OCR Exemplar Coursework

Shelley Academy Room Booking System

Definition

Shelley Academy is located in a small town in Worcestershire. There are 800 pupils in the school. Pupils attend school between 9am and 4pm and most live in the local area. The school offers GCSE, A-Level and BTEC qualifications.

There are many rooms on the campus, which are "special rooms" because of their facilities. For example, some rooms have many computers for pupils to use during lessons, whereas others have headphones and televisions for the modern languages department. Some rooms contain a projector for the viewing of media.

There is also a lecture theatre which seats up to 200 people.

There are 70 teachers in the school, any of whom may want to make use of the special rooms. Mr Dattani is a teacher in the school who has special responsibility for co-ordinating room bookings. He will be my client. The other teachers in the school will be able to book rooms so they will be users of my system and their needs will have to be considered too. He wants a system which will allow multiple users to book rooms, change existing bookings, download bookings as a file and also be better than the current system in terms of user friendliness.

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*a(i) **Definition:** a brief description of the organisation or group that has the problem and an introduction to the client and/or the end user(s) and their place within the organisation or group (1)*

Candidate would gain the mark here. They could also have shown an organisation chart of the company in addition to this, or on its own with some annotation.

The current system uses a variety of linked worksheets in a spreadsheet. This does not work effectively for a variety of reasons outlined in the following pages, so a new and more sophisticated system is required.

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*a(i) **Definition:** an outline of the problem that needs to be solved (1)*

Candidate would gain the mark here.

Initially, Mr. Dattani wrote a letter to me, which defined the problems associated with the current system. This is shown on the next page.

a(i) *Definition: an outline of the problem that needs to be solved (1)*

Although this is not essential at this stage and would not receive extra marks here, good, ongoing communication with the client needs to be evidenced so it would be good practice to keep copies of communication. Any letters should be on headed notepaper, emails should be from an 'official' organisation address and letters should be signed.

Mr. R. Dattani
Room Bookings Co-ordinator
Ext. 267
rdattani@shelleyacademy.ac.uk

Shelley Academy
2 Learning Street
Coventry
CV56 7GY
(01533) 409876
admin@shelleyacademy.ac.uk

6th September 2008

Dear Miss. Howard,

As discussed on the phone, we currently have a room booking system which we use. It was designed by one of the ICT Staff, and has many flaws. It is a flat-file based spreadsheet, and shows days with rooms against periods. If a teacher wants to make a booking they go along and find an available room in a given day and period and make that booking. The problems associated with the current system exist primarily because it is a flawed system. Some teachers hate using the system so much that they either don't use the facilities of the school, or they email me to make their bookings.

One of the problems with the current system is that it can only be accessed by one teacher at a time. If the system is opened by another teacher, a teacher trying to access the system will receive an error message. As a result of this, many teachers result to emailing me to make their bookings for them. This is irritating, and sometimes up to thirty emails per day are received based on this.

Another problem is that when a teacher is using the system, they will make their booking and then select the "Save As" option, instead of the "Save" option. This will then create a duplicate spreadsheet which is again, an irritating problem which is left for me to resolve.

The current system also has the issue that it is difficult to interpret by some teachers, and this could be a reason why some teachers tend to avoid using it. It could be said that the current system is not user friendly at all. User friendliness is an important factor to which a new system should contain. Some teachers dislike computer facilities; however it could be said that they are forced to use them for coursework lessons where the pupils need computers to do work.

The current system also contains a lot of null data within it. This is something you can look at when you receive a copy of the current system. This null data should not be incorporated into a new system, as it has no meaning and does not affect the actual room bookings, its more to keep the system neat and tidy.

I would like you to look at creating a new system for the school. The new system should meet a set of requirements which should be established based on the needs of myself and my fellow colleagues.

Would you be interested in designing a new system? I am happy to meet with you on 10th September 2008 for you to observe the current system.

Kind Regards,

R. Dattani

Investigation

Planning of the Interview

Overview

I will be using interviews and questionnaires for the fact-finding element. This is so that I can analyse the results to determine what exactly is needed at the school. An interview will also allow me to go into greater depth with the type of questions I intend to ask and any misunderstandings with the questions can be easily clarified.
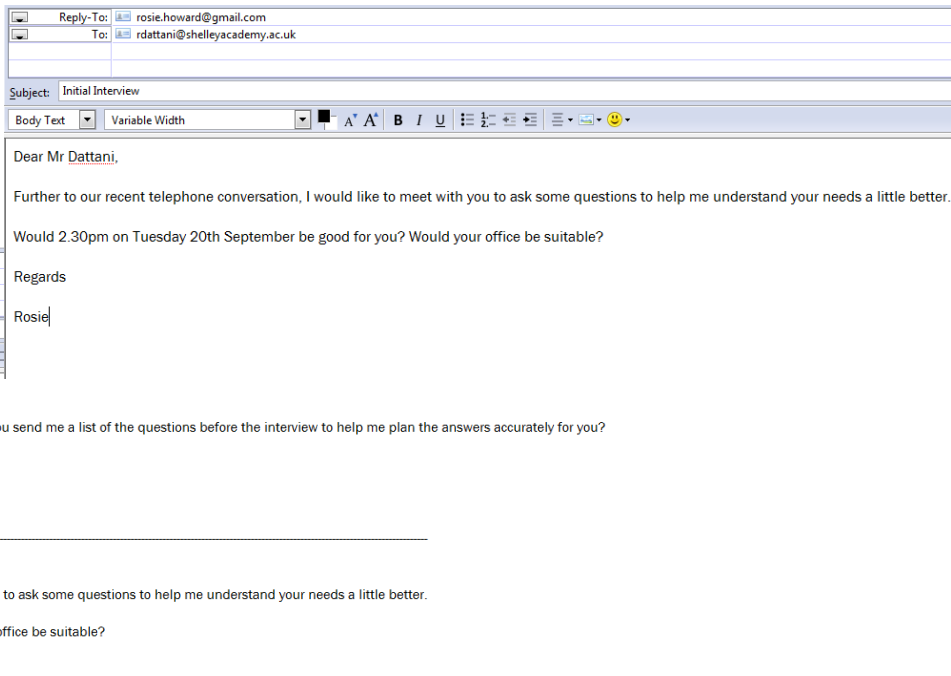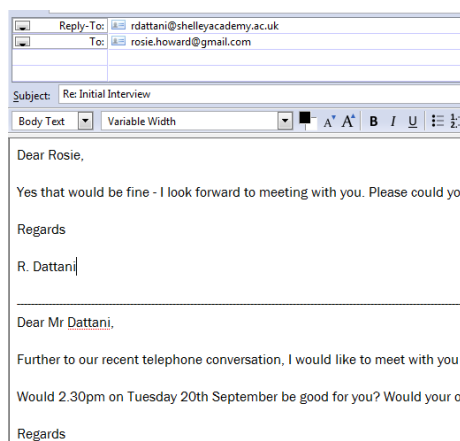
Planning

I will interview Mr. Dattani, the room booking co-ordinator. He will hopefully give me a better idea of what exactly is needed from the system I will design – because essentially, he uses the current system, and he also designed it. I will send a questionnaire to 20 staff members selected at random by Mr. Dattani, in the hope that they can give me feedback on the current system and see what they would find useful in a new system. By analysing their results, I hope I can tailor the system directly to their needs.

Interview Planning

The interview will take place at Shelley Academy in Mr. Dattani's office. It will be with Mr. Dattani himself and my main objective is to find out exactly what he wants from my work so that in the future he will not need to add additional tasks to the list. This will also ensure that the system is made specifically to his needs, and that there will be ultimate customer satisfaction. I will also gain customer satisfaction by using my questionnaire, which I will give to a sample of teachers who use the current system – which will give me a more user approached view of what needs to be incorporated into the new system. This interview will give me the technical details I might need.

I emailed Mr. Dattani to set up a time for the interview.

This is his reply. I forwarded him a list of questions as requested, which are shown on the next page.

Planning the Interview Questions – Current System Investigation

Question/Follow Up Question(s)	Reason
How many teachers are there in the school? How many of these teachers use the computer rooms?	To give me some idea of the size of the data file and the potential number of users that could use the system.
How many teachers actually use the system at the moment?	To give me an idea of how many teachers currently use the system at the moment and how popular it is.
Is security an issue?	So I understand how the security measures work at the moment.
What data is stored in the system?	So I know which tables to make and which data I will need to obtain for input.
What data do staff input into the current system?	To find out exactly what data is stored at the moment.
How is the data inputted into the current system? Is this an easy task to do?	So I know how teachers actually input data into the system and to find out whether it is an easy process to carry out or not
In what format is the data from the booking system outputted to users? Are there any parts that are printed out?	This will help me understand how users view the data from the system and whether any of it is printed out.
What is the main problem with the booking system at the moment?	So I can clarify the main issue with the system at the moment.

Interview Transcript – Current System Investigation

Q) How many teachers are there in the school?

A) About 70.

Q) How many of these teachers use the computer rooms?

A) Potentially all of them. There are probably a few who don't.

Q) How many teachers actually use the system at the moment?

A) I am not sure on the exact numbers, but if I were to have a guess, it would probably be about 30% of the teaching staff who do not use the system.

Q) Is security an issue?

A) Yes. At the moment all teachers can access the system and even students can see it, which is an issue. In addition, staff can make changes to certain aspects of it, which could potentially cause huge issues if they were to delete things by mistake!

Q) What data is stored in the system?

A) Times of lessons/room availability, room names and locations, staff names and initials, departments, facilities in the rooms, dates of bookings.

Q) What data do staff input into the current system?

A) They currently pick the week (from worksheets) they want, then locate the day on the page and enter their initials in the box for the lesson/time slot and room they want (provided no-one else has already got their initials in there)

Q) How is the data inputted into the current system?

A) As I have just mentioned, they use a combination of the keyboard and mouse to type in/select data.

Q) Is this an easy task to do?

A) If you know how the system works, then yes. We do have a lot of teachers who are not that confident with technology and they are often the ones, who will be scared to type in data and use the system, because they are worried about doing something wrong! Once you know how to use the system, it's fine, but could be a lot better!

Q) In what format is the data from the booking system outputted to users?

A) Each week is presented on a different worksheet and within each worksheet there is a list of the different days. For each day, the rooms are listed and also the teaching periods. Some colouring is

Q) Are there any parts that are printed out?

A) No, it is just available onscreen for users.

Q) What is the main problem with the booking system at the moment?

A) It would be the fact that not all users find it easy to use and it could be much better. I am also finding it very difficult having to now take charge of all of the room bookings via email, seeing as a lot of users have simply given up using it altogether.

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a(ii) **Investigation:** *record of key responses, demonstrating two-way discussion (1)*

The candidate has provided a transcript, which indicates some discussion and follow-up questions were used. This will gain the 1 mark.

Additional Information Collection

In addition to doing an interview with my client, I also gave out a questionnaire to various members of staff asking for their views. I asked Mr Dattani's advice and gave the questionnaires to some staff who used the system a lot and some who did not use it very much to give me an idea of the needs of a variety of users.

I also observed the current system as Mr Dattani gave me a copy of it to take away and look at in detail.

Questionnaire

The questionnaire I gave to 20 teachers is shown on the next page.

Room Booking System Questionnaire:

The main aim of this questionnaire is to find out exactly what the users of the Room Booking System find annoying about the old system, and with careful analysis I hope to find out what you will require from the new system.

1. How easy to use do you think it is to use the current system?

   1   2   3   4   5   6   7   8   9   10

   Hard   Easy

2. Do you think ease of use an issue when it comes to making bookings?

   Yes   No

3. Does it annoy you when the system has already been opened by someone else and you are trying to make a booking?

   Yes   No

4. Do you find the current system confusing in any way?

   Yes   No

5. How often do you make a booking per week (approximately)?

   Less than 1

   1-3

   4-7

   8-10

   10-13

   13+

6. How often do you make a double booking per week (approximately)?
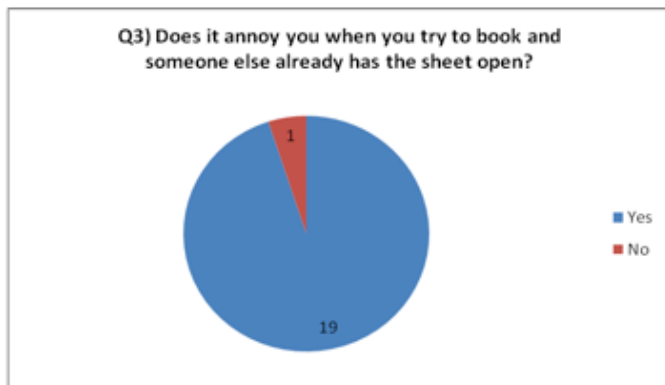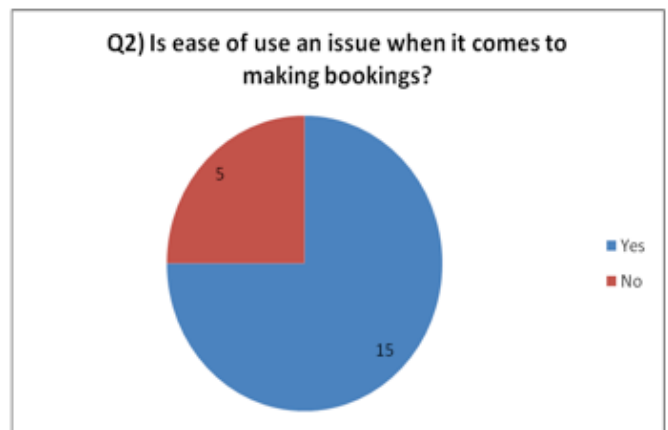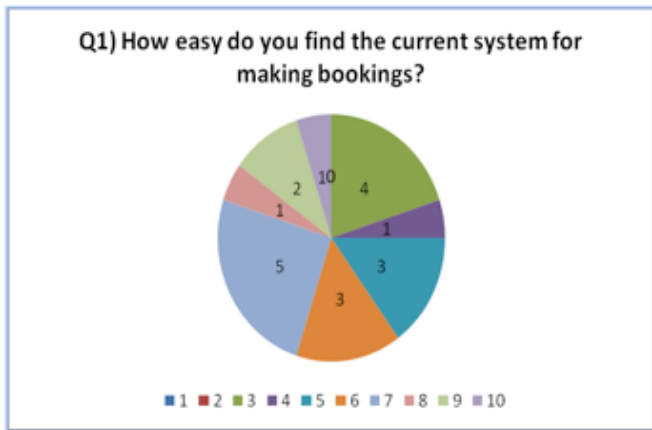
   Less than 1

   1-3

   4-7

   8-10

   10+

7. Do you have any comments with regards to the current system and what improvements you would like to see on a new system?

   _____

   _____

   _____

Current System

A screenshot of the current system is shown below. The problems I have observed are as follows:

Mar-09		Period 1 03:00	Period 2 00:00	Period 3 00:00	Period 4 12:00	Lunch 13:00	Period 5 14:00	Period 6 15:00
IT-RoomA	25	CHK		SCN			PTK	MW
IT-RoomB	22		GRB	GRB	DNP		MD	FED
IT-RoomC	24	HPB	HPB	HPB	HPB		KCL	HPB
IT-RoomD	25						KET	CPM
Laptops 10	10							
Laptops 10	10							
LectureRoom	24				AC			
LRC-	24	AC		AC	MW		AC	AC
LRC-	25		LZS 24	pjm 25			pjm 25	JLB
IT-RoomA	25	Rws	MMH	TLC	CHK		HSB	
IT-RoomB	22	jsh	GRB	FED	GRB		JAH	
IT-RoomC	24	CAJ	TAJ	HPB	TAJ		HPB	
IT-RoomD	25	CPM						

- Looking at the different sheets at the bottom of the page, each time a new week begins a new sheet must be created. This is time consuming and also a waste of network space.

- The system can only be opened by one teacher at a time and if a teacher tries to open the system while it is already opened, an error message will appear.

- There is no way of actually confirming that the booking has been made, a teacher puts in their initials and then closes the spreadsheet, with no confirmation message.

- There are invalid initials, such as "Dummy Initials". If a new teacher has to be added, the entire list must be reedited.

- A good point about the system is that if the teacher only needs a certain number of computers, then they can write their initial and a number next to it in regard to how many they need. In this way, two sets of classes can use the system.

- The system needs weekly maintenance, something which costs money and labour to the school

- Another good point about the system is that a weekly view can be seen, and when double periods need to be booked, a teacher can see which room is free for a double.

- When a teacher opens the system and makes a booking, sometimes they click "Save As" and make two copies of the spreadsheet, which is irritating for others as there are then two copies of the spreadsheet. This causes confusion and requires the room booking manager to resolve it.

OCR GO64 Exemplar Coursework

Q1) How easy do you find the current system for making bookings?

Q2) Is ease of use an issue when it comes to making bookings?

These pie charts show the breakdown of answers to the some of the most pertinent questions in my questionnaire. They back up what Mr Dattani told me about some of the problems in the current system and show how important it will be to make a system which is easy to use, with multiple concurrent user access.

The first graph shows that most people answered between 1 and 5 on the question about how easy the current system was for making bookings. The answers in the 1-5 range show that it is quite difficult for most users.

Q3) Does it annoy you when you try to book and someone else already has the sheet open?

This is the data flow diagram for the current system, which will help me in understanding how it works.

OCR G064 Exemplar Coursework
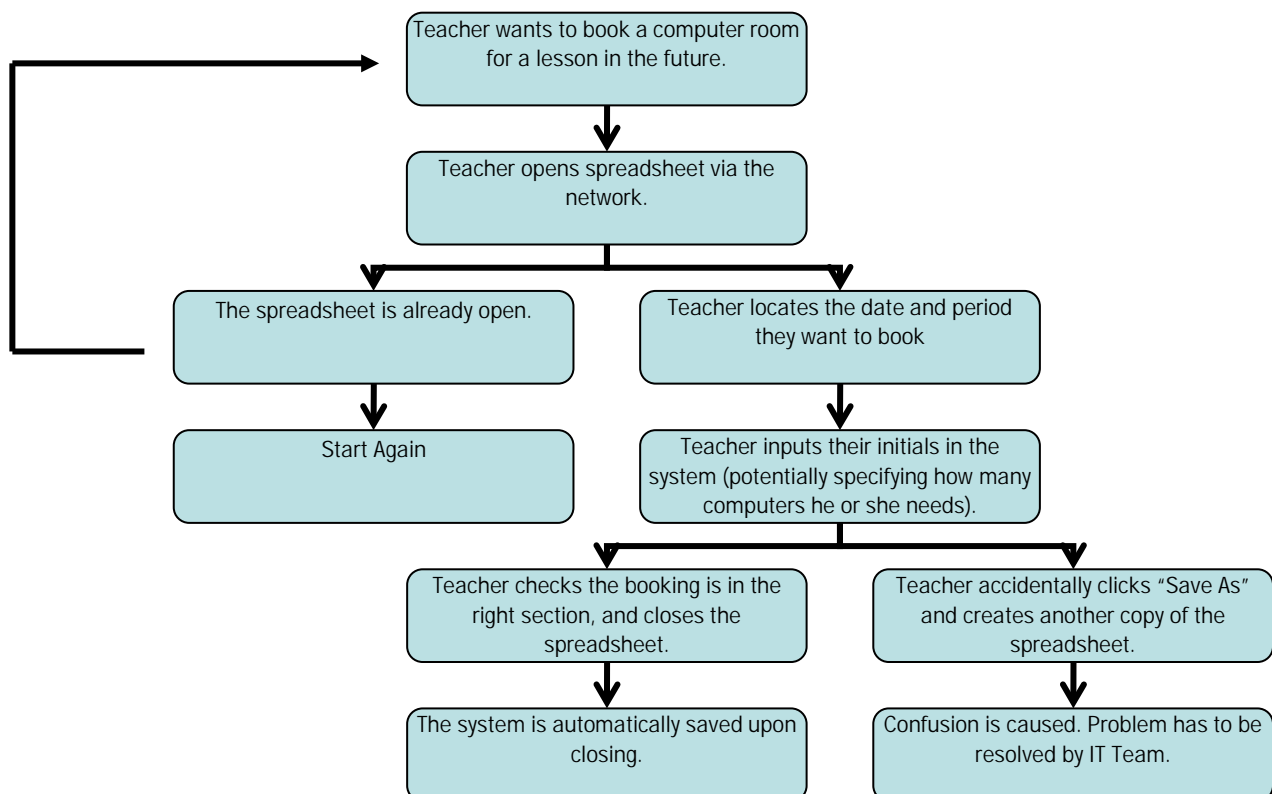
Summary of the Current Situation

The school has computer rooms which the teacher books. The school is split into two sections, pupils and teachers. The teachers are the ones who make the room bookings. The school day is between 9am and 4pm. The lesson periods are only between 9am and 4pm, and there are six periods per day. These are the only times in which computer rooms and projecting facilities will be required. Most of the teaching rooms have one computer linked up to a projector for presentation capabilities.

The current system is highly flawed for many reasons, and so a new system must be designed for the school to use. The problems with the current system, to name a few are; only one person can use the spreadsheet at one time, some teachers leave the spreadsheet open accidentally, preventing others from using it, the information displayed is a lot to digest for the teachers because of the layout. Both the room booking co-ordinator and the teaching staff who use the system have problems in finding their way around the system, searching it and getting an overview. It is hard to print reports of usage and free rooms, which would be helpful to the co-ordinator.

Problems
- The current system can only be accessed by one teacher at a time.
- The current system can look quite confusing to some people.
- There is unnecessary data in some of the cells of the current system.
- The only confirmation, which the staff member receives, is that they have entered their initials into the system – there is no feedback from the system.
- Anyone can go and overwrite another booking, and there is no record of this happening.
- Reporting and searching are not easy.

As a result from the issues identified above, it can be concluded that the system is not reliable in its current state and there is a big risk of data being accidentally deleted or altered by users, due to the lack of security features. This can potentially lead to double bookings and conflict between staff, even if they have used the system and technically made their booking, following the correct procedure. The system does not aid the day-to-day duties that teachers have to carry out and it can also add some element of stress to both teachers and also the client, who often has to make bookings on behalf of teachers who are unable to use the system. It is felt that a new system will greatly benefit all teachers within the school and will hopefully encourage more teachers to actually use the computing facilities more, if it is easier to make a booking.

Client Agreement:
I, Mr Dattani, agree that the above represents the issues we are facing with our current system and is an accurate representation of the problem in hand.

Signed
Date: *R.Dattani*

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a(ii) **Investigation:** *evidence of analysis of the current system or of likely problem areas, arriving at reasoned conclusions that will show evidence of being agreed by client. (3)*

The candidate has attempted to analyse the information they have gathered and has defined the issues clearly. They have also discussed the conclusions made following their information collection. They have this signed by the client to agree to it. This would gain 3 marks.

Planning the Interview Questions – New System Investigation

Question/Follow Up Question(s)	Reason
Do you think that the issue of speed is important? I.e. being able to quickly open the system and make a booking and then quickly close it? Would this imply that the system must be accessible from all computers across campus? Would you need shortcut keys?	To give me an idea of the file sizes involved and any networking issues. I will also need to know if shortcut keys are required so I can build these into the design.
How often would the average teacher use the system? Do some teachers use it more than others? Do some teachers not use the system at all? Are these teachers part of a specific department who do not use the system at all?	I need to know if there are any staff who don't need access to the system or departments who don't need to be included.
What is the main task you want your system to do? What other tasks are important for the system to perform?	This will ensure I build a system which does what it's supposed to do.
Will the teachers need a user guide to instruct them how to use the system? Would this be more useful in hard copy or electronic format?	I need to know what sort of user guide to write for them.
Will you need the data to be output as a timetable? Would it be desirable to view the current bookings in a specific room? Would it be desirable to view current bookings for a specific teacher?	This will give me an idea of some of the reports, in addition to those in the current system, which might be useful to the client.
How important are security restrictions for the new system? Do pupils have access to the system and would you want them to access the new system? Which aspects of the system would need to be password protected?	It is important that I set up the right levels of security.
Is there anything missing from the current system which would be useful in the new one?	This will help me design a suitable interface with the relevant information?

Interview Transcript – New System Investigation

Q) Do you think that the issue of speed is important? i.e. being able to quickly open the system and make a booking and then quickly close it?

A) Yes – teachers are busy people, they want a system that is quick and easy to access.

Q) Would this imply that the system must be accessible from all computers across campus?

A) Yes this is essential. It must be multi-user and people should be able to use it at the same time as each other with not problems on the school network.

Q) Would you need shortcut keys?

A) Not really – but buttons to make saving and printing easier would be handy.

Q) How often would the average teacher use the system?

A) Some would use it a couple of times a week, others only a few times a term. Most teachers like to book several slots in one go when they think about it. There are teachers who book last minute though.

Q) Do some teachers use it more than others?

A) Yes

Q) Do some teachers not use the system at all?

A) Yes

Q) Are these teachers part of a specific department who do not use the system at all?

A) No – I would think that every department uses it at some time.

Q) What is the main task you want your system to do?

A) Allow staff to make bookings for specific rooms

Q) What other tasks are important for the system to perform?

A) It should allow teachers to check whether a particular room is free on whatever date and period they want to. It should also allow the room booking co-ordinator to have an overview of the bookings for a period of time.

Q) Will the teachers need a user guide to instruct them how to use the system?

A) That would be really useful, but not something too large – they would want to refer to it quickly if they had problems.

Q) Would this be more useful in hard copy or electronic format?

A) I think both and we can put one in each classroom and office. We could also put an electronic copy on the network next to where the new booking program gets saved.

Q) Will you need the data to be output as a timetable?

A) That would be very handy although the problem is that it would get out of date quickly, with people adding to the bookings regularly.

Q) Would it be desirable to view the current bookings in a specific room?

A) Definitely – then it would be easy to see at a glance whether a room was free or who to speak to if it was already booked. It would also help in case of any issue with computers or equipment being damaged - we could trace back and see who had booked it.

Q) Would it be desirable to view current bookings for a specific teacher?

A) *Yes – teachers often forget which room they booked and when. It would be good to be able to see this. It may also be handy for statistics.*

Q) How important are security restrictions for the new system?

A) *Very important – it needs to have different levels of security. For example, I would want to be the only one who could add new members of staff or amend room details (e.g. how many computers are in a room). But all staff would need to be able to make bookings. I wouldn't want pupils to access the system either.*

Q) Do pupils have access to the system and would you want them to access the new system?

A) *see above answer*

Q) Which aspects of the system would need to be password protected?

A) *Back up procedures, whole system timetable view. It would probably be to complicated to give every teacher a user name and password in order to make bookings so I don't really want that.*

Q) Is there anything missing from the current system which would be useful in the new one?

A) *It would be useful to ensure staff can't overwrite other people's bookings – this probably comes into the security aspect too.*

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a(ii) **Investigation:** *information collected about the requirements of the new system (2)*

The candidate has planned a second questionnaire with questions justified and follow up questions considered. The questions cover all aspects of the new system. This is enough for the 2 marks.

a(ii) **Investigation:** *clear presentation of the information collected about the new system (1)*

The candidate has provided a transcript, which indicates some discussion and follow-up questions were used. All questions have been covered and responses given. This will gain the 1 mark.

Analysis

Requirements Specification

Based on what I have discussed with my client and with the end users, I have reached the following requirements specification.

1	Be easy to operate by all teachers – with user friendly messages and no screen to be more than 3 clicks from the main menu.
2	Be accompanied by a user guide explaining how to use the system.
3	Enable staff to make bookings for specific rooms at specific dates and times.
4	Enable staff to search for availability of rooms at specific dates and times.
5	Contain initials of all the teachers.
6	Contain the first and last names of each teacher and their initials,
7	Contain the name and code of each bookable room
8	Ability to edit information about each bookable room – e.g. numbers of computers (for example if some are being fixed)
9	Comply with the schools colour scheme and font use – this is Arial, Size 12, deep red in colour. Also to follow the design specification shown in the design section.
10	Making a new booking must be accomplished within only 10 clicks of the mouse and unlimited keyboard use.
11	Must be accessible from all areas of the campus, and must have the attributes for this.
12	Multiple users must be able to use the system at one time.
13	Contain a main menu.
14	Contain functions to check current bookings, accessible by all.
15	Contain relevant security measures to ensure bookings cannot be over written.
16	Contain relevant security measures to ensure room details cannot be added or deleted or edited.
17	Contain relevant security measures to ensure teachers and their details cannot be added or deleted or edited.

Client Agreement

I, Mr Dattani, agree that these requirements are as discussed and I am agreeable to the project being undertaken by Rosie Howard based on this requirements specification.

Signed: *R. Dattani*

Date:

Alternative Solutions

1. Off the shelf software which will do a similar task. The advantages being it would be quicker, easier to maintain and also updatable without cost. The disadvantages being that it would not be specific to Shelley Academy, and also would not have specific features built in which have been requested by Mr. Dattani. I have investigated some off-the-shelf packages which might suit the school and have found the following features amongst most of them:
   - find free rooms quickly
   - resource bookings
   - recurring bookings
   - infinite bookings
   - manage when bookings can be made
   - printable booking sheets
   - authorise bookings
   - one-off timetable exceptions
   - booking details
   - transfer bookings
   - email notifications
   - individual user accounts with different levels of security
   - backup to a UK based server
   - email based support
   - produce statistics and reports.

Using this type of system would require all teacher details to be entered into the system manually, which could be irritating. If the company who provide this solution stop operating as a company, then the support which they offer would be gone. The entire system is online based. If a computer does not have internet access, this is not a solution. If there is an issue with the internet within the school – then this is not a solution. Systems like this cost £210 per year, with an initial set up fee of £410.

2. Continue using the old software after an upgrade – however the original software is a flat file spreadsheet and does not give information about room locations. It does not show everything on just one screen, and the user has to navigate around the spreadsheet to find different information. It is just an inefficient system – and looks more like a temporary solution rather than a long term one. It would be possible to redesign it and make it more efficient, but this would still not be able to do what the room booking co-ordinator wants.

3. A relational database system is the 3rd alternative I considered. There are many advantages of a RDB system which should help the client achieve the things on their requirements specification. It would be easy to organise and update data files – e.g. staff lists could be imported from the school database easily and updated throughout the year. Reports would be easy to produce and a much more user friendly interface could be designed in a database. The problem of not being able to have two people working on it at once would also be resolved by a networked database system. In addition, security is easily set up to allow different levels of access to different users.

I have discussed all of the options with the client and we discussed the points below in making the decision to design a relational database system.

Factors for Consideration:

- Costs of buying an off the shelf solution versus costs of designing a custom-built solution.
- If the school merges with another school for example, would it be easy to merge the teacher data and room data. The same goes for if the teacher list expanded and new buildings with computer facilities were built. Will the system be able to cope with the new amount of teachers and rooms?
- Educating the current teachers on how to use the system. The new system should not be hard to use at all and therefore training required will be minimal. Also – the new system will contain instructions on forms where it may be unclear on what they must do. Validation where appropriate will be used.
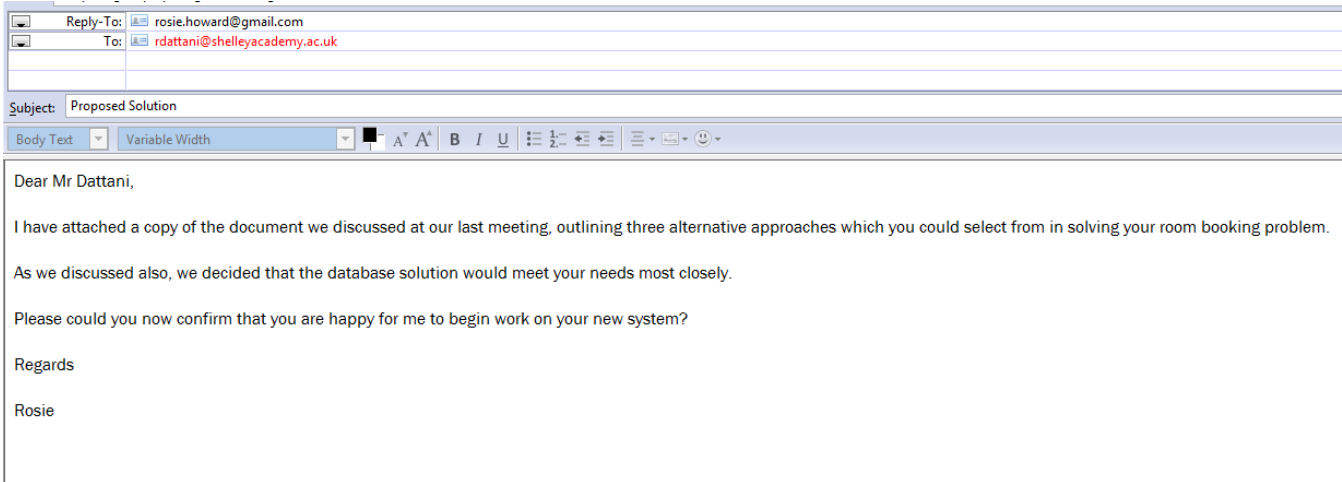

Benefits for the school of using a relational database:

- The custom written software will be written to the specifications of Mr. Dattani, and therefore should be exactly what the school will require.
- The old system will no longer be in use and therefore the school will benefit from not having the problems the old system had.
- Customer satisfaction should be achieved, due to the fact that Mr. Dattani will be specifically asking for different requirements, and therefore the customer should be happy.
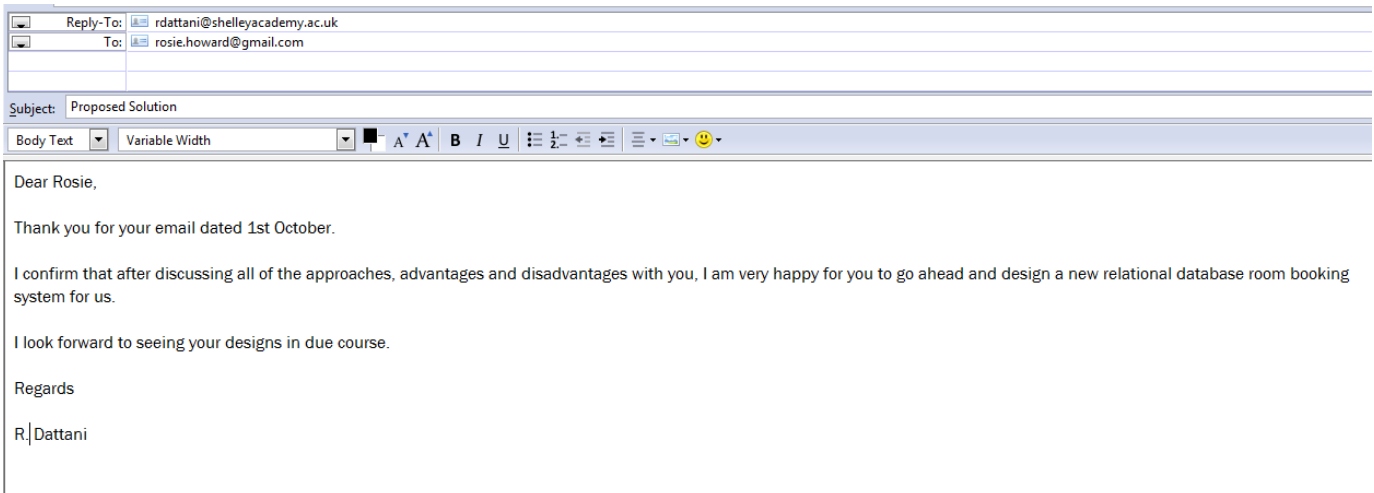- The school will have an increased morale due to working with a better system.

Costs involved in creating the solution:

- Purchasing new hardware – if the campus computers do not meet the hardware specification of the software, they will all have to be upgraded, OR one computer will have to be upgraded and all teachers would have to make bookings from that computer. However – it is likely that all computers within the campus are able to run the system I design.
- The new system will be costly to install, because if it is to be accessed from all areas of campus, then each individual computer will have to have the new system (and maybe software) installed, which would include not being able to use each computer at some point – and also the inconvenience of having to employ somebody to do such a job. If each computer already has Microsoft Access installed, then this won't be an issue. Also, if the main file is placed on the network where all teachers can access it, this cost will disappear.
- There would be general development costs, as once the system has been implemented, it may have to be re-tailored to suit the needs of the school just slightly – and also maintaining the system would cost the school to have to employ somebody to make such changes. Some costs may occur after implementation.
- Personnel costs would apply to this system – practical management and administration of running the system would be required. This costs money.
- There would also be operating costs, which include things like keeping a main server computer on which holds the data for the database – consuming electricity. This will be the computer which holds the hard-drive which is on the common network – which is accessible during the day anyway. Operating cost also include the maintenance of the system as mentioned previously.

After our meeting, at which we discussed all of the above points, I wrote an email to Mr Dattani:

| Reply-To: | rosie.howard@gmail.com |
| To: | rdattani@shelleyacademy.ac.uk |

Subject: Proposed Solution

Dear Mr Dattani,

I have attached a copy of the document we discussed at our last meeting, outlining three alternative approaches which you could select from in solving your room booking problem.

As we discussed also, we decided that the database solution would meet your needs most closely.

Please could you now confirm that you are happy for me to begin work on your new system?

Regards

Rosie

His reply is below:

| Reply-To: | rdattani@shelleyacademy.ac.uk |
| To: | rosie.howard@gmail.com |

Subject: Proposed Solution

Dear Rosie,

Thank you for your email dated 1st October.

I confirm that after discussing all of the approaches, advantages and disadvantages with you, I am very happy for you to go ahead and design a new relational database room booking system for us.

I look forward to seeing your designs in due course.

Regards

R. Dattani

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a(iii) **Analysis:** *a comparison of a number of different methods of solution, one of which may be the present solution and at least two others to allow a reasoned decision to be made in consultation with the client (3)*

The candidate has given 3 alternative solutions, using generic software rather than specific applications. They have considered the advantages and disadvantages – in particular of the chosen approach. They have discussed it with the client and have written authorisation to continue to the chosen approach. Although they have attempted to discuss the requirements, this has not been done in sufficient detail. Candidates should ideally discuss each requirement and investigate whether each could be realistically achieved, using the various methods. This would achieve 2 marks.

Hardware and Software Requirements

Hardware/Software	Justification of item
Pentium 233Mhz processor equivalent or higher – Pentium III recommended	Required for running software effectively and efficiently
128Mb Random access memory for operating system (Windows XP) or higher 512Mb – 1Gb recommended	Required for running software effectively and efficiently
450 Mb Hard Disk space or higher 2Gb recommended	Required for storage of software and also files which are made which are the system file
A super VGA monitor supporting at least 800pixels x 600pixels resolution. Also must have 256 colours minimum	To output the graphics which the software displays, so the user can understand what the system is doing
A pointing device, such as a mouse	To navigate around the system properly to make changes and select different options
A typing input device, such as a keyboard	To input different commands which the system will understand with reference to making new bookings and editing existing ones and deleting them completely
Microsoft Access 2000 or higher Access 2003 recommended as there could be compatibility issues with Access 2007 on the School computers.	To run the system on
Operating system such as Windows 2000 or XP	To run Microsoft Access 2003 on
Relevant network hardware and software to ensure system can be accessed from all areas of campus	To ensure that everyone can access the system across the campus for convenience and ease of use

Design

Nature of the solution

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*a(iii) **Analysis:** a reasoned list of hardware and software requirements for the new system, providing clear justification for each choice in relation to the problem to be solved (3)*

The candidate has made a good list of hardware and software and has justified all choices. However, they haven't linked their justifications thoroughly enough back to the requirements specification so this would achieve a maximum of 2 marks.

I firstly set about designing all of the data handling in my new system. I looked at data entry screens.

Entity Relationships

Relationship	Type
tbBookings2 to tbRooms	1 to Many
tbBookings2 to tbCurrentTeacherData	1 to Many
tbBookings2 to tbPeriod	1 to Many
tbRooms to tbBuilding	1 to 1

File and Data Structures

File Name: tbBookings2

Location: RoomBookings.mdb

Purpose: Holds data about bookings made

Field Name	Description	Data Type	Length	Sample Values	Validation expected
BookingID	Primary Key	Auto number	Long Integer	183	None: Auto generated
BookingRoomReference	Which room has been booked	Text	4	ITH1	Look up
BookingTeacherInitials	Which teacher has booked the room	Text	3	RJD	Look up
BookingDate	Which date the booking is on	Date	8	12/12/09	None, user has selected the date personally
BookingPeriodID	Which period of the day the booking has been made	Number	1	4	Look up

File Name: tbBuilding

Location: RoomBookings.mdb

Purpose: Hold data about the different buildings

Field Name	Description	Data Type	Length	Sample Values	Validation expected
BuildingID	Primary Key	Auto Number	Long Integer	2	None: Auto generated
BuildingAddress1	The address of the building	Text	50	Humanities	Look up
BuildingReference	The reference of the building	Text	3	LRC	Look up

File Name: tbCurrentTeacherData

Location: RoomBookings.mdb

Purpose: Hold data about the teachers

Field Name	Description	Data Type	Length	Sample Values	Validation expected
LecturerID	Primary key	Autonumber	Long Integer	4	None: Auto generated
Name	The full name of the teacher including prefixes	Text	50	Mr Rohil Dattani	Look up
Owner	The department who owns the teacher in question	Text	20	PE	Look up
Title	The title of the teacher in question	Text	5	Mr.	Look up
Forename	The forename of the teacher in question	Text	20	Rohil	None
Surname	The surname of the teacher in question	Text	20	Dattani	None
Gender	Whether the teacher in question is male of female	Boolean	6	Male	Look up

File Name: tbPeriod

Location: RoomBookings.mdb

Purpose: Hold data about the periods in a day

Field Name	Description	Data Type	Length	Sample Values	Validation expected
PeriodID	Primary Key	Number	1	3	Look up
PeriodStart	Time of day the period starts	Text	5	09:00	Look up
PeriodEnd	Time of day the period ends	Text	5	12:00	Look up

File Name: tbRooms

Location: RoomBookings.mdb

Purpose: Hold data about the rooms within the school campus

Field Name	Description	Data Type	Length	Sample Values	Validation expected
RoomID	Primary Key	Autonumber	Long integer	8	None
Location	Which building the room is located in	Text	10	LRC	Look up
RoomBuildingID	The primary key of the building ID which the room is located in	Number	3	4	Look up
Num of Computers	Information about the number of computers in a given room	Number	3	102	Look up
Projector	Whether the given room has a projector or not	Boolean	3	No	Look up
I-whiteboard	Whether the given room has a whiteboard or not	Boolean	3	Yes	Look up
RoomReference	The room reference which all know the room as	Text	5	ITH1	Look up

Data Processing

The following processes take place in my system.

1. Creating a new booking:
   - i. User opens the system
   - ii. User clicks the "Make a Booking" button
   - iii. Booking form opens
   - iv. User clicks "New Booking" button
   - v. User selects date from the calendar control
   - vi. User selects a period
   - vii. User selects an available room
       - If room required is not available, user clicks "Close" button
   - viii. User either types initials in or selects from drop down menu
   - ix. User clicks "Save Booking"
   - x. Booking confirmation shows up in box below
   - xi. User clicks "Close" button
   - xii. Main menu is shown
   - xiii. User clicks "Close" button again

2. User wishes to view the map of the school:
   - i. User opens the system
   - ii. User clicks "View Map" button
   - iii. When finished, user clicks "Close" button
   - iv. Main menu is shown
   - v. User clicks "Close" button again

3. Supervisor wishes to View/Edit the list of Rooms
   - i. Supervisor opens the system
   - ii. Supervisor clicks "View/Edit Rooms" button
   - iii. Supervisor is prompted for password
   - iv. Supervisor enters password
       - If incorrect, error message is shown and main menu is shown
   - v. View/Edit Rooms form is shown
   - vi. Supervisor makes relevant amendments
   - vii. When finished, supervisor clicks "Close" button
   - viii. Main menu is shown
   - ix. Supervisor clicks "Close" button again.

4. Supervisor wishes to View/Edit the list of Teachers
   - i. Supervisor opens the system
   - ii. Supervisor clicks "View/Edit Teacher" button
   - iii. Supervisor is prompted for password
   - iv. Supervisor enters password
       - If incorrect, error message is shown and main menu is shown
   - v. View/Edit Teachers form is shown
   - vi. Supervisor makes relevant amendments
   - vii. When finished, supervisor clicks "Close" button
   - viii. Main menu is shown
   - ix. Supervisor clicks "Close" button again

5. User wishes to check current bookings based on information about specific rooms and dates.
    i.   User opens the system
    ii.   User clicks "Check Bookings"
    iii.   Checker Selector form is shown
    iv.   User clicks "Rooms and Dates" button
    v.   Rooms and Dates checker form is shown
    vi.   User types in a relevant date
    vii.   User selects a relevant room
    viii.   In the box below these options, the periods are which teacher has booked the room is shown
    ix.   When finished, user clicks "Close"
    x.   Checker Selector form is shown again
    xi.   User clicks "Close"
    xii.   Main menu is shown
    xiii.   User clicks "Close" again

6. User wishes to check current bookings based on information about a specific teacher
    i.   User opens the system
    ii.   User clicks "Check Bookings"
    iii.   Checker Selector form is shown
    iv.   User clicks "Specific Teacher" button
    v.   Specific Teacher checker form is shown
    vi.   User types in a relevant teacher's initials
    vii.   In the box below these options, the bookings that teacher has made is shown
    viii.   When finished, user clicks "Close"
    ix.   Checker Selector form is shown again
    x.   User clicks "Close"
    xi.   Main menu is shown
    xii.   User clicks "Close" again

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b(i) **Nature of the Solution:** *design of data handling, including capture, preparation and storage or design of website to include map and diagrammatic representation of links (4)*
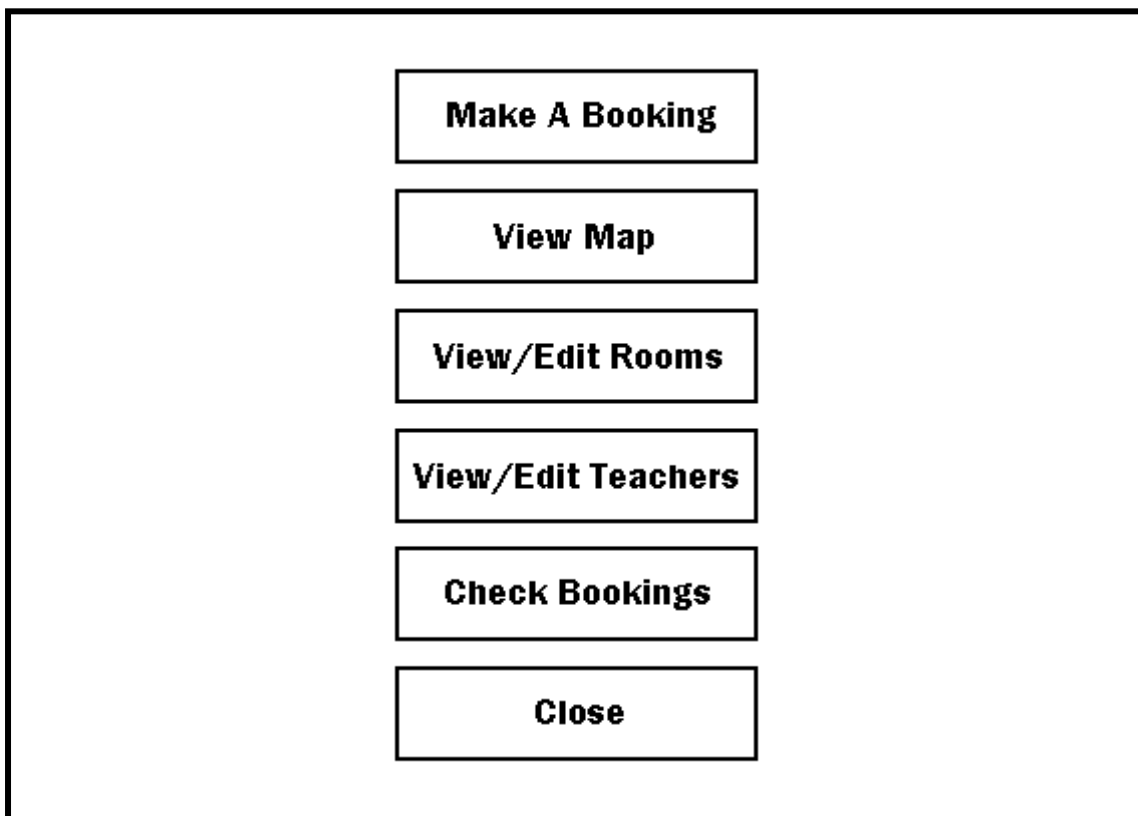
The candidate has shown what data will be required and how it will be organised. They have shown links between tables and items of data and considered validation requirements, although these are quite basic and more consideration of the specific methods used would be expected. They have provided a description of the processes that would take place within the system and they could have also shown a data flow diagram or flowchart here to further explain their system. A mark of 3 would be appropriate.

Design Specification

Font	Franklin Gothic
	Size 12
Colours	Text should be a deep red colour and background can be any neutral colour
House Style	The school crest should be on the main menu
Buttons	Clear buttons in the same place on each menu
	An exit button at every stage
Interface	On screen messages to assist and links to help files.

Design of Inputs

The following are the screen for the user to input items either by clicking or typing.

The above shows the main menu screen. The "View/Edit Rooms" and the "View/Edit Teachers" will both be password protected to ensure that the data within these tables cannot be edited by anyone. The close button will close the entire application.

The text on all of the buttons will maroon as per the design specification.

Shelley Academy Room Booking System

Calendar Control

Current Date and Time

New Booking

Select Period   Select Room

Teacher:

Save Booking

Information on how to use the box to the right.

Date	Period	Room

Close

This shows the booking form. It is how users will create new entries for bookings. First the user will click "New Booking". There is a calendar control application within Microsoft Access, the program I will be designing the system with. This will be how the user selects a date to book on. The user will then select a period. Then they will select an available room. They will then enter their initials, and finally click save booking.

This booking will show up in the box below, which will have a white background. There will be instructions in the bottom left corner of the screen. The current date and time will be between the calendar control and the instructions. The close button will take the user back to the menu screen.

Rooms and Dates

Specific Teacher

Instructions

The above shows the way in which a user will choose how they want to check the bookings. This check screen will appear when the user has clicked "Check bookings". There will be instructions in the box on the right. The user can choose to search the bookings by rooms and dates, or by a specific teacher, and click the relevant button. Colours and fonts will be as before.

The above shows the screen a user will see if they decide to check the bookings via date and room. The teacher will enter the date they want to check in the top left, and then they will select a room they want to check. Then in the box below, a list of the periods and teachers who have booked those rooms will show up – allowing the user to see who has booked what and what is available. There will be instructions on the right. Colours and fonts will be as before.

The above shows the checker based on a specific teacher search. The user will select a specific teacher from the drop down menu at the top, and the system will then show the dates, rooms and periods, which the teacher has booked a room. Instructions will be shown on the right of the screen. Colours and fonts will be as before.

ID	Location	BuildingID	PCs	Proj?	i-WB?	Room Ref

The above design layout shows the form for viewing the current rooms and the adding or editing existing ones. It will be in a table form, where data can be edited and changed.

Initials	Name	Dept	Title	Forename	Surname

This design shows the form for viewing the current teachers and the adding or editing existing ones. It will be in a table form, where data can be edited and changed.

Forms

The forms within my system all relate to a table or query, i.e. entering data into the forms will change or add data in the tables, or will run a query and give the user some feedback.

Form	Relates to	Information
frmBookings2	tbBookings2	As a booking is made using the form, tbBookings2 is changed.
frmBookings2	QUERY: ShowAvailableRooms-OnGivenDatePeriod	As a user selects a date and a period, the query updates the combo box of rooms with the available rooms on that given date and given period.
frmBookings2	qryBookings2	In the blue box on the booking form, when a date is selected, the blue box updates with a list of bookings on that date for all rooms.
frmChecker	None	This form is a type of menu, and nothing is changed except the output for the user when the user makes an input (such as a mouse click).
frmCurrentTeachers	tbCurrentTeacherData	As changes are made to frmCurrentTeachers, tbCurrentTeacher data is changed.

frmMenu2	None	This form is a type of main menu, and nothing is changed except the output for the user when the user makes an input (such as a mouse click).
frmRooms	tbRooms	As changes are made to frmRooms, if a new room is created or an old one renamed or destroyed, those changes will update on tbRooms.
frmWhatsBooked	qryWhatsBooked	When a date and a room are entered into frmWhatsBooked, the qryWhatsBooked is run, and updates the user by showing what the current bookings are on that specified date and room.
frmWhoBooked	qryWhoBooked	When a teachers initial is entered into the frmWhoBooked, the qryWhoBooked is run and updates the user by showing the current bookings made by the teacher specified.

Below is a list of queries in the system which relate to the processes about, with details about what they do or require the user to do.
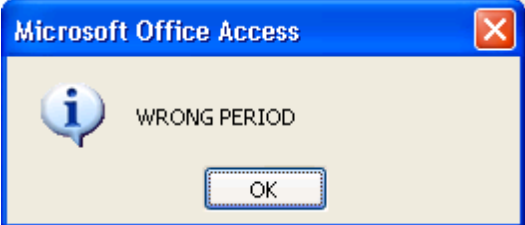
For the extendibility of the system, there are some queries which have been created but are not used on any of the forms. They are simply there for the future if any use can be found for them or if the requirements of the system change.

Queries

Query Name	Information about Query
BookedRoomsOnADate	Input: Date and Period Output: Shows information about each room booked on specified input.
DuplicatesForBookings	Shows duplicates of all bookings if they occur via error, in this way duplicates can be tracked systematically.
qryBookings2	Input: Date Output: All bookings on that given date, including room, teacher initial and period
qryFindTeacherByInitial	Input: Teacher's initial Output: Teacher's full name
qryShowUnavailableOnDate	Input: Date and Period Output: Booked rooms on that given date and period
qryWhatsBooked	Input: Date and Room Output: Booked rooms on that given date and room
qryWhosBooked	Input: Teacher initial Output: What that teacher has booked on the system
ShowAvailableRooms-OnAGivenDatePeriod	Input: Date and Period Output: Shows the available rooms for booking on such given date and period.

Error Messages

The system will contain error messages to help the end user when they make erroneous entries or other mistakes in the system. I developed these error messages as prototypes so the user could see during the design how the worked.

On Screen Display:	When it occurs	Form displayed on:
	Attempt to make a booking without entering a room	frmBookings2
	Attempt to make a booking without selecting a teacher	frmBookings2
	Attempt to make a booking without selecting a date	frmBookings2
	Attempt to make a booking without a period selected	frmBookings2

Outputs

The outputs are almost entirely screen-based (from the forms in the report). Aside from the occasional printout required by the room booking co-ordinator, nobody else will need to print from the system. The forms shown above also show the outputs (screen). The room booking co-ordinator could print from the forms if he needs to although he has indicated this would be very rare as the bookings will be maintained and monitored electronically.

b(i) **Nature of the Solution:** *design of inputs, processing and outputs, including error capture reports as appropriate, based clearly on the analysis of the client requirements.*

The candidate has put a good deal of work into the input forms and screens and the processing including macros and queries, although some of the form designs are quite basic. They have also made use of prototyping for the error messages. They haven't put so much into the outputs though. Therefore, a mark of 2 would be given here.

Initial Client Involvement

I showed Mr Dattani my designs during a face-to-face meeting and we discussed them as we progressed. Although he was fairly happy with most of them, he did point out that the main menu screen looked a little bare and needed a school logo adding to it, to add some corporate identity. He also pointed out that there were three screens that did not have any method of exiting them. I have therefore made amendments to the four screens in question, which can be seen below:
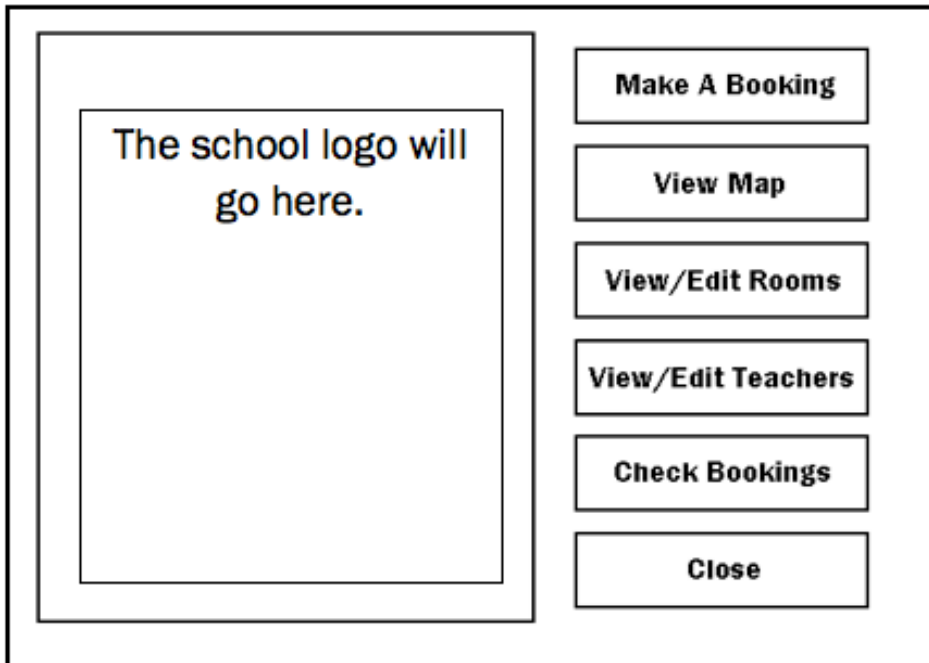

The above shows the updated main menu screen. The buttons have now been moved to the right hand side of the screen. The school logo will be an embedded image, with a border around it and will be imported from a jpg picture file given by the School. I will create the border in the same maroon to co-ordinate with the text colour.
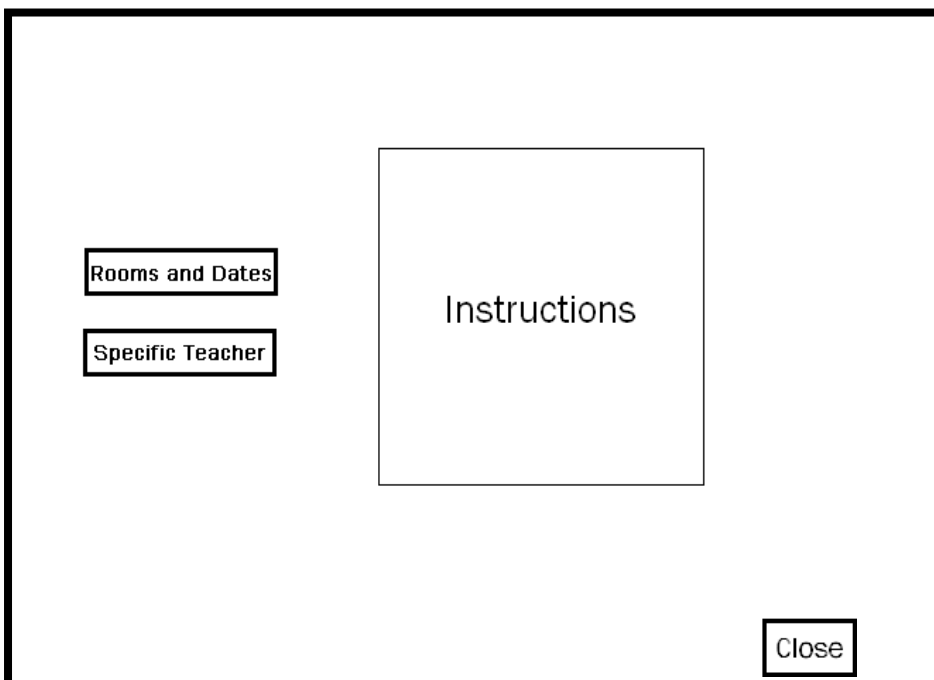
The booking checker screen shown above now has a close button added to it, which will take the user back to the menu screen.
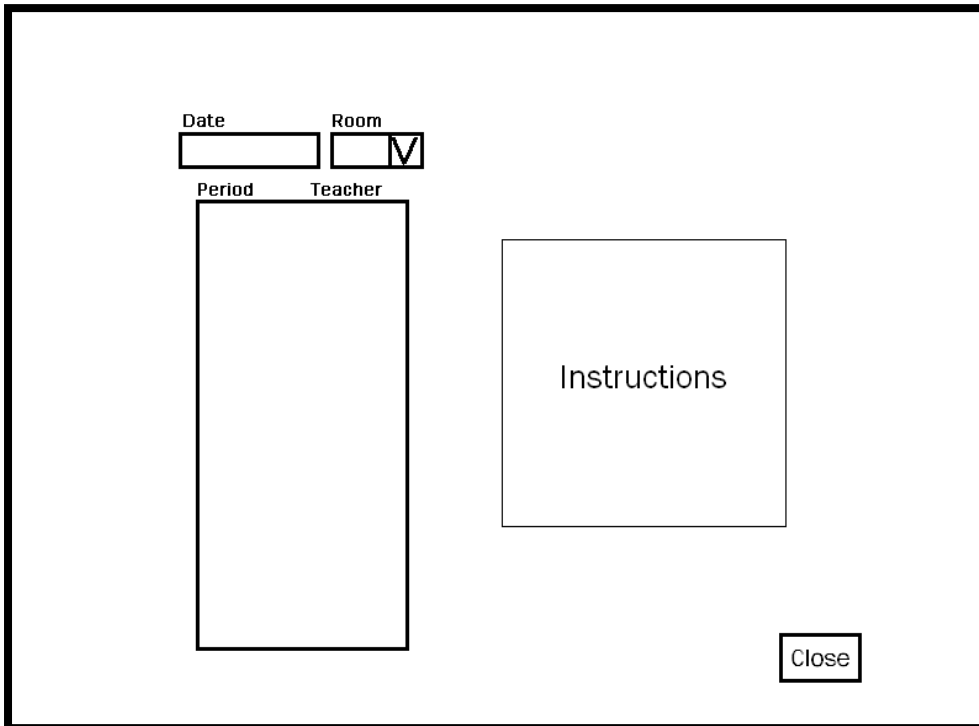
A Close button has now been added to the screen allowing checking of bookings by date and room and it will go back to the booking checker selector screen (shown above).
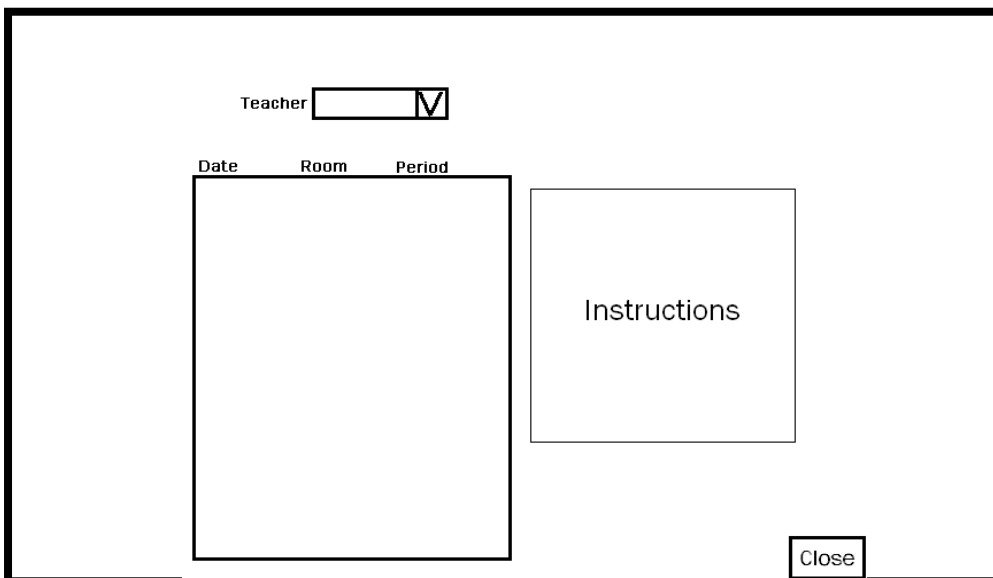
Finally a close button has also been added to the teacher search screen, which will take the user back to the booking checker selector.

Final Client Involvement

Following the above changes, Mr Dattani was happy with my designs and felt that I was designing them to his requirements quite well. I ensured I used the house colours and fonts as specified at the outset, which helped.

His letter is shown below confirming he was happy for me to continue.

Mr. R. Dattani
Room Bookings Co-ordinator
Ext. 267
rdattani@shelleyacademy.ac.uk

Shelley Academy
2 Learning Street
Coventry
CV56 7GY
(01533) 409876
admin@shelleyacademy.ac.uk

27th November 2008

Dear Miss. Howard,

Thank you for all the time and effort you have put into designing a new room booking system for Shelley Academy. I am very pleased with the discussions we have had and the designs you have shown me.

I am happy for you to continue to develop this piece of software and I look forward to meeting with you again soon and seeing how the system is developing.

Kind Regards,

R. Dattani

b(i) *Nature of the Solution: clear evidence of end user/client involvement in decision making and evidence that the options of the client have had an effect on the solution (1)*

The candidate has discussed the designs with the client during development and has highlighted some issues that have been identified. Ideally these would be formally documented in the form of an email or letter. The candidate has then amended the designs and these have been documented. The finished designs have been presented to the client and they have provided their approval. The 1 mark for this section can be awarded.

Test Plan

I will plan some tests for the new system; mainly to ensure the user requirements have been met.

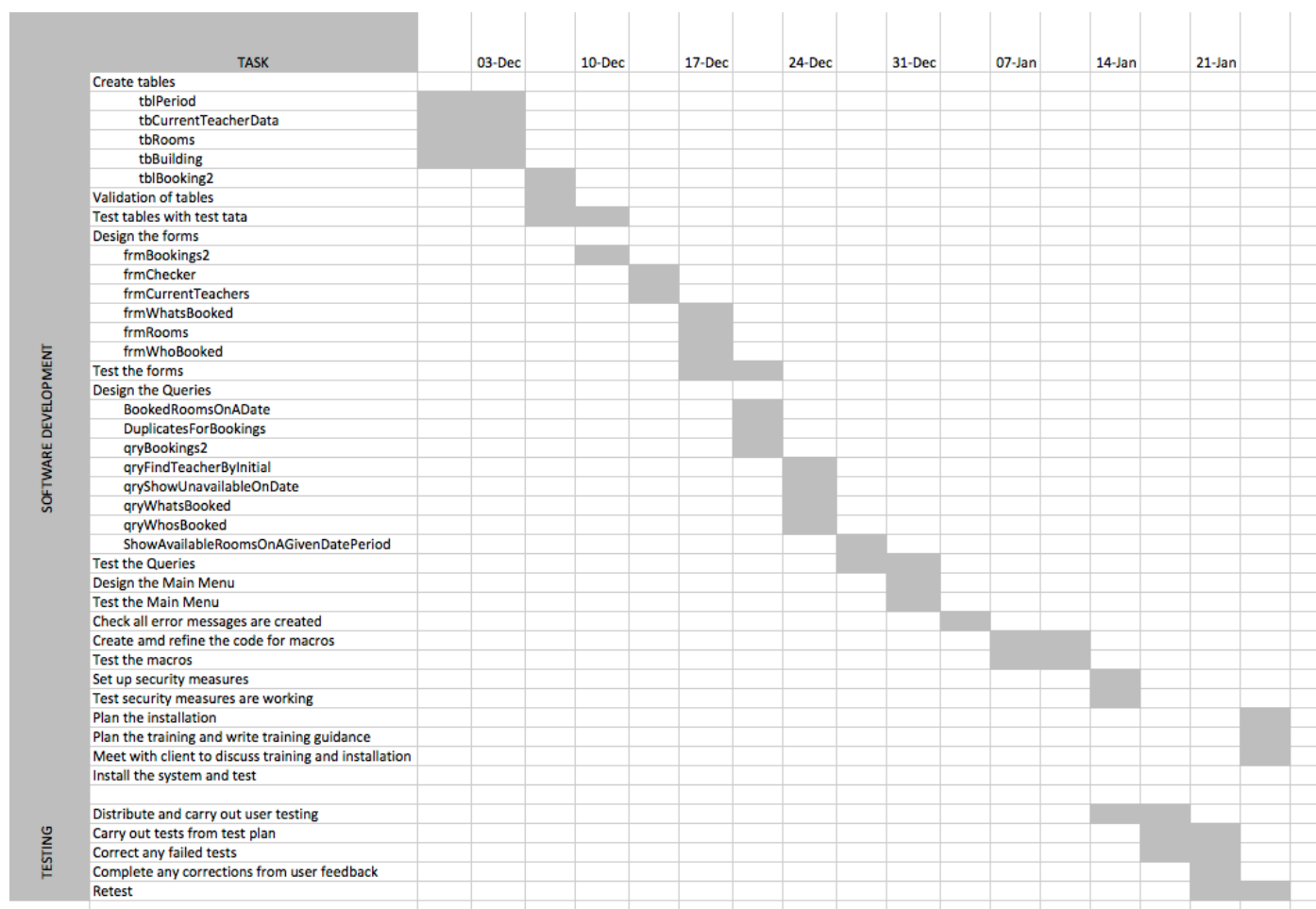|	Description of test	Which Requirement Spec.?	Data to be used	Expected outcome
1	Enter details of a new teacher	1, 3,4	RKD, Mr Rohil Dattani, ICT, Mr, Rohil, Dattani	New user appears in tbCurrentTeacherData with the exact details entered.
2	Make a booking	5, 10	12/12/2009, 3, ITH1, RKD	Booking confirmation shown in blue box
3	Check Test 2 via Specific Teacher	10	RKD	The booking made in Test 2 on the 12/12/2009, period 3, in ITH1 by RKD.
4	Add a new room	6	Kitchen, 6, 99, , , KIT	New room should be selectable when making new booking, and should appear in tbRooms
5	Password protection on editing room information	15, 16	123 into the password box in the room editing page	Typing in 123 into the password box should grant me access to edit information about rooms
6	Password protection on editing room information	15,16	999 into the password box	Typing in 999 into the password box should deny me access to edit information about rooms
7	Check Test 2 via Rooms and Dates	5,10	12/12/2009, ITH1	My booking should who up in the checker
8	Creating a backup of the system		Create a backup of the system using the guide	A backup should be made.
9	Check that a booking can be completed in 10 clicks or fewer as per client requirements. The client should test this.	10	Create a booking for the LRC on Monday 18th September for RKD and count the number of clicks from the main menu	Should be completed in 10 or fewer clicks.
10	Multiple users should be able to make bookings simultaneously.	12	Ask the client and another end user to both make bookings from two different computers at the same time.	Both should be able to make bookings without error messages.

OCR G064 Exemplar Coursework

11	Client Visual Check to ensure the HCI is effective	18, 7, 13	Ask the client to visually check for the attributes specified in the requirements numbers 7,13 and 18 to ensure they are all met	All fonts, colours, sizes, menus should be as specified.
12	Check the error messages are useful and informative	8,9	Try to make a new booking but leave the field blank	Error message 'Please enter a date' should appear.
13	Check the system works on multiple computers on the campus	11	Install the software on three different computers in different locations. Ask 3 people to make a booking at exactly the same time.	The bookings should be made without problems.
14	Check that all users can check the current bookings	14	Ask a user with normal user access rights to use the main menu in order to check current bookings	The user should be able to see the bookings.

b(i) **Nature of the Solution:** *a test plan will identify a number of tests that will be carried out on completion of the work. Each test outlines, should be clearly related to the relevant requirements stated in the requirements specification, all of which should feature in the test plan. The specific test to be carried out should be included in the plan together with the result expected. The tests specified in the plan will be completed during the testing of the solution (some elements of testing should involve the end user) (4)*

The candidate has listed an acceptable number of tests for this kind of system. She has included what the test will be, the expected result and which requirement(s) it relates to. She has only missed one requirement and this was related to producing the manual, which is not really something that is easy to test. Invalid and valid tests have been covered by the candidate and test data has been identified, although most requirements have been covered in the test plan, there are still some areas of the system that have not been considered during testing and possibly more specific test data could be provided for some of the tests. Overall this would receive 3 marks.

Project Plan

I created a Gantt chart to help me plan the project and it is included here:

	TASK	03-Dec	10-Dec	17-Dec	24-Dec	31-Dec	07-Jan	14-Jan	21-Jan	
SOFTWARE DEVELOPMENT	Create tables									
	tblPeriod	▓								
	tbCurrentTeacherData	▓								
	tbRooms	▓								
	tbBuilding	▓								
	tblBooking2		▓							
	Validation of tables		▓							
	Test tables with test tata		▓							
	Design the forms									
	frmBookings2			▓						
	frmChecker			▓						
	frmCurrentTeachers			▓						
	frmWhatsBooked			▓						
	frmRooms			▓						
	frmWhoBooked				▓					
	Test the forms				▓					
	Design the Queries									
	BookedRoomsOnADate				▓					
	DuplicatesForBookings				▓					
	qryBookings2				▓					
	qryFindTeacherByInitial					▓				
	qryShowUnavailableOnDate					▓				
	qryWhatsBooked					▓				
	qryWhosBooked					▓				
	ShowAvailableRoomsOnAGivenDatePeriod					▓				
	Test the Queries					▓				
	Design the Main Menu						▓			
	Test the Main Menu						▓			
	Check all error messages are created						▓			
	Create amd refine the code for macros						▓			
	Test the macros						▓			
	Set up security measures							▓		
	Test security measures are working							▓		
	Plan the installation							▓		
	Plan the training and write training guidance								▓	
	Meet with client to discuss training and installation								▓	
	Install the system and test								▓	
TESTING	Distribute and carry out user testing								▓	
	Carry out tests from test plan								▓	
	Correct any failed tests									▓
	Complete any corrections from user feedback									▓
	Retest									▓

Software Development and Testing

Software Development

In this section I have included annotated screenshots of the tables, forms, queries, reports and macros which I created in my solution.

Tables:

The system contains five tables:
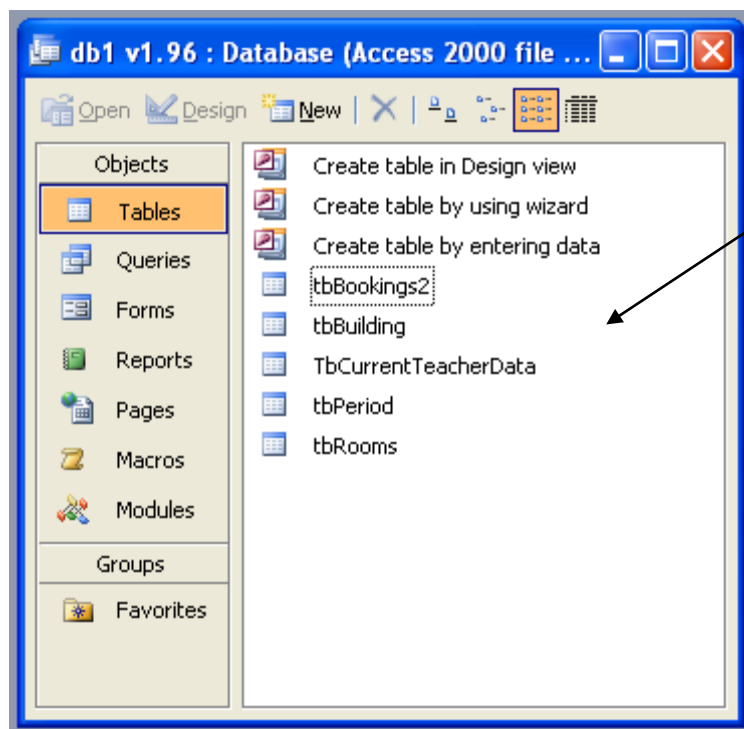
This is the main Tables menu and shows the 5 tables in my database.

tbBookings2:

tbBookings2 is the table where the booking information is stored.

tbBuilding:

tbBuilding is where information about the buildings is kept, for future reference.

tbCurrentTeacherData:

tbCurrentTeacherData is where information regarding each teacher is kept.

tbPeriod:

tbPeriod is where information about the different periods in a day is kept.

tbRooms:

tbRooms is where information about the different rooms is kept.

Forms:

The system contains seven forms.

This is the main forms menu where you can see all of the forms in the database.

frmBookings2:

frmBookings2 is the booking form which a teacher can use to create a booking.

It has an active calendar control, as well as buttons and lists to make a new booking. Clicking close will take the user back to frmMenu2.

The blue box shown will give the teacher information about current bookings on the date selected on the calendar control.

There are editable instructions on this form.

frmChecker:

frmChecker is the menu which allows the user to select which type of checker they would like to use. The two options are by "Rooms and Dates" and "Specific Teacher".

The close button takes the user back to the main menu.

There are editable instructions on this form.
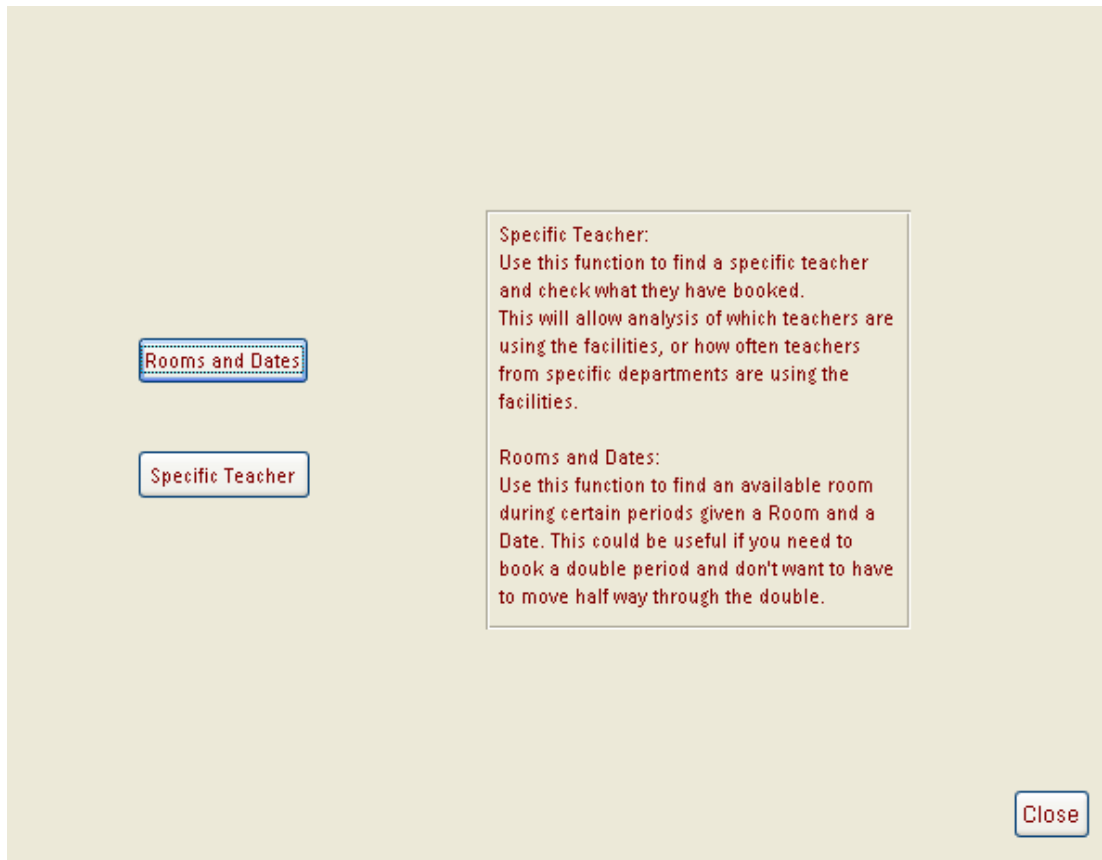
frmCurrentTeachers:
frmCurrentTeachers is the form which allows a user to edit information about each individual teacher.

The form contains mainly fields for text.
The form is accessible via the main menu and is password protected.

There is only an exit button on the top right of the screen, which will take the user back to the main menu.

frmMenu2:
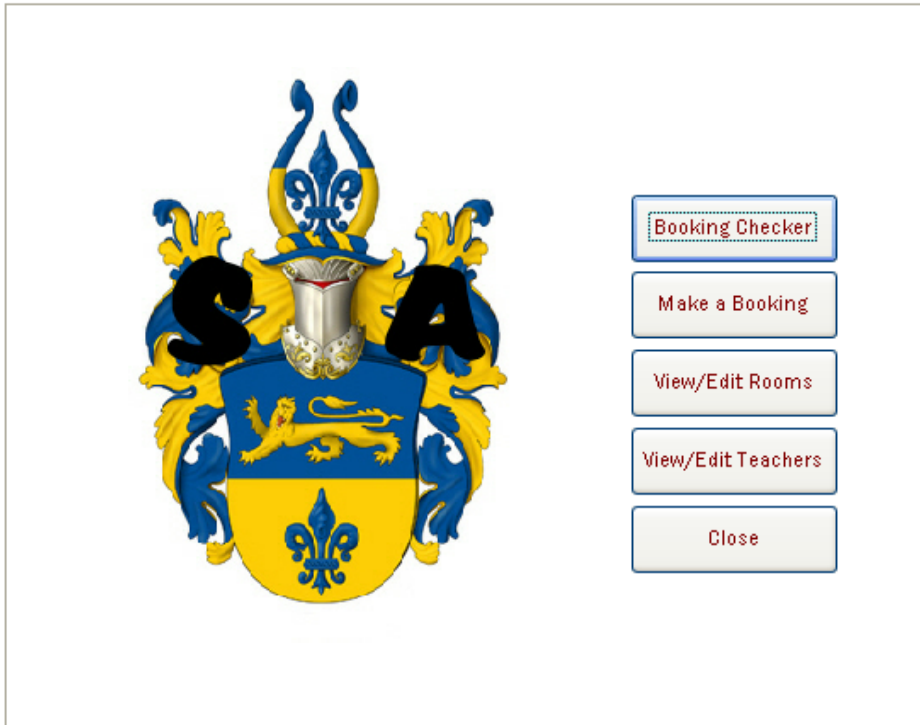
frmMenu2 is the main menu of the system. From the main menu, everything can be accessed. There are five buttons on the main menu:

"Booking Checker" will open "frmChecker" to allow users to check bookings.

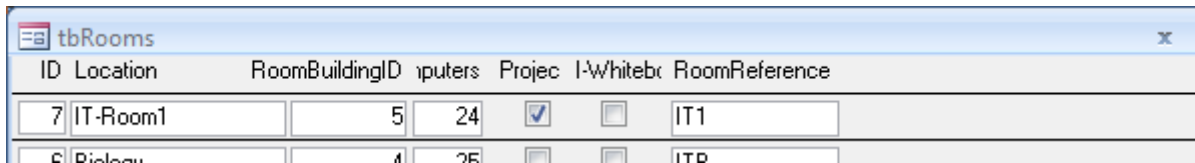"Make a Booking" will open "frmBooking2" to allow users to make a booking.

"View/Edit Rooms" will open "frmRooms" to allow users to edit data about rooms.

"View/Edit Teachers" will open "frmCurrentTeachers" to allow users to edit data about teachers.

"Close" will exit the entire application.

frmRooms:
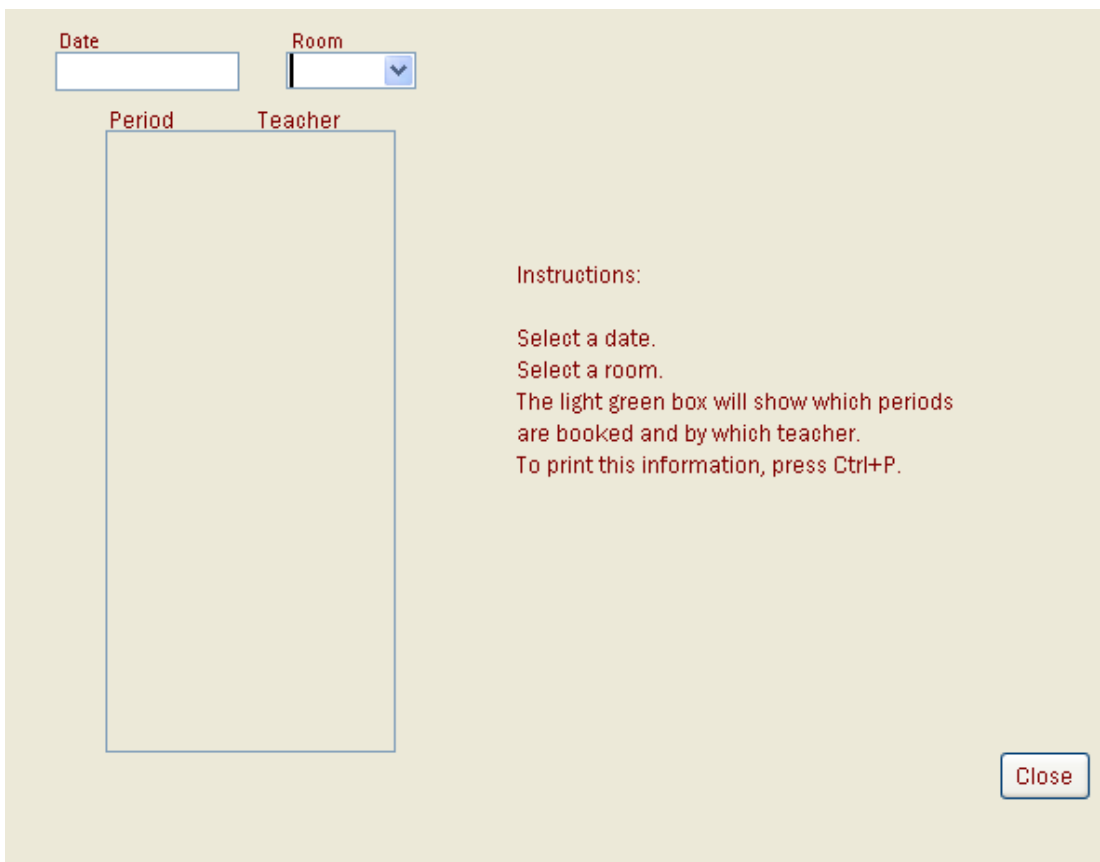
frmRooms allows users to edit the rooms within the system.

The form mainly contains fields for text.

The exit button is at the top right of the screen and takes the user back to the main menu.

frmWhatsBooked:

frmWhatsBooked allows a user to enter a date and a room in order to see which teachers have booked that room on the date specified and which period each teacher has booked.

The close button returns the user back to the frmChecker.

frmWhoBooked:

Teacher: [dropdown]

Date   Room   Period

To use this form, select a specific
teacher initial from the drop down list.
TIP: Type the teacher initial on the
keyboard for a quick way of entering
the intial.
The box below the teacher initial will
show the dates, rooms and periods
which have been booked by the
selected teacher.
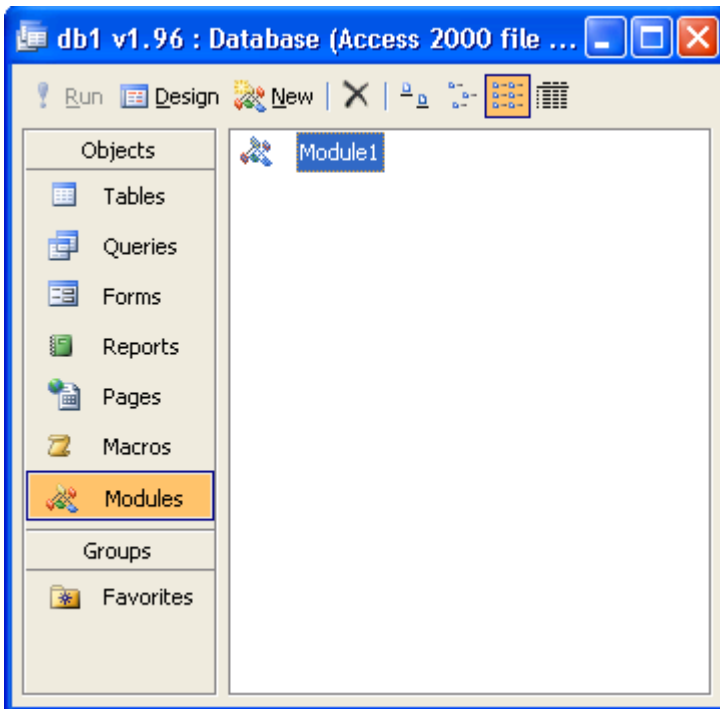To print, press Ctrl+P.

Close

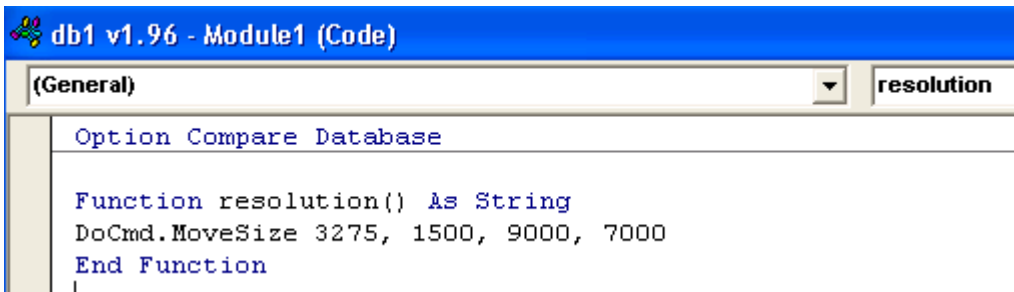frmWhoBooked allows a user to see what a specific teacher has booked.

There is a close button which returns the user back to the frmChecker.
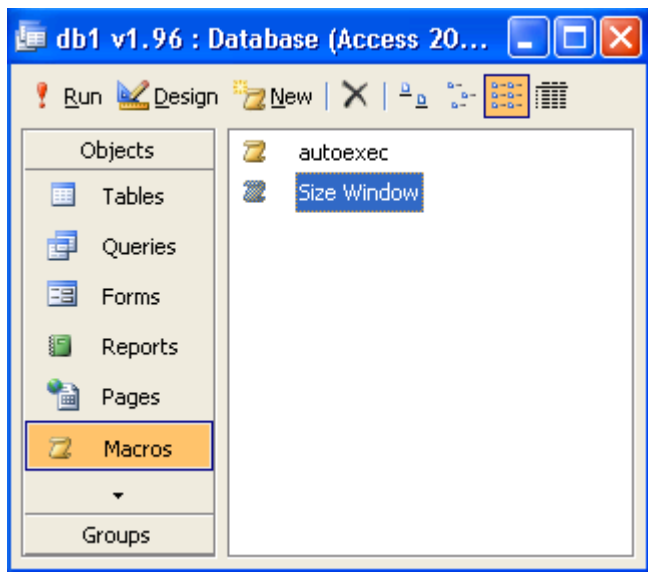
Modules:

There is only one module in the system:

This module is used to ensure all the forms are in the same position when they are opened and gives them all the same resolution.
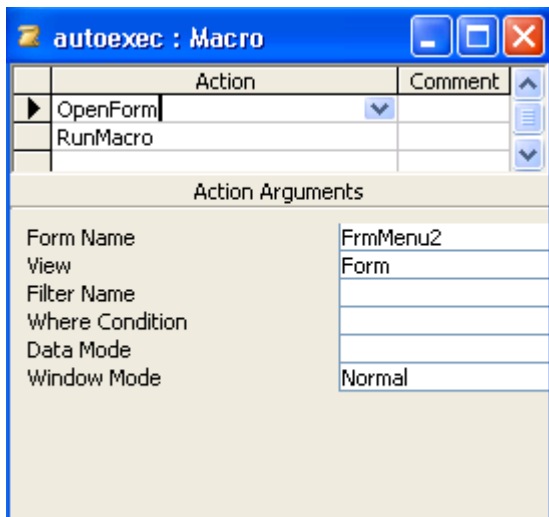
OCR GO64 Exemplar Coursework

Macros:

There are two macros in the system:

The macro autoexec is used to start the main menu upon opening the system from windows explorer:

OpenForm is used, and the form name selected is the main menu "FrmMenu2".

Then, RunMacro is used, which as follows:

RunMacro runs the macro Size Window, which is a macro used to ensure a standard resolution throughout the system is met.
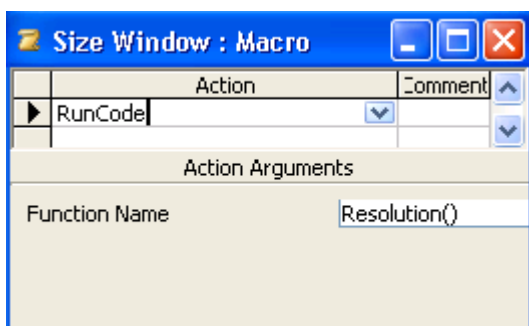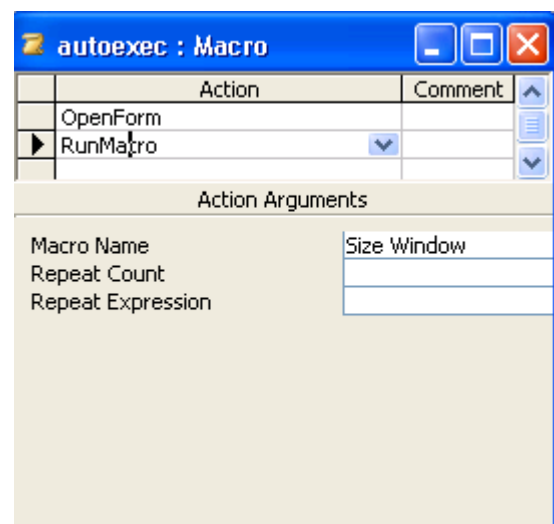
From "Size Window", the function "Resolution()" is run, which standardises all the sizes of the windows.

Reports:

There are no reports within the system. Instead, there are the booking checkers, which allow the users to create report-like documents.

Use of reports is something, which is mentioned in the Evaluation section of the project report, where desirable extensions are stated.

Queries:

There are eight queries within the system.
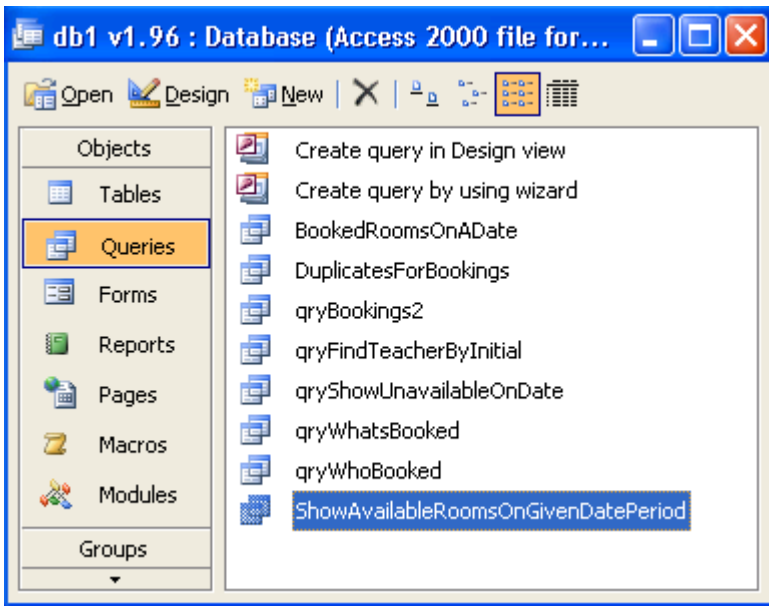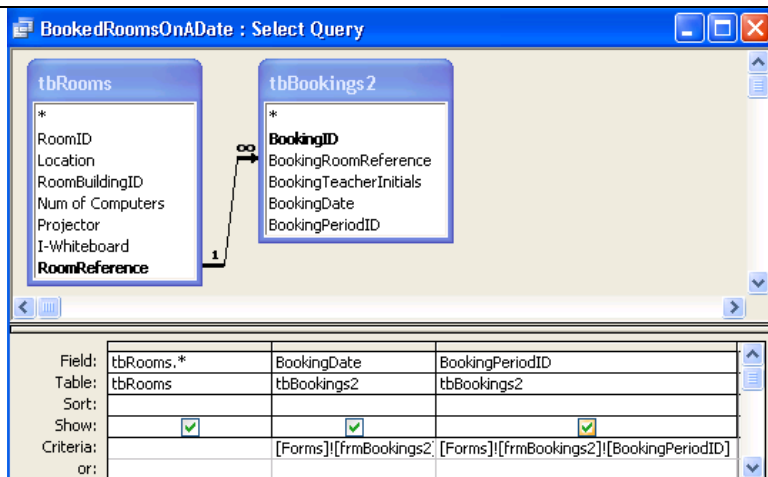
Query Screenshot:	Information:
	This query takes information about the date and the period and returns the rooms which are booked on that specified information.
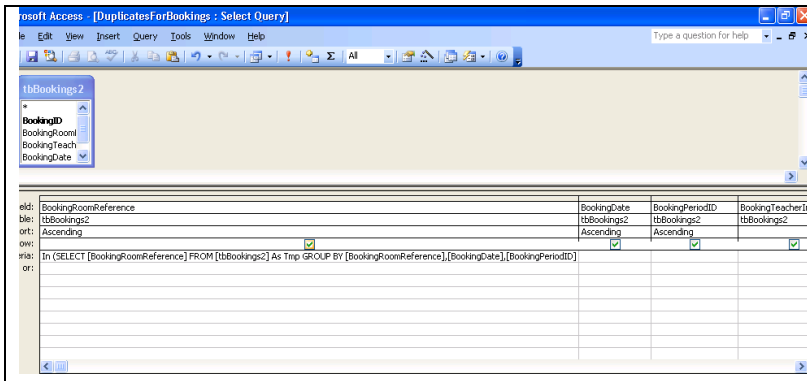
	This query can be used to find duplicate bookings within the system to check for errors. It is a quick and easy way of checking for duplicates without having to manually go through the system.
	This query takes the booking date selected on the frmBookings2 form and shows the period, room reference and teacher initials who have made a booking on that date.
	This query takes a teachers initial and tells the user their full name.
	This query shows which rooms are unavailable on a given and period.
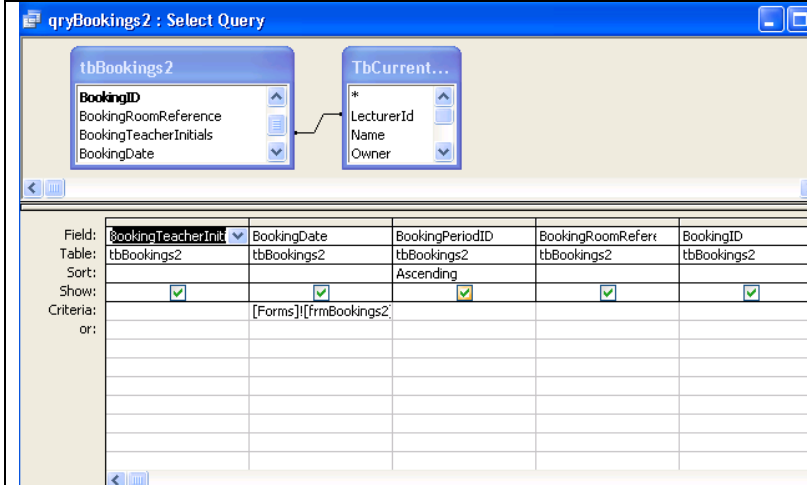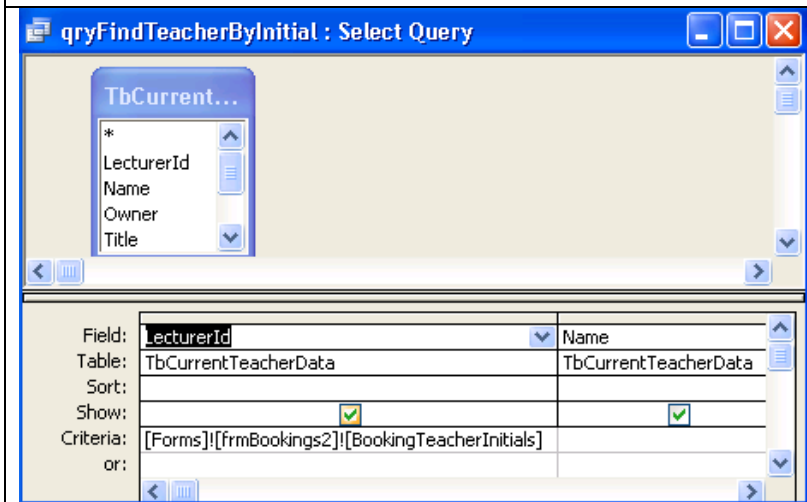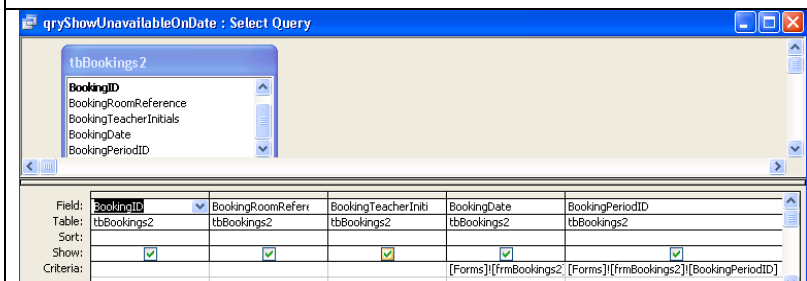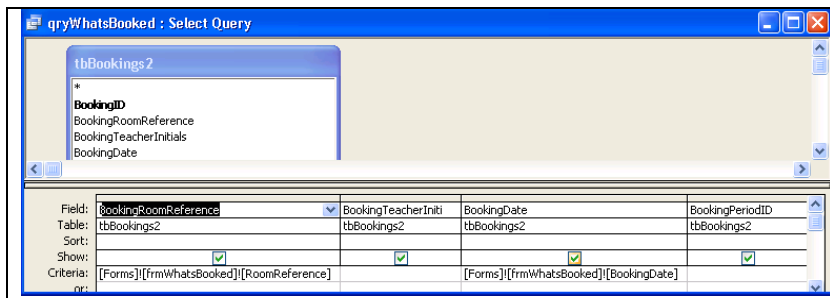
	This query takes information about a date and a room and then returns information about which periods are booked on that date and who has made the bookings.
	This query returns information about which dates, rooms and periods a specific teacher has booked.
	This query returns information about which rooms are available given a date and a period. It uses the "BookedRooms-OnADate" query as part of its design.
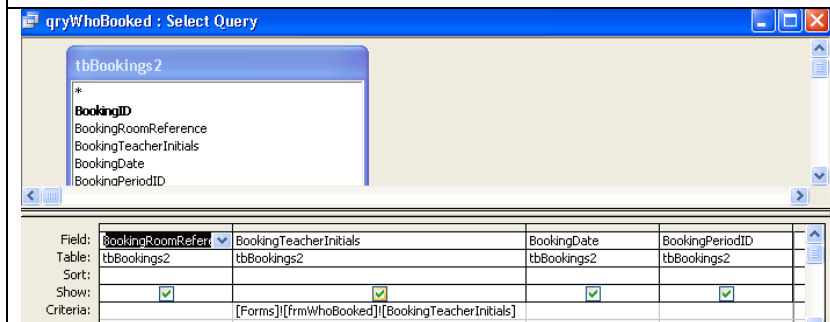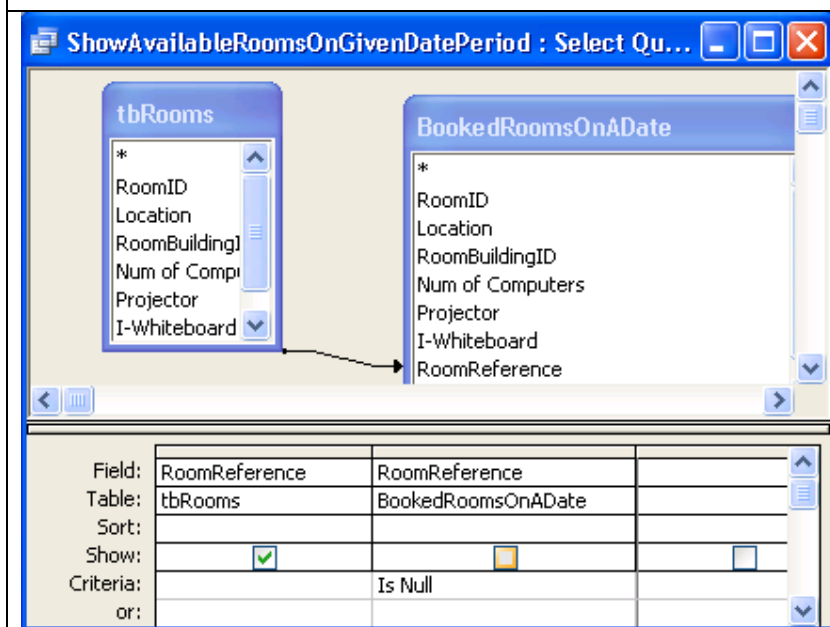
Codes:

There are codes in the system which are used to do different tasks. These codes are shown below:

Code	Description

Private Sub Command4_Click()
 	
On Error GoTo Err_Command4_Click
 	
   Dim stDocName As String
 	
   Dim stLinkCriteria As String
	This code is used on the buttons which open a form that requires a password.
	
	If the password is correct, the form is loaded. If the password is incorrect, the form is not loaded.

If (InputBox("Please Enter Password. It is 123.", "Security") = "123") Then
 	
   stDocName = "frmRooms"
 	
   DoCmd.OpenForm stDocName, , , stLinkCriteria
 	
End If
 	
Exit_Command4_Click:
 	
   Exit Sub
 	
Err_Command4_Click:
 	
   MsgBox Err.Description
 	
   Resume Exit_Command4_Click
 	
End Sub
	The form which is loaded if the password is correct in this case is frmRooms, the form which allows the user to edit the rooms in the system.

Security ✕ Please Enter Password. It is 123. [OK] [Cancel] [ ]	
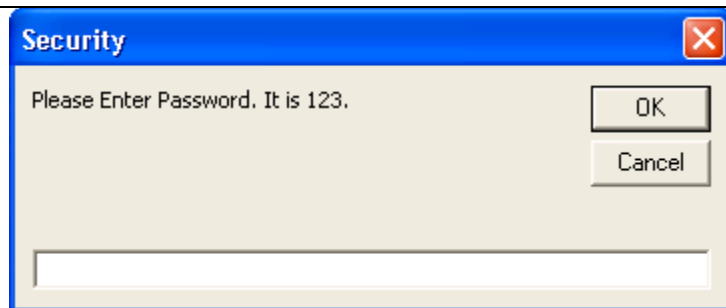
Private Sub Command20_Click()
 	
On Error GoTo Err_Command20_Click
 	
   DoCmd.Quit
 	
Exit_Command20_Click:
 	
   Exit Sub
	This code is used on the "Close" button of the main menu form.
	
	It quits the entire application, not just the form.

Err_Command20_Click: MsgBox Err.Description Resume Exit_Command20_Click End Sub	
Private Sub Command40_Click() Me!BookingRoomReference = Null Me!Calendar0.Value = Null Me!BookingPeriodID = Null Me!Command36.Enabled = -1 Me!BookingPeriodID.Enabled = -1 Me!listRoomReference.Enabled = -1 Me!BookingPeriodID.SetFocus End Sub	This code is found within the booking form. It is used on the "New Booking" part of the form, and enables the boxes which are disabled when the user wants to create a new booking.
Private Sub Calendar0_Updated(Code As Integer) frmBookings2.BookingDate = Calendar0 Me!Command36.Enabled = -1 Me.Text31.Requery DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70 End Sub	This code is found within the booking form. It is used on the Calendar Control, and is used when the calendar is updated. Text31 refers to the blue box below the teacher initial box, which shows which bookings have been made on a selected date. This code is telling Text31 to update after a new date has been selected on the calendar.

Private Sub Calendar0_Click()	This code is found within the booking form. It is used on the Calendar Control, and is used when the calendar is clicked.
	This part of the code is telling the system that whatever the value clicked on the Calendar is the "BookingDate" referred to in many forms and tables.
Forms("frmBookings2").BookingDate = Calendar0.Value	Text31 refers to the blue box below the teacher initial box, which shows which bookings have been made on a selected date. This code is telling Text31 to update after a new date has been clicked on the calendar.
Me!Text31.Requery	
End Sub	
Private Sub Command36_Click()	Command36 refers to the "Save Record" button on the booking form.
	This part of the code tells the system that if any of the boxes are not filled in when the user tries to click "Save Record", an error message will appear, telling the user they have to enter what they have missed.
If IsNull(Me!BookingRoomReference) Then	
MsgBox ("Enter Room")	
Exit Sub	
End If	
If IsNull(Me!BookingTeacherInitials) Then	
MsgBox ("Select Teacher")	
Exit Sub	
End If	
If Me!Calendar0.Value = 0 Then	
MsgBox ("Select Date")	
Exit Sub	

End If
 	
If IsNull(Me!BookingPeriodID) Then
 	
MsgBox ("Select Date")
 	
Exit Sub	

Private Sub BookingDate_AfterUpdate() Me.Text31.Requery End Sub	BookingDate is equal to the value on the calendar. Therefore, after the date has been updated, Text31 is told to requery itself – to ensure the blue box is constantly being updated.
Dim MyRs As Recordset, MyDb As Database Set MyDb = DBEngine.Workspaces(0).Databases(0) Set MyRs = MyDb.OpenRecordset("tbBookings2") MyRs.AddNew MyRs!BookingRoomReference = Me!BookingRoomReference MyRs!BookingTeacherInitials = Me!BookingTeacherInitials MyRs!BookingDate = Me!Calendar0.Value MyRs!BookingPeriodID = Me!BookingPeriodID MyRs.Update MyRs.Close Set MyRs = Nothing Set MyDb = Nothing Me!BookingPeriodID.Enabled = 0 Me!listRoomReference.Enabled = 0 Me!Command40.Enabled = -1 Me!Command40.SetFocus Me!Command36.Enabled = 0 Me!Text31.Requery End Sub	This part of the code is linked to Text31, the blue box, and belongs to Command36, which is the "Save Record" button – and it comes into use when Command36 is clicked. It is used to update the blue box with details about a new booking which has been made, as a confirmation to the user that their booking has gone through.

Private Sub Command57_Click()
 	
On Error GoTo Err_Command57_Click
 	
   DoCmd.Close
 	
Exit_Command57_Click:
 	
   Exit Sub
 	
Err_Command57_Click:
 	
   MsgBox Err.Description
 	
   Resume Exit_Command57_Click
 	
End Sub
	Command57 refers to the "Close" button at the bottom of the Booking form.
	
	It is used to exit the form, not the entire application.
	
	This is the same close button as will be used on all other forms which are not the main menu, to return the user back to the previous form.

Private Sub Command0_Click()
 	
On Error GoTo Err_Command0_Click
 	
   Dim stDocName As String
 	
   Dim stLinkCriteria As String
 	
   stDocName = "frmWhatsBooked"
 	
   DoCmd.OpenForm stDocName, , , stLinkCriteria
 	
Exit_Command0_Click:
 	
   Exit Sub
 	
Err_Command0_Click:
 	
   MsgBox Err.Description
 	
   Resume Exit_Command0_Click
 	
End Sub
	This is the built in Microsoft Access code which uses a button, when clicked, to open another link, in this case a form – "frmWhatsBooked".
	
	This code is found on the frmChecker.
	
	The same applies for all the other buttons as shown below.

Private Sub Command1_Click()
 	
 On Error GoTo Err_Command1_Click
 	
   Dim stDocName As String
 	
   Dim stLinkCriteria As String
 	
   stDocName = "frmWhoBooked"
 	
   DoCmd.OpenForm stDocName, , , stLinkCriteria
 	
 Exit_Command1_Click:
 	
   Exit Sub
 	
 Err_Command1_Click:
 	
   MsgBox Err.Description
 	
   Resume Exit_Command1_Click
 	
 End Sub
	Again, when this button is clicked, a form is opened, this time "frmWhoBooked".
	
	 This is on the "frmChecker" form.

Private Sub Command15_Click()
 	
 On Error GoTo Err_Command15_Click
 	
   Dim stDocName As String
 	
   Dim stLinkCriteria As String
 	
   stDocName = "frmChecker"
 	
   DoCmd.OpenForm stDocName, , , stLinkCriteria
 	
 Exit_Command15_Click:
 	
   Exit Sub
	This code is on the main menu, frmMenu2.
	
	 The button is the first one, which is the booking checker button. It opens "frmChecker".

```
Err_Command15_Click:

    MsgBox Err.Description

    Resume Exit_Command15_Click



End Sub
```

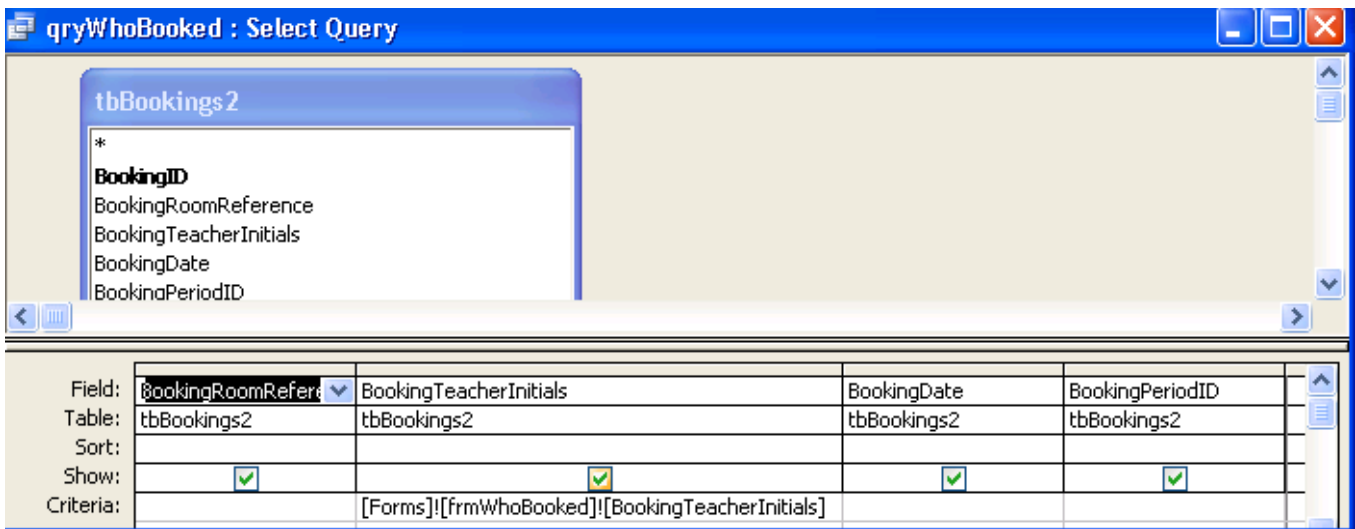|	
| ```
Private Sub Command0_Click()

On Error GoTo Err_Command0_Click


    Dim stDocName As String

    Dim stLinkCriteria As String


    stDocName = "frmBookings2"

    DoCmd.OpenForm stDocName, , , stLinkCriteria


Exit_Command0_Click:

    Exit Sub


Err_Command0_Click:

    MsgBox Err.Description

    Resume Exit_Command0_Click


End Sub
``` | This code is on the main menu, frmMenu2.


The button is the second one which is the "Make A Booking", and it opens "frmBookings2". |

C(i) **Software Development & Testing:** *6-8 marks: the candidate has solved a problem that has needed a level of complexity greater than a simple linear solution*

The candidate has produced a non-linear solution, so immediately this is the right mark band. It is non-linear as it has more than one type of processing leading to different outputs. For example, the user can either check a booking, which involves processing the data in the system in one way using a query, leading to an output of room availability. The user could also make a booking, which involves another method of processing to save and store the data and give confirmation of the booking. They have shown good evidence of all aspects of the system, but the lack of reports is a failing in the system. There is evidence of tailoring the solution and creating modules and macros. Overall this is worthy of 6 marks.

Processing

The query above is used to display all of the bookings that have been made when a teacher's initials are selected from the form frmWhoBooked. It links to the field on the form called 'BookingTeacherInitials', which is the drop down box and displays all the bookings made by that particular teacher. The results are then displayed on the form as seen below.

c(i) Software Development & Testing: evidence of the development of one aspect of the system that processes data (2)

The candidate has attempted to demonstrate how a query is used to process data within the system and display selected information on a form, but their evidence is limited. They need to show more clearly how the aspect has been thoroughly tested to ensure that it is working as expected. This is worth 1 mark.

Human Computer Interface

I designed the forms whilst bearing in mind the requirements of my client. The font had to be Franklin Gothic and the colour had to be maroon. The client and users also wanted to be able to use the mouse for much of the entry and for me to make it difficult for the users to make errors. The following screenshots demonstrate how I have met these criteria. The font for the entire system is Franklin Gothic Book, in accordance with the Schools own font. The colour schemes where possible will be in line with the schools colours. This colour is maroon, (128,0,0), the font is Franklin Gothic Book, colour is Maroon (128,0,0). Screen resolutions to all be the same, no "Control Box", no "Min/Max Buttons", Buttons to all be similar sized, with similar design

Client's school crest

Buttons to click on with clear labels.

Fonts and colours as specified

Again this form has the house style for Shelley Academy. It has clear user instructions as requested and again, simple clickable buttons.

Close button for easy exit to main menu.

Room Booking Application

Dec 2009 [Dec ▼] [2009 ▼]

Mon	Tue	Wed	Thu	Fri	Sat	Sun
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

Tuesday, May 5 2009, 08:00:55 PM

New Booking

Select a period   Select Room
[0 ▼]   [▼]

Teacher
[▼]

Save Record

Calendar to assist with mouse-entry of data and minimise mistakes

Drop down lists for easy, validated entry.

Clear instructions

To make a booking select Required Date from calendar.
Select Period from drop down list.
Select Room from Drop down list.
Type initials into Teacher box.
_____
Blue screen to the right will show what is booked based on which date is pressed on the calendar above.

Date   Period   Room

Close button for easy exit to main menu,

[Close]

---

c(i) **Software Development & Testing:** *hard-copy evidence of an effective HCI with annotations explaining its effective solutions for problems that had been highlighted in the requirements specification (2)*

The candidate has produced screenshots and annotated them to show how they have met the requirements. There is evidence of customisation of the interface and the candidate has explained how this has been achieved. However, not all of the requirements have been discussed by the candidate and this is expected for this section. 1 mark is awarded.

Testing

In this section I will carry out the tests in my test plan. User testing will also take place to ensure that users are comfortable in using the system. If any errors are found, the system will be rectified before implementation.

	Description of test	Data to be used	Expected outcome	Test Success?
1	Enter details of a new teacher via the form.	RKD, Mr Rohil Kamal Dattani, ICT, Mr, Rohil, Dattani	New user appears in tbCurrentTeacherData	Yes

LecturerId	Name	Owner	Title	Forename	Surname
RKD	Mr Rohil Dattani	ICT	Mr	Rohil	Dattani

As can be seen by the above screenshots, the information is entered into the form, then it appears in the table.

2	Make a valid booking	12/12/2009, 3, ITH1, RKD	Booking confirmation shown in blue box	Yes

First I press New Booking. Then I select the date, enter the period, room and my initials and click save record. The booking confirmation shows up in the blue box.

In tbBookings2, my booking can be seen.

3	Check Test 2 via Specific Teacher	RKD	The booking made in Test 2 on the 12/12/2009, period 3, in ITH1 by RKD.	Yes

Teacher: RKD

Date	Room	Period
12/12/2009	ITH1	3

To use this form, select a specific teacher initial from the drop down list.
TIP: Type the teacher initial on the keyboard for a quick way of entering the intial.
The box below the teacher initial will show the dates, rooms and periods which have been booked by the selected teacher.
To print, press Ctrl+P.

Close

As can be seen, my booking shows up in the booking checker.

4	Add a new room	Kitchen, 6, 99, , , KIT	New room should be selectable when making new booking, and should appear in tbRooms	Yes

| 12 | Kitchen | 6 | 99 | ☐ | ☐ | KIT |
| ıber) | | 0 | 0 | ☐ | ☐ | |

I enter the data into the form.

| | + | 8 | Lecture Theatre | 1 | 1 | ☐ | | ☐ | LT |
| | + | 13 | Kitchen | 6 | 99 | ☐ | | ☐ | KIT |

My entry shows up in the tbRooms table.

5	Password protection on editing room information	123	Typing in 123 into the password box should grant me access to edit information about rooms	Yes

I click on View/Edit Rooms button.

I receive this prompt and type in "123".

Access granted, I can now edit rooms.

6	Password protection on editing room information	999	Typing in 999 into the password box should deny me access to edit information about rooms	Yes

I click on View/Edit Rooms button.

I receive this prompt and type in "999".

Nothing happens, and I am still on the main menu.

7	Check Test 2 via Rooms and Dates	12/12/2009, ITH1	My booking should show up in the Rooms and Dates checker.	Yes

Date
12/12/2009

Room
ITH1

Period   Teacher
3   RKD

Instructions:

Select a date.
Select a room.
The light green box will show which periods
are booked and by which teacher.
To print this information, press Ctrl+P.

Close

Using the rooms and dates checker, I type in the relevant data. My booking shows up.

8	Creating a backup of the system	Create a backup of the system using the guide	A backup should be made.	Yes

I click on Tools > Database Utilities > Back Up Database…

I am prompted with this screen to make the backup

The backup has been made.

9	Make an invalid booking	13/12/09, 1, ITH1, (Teacher Initials).	Select Teacher error message comes up.	Yes

As I fill in the details according to the plan, and click Save Record, the error message comes up.

User Testing of the System

The system was loaded onto the campus network and was tested by Mr Dattani and Miss Smith, a member of the ICT Team. Following the use of the system, a questionnaire was presented to them in line with the requirements specification to ensure the requirements have been met and the system can be used.

Response from Mr. Dattani:

Question	Passed?
Was the system easy to operate?	Yes
Did you find the user guide useful to use?	Yes
Did you find your initials in the teacher form?	Yes
Was your first and second name contained in the booking form?	Yes

Did you find every room within the school in the system?	Yes
Did you successfully edit the data about the rooms?	Yes
Does the system meet the schools colour scheme?	Yes
Did you come across any error messages?	Yes
Were the error messages useful and constructive?	Yes
Were you able to book a room within 10 clicks of a mouse upon opening the system?	Yes
Once on the network, were you able to access the system from multiple computers?	Yes
Were all the people testing the system able to use it during the test period?	Yes
Did you find the main menu easy to use?	Yes
Did you use the booking checker successfully?	Yes
Do you think the security measures to protect the changing of the data about the rooms and teachers and the bookings already made were sufficient?	Yes
Was every window on the system the same size?	Yes

Response from Miss Smith:

Question	Passed?
Was the system easy to operate?	Yes
Did you find the user guide useful to use?	Yes
Did you find your initials in the teacher form?	Yes
Was your first and second name contained in the booking form?	Yes
Did you find every room within the school in the system?	Yes
Did you successfully edit the data about the rooms?	Yes
Does the system meet the schools colour scheme?	Yes
Did you come across any error messages?	Yes
Were the error messages useful and constructive?	Yes
Were you able to book a room within 10 clicks of a mouse upon opening the system?	Yes
Once on the network, were you able to access the system from multiple computers?	Yes
Were all the people testing the system able to use it during the test period?	Yes
Did you find the main menu easy to use?	Yes

Did you use the booking checker successfully?	Yes
Do you think the security measures to protect the changing of the data about the rooms and teachers and the bookings already made were sufficient?	Yes
Was every window on the system the same size?	Yes

Summary of questionnaire:

Each element of the requirements specification passed tests made by Mr Dattani and Miss Smith. Although they wrote no actual comments, they both seemed very impressed by the system and its ability to meet the requirements needed by the school.

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*c(i) **Software Development and Testing:** evidence that each of the tests specified in the test plan have been carried out, that they are linked to the hard copy evidence, that the results have been analysed and that any necessary action has been identified (2)*

The candidate has carried out most of the tests. Although the user tests were completed by asking the end user/client to use the system and them fill out a questionnaire, which seems to make sense in this case, but did not necessarily test the system thoroughly. They have provided clear screenshot evidence. All of the tests passed which didn't leave any room for identifying and rectifying issues, which might have been more realistic. This would gain 1 mark as not all tests planned were carried out.

Installation

The installation process happens in several ways. Firstly I am going to discuss details of the training I will offer to the client and end users who will use the new system. I will then discuss the hardware and software, installation of the database and how the new files will be created. Finally I will discuss the different methods of changing over to the new system and get the client's agreement to the preferred method.

I wrote to Mr Dattani with my plans for installation and my letter and his response are shown below.

56 Cherry Tree Lane
Coventry
CV57 9YY

Mr R. Dattani
Shelley Academy
2 Learning Street
Coventry
CV56 7GY

10th March 2009

Dear Mr. Dattani,

Further to our telephone conversation today I would like to confirm in writing the details for the installation of your new Room Booking system.

I plan to come into Shelley Academy at 10am on 25th April. As agreed, I will meet you in the ICT offices where the network technician will be on hand to assist with the installation of the system.

We will need to install the room booking system and I will import the most up to date version of your CSV files with staff and room details on at the same time to ensure the data is accurate from the beginning.

The training plan is attached to this letter and again I think you will find it meets the plans we agreed verbally.

Please do not hesitate to contact me if you have any questions about this prior to 25th April. Otherwise, I look forward to seeing you then.

Yours sincerely

Rosie Howard

Mr. R. Dattani
Room Bookings Co-ordinator
Ext. 267
rdattani@shelleyacademy.ac.uk

Shelley Academy
2 Learning Street
Coventry
CV56 7GY
(01533) 409876
admin@shelleyacademy.ac.uk

14th March 2009

Dear Miss. Howard,

Once again I would like to thank you for creating what looks to be a superb room booking system for Shelley Academy.

I have looked at the beta version you sent to me and it looks most impressive.

Your plans for installation are as I recall us discussing and I would therefore like to confirm that I am happy for you to come to the school ICT offices where we can install the system ready for user testing, on Thursday 25th April.

I look forward to seeing you then.

Kind Regards,

R. Dattani

Training

The timetable for installation and training is shown in a table below, and it was this document, which I sent to Mr Dattani with my letter above.

Before implementation, it is necessary to show all the teachers who will be using the system how it works and allow the future users to ask questions about the system. This will have to take place after all internal tests which use valid, invalid and extreme data have taken place, so that I know the system is working as expected. This demonstration will take place on the 27th April in the Lecture Theatre at the school as part of a staff meeting so that all teachers will know how to use it. The system will run from a school computer which will use the system, with the system being located on the school network, and be projected onto a large screen, so that everyone can clearly see the system being used. All teachers will need to know the same information about how to use the system, so it was decided that a group session would be most effective. The plan for this demonstration will be to do the following: show the main menu was, a mock booking to show the teachers how to make a booking via the booking form. Then the process of checking which bookings had been made on a specific day will be demonstrated in a specific room, and then a demonstration of how teachers can view what they have booked and also what others have booked.

In addition, I was asked by the client, to run a few lunchtime drop-in sessions for staff so that they could ask any questions they wanted to or to find out anything they were unsure of. This will help to cater for any teachers who do not feel as confident in the use of the system and technology and will provide them with the opportunity to ask specific questions and gain personalised training, based on their own needs. Hopefully at the end of these sessions, teachers will feel happier about using the system and all of their questions will have been answered. I will do this in the weeks after the system is installed. Along with the user guide, both Mr Dattani and I feel this will be enough to help staff get used to the system and use it effectively.

Training and Installation Plan

Date	Action
25th April	Meet with Mr Dattani and the network technician, in the ICT offices to install the software and import the data files, which Mr Dattani has.
27th April	Group demonstration of the software to staff. Venue: in the school lecture hall which has a projector and large screen. This will be led by me and assisted by Mr Dattani. A question and answer session will take place at the end.
29th April – 5th May	A series of lunchtime drop-in sessions will take place in this period – 4 in total. I will be present at these, as will Mr Dattani. To each session a department will be invited to bring their staff along and have a one-to-one demonstration where they can practice using the system for themselves.

c(ii) *Installation: details of the training that will need to be available to the staff who must use the new system (3)*

The candidate has clearly outlined some sensible and viable methods for training the staff, with details of what the training would involve and logistically how it would take place. They have provided the administrative details of the training plan and have explained what will be covered in the session. Different needs of the staff members have been considered and two types of training session have been planned. 3 marks are awarded.

Creation of Files
System Data

The data to be installed on the system will be in the form of a CSV file and this will store information about the current teaching staff and rooms available for booking. I will need to make sure that I have the most up to date version of these files, so that the information provided by the system is accurate. I will ask Mr Dattani and the network technician to prepare this data, so that it can be imported into the system when required. At the moment there are 70 teachers within the school that will need to be imported and 9 teaching rooms that will also need to be imported into the system. This is expected to take 2 hours in total, just to make sure that the data has been correctly imported over and checked through, so be 100% sure that there are no errors within the data stored. It is planned to import this data on the 25th April and myself, a network technician and Mr Dattani will oversee this process. It will be carried out within the school in the network technician's office where the system can be accessed.

Hardware/Software Acquisition and Installation

The school campus already has a large web of networked computers in every room. There are network connections within each room, which means the system can be accessed on the common area of the system. Therefore, no extra hardware was needed to run the system on all the computers. Also, all of the computers meet the original hardware requirements of the system. All computers come equipped with Microsoft Access 2003, and therefore no extra software is needed. I shall install the database with the help of the network technician, on the school network and this will again be done on the 25th April. I shall then import the necessary data files from CSV files, which Mr Dattani has for me, as mentioned previously.

See the hardware specification below:

Hardware/Software	Available on all computers on campus?
Pentium 233Mhz processor equivalent or higher – Pentium III recommended	Yes
128Mb Random access memory for operating system (Windows XP) or higher	Yes
64Mb Random access memory for operating system (Windows 2000) or higher	Yes
450 Mb Hard Disk space or higher	Yes
A super VGA monitor supporting at least 800pixels x 600pixels resolution. Also must have 256 colours minimum	Yes
A pointing device, such as a mouse	Yes
A typing input device, such as a keyboard	Yes
Microsoft Access 2003 or higher	Yes
Operating system such as Windows 2000 or XP	Yes

Server:

There is a central server room on campus, which hosts the network for the school. It is essentially where the software will be located, and the software will be accessible from all areas of the campus. The server has enough storage space for the small software .mdb file and will cope with the software easily. Also, the server holds all of the applications for each individual computer, such as Microsoft Access. The server is capable of running the software needed.

Processor:

Each individual campus computer has at least a Core 2 Duo processor running at 1.6Ghz clock speed. This amount is sufficient for running Microsoft Access from the network and running the system.

RAM:

Each individual campus computer has at least 512Mb DDR2 Random Access Memory (RAM). This amount is sufficient for running Microsoft Access from the network and running the system.

Hard Disk:

The individual campus computers run all of their applications directly from the server. The server is capable of having enough hard disk space for the software file, and already has Microsoft Access installed.

VGA:

Each individual campus computer has a 17″ flat screen TFT. Each screen can run a maximum resolution of 1280 x 1024 pixels in 32-bit. This is sufficient for the software.

Input Devices:

Each individual computer has a mouse and a keyboard, which are needed to run the software.

Operating System:

Each individual campus computer has Microsoft Windows XP installed, which can run Microsoft Access, and therefore each computer is capable of running the software.

Software:

The software used to design the system was Microsoft Access 2000. The system is easy to use, and has many wizards to help make forms and macros and even tables. The most useful wizard was the importing data to form a table, where Mr. Dattani emailed me a text file which had the teacher details in it, and I was able to import this data into Access with very little trouble. The wizard did it all for me.

> *c(ii)* **Installation:** *details of the means by which the new files are going to be created, including some indication of the scale of the problem, and also the possible need for hardware installation and the installation of the software on the hardware (2)*
>
> The candidate has clearly outlined how the files will be created and where they will come from. They have also thought about the hardware and software requirements required. They have clearly considered specific details about the data to be transferred, such as data volumes, timescales and how the data will be transferred into the new system. 2 marks are awarded for this section.

Changeover Methods

The installation of my system within the school can happen in one of a number of ways. These different ways have their own advantages and disadvantages, and some may be more beneficial to the smooth running of such a task than other methods of implementation.

The four different methods of implementation, which the school can use, are as follows, with descriptions:

Pilot changeover

- o This is where only a small part of the school will receive the new system. When they agree the system is OK, then a full changeover can take place. This will not be a good method for the school to use as if half of the teachers are using the old system and the other half are using the new system, then problems could arise with bookings. Also – if perhaps only one or two rooms are subject to the new system and the other rooms are all subject to the old system, problems could arise again, with perhaps those who are used to using the old system finding themselves constantly booking the rooms only available on that system.

Parallel running

- o This is where both systems are used in conjunction, until everybody is completely happy with the new system, and then the old system will be removed. This will cause problems for the school with double bookings and other issues. Synchronising the two systems may be an option if parallel running is to be used, however – it will be the case that this method will become too complicated.

Direct changeover

- o This method is where the old system is removed completely, and replaced by the new system. This is likely to be the method, which the school should use to implement the new system. All old references to the old system will be destroyed, to ensure duplicate bookings and confusion does not take place. In this way – the teachers will literally go from using the old system to the new system and have to deal with the problems that the new system contains, and will have to learn how to use the new system. This could cause problems if some teachers are unwilling to learn how to use the new system, however it should not be a problem.

Phased changeover

- o The new system does not have phases, and it would be impossible for the new system to be implemented in phases. Therefore, a phased changeover is not an option.

After discussing these options with the client and advising him, Mr Dattani has agreed that the direct changeover method will be used.

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c(ii) ***Installation:*** *details of appropriate, different, methods of changeover explained so that the client can make a reasoned decision (2)*

The candidate has given clear description of four methods of changeover and related them to the situation and client in hand, clearly stating why the chosen method is better. This section is awarded 2 marks.

Manual

See separate document

Activity Log

Date	Activity
5/9	Initial telephone discussion with Mr Dattani – he is going to write to me with more information.
10/9	Visited Shelley Academy to talk with Mr Dattani and observe the current system. Took some screenshots to help me.
14/9	Wrote interview questions and follow up questions ready for formal interview with client on 20th September
20/09	Interviewed Mr Dattani. I also left him 20 questionnaires to give to staff. He will send them back when he has got them completed.
29/9	Collected questionnaires which had been sent back. Began analysing them.
5/10	Completed analysis of questionnaires. Made some pie charts to show results and wrote up the analysis of all the data I've collected on the current system.
7/10	Completed the write up of the problems and spoke to Mr Dattani about the requirements specification.
10/10	Wrote up the requirements specification.
12/10	Investigated and wrote up the possible alternative solutions and sent these and the requirements specification to Mr Dattani.
15/10	Received an email from Mr Dattani confirming he was happy with the requirements specification and the solution chosen. Wrote up the hardware and software specification.
5/11	Began the design of the solution by drawing out the ERD and planning my tables on paper
7/11	Wrote up the design specification after confirming in a phone call to Mr Dattani that I had the details correct.
10/11	Drew up a table of file and data structures to enable me to build the tables and validate them. Managed to design most of the tables in Access too.
15/11	Drew out the designs for the forms
18/11	Listed all the processes in a table format so I can clearly see how the data flows through and also which processes need to take place. Planned and designed the queries.
21/11	Planned the error messages needed and designed some of them.
25/11	Met with Mr Dattani and showed him all of my designs. Left them with him to look over.
28/11	Received a letter from Mr Dattani, stating that he was happy with the designs so I began to put some sample data into the system in order to begin developing it.
3/12	Drew up my project plan for the development stage
5/12 &	Spent some time planning the tests required in order to check I'm testing the requirements

7/12	specification and all aspects of the room booking system.
9/12	Checked all the tables were set up, validated and relationships were set up properly. Had a few issues with the relationships as I hadn't set up some field types correctly. Resolved these.
6/1	Designed the first couple of forms and designed the switchboard. Had to move things around a few times on the switchboard to get it working properly and get the required buttons in.
8/1	Designed some of the queries and began to link them to the buttons in order to test them.
10/1	Finished designing the forms and did a little sample testing on them. Discussed modules with my teacher to further understand the point of them and then decided to create a module for making sure the windows are of the same size for all forms when they open. I thought this would look quite neat.
15/1	Did some research in books on Macros and thought about which macros would be useful in my database.
18/1	Finished designing the queries and began to attach queries to the correct forms.
19/1	Finished attaching queries to buttons and did some on-going testing to make sure it all worked. Got my teacher to test the buttons and see if there were any issues.
25/1	Worked on designing password protection for the form, which allows amendments to data in the system.
27/1	Finished the password protection.
28/1 - 10/2	Spent some time finalising the design of the interface, ensuring all colours/fonts/crests were in the right place according to the client. Made some phone calls to confirm things with the client during this time to ensure I had the right crest and whether the colours were the right shade.
25/2	Began testing the system formally according to my test plan. This took several lessons and I was pleased that they worked well.
4/3	Visited Shelley Academy to give a beta copy of the system to Mr Dattani. He and a member of the ICT department are going to test out the system and report back on it using some questions I've designed.
8/3	Received very positive feedback from the client testing.
10/3	Having finalised the testing, I phoned Mr Dattani and we discussed his ideas for installing the software and what training would be required for the staff in the school. Following the call I wrote him a letter detailing the dates, times and places for the installation and training.
15/3	Received a letter from Mr Dattani confirming details. Worked on some plans for the training - a PowerPoint presentation. This will happen after the Easter holidays.
22/4	Phoned Mr Dattani to confirm all was OK for the installation and to ensure he has the data files needed. Worked on finalising some of the details and just making sure all was OK with my system. Worked on the training slides.

25/4	Went to Shelley Academy to install the system with the help of the network technician. All went smoothly and we managed to import Mr Dattani's staff data and room data into the right tables.
27/4	Went in to Shelley Academy to present to the staff. Very positive feedback from them about the new system and lots of useful questions.
29/4 – 5/5	I spent some lunchtimes with Mr Dattani, helping to train the staff one-to-one.

Evaluation

Evaluation of Requirements

In my evaluation I am going to discover and analyse the extent to which I met the requirements and objectives of the client.

Requirement	Degree to which it has been met	Notes
Be easy to operate by all teachers – with user-friendly messages and no screen to be more than 3 clicks from the main menu.	This was completely met as shown in the screenshots of the forms and in the end user testing.	
Be accompanied by a user guide explaining how to use the system.	This was also fully met. The user guide is attached and clearly explains to the user how to use the system. It provides a range of screenshots and written instructions, so that the user may refer to it, if they cannot remember the details covered during the training session	Separate User Guide
Contain initials of all the teachers.	Fully met as shown in the tables. All 70 teachers have been added to the database and their initials have been stored in the table tbCurrentTeacherData.	
Contain the first and last names of each teacher.	Fully met as shown in the tables. As above, the first and last name of each teacher is also stored in the table tbCurrentTeacherData.	
Contain the name and code of each bookable room	Fully met as shown in the table tbRoom, where this data can be stored.	
Ability to edit information about each bookable room – e.g. numbers of computers (for example if some are being fixed)	Fully met as shown in software development and in the user guide. The user is able to change the information about bookable rooms via the frmRooms form, which allows them to change data as required.	
Comply with the schools colour scheme and font use – this is Arial, Size 12, deep red in colour.	Fully met as shown in the screenshots of the screens and in user testing. A consistent colour scheme and use of fonts has been used and the system matches the style of the school's other documents.	
Enable staff to make bookings for specific rooms at specific dates and times.	Fully met as shown in the design and development as well as in the user guide. Staff members select the 'Make a Booking' option from the main menu and they are then taken to another form. They select a date from the calendar and then select a time and room from the drop down box. They finally select their initials from the teacher drop down menu and save the record. This is then added to the database.	

Enable staff to search for availability of rooms at specific dates and times.	This requirement has been fully met. Staff can use the Rooms and Dates form, which is accessed from the Booking Checker main menu. They can then select the date by typing it in and then and the room from the drop down menu. Although the user cannot select the time, the bookings that have been made for each period are displayed, so that the user can then identify the periods when the room has not been booked.
Making a new booking must be accomplished within only 10 clicks of the mouse and unlimited keyboard use.	Fully met as shown in user testing. They have tested to make sure that a booking can be made in under 10 clicks and have confirmed that this is possible.
Must be accessible from all areas of the campus, and must have the attributes for this.	Fully met as shown in user testing, where the user attempted to access the system from a number of locations. This was found to be successful.
Multiple users must be able to use the system at one time.	Fully met as shown in user testing. Again, the users attempted to access the system simultaneously and from the testing they found that multiple users could access the system at once, meaning that there will be no issues with error messages coming up and users not being able to make a booking.
Contain a main menu.	Fully met as shown in the form screenshots and testing. A main menu was created, which allows the user to select from the following options: Booking Checker, Make a Booking, View/Edit Rooms, View/Edit Teachers and the option to close the system. There is also a sub menu which allows the user to search for bookings that have been made, both by date and room and also by teachers.
Contain functions to check current bookings, accessible by all.	Fully met as shown in the testing. There is an option to view all bookings that have been made by teacher and also by room/date. When used, the search feature displays all of the bookings that have been made, which match the search criteria entered.
Contain relevant security measures to ensure bookings cannot be over written.	Fully met as shown in the development phase. There is actually no option or feature available to the user, which gives them the option to select and delete a booking that has already been made. This can however be done by the database administrator if required and a booking has been made by mistake or is now no longer required.
Contain relevant security measures to ensure room details cannot be added or deleted or edited.	As above. This part of the system is password protected and only authorised users can actually amend this data. They cannot view it without entering the correct password.

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Contain relevant security measures to ensure teachers and their details cannot be added or deleted or edited.	As above. This part of the system is again password protected and only authorised users can actually amend this data. They cannot view it without entering the correct password.
Each window of the system must be the same size, and the system must be clean and tidy.	Partially met. This hasn't been completed, due to time restrictions. It took too long to make sure that they were all uniform in size and appearance and during the development of the system, it was felt that this was not a priority.

Shortfalls

Although I fully met almost all of the requirements I feel that some aspects of the system didn't work as well as I would have wanted them to. I think it would have been better if I had created some reports because although the client didn't really need them at present it would have been a good feature and would mean that room lists and booking sheets would be printed in a more user-friendly way. The printing of information in the current format is not very professional looking and the layout of information is not that suitable.

The windows were not all the same size in the end as this was a very time-consuming thing to ensure and really I should have made it a priority every time I created a new form. However this is more of a cosmetic issue so the client doesn't really mind this. However as it was on the requirements specification I really should have tried harder to do this.

I could have created more error messages. Although the end-users felt that the error messages that were in the system were helpful and helped them to know what they had to put right and they didn't come across anything, which they couldn't work out themselves, I think it would have been better to put in messages to warn people about what they should enter.

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*e) **Evaluation**: evaluation of each of the requirements from the requirements specification including showing how the completed solution meets the requirements. Areas from the requirements specification that have not been met are discussed (4)*

This candidate has clearly discussed each requirement in a good level of detail. The have specified whether the requirements have been met and have also provided a written description, to explain exactly how the requirement has been met by the solution. Any requirements that have not been met are identified and discussed further by the candidate. 4 marks are awarded.

Desirable Extensions

Although my room booking system has satisfied the client there are some areas where if I had more time I would be able to extend the system and make it even better. These ideas are listed here:

Online version of the system

The system could be placed online so bookings could be made off campus. This is possible, if the main system was located online, then teachers could access the system from any computer with internet access. This would be particularly useful if they tend to do quite a bit of work at home. A limitation of this would be if the internet was to fail on campus (or outside campus on a computer a teacher wished to use) then the system would be inaccessible. Microsoft Sharepoint Services provide a shared document facility, and it would be wise to use such service to have the system online.

Timetable

The old system was in a timetable format, where the bookings where listed via a timetable, and if a new booking was to be made, then a teacher would fill in an available slot on the timetable to reserve it. The new system does not contain this function, however it does contain a function, which allows a user to see which periods have been booked for a room on a date by which teacher. Reports could be used to create a timetable style system and this could be then printed out. Each room could have a dedicated report, which would show which teacher has booked the room for the teaching periods within the space of a day or even a week. This would also be useful, so that a paper-based log of who has booked each room could be displayed for say the following week.

Username and Passwords

The system requires users to type in their own initials. There is nothing stopping the users from typing in someone else's initials, either by mistake or purposely. Therefore, having individual usernames and passwords for each user could be quite useful – because it stops vandalism taking place. Microsoft Access does have a facility to implement this type of security, however it would be quite a long process, and each user would have to have their own individual details.

Converting the system into an application

At present, the system runs on Microsoft Access. It would be desirable to have the program run via Visual Basic as an .exe file, so that users do not use Access to vandalise the system. This would not be difficult to do.

Deleting a user's own booking

If a teacher wishes to delete their own booking, they have to email one of the ICT team who would go through the table of bookings and delete it manually. It would be good to have a query, after implementing usernames and passwords, which finds all the current usernames bookings. That user could then delete specific bookings, to save the hassle of the ICT team from doing it. Again, the use of individual's passwords and usernames would have to be implemented for this idea to work, as otherwise it could be used to delete other teacher's bookings, so that a room was then available. This is unlikely to occur, but it is best to ensure that security is at a high level, so that the option for misuse is not available.

e) **Evaluation**: details of extensions to the project and how these might be completed (2)

The candidate has provided a range of possible extensions to the system and they have considered how these would be achieved. 2 marks are awarded for this section.

Evaluation of the System Development Process

The development of the actual system started pretty much on time and I got to work on the tables to start with. It took just over a week to develop the tables, set up validation and check that they worked correctly. I did have some errors with the data types I had used, which caused errors when creating relationships between the tables. This meant that the testing took a little longer than expected, but only by a few days. Rather than sticking to my plan, I then had quite a bit of time away from the project as it was the Christmas holidays. Looking back, I was quite unrealistic with my plan and didn't really give myself any time off from the database development and by the time the holidays arrived, I wasn't that motivated to get on with my work and had a few weeks rest. This subsequently meant that the form creation didn't start till early January and I was therefore nearly a month behind with my time plan.

Although there was this delay, I tried to still follow the project plan I had developed, but using altered dates, to reflect the time I took off. The form development was also merged in with the query and macro development, rather than doing each component bit by bit. I found it easier to do it this way, as the queries, forms and macros all linked in together and it seemed more logical to fully complete a section, test it and then move onto the next section. This in the end worked very well and it meant that I could fully focus on making sure each aspect of the system was developed correctly and worked as expected. The remaining aspects of the system development followed the plan as expected, but again the time required did take longer than expected.

As a whole, I think the plan did help me to work out what tasks had to be completed and the order that they needed to be done in. Although I did complete some tasks in a slightly different order, all tasks were eventually completed and this worked best for me. The timing was the biggest issue with the project plan and it was unrealistic to think that I could complete the system and fully test it in just under two months. In reality it took me three months to complete the system. I hadn't taken into account the complexity of some aspects of the system, mainly due to the fact that I had never used some of the required skills before and this meant that I had to do some independent research before starting these. This was in particular for the coding and macros that I created for the system. Another issue I did not plan for was the fact that things do not always work and go as planned. I should've added some extra time in at the end of sections, to cover this.

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*e) **Evaluation**: evaluation of the finished development against the project plan from design (2)*

The candidate has looked at both their project plan and log of events and discussed how the two compare. The candidate has explained areas where actual and planned activities differed and they have reflected upon their work and they have identified possible areas for improvement, for future work. 2 marks.

*f) **Presentation of Report:*** *The candidate has provided details and accurate means of navigation of the report and has tailored the language used, both technical and non-technical, to the audience for which the parts of the report were aimed. Subject-specific terminology will be used correctly. A professional approach to the presentation will be expected and a clearly understandable, dated log of events will be kept. The information will be presented in an ordered and well structured manner. There are few, if any, errors of grammar or spelling (3 marks).*

The candidate has presented the report in a professional way; there are page numbers, hierarchical headings and a contents page. The report is structured according to the mark scheme layout so everything flows in a natural order. Technical language has been used in the development phase but less so in the user guide where a non-technical user is more likely to be reading the user guide. Fonts and screenshots are clear and appropriately sized. A log of events is included and although this does not follow the project plan Gantt chart exactly, this is not a problem. Grammar and spelling are excellent. Full marks would be appropriate here – 3 marks

Marks and Mark Scheme

Definition, Investigation and Analysis	
Definition [2 marks]	2
Investigation [12 marks]	11
Analysis [9 marks]	6
Design	
Nature of the solution [13 marks]	9
Project Plan [2 marks]	2
Software Development, Testing and Installation	
Software Development and Testing [14 marks]	9
Installation [7 marks]	7
Documentation	
Manual [10 marks]	9
Evaluation	
Evaluation of Requirements [4 marks]	4
Extensions [2 marks]	2
Evaluation of finished development [2 marks]	2
Presentation of Report [3 marks]	3
TOTAL:	66

A2 Unit G064: ICT Project (Exemplar Project)

(a) Definition, Investigation and Analysis [23 marks]

(i) Definition – nature of the problem to be investigated [2 marks]

1 mark	a brief description of the organisation or group that has the problem and an introduction to the client and/or the end user(s) and their place within the organisation or group;	1
1 mark	an outline of the problem that needs to be solved.	1

(ii) Investigation [12 marks]

2 marks	thorough planning of the mechanics of the interview situation;	2
3 marks	reasoned set of questions to elicit important information (possible responses have been considered and follow-up questions have been planned);	2
1 mark	record of key responses of interview, demonstrating two-way discussion;	1
3 marks	evidence of analysis of the current system or of likely problem areas, arriving at reasoned conclusions that will show evidence of being agreed by client;	3
2 marks	information collected about the requirements of the new system;	2
1 mark	clear presentation of the information collected about the new system	1

(iii) Analysis [9 marks]

3 marks	a requirements specification containing a number of clearly defined objectives that the solution should meet. These must be arrived at through consultation with the client;	2
3 marks	a comparison of a number of different methods of solution, one of which may be the present solution and at least two others to allow a reasoned decision to be made in consultation with the client;	2
3 marks	a reasoned list of hardware and software requirements for the new system, providing clear justification for each choice in relation to the problem to be solved.	2

(b) Design [15 marks]

(i) Nature of the solution [13 marks]

4 marks	design of data handling, including capture, preparation and storage or design of website to include map and diagrammatic representation of links;	3
4 marks	design of inputs, processing and outputs, including error capture reports as appropriate, based clearly on the analysis of the client requirements;	2
1 mark	clear evidence of end user/client involvement in decision making and evidence that the options of the user/client have had an effect on the solution.	1
4 marks	a test plan that will identify a number of tests that will be carried out on completion of the work. Each test outlined should be clearly related to the relevant requirements stated in the requirement specification, all of which should feature in the test plan. The specific test to be carried out should be included in the plan together with the result expected. The tests specified in the test plan will be completed during the testing of the solution (some elements of testing should involve the end user(s)).	3

(ii) Project plan [2 marks]

2 marks	Clear description, diagrammatic or otherwise, of the different tasks necessary to complete the solution and a clear timetable.	2

(c) Software Development, Testing and Installation [21 marks]

(i) Software Development and Testing [14 marks]

8 marks	§ 6-8 marks: the candidate has solved a problem that has needed a level of complexity greater than a simple linear type solution; § 3-5 marks: the candidate has attempted to solve a problem that has needed a level of complexity greater than a simple linear type solution and has been successful in some aspects; § 0-2 marks: the candidate has produced a solution that is a linear style of solution in the use of software;	6
2 marks	evidence of the development of one aspect of the system that processes data;	1
2 marks	hard-copy evidence of an effective HCI with annotations explaining its effective solutions for problems that have been highlighted in the requirements specification;	1
2 marks	evidence that each of the tests specified in the test plan have been carried out, that they are linked to the hard copy evidence, that the results have been analysed and that any necessary action has been identified.	1

(ii) Installation   [7 marks]

3 marks	details of the training that will need to be available for the staff who must use the new system;	**3**
2 marks	details of the means by which the new files are going to be created, including some indication of the scale of the problem, and also the possible need for hardware installation and the installation of the software on the hardware;	**2**
2 marks	details of appropriate, different, methods of changeover explained so that the client can make a reasoned decision.	**2**

(d) Documentation   [10 marks]

Manual

8–10 marks	Candidates will produce detailed and accurate documentation. The manual will be presented in a well-structured and coherent format. Subject specific terminology will be used accurately and appropriately. The documentation will include a complete and detailed user guide covering all operations that the user would be required to perform. The on-screen guide should be well presented and easy to follow. There will be few if any errors in spelling, grammar and punctuation.	**9**
4–7 marks	Candidates will provide clear documentation. The documentation will be well presented. There is clear on-screen help to support the end user. The supporting documentation and on-screen help is well presented and covers most aspects of the operations that the user would be required to perform. Some subject specific terminology will be used. There may be occasional errors of spelling, grammar and punctuation.	
0–3 marks	Candidates will provide a superficial documentation with weak supplementary user documentation covering few aspects of the operations that the user will be required to perform. The information will be poorly expressed and limited technical terms will be used. Errors of spelling, grammar and punctuation may be intrusive.	

(e)   Evaluation   [8 marks]

4 marks	Evaluation of each of the requirements from the requirements specification including showing how the completed solution meets the requirements. Areas from the requirements specification that have not been met are discussed.	**4**
2 marks	details of extensions to the project and how these might be completed;	**2**
2 marks	evaluation of the finished development against the project plan from design	**2**

(f) Presentation of report   [3 marks]

3 marks	The candidate has provided a detailed and accurate means of navigation of the report and has tailored the language used, both technical and non-technical, to the audience for which the parts of the report were aimed. Subject-specific terminology will be used correctly. A professional approach to the presentation will be expected and a clearly understandable, dated log of events will be kept. The information will be presented in an ordered and well structured manner. There are few if any errors of grammar or spelling.	**3**
2 marks	The candidate will produce a navigable report. The contents will be determined by the requirements of the candidate rather than the reader. A log of events will have been kept. The information is presented in an ordered fashion that maintains some coherence. There may be some occasional errors of grammar or spelling.	
0–1 mark	The candidate has produced some material that explains part of the solution attempted. It will be difficult to navigate and will assume much knowledge of the solution that the reader will probably not possess. The information may be expressed without a structure. Errors of grammar or spelling may be intrusive.	|