based

software are likely to be protected and will last for a long time. The purpose and aim of this it being protected is that only the user can alter data.

Verification

It is vital that all the data entered is accurate, it is important that the information/ data entered is double-checked. However, verification does not check if the data entered is *correct,* if the data that was supplied is incorrect then the entered data will pass a verification check despite being incorrect. To check that your data is accurate you can do the following:
- Re-entering data
- Index formula & Combo box
- Proof reading
- Another person to proof read.

When the patient records are imported, it is important to check:
- The first and last entries in the text file against the first and last records once imported into Excel
- The rows correspond to 5 random numbers to them in the text file to see if they agree

The receptionist would need to learn how to use the booking software. He/she would need to be trained to use the software. Especially when the software is more advanced than the one I have created. The receptionist may not be aware in how to alter data. He/she will need to be aware that if certain things happen then it is advised that they leave it as it is and a technician fixes the problem. The software that I have created reduces the errors made as all the necessary data and the receptionist will only need to insert the patients' details in the menu page and click on the macro that prints out the appointment. The receptionist has 2 macros on the appointments page that print the appointment and to post an appointment.

Output devices

The information will need to be viewed by the receptionist, the doctor and the patients. The receptionist will need to see the data that she/he has inputted; she will see the data via the monitor. The receptionist may also want to send out information letters to the health centres patients and/or the staff, he/she will then print out these letters by the use of a printer. The doctor will need to use a specialised printer to print out prescriptions for patients. This printer will have different settings to a standard printer. Another output device could be the digital screen in the health centre that displays the any announcements (including the patient's name that is up next to see the doctor). This is not in every health centre but it would be very useful to the health centre. There may be speakers on the screen so that the patients can not only see but also hear the announcements; this is another form of an output devise.

Another kind of output device is the TV screen in which CCTV footage is displayed. This is not linked to the receptionist or the doctors, as it is not their job to see these recordings. A specialist would be employed to function the CCTV cameras and they would be the people that would watch the CCTV footage.

3.2 Inputs(A01.32, A01.33, A01.42, A01.44,A01.45, A02.25, A 02.26, A02.27)

The data will be inputted by the designer of the software and also by the receptionist/doctor.
The main input data that the designer of the software will need to input is the patient records. This will be imported from the (.txt format based) software to the excel sheet by the name of 'patients.

This screen shot is of the (.txt based) database. It is imported to the excel spreadsheet via the process of importing data.

The patients page is a form of input and output. Bu importing the data it is an output but it is the base of the booking software and without the patient record the software will not function as it should. The patient records are therefore a form of inputted data. It is used in the drop-down menus, which then is used in the schedule page and the appointment letter, etc. the patient records' are also a form of inputted data as it essential for the concatenate function. The concatenate formula is then a form of input as the output is on the appointments page.

The purpose of this function is to fill in any taken appointments on the appointments page with the patients' names. The formula for this function is, (as an example) =CONCATENATE (C2, D2). This is used to join the two names and is on the appointments page I the form of a drop-down menu.

The user will input data as well. Examples of the data that will input forms are as follows:

Clicking on a doctor on the menus page (macros take you to the appointments page).

Each of these macros is a type of input data. When you click on the images next to the doctors', it takes you to the appointments page with the aid of macros.

On the appointments page, there are several forms of input. When choosing an appointment, the information is being inputted into the system.

All of the above are from the appointments page of the system. These drop down menus used aid from the cell links page, I have designed this in such a way that if u change one drop down menu, the rest will change. For example, if I change the date to 26-09-06, then the day will also change. The time will not change, as it does not work according to the day and date. If I change the drop down menu with the surnames, then the first name, the date-of-birth, the patient's number, their postcode and doctor will all change. When any of these are altered the information is changed on the appointment letter according to the drop down menus.

=Appointments!*H6*

Dear   Annie   Jessop

=Appointments!*I3*   =Appointments!*J3*

You have an appointment on the   25/09/2006   at   08:00
with doctor   Dr.B.Valentino
                                                    All of these change when the data that
                                                    is being inputted on the appointments
                                                    page is altered.
=Appointments!*L4*

Yours Sincerely,

Bhairavi Saravanamuthu

G	H

Print Appointment

The output of this would be on the monitor and it could also be a print out. In order To print out this letter, you would have to click on the macro that is located on the top of the page which is called 'print appointment'.

Going back to the appointments page, there are two macros, one that posts the appointment on schedule page and the other that prints out the appointments. These are other forms of input, the outputs of these are the printouts and once the appointment has been posted.

A	B	C	D	L	F

Print Appointment   **Dr.G.Yoonit**   **Post Appointment**

The 'print appointment' will print out the appointment; the 'post appointment' will post the appointment onto the schedule page. This is a form of output. The following screenshot shows the data being output onto the schedule page:

Doctors Schedule

Date	Time	Patient No.	D.O.B	Firstname	Surname	Doctor
9/26/2006	8:00	BS00023	1/19/1959	Annie	Jessop	Dr.K.Swiss

Task 4 System testing

A01.11, A01.15, A01.31, A01.34, A01.35, A01.52.

Random access memory…etc!!

To communicate and send messages to the computer, an operating system is required. Two commonly used operating systems are Apple Macintosh and Microsoft Windows. Microsoft Windows was the first to provide this service and Macintosh needed to get permission to compete with Microsoft. The two operating system providers are both very successful and have regular updates in the standards to ensure that all customers are satisfied and the software is up to date. The latest operating system that has recently been launched by Microsoft is Microsoft Vista. Although it is expensive, customers are willing to buy the software as it provides the users with almost everything and is very up to date. The operating system that I have been using is clearly Microsoft as I have using Microsoft Office as it is only compatible with Microsoft Windows. When buying/installing software, consumers need to check whether it is compatible with the operating system, but usually this is not a problem as most software are compatible with both and it is just a case of different methods of installing software. When the operating system is installed, it is important and vital to install the hardware software. Hardware such as keyboards, the mouse, USB storage devices, the monitor do not need to bee installed as the computer recognises them. But, just having a monitor will not do any good; the graphics card that is inside the computer, on the mother/main board will need to be installed. The same applies for speakers, the sound card will need to installed and most components. Consumers who buy a computer that is ready to use will not need to worry as every thing will be installed for them. But, if they want to change any of the components, they would have to install them.

There are many different software can be used. Many of which are much more advanced than the system that I have created. The software that I have created was produced with the aid of the software 'Microsoft Excel'. This is a basic software that is usually used for accounting, but in my case I have used it for a booking software. This is sensible a software to use for the health centre as it has just opened and has a low budget. Microsoft Access can be used for a booking software as it comes within the package that Microsoft offer. This is a more advanced software compared to excel and is also more suited for the hospital's needs.
I have used it for the logbook to record any problems that I had when creating the booking software, for creating my booking system and for this write up. I used Microsoft Word for the logbook and the write up. I used Microsoft Excel for the booking system and also for the booking system test form. (Please refer to task 2, pages 7-10).

To ensure that data is not lost, modified or copied, there are a lot of software that protect the computer from interfering communications. These include anti virus software and software that protect the computer from being hacked into. These software include, Firewall, Norton anti-virus, Sophos anti virus, etc.

An alternate monitor that I could have used is a CRT monitor by Dell™ called the E773 17" monitor that displays sharp images at a maximum resolution of 1024x768 Pixels. The monitor has a coating that is anti-static/anti-reflective and produces flicker-free images and easy viewing. The E773 monitor is designed for a wide range of users and can be used at home as well as at work. This monitor is also quite cheap, being only £79.00. This would be suitable for the health care centre as it is a new practise and has a low budget. Unlike the TFT and the LCD monitors, is not that fragile. The screen of the monitor is not at a high risk of being damaged or scratched, the cost of repairing a TFT or LCD monitor is also, quite high. However, this type of a monitor is not better to use than an LCD. LCD monitors reduce eye strain and the user (either the receptionist or the doctor) will be looking at the screen for a long time. Another disadvantage of this monitor is it's size. It is very space consuming, it cannot be transported around very easily and it does not look very appealing.

An alternate printer that could have been used is the Lexmark X1100 series. This is a printer, scanner and a photocopier machine. It is ideal for office and photo use. It costs roughly £45.00.

This printer is not a fast printer like the LaserJet printer. But I feel that the heath centre do not need a fast laser jet printer as they are not going to need a fast printer to print out prescriptions, letters, etc. the accounting department of the health centre or any other department may require a faster printer but the doctor and receptionist need a printer that prints at a reasonable speed. The printer/scanner/photocopier is effective as the user can scan and photocopy things that can be stored and used. The health centre saves money when buying this as it is a 3-in-1 hardware that comes quite cheaply. Also, the cost of the ink is not too expensive, it is roughly £14.99.

The disadvantage of this ink cartridge is that it is very small. The ink runs out very quickly and the user will be printing out a lot of things such as, prescriptions, letters, planner, etc. considering the size, the ink then seems to be quite costly.

The printer takes up quite a lot of space, the user is most likely to have a lot of paper work on the desk and it is important that the printer/scanner/photo copier is kept on a stable surface. This printer can be bought at most stores, including PC World an also Argos.

An alternate keyboard and mouse that can be used is the Typhoon 40224. this keyboard and mouse set are wireless and are therefore less of a hassle. The QWERTY keyboard has 102 keys, it also has shortcuts on the top of the keyboard. These shortcuts include, volume control, going onto Word, Office Tools, My documents, Music playback functions and more.

The disadvantage of the keyboard is that is not the most comfortable keyboard that can be used. It does not have a small rest on the bottom of the keyboard for your wrists. But this is not a major problem as the doctor/receptionist will not be typing for a long period of time.

The mouse, being wireless is not a hassle as there are no wires to interfere. It has a small scroll mechanism that scrolls up and down a page. This is easier than dragging the scroll bar down. The mouse is also designed in a way that will be comfortable. The clicking sounds that the mouse makes aren't very loud as older mice tend to be. The mouse is not an optical light based mouse. These type mice tend to use a USB connection. The wireless devise is a PS/2

connection. The disadvantage of a mouse that uses a ball is that it may get dusty and not function properly. Moreover, the ball could lose and it is hard to replace it unless you remove it from another mouse.

The disadvantage of using a wireless keyboard and mouse is that you will have to change the battery on a regular basis. The battery may not work at a critical moment and could cause some mayhem. Saying this, I do not believe that the battery issue is that much of a problem. It does not run out straight away, if a good quality battery is used then it will last for a long time.
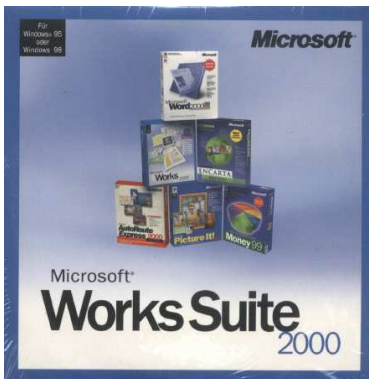
An alternative software package that could have been used is Microsoft Works. Microsoft Works in an office Suite that is available from the Microsoft Corporation, hence the name being Microsoft Works. It is considered to be a smaller and a cheaper alternative to the Microsoft Office Suite. It includes, the Microsoft Works word processor, spreadsheet, and the works database. Since it is cheaper, it would be more affordable for Howard Health Centre.

The disadvantage of using this alternative software is that if the Practice encounters a problem, they would have to take it back to the shop and ask them to resolve the problem. This would mean that the hospital would not have a system to run the hospital and it would be inefficient.

(AO1.31)
The software that I have used to create as well as use my booking system is Microsoft Excel, Paint and SOPHOS. The first software that I shall be discussing is Microsoft Excel. There are a number of different reasons that I used Microsoft Excel. One of the reasons is that Microsoft Excel is very user friendly and easy to use. You do not need to undergo any type of training to use Microsoft Excel and it is quite self-explanatory and this means that the hospital does not need to spend money on training the staff and the receptionist to use this software. Also, another reason that I used Microsoft Excel is that most computers have this software and this means that the hospital could use this software without spending money on buying it. Also one of the main advantages of using Microsoft Excel is that when I create the macros to take the receptionist from one page to another and save appointments then I did not have to write out any of the codes for the macros. All I had to do was to go through the steps that I wanted the macro to take and all of the steps that I took were recorded and Microsoft Excel automatically coded the macro.

 I have also used Paint for cutting and pasting a lot of the codes for the macros as well as the buttons used for them and the screenshots of the pages in the booking system. I have used paint because again it is very user friendly and easy to use and the functions of Paint are very useful. For example you can cut and paste lots of things from paint and you can also colour them in and design your own buttons etc. Also Paint is a very common software on many computers and this meant that I could use it on most computers and also Paint is a very simple and basic software to use and it was not used frequently by me.

The last software that I shall de discussing is SOPHOS, which I used to protect my booking system. SOPHOS is anti-virus software that automatically scans for any type of virus when any user logs in to protect the data on the computer from being lost or corrupted by foreign vir uses. It is very useful as this means that viruses would protect the booking system and it will keep all the data on the system safe from corruption.

(AO1.34)

I have chosen to use Microsoft Excel as the software that is suitable for making a booking software. Excel is very easy to use and also user friendly. Some training will be required but you will not need to undergo masses of training. The software is also quite cheap and it comes within a package, it is not bought separately.

One of the main advantages of using Microsoft Excel is that when I create the macros to take the receptionist from one page to another and save appointments then I did not have to write out any of the codes for the macros. All I had to do was to go through the steps that I wanted the macro to take and all of the steps that I took were recorded and Microsoft Excel automatically coded the macro. Also in Microsoft Excel you can also protect sheets so that so that the rest of the sheet do not colour in when the receptionist clicks on them and this means that the receptionist avoids another mistake form being made. The benefits of using Microsoft Excel is that it has many sheets on one document and that means that when using the booking system you can navigate from one sheet to another instead of opening a lot of sheets and this makes Microsoft Excel more efficient and less time consuming. The sheets on the booking system are shown above. Another benefit of this is that when I was making macros to take the receptionist from one page to another and save appointments then I did not have to write out any of the codes for the macros. All I had to do was to go through the steps that I wanted the macro to take and all of the steps that I took were recorded and Microsoft Excel automatically coded the macro. The drawbacks of using Microsoft Excel is that when you are using the formulas then you have to learn about the special signs and how you have to write something for the computer to do something. Another disadvantage of using Microsoft Excel is that it does not look very nice with the entire cell on the sheets and it makes it look unsightly and this may put the Microsoft Excel user off.

4.1 Test schedule (A02.28)

Booking system test form

Tester:	Taran Athwal	System designer:	Bhairavi Saravanamuthu
Signed		**Date**	09-01-2007

Test No	Test procedure	Expected result	Completed tester		Completed system designer
			Actual result	**Pass / fail**	**Further work needed on system**
1	**Menu page: macros**	Go to doctors appointment page and changes according to the doctor that was clicked.	The macros work well, and take the user straight to the doctors appointment page, but doctor's name does not change	fail	Re-record macros, but this time, whilst recording macros, change the doctors name as well.
2	**Appointments page: combo boxes**	Change of name for each address, DOB etc.	Day and doctor combo boxes do not work, when you click on a certain day, the date does not change, but the name changes according to the postcode.	fail	Change the combo boxes and index formula for the day and so that, the date is correct according to the day that is meant to be on the date.
3	**Post appointment button to schedule page**	Selected information on combo boxes, is booked as an appointment to the schedule page	When you select the doctor, and the patient's details in the combo boxes and then click on the post appointment macro, excel automatically inserts the information into the schedule page.	pass	
4	**Name ranges**	This should highlight the name range in the cells, according to the range selected from the drop down name box on the top left.	The name ranges successfully highlight al of the names in the category, when I click on the D.O.B, excel automatically highlights the D.O.B column.	Pass	
5	**Appointments page: freeze panes.**	The freeze pane should enable you to see the headings of the days/dates and the combo boxes at the top of the page, whilst scrolling down, so that information is inserted correctly.	I can scroll down the page without moving the combo boxes at the top; therefore the receptionist can make as many appointments as possible and still can see the combo boxes at the top of the page.	pass	

Test No	Test procedure	Expected result	Completed by tester		Completed by system designer
			Actual result	Pass / fail	Further work needed on system
6	**Appointments page: index formula**	The information selected in the combo boxes are to be shown underneath them so that, the person is aware of the information that is selected.	The index formula works productively. When I select some information from the combo boxes, the index formula at the bottom will change, and display the information clearly	pass	
7	**Concatenate function, on appointments page.**	should have all of the patients name (in drop down menu) in Doctors appointments	Concatenate function error	Fail	Redo concatenate formula [eg. (=CONCATENATE (C1019, D1019)].
8	**Appointments page: protection sheet/ locked and unlocked cells.**	You cannot alter data on booking software	Says that you cannot modify the worksheet, it is protected and is therefore read-only	pass	

4.2 Test feedback and actions required (A02.29)
- Where our system has failed a test, you should explain in detail what action you need to take, and how effective the action was once taken.

Date	Task	Problem Identified	Solution
Front End			
29-09-06	Gridlines	On menus page, there are gridlines present.	Click on 'tools', and underneath the section that says 'window options' click on the tick-box that says GRIDLINES to unmark it.
29-09-06	macros	The macros do not take the user to the patients page	Re-record your macros and make sure you change the doctors name each time you record that doctors macro.
Patient Records			
21-09-06	Importing data	There are no patients in the database	The data will need to be imported by using the importing function. Import the (.txt) file that is called 'Patients'
24-10-06	concatenate	The patients' names are not appearing under concatenate column. Instead '#NAME?' is there, with a comment box.	Check that the formula is correct, and in the form of: '=CONCATENATE,text1,text2,…' E.G =CONCATENATE,c2,d2
Calendar			
10-10-06	Practise not open weekends	When dragging the days down, they include Saturday and Sunday	Write out the days(Mon-Fri) for 2 weeks and then drag it down.
Appointments : all processes			
10-10-06	Drop-down menus	D.O.B was not linked to the patients name	We had to link everything by u sing the cell link c2.
2.11.06	Index form on appointments page	Not working according to the drop down menu	Re-do the Index formula and ensure that you use the same cell that is on the cell links page as the drop -down menu.
17-10-06	Freeze panes	When scrolling down, the drop-down menus go as well.	Click on the cell under the drop -down menus, and click on 'freeze panes'
Validation and Verification			
14-11-06	Name ranges should be correct	Some of the last names have not been selected in when I select the 'surnames' range	Define the named range, ensure that all of the required data is now selected. When it has been defined, double check that is selects all of the correct data.
02-12-06	Lots of red and green lines under some words	Spelling and grammar errors in write up	go onto the spell check, some may not need to be modified, ensure that you check which ones do and don't
02-10-06	Date of birth is not in correct format	The date of birth is not understandable on the spreadsheet, digits appear	Right click on cell and click on format cells, make sure that it is set to the date.

Date	Task	Problem Identified	Solution
Schedule			
21-11-06	Should post an appointment.	The button does not work, when you click, no effect	
21-11-06	Should post an appointment.	Macro that should post the appointment does not work	Re-record macro, ensure that you do not navigate from page to page unnecessarily.
Cell Links			
Protection and password			
23-11-06	Password asked to modify data.	This was not asked. I could unprotect the sheet just by selecting it.	Set a password, but record the password so that you do not forget as it cannot be retrieved.
VB Code			
12-10-06	Visual basic	1's appearing everywhere	Select the cells that need to be used, click on format, and use Conditional Formatting
12-10-06	Visual basic	Visual basic not working	Check code, otherwise, use the Concatenate function.

This is my logbook. It shows that a lot of mistakes and errors occurred in process of making a system that functioned appropriately.

A02.31

Before computers and other electronic based methods were introduced in health centres, manual systems had to be used. This meant that the appointments, the doctor's details, the other employees' information, patient records, etc, had to be handwritten. Using a handwritten system was and still is very time consuming and just not suited for hospitals. The designer would need to make a database all by hand; this is not a very effective way to do this as the designer's handwriting may not be very legible. The designer would have to start over if they made a mistake and they would get fed up if they had to make a very large database for all the hospital. It would be even less appropriate if the designer/s had to redo the whole database, details, booking system, etc if the data was destroyed due to an unfortunate event. If it were a large hospital a lot of storage would be required and the hospital may not be able to provide that. The information will not last for a very long time as it can get destroyed easily. The data cannot be altered and it is vital that a few back up copies are made, just in case. Another problem is that the data can be easily tampered with. The most protection it could have was most likely to have been a padlock.

A computer based system on the other hand is very efficient and easy to use. It is legible and it is likely to last for a very long time. The data can be easily altered

Task 5 User documentation
You need to prepare and test documentation for users of the system as follows:-

5.1 User manual (A02.42) *(5 pages + screenshots/diagrams)*

- You should prepare a brief user manual giving instructions for 10 common tasks performed with the system. Five of these tasks will be specified by your teacher, five of them by you.
- Your manual should be suitable for the level of expertise of HHC users. This is one of the things you considered in task Task 1.

5.2 User manual testing (A02.42, A02.44, (A02.45) *(2 pages)*
- The user manual should be tested by another pupil to ensure that it is fit for the intended purpose.
- You should record your tester's feedback and explain the steps you need to go through to improve the documentation.

5.3 Technical documentation (AO2.43, AO2.41) *(1page + screenshots/diagrams)*

- You should prepare brief technical documentation listing all the macros in your system. Explain what each macro does and include a copy of the code.

If your system design does not include macros, give a full explanation of your use of data validation and cell and worksheet protection .

If you have used some alternative software (e.g. Access), speak to your teacher about how to complete this section of the coursework.

Task 6 Evaluation of your system

6.1 Explanation of a non -ICT system (A02.32)
- Provide a detailed description of how the receptionist's requirements could be met by using and non-ICT system.
- The receptionist will need to create something that wil store the patients records and also the appointments.
- He/She will need to have the name, address, doctor, d.o.b, date of the app.
- If there is a new patient the receptionist will need to make give them a paper based form.

- They will need a filing cabinet to store data   f.d
- Back ups in the form of a hard copy(photocopy) (no electronic back up)f
- It will not get faulty.
- Training is not needed.f
- Time consuming to edit.d
- Other's may not be able to read(illegible)
- Wastes paper
- Appointment slips would have to be hand written/type writer.
- Lots of diary sheet (should have sufficient slots).
- Time consumer because there isn't an erase button, so u would have 2 do it again
- No electricity usedadv
- No virusesadv
- May be destroyed easily even though it's a long lasting fngi majigi

f. featcha
adv
disadvantage - D

- Explain what files would need to be maintained, how they would be updated and kept and how communications would be issued to patients.

6.2 Benefits and limitations of your system (A02.15, AO1.14, A01.15, A01.35, A02.32, A02.33, A02.33, A02.34, AO3.12, A03.34)

Features.

1. Book appointments
2. diary slot
3. menu page
4. print out appointment slip
5. patient records=master data
6. schedule
7. validation- to check accuracy
8. calendar-available dates.

Beneifits to user

1. **receptionist**
2. **doctors**

1. accuracy(compared to manual system)
2. easier to understand
3. less time consuming
4. contacting the surgery:
   a. phone
   b. email

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        c.   physically visiting centre

5. minimal typing
6. data stored at centre point (hardrive/network drive)
7. space (large storage capacity)

Limitations to user-draw backs(ur software)

1. LED screens not displayed
2. emails not activated
3. no passwords (security)
4. liable to get virus
5. does not auto save/auto backup.
6. backup system needed
7. need to change for every doctor
8. manually add patient.
9.

</div>

- Explain the benefits that your system would provide compared to a non-ICT system
- Explain the limitations of your system: what it cannot do, or does not do well.
- In particular, explain any limitations presented by the software that you used to build your system.

6.3 Improvements to your system, and what you have learnt (A02.29, A02.30, A02.32, A03.15, A03.13, A03.14)

- List and explain the main changes you have made to your system during its development.
- List and explain any further changes you think ought to be made to your system, indicating:-
    - (a) What work would be involved
    - (b) What benefits these changes would provide to users
- Briefly list the main things you have learnt from developing your software system.

Task 7 Investigation of a clinical system

Many medical practices use a clinical system to carry out appointment bookings.
A clinical system is more complex than the system you have built. Booking appointments is just one of the functions these systems perform. A clinical system will probably be used to:

- Maintain patients' details and medical records
- Control and formulate prescriptions
- Record doctors' consultation notes

You need to prepare:-

- a brief report investigating a clinical system
- notes for a stand-up presentation about how a clinical system changes working practices

Your work should have the following structure:-

7.1 Introduction (A04.12)
- Identify a clinical system currently in use in a real practice. Explain who makes this system, and give a brief account of what the clinical system does.

7.2 Comparison between a clinical system and your system (A02.15, AO1.14, A01.15, A01.35, A03.34, A04.12)
- Explain what functions the clinical system will perform, and set out how they differ from those of your own system.

7.3 What changes when a clinical system is introduced (presentation notes) (A04.12, A02.35, A04.13, A04.14, A04.15)
Bullet points are sufficient for this task, provided that enough detail is provided. You do not need to prepare presentation slides.

- You should prepare notes for a stand-up presentation explaining the changes to working practices and job roles when a clinical system is introduced. You should consider the need for training requirements.

Task 8 Building a LAN for the Health Centre *(2 to 5 pages + screenshots/diagrams)*

HHC is considering whether to install a local area network (LAN). You need to prepare a report on this subject, addressed to the director of the Health Centre. Your report should have the following structure.

8.1 LAN configuration (A01.23, A01.24 A01.23)
- You should recommend a configuration (structure) for the HHC local area network. Present this by means of a diagram illustrating how the Centre's hardware would be attached to the LAN.
- You should show possible alternative configurations and justify your recommendations

8.2 Hardware listing and budget (A01.22, A01.23)
- You should prepare a list of recommended hardware to meet HHC's network requirements. The list should cover servers, workstations, printers and scanners.
- You should support each recommendation with evidence of research into specifications and costs.
- From your hardware list, you should estimate a hardware budget for the HHC network.

8.3 Benefits and recommendations for the LAN (A03.15)
- Explain the benefits which a LAN will provide to HHC.
- Set out recommendations for future enhancements to the network, stating why they might be necessary or beneficial.