AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

GCSE Information and Communication Technology (Specification B)

Coursework Support Material

Exemplifying The Marking Scheme

Theme 1: Communicating and Handling Information Example 1

Note:

> The examples given in this booklet usually demonstrate the absolute minimum that is required for each mark. Any work showing less evidence than that shown is therefore likely to be awarded less marks.

Coursework – Communicating and Handling Information

The marking criteria are given in the syllabus, together with some explanatory notes. This section includes these criteria, together with additional guidance from the Syllabus Support Material and exemplar paragraphs for each criterion.

The notes are provided to amplify the application of the marking criteria. They are given for guidance and to aid teachers in the assessment of coursework not to replace the criteria themselves. If centres have specific enquiries in relation to the marking criteria, they are encouraged to contact AQA for further clarification.

The exemplar paragraphs indicate the minimum standard expected for the award of a particular mark. If a candidate's work does not exceed or meet the content shown for a given mark in these paragraphs then that mark cannot be awarded.

For some criteria, evidence in the form of print-outs, screen dumps or diagrams will be needed. These are indicated for each criterion, with suggestions as to the nature of this supporting evidence. For some criteria the report itself will provide the necessary evidence.

The number of marks is not related to the amount of text written to evidence any criterion. In these samples the examples for higher marks are often slightly longer: this is because they are intended to show the difference in evidence needed to support each criterion.

There is no virtue in encouraging candidates to illustrate each criterion many times. Validation, for example, can be justified within a context by explaining how two or three fields are validated (using more than one technique): it is not necessary to explain in detail how all seventeen fields are validated.

A - Description of the task to be attempted (3 marks)

3   The description is concise and clear and shows a good understanding of what is involved within the problem

2   Description is evident and shows some understanding of the problem

1   A simple outline of the problem to be solved

0   Little or no description

The thrust of the task involves using ICT to solve a problem. The task should address identifiable needs, preferably of a third party, and provide scope for candidates to demonstrate breadth and depth in their use of ICT. If a candidate chooses a task that is trivial, i.e. that no investigation or analysis is required and the candidate needs to make no choices, it will be hard to award marks for the description of a task. Few candidates are expected to select tasks that fall into this category. Teachers should approve the tasks that candidate chooses.

To be worth more than 1 mark, the description should provide sufficient detail to provide a clear indication of the problem, in both depth and extent, which the candidate has chosen to solve. For 3 marks, the problem will require the candidate to explain clearly what the problem is and the extent of the difficulties being faced by the third party.

Evidence in report

1 mark minimum requirements - work showing less evidence can be worth no marks
I have been asked to design a patients' database that can be used by doctors to find patients' data more easily as it is taking a long time to find the data.

2 marks minimum requirements - work showing less evidence can be worth one mark
The doctors keep the patents' records on slips of paper in a folder and these can be lost. They find it slow to get at patient's data and it takes time to get the data. I am going to design a patients' database that can be used by doctors to find patients' data more easily

3 marks minimum requirements - work showing less evidence can be worth two marks
The doctors keep the patents' records on slips of paper in a folder and these are sometimes misplaced. The receptionists and the doctors both find it slow and difficult to get at patient's data and the patient often has to wait while records are found. The records are updated by the doctor writing on slips of paper which are sometimes put into the wrong order. The receptionists have problems reading the doctor's handwriting and sometimes put the folders back in the wrong place. I am going to design a patients' database that can be used by both the doctors and receptionists to find patients' data quickly and more easily

B - Analysis (3 marks)

3   A clear understanding and analysis of what is involved within the problem, an insight into the possible methods that could be employed in its solution and reasons for the chosen method of solution.

2   An understanding and analysis of what is involved within the problem and an insight into the possible methods that could be employed in its solution

1   Some analysis of what is involved within the problem

0   No, or a cursory, analysis

Here the candidate should have analysed the task and have looked at the possible alternative methods of solution. To gain 3 marks the candidate should make a reasoned judgement as to why the chosen method of solution is to be used.

The candidate must show some evidence in the report of the investigation and analysis, and marks are awarded in the light of this evidence. However this investigation should be of the problem and not of the solution. This evidence may be a needs analysis carried out by questionnaire, examples of similar systems implemented in different contexts or some relevant information from sources such as business organisations, internet sites or printed resources. Note that weaker candidates may flood the report with large volumes of printouts and similar materials, without any indication of understanding of relevance (or otherwise) to the task. This type of evidence cannot be given a great deal of credit, and is unlikely to be worth more than 1 mark. For more than one mark there must be an examination of other methods of solving the problem

Evidence in report

1 mark minimum requirements - work showing less evidence can be worth no marks
I went to see our doctor and talked to her about the information that they kept on patients and how they keep it. I am going to make a database for a doctor's surgery. My database will do the same things that they do with the filing system that they use now but it will be a lot quicker and easier to use. Their filing system at the moment is a lot of brown envelopes which hold the patient records but these take up a lot of room and also take a long time to find especially when they are put back in the wrong place. It should be possible to look up patients details and to change things about the patients, like their addresses and what drugs they are allergic to.

2 Mark minimum requirements - work showing less evidence may be worth 1 mark
I went to see our doctor and talked to her about the information that they kept on patients and how they keep it. At the moment they use a lot of brown envelopes which hold the patient records but these take up a lot of room and also take a long time to find especially when they are put back in the wrong place. They could do the job better by investing in a new, paper based system where each patient has their own folder of forms which the doctor can write on. The other idea is for me to make a database system that will do the job. If I do it well then the new system should make their life a lot easier, because they won't have to spend such a long time bending over and looking in filing cabinets for patient's medical details but will be able to get them at the touch of a key. I am going to make a database for a doctor's surgery. My database will do the same things that they do with the filing system that they use now but it will be a lot quicker and easier to use.

3 mark minimum requirements - work showing less evidence may be worth 2 marks
I went to see our doctor and talked to her about the information that they kept on patients and how they keep it. I talked to doctor and receptionists to find out what is good and what is bad about the system that they use now. They showed me that they use a lot of brown envelopes which hold the patient records but these take up a lot of room and also take a long time to find especially when they are put back in the wrong place.   They would like to be able to easily look up patients details and to change things about the patients, like their addresses and what drugs they are allergic to.

I have looked at other possible systems that might solve the problems that the doctor and receptionists face. I should be able to find out what works well and what needs to be improved and use this information to develop my computerised system.

They could invest in a new, paper based system where each patient has their own folder of pre-printed forms which the doctor can write on. This would be slightly better than the current system but would still take a lot of space and be slow to use   A second alternative is to buy a professional patient handling system. This is a specially written data handling system for health care professionals. I went on the net and found a company that does this but I could not find the price of it. I have been told by my teacher that this is a very expensive option.

The third alternative is for me to create a database system for the medical practice. This is the cheapest option and it should allow the receptionists and doctors to add new patients, delete those patients who leave the practice for whatever reason, to edit their details and to add details of new illnesses and treatments. It will be based upon the manual system that is used at the moment, although this is very labour intensive. When implemented it will be more efficient than the existing system, allowing information to be retrieved more quickly and accurately. The database will also allow the medical practice to quickly get information that is now too time consuming to put together. For example, they could estimate future needs for medical care for older people by finding out how many patients are more than 70 years old.

C - Specification (3 marks)

3   Detailed and reasoned specification of how the solution will be judged as a success

2   Evidence of a specification of how the solution will be judged as a success

1   Some evidence of a specification

0   No specification

In this section the candidate shows that the solution to the problem has clear evaluation criteria. To gain 3 marks the candidate should demonstrate depth and sophistication in the criteria that will be used to judge the success of the final solution.

Evidence in report

1 mark minimum requirements - work showing less evidence can be worth no marks
The new database system must be faster than the current system and should be easy to use. It should take up less space and stop losing stuff

2 mark minimum requirements - work showing less evidence may be worth 1 mark
The new system should be:

- Easy to use for the doctor and receptionists

- Able to retrieve information more quickly

- Able to store all the data on patients

- Able to print lists of patients who need a visit

- Free from errors as much as possible

3 mark minimum requirements - work showing less evidence may be worth 2 marks
My evaluation will be based firstly on whether the database system works properly and secondly that it is faster in finding a particular patient and a surgery list than the existing system. Thirdly the doctors and receptionists should find it easy to use.

- The system will need to be thoroughly tested to make sure that there are no errors in the system functions.

- The data must be carefully checked during entry to prevent mistakes.

- The resulting output data must be completely accurate.

- The details of a particular patient should be able to be printed within one minute so that the patient is not kept waiting.

- The production of a surgery list should take less than five minutes.

- The results of a survey should show that doctor and receptionist find the system easy to use.

D - Design of the ICT system (4 marks)

4   A clear and logically laid out design using a variety of techniques

3   A clearly laid out design using a variety of techniques

2   A clearly laid out design

1   Some evidence of a design

0   No evidence of a design

Having chosen the appropriate method and identified the requirements of the solution, the candidate should develop a planned design of the ICT system as a whole and describe the relationship between the various parts of the solution, using a variety of presentation techniques which could include flowcharts, algorithms, structure diagrams, systems diagrams or written descriptions. In this context a good design shows how the various parts of the newly designed system will fit together, from gathering the data all the way thorough to the final output. For more than two marks there must be more than one technique evidenced.

Evidence in report and diagrams

1 mark minimum requirements - work showing less evidence can be worth no marks
This could be a simple top-level system flow chart or simple structure diagram of the whole system, or simply a written description as below. There may be errors in the chart or diagram.

Having carried out my investigation, and analysed the results, I have decided that my system will be based on a file of patients' records. Each record will contain the details of one patient. The fields will include details like name, address and telephone number as well as visits to the doctor.

2 mark minimum requirements - work showing less evidence may be worth 1 mark
This must be evidenced by a clear system diagram, structure diagram or flowchart of the whole system. It may alternatively be a written description as below however there may be some errors in either the written or diagrammatic form.

Having carried out my investigation, and analysed the results, I have decided that my system will be based on a file of patients' records. Each record will contain the details of one patient. The fields will include details like name, address and telephone number as well as National Health number, details of allergies to medicines and visits to the doctor. The medical staff will have to load Access and then load the file. When they have done this they can choose to search for a patient, to add new patients, delete those who have left the practice or update records after a visit. Input to the system will be validated to reduce or eliminate errors in the data. Reports will be produced that cover all the needs of the doctor and receptionists including lists of patients for each surgery and individual reports on patients.

3 mark minimum requirements - work showing less evidence may be worth 2 marks
This could be evidenced by an appropriate combination of a clear system diagram, structure diagram, flowchart of the whole system or a written description such as the one above. The use of more than one appropriate technique is required for the third mark. There may be a few errors in either format.

4 mark minimum requirements - work showing less evidence may be worth 3 marks
The variety of techniques are clearly and logically laid out. Having chosen the appropriate method and identified the requirements of the solution, the candidate should develop a planned design of the ICT system and describe the relationship between the various parts of the solution, using a variety of presentation techniques which could include flowcharts, algorithms, structure diagrams, systems diagrams or written descriptions as below. There will be very few errors.

Having carried out my investigation, and analysed the results, I have decided that my system will be based on a file of patients' records. Each record will contain the details of one patient. My implementation will begin with the design of the database, and then data collection forms, entry screens and output screens. Then I will test it and finally I will write user documentation to allow the medical staff to use it.

When searching for a patient the user will be prompted to type in the forename and surname. To do this I will design an appropriate data entry form. This data should be enough to identify most patients although it is possible that there will be more than one patient with this combination. This could be the case with a common name like John Smith, or a family might have a tradition of giving one son the same name as his father. In that case they would have to use another search criterion as well, such as the date of birth, address or National Health number. I will design an error message to prompt for this information.

Similarly for the surgery list I will design a data entry form that asks for the date and day of the week (which can be used for validation) and the time of the surgery. The system will search for appointments that match the given details, then sort them and print appropriate fields in a report, with the time as the first column.

The search procedure will be followed when an existing patient's details have to be changed. If the doctor or receptionist chooses to edit a field the system will prompt the user to ensure that the correct field is chosen, and will validate the input. Once the alterations are made, the file can be saved.

To delete an existing patient the same procedure will be used, but if DELETE RECORD is chosen, then the system will check that the user is sure that deletion should take place before carrying out the operation. The file will then be saved.

To add a new patient, a different data entry form will appear and each field will be validated and require on-screen verification before being saved. This is to ensure that all the data stored on the system is correct.

Before I allow the medical staff to use it I will test the system using a range of valid and invalid data to make sure that the system gives the outputs that it should do. I will then create user documentation to allow the doctors and receptionists to use the system efficiently.

E(i) - Hardware resources required (2 marks)

2   An indication of the selection of hardware with justifications for the choice made

1   An indication of the selection of hardware

0   No indication of the selection of hardware

These marks are awarded for the selection of appropriate computer hardware including interfaces and control packages for measurement and control. In control tasks, marks for the choice of sensors and actuators would be given in sections E(iii) and E(vi).

Candidates are expected to explain reasons for selection of both hardware and software resources for 2 marks, although selection of hardware may well be determined by availability. An understanding of fitness for purpose can be considered as evidence of selection of a computer system if the candidate has no sensible choice available.

Evidence in report

1 mark minimum requirements - work showing less evidence can be worth no marks
I have used Access on a Pentium 2 system. This is a bit slow but, since my pilot database won't be all that big (only about 50 made-up patients), it should be fast enough to show how well my system will work. For the real system I would use the Bell 186 Pentium 4 system running Windows XP professional from Bell computers. They would need to have a large hard disc, because the database would be very big. It might be as much as 80Gb. They would also have a laser printer to print out reports instead of the Lexmark inkjet that comes with the Bell.

2 mark minimum requirements - work showing less evidence may be worth 1 mark
For the actual surgery system I would specify the use of up-to-date PC systems such as a Dell 213 Pentium 4 system running Windows XP Professional. This would have to have a large fast hard disc, since the number of patients at the practice is about 9000 and I calculated that it would be sensible to budget about 500Kb for each patient's records - this means that the database would occupy up to 50Gb. With backups this could go up to double that size. A laser printer attached to the system would be sufficient to print out any paper reports needed for the system although it would not provide colour pictures. A second printer would be a good idea, this should be a colour ink jet printer such as the Lexmark 201 as they are cheap and can provide good quality prints for patents photographs.

E(ii) - Software resources required (2 marks)

2   An indication of the selection of software with justifications for the choice made

1   An indication of the selection of software

0   No indication of the selection of software

These marks are awarded for the selection of appropriate computer application software.

Evidence in report

1 mark minimum requirements - work showing less evidence can be worth no marks
I suggest that the doctor uses Access rather than Lotus Approach because it is very powerful.
Access is a relational database from Microsoft.

2 mark minimum requirements - work showing less evidence may be worth 1 mark
I would recommend the doctor gets Microsoft Access 2003 to run the database because it
allows me to create a customised data entry form (which will look exactly the same as the data
collection form and so will speed up data entry at the doctor's surgery) and has a wide range of
validation checks. It is designed to work with Windows XP, normally comes as part of the very
useful Microsoft Office Professional package.

E(iii) - Data collection, data capture and input (2 marks)

2   Evidence, with clear justifications, of the design of methods of collecting or inputting
       data

1   Evidence of the design of methods of collecting or inputting data

0   No evidence of the design of methods of collecting or inputting data

In measurement and control tasks, marks can be awarded for the selection of sensors, sampling
times, variables and calibration (as appropriate).

Typical evidence for this could be the inclusion of data capture forms. Other evidence could be
the use of explicit or defined data entry sections on spreadsheets. 2 marks are available if the
candidate explicitly links the format of the data capture forms with the data structures
themselves or in some way indicates the reasons for the particular layout chosen.

Evidence in report and data collection forms or screen dumps

1 mark minimum requirements - work showing less evidence could be worth no marks
This report must be supported by evidence of data collection forms or screen dumps

I decided that I would need to draw separate input forms for finding a patient, for adding new
patient's details and to change existing details. I have included examples of these in the
printouts. I used Word to create the forms giving enough space for each item of data

2 mark minimum requirements - work showing less evidence may be worth 1 mark
This report must be supported by evidence of data collection forms or screen dumps

I decided that the main data inputs would be entering patient details, which would need an
appropriate data collection form that matched the data input screen. I created data entry forms
using Access and then used Word to create a set of matching data input forms to record the
data from the patient. The forms are neatly laid out with the fields in the same order and size as
the Access data entry form. The size of each input box is set at the maximum length allowed
for the field and those where there is a restricted choice have been coded so that incorrect data
cannot be entered. I have included examples of the forms used to collect a patient's name, date
of birth, etc.

E(iv) - Data verification and/or validation (3 marks)

3   An understanding of and use of appropriate verification and/or validation techniques

2   A critique as to whether verification and/or validation techniques are appropriate

1   A simple mention of possible verification and/or validation techniques

0   No mention of possible verification and/or validation techniques

Not all applications software readily incorporates automatic or user defined verification and/or validation techniques. However, the candidate should be aware of how data is checked and, where appropriate, should have used methods to check that data inputted into their system is correct. Possible verification checks could include visual checking, double entry, etc. Whilst validation could include range checks, etc. For any marks to be awarded there must be more than one technique considered or used.

Evidence in report and screen dumps, annotated printouts and data collection sheets showing validation

1 mark minimum requirements - work showing less evidence can be worth no marks
I can double-check all the data as it is typed in by comparing what was on the screen with the information on the data collection sheet. This is called verification. Access also lets you say what range of numbers can be included in any field, and also allows me to say the maximum length allowed for any particular field. It is important to make sure that the data is correct, otherwise the output from the database could be incorrect and this would be very important in a doctor's surgery.

2 mark minimum requirements - work showing less evidence may be worth 1 mark
I double-checked all the data as it was typed in by comparing what was on the screen with the information on the data collection sheet. Because this had the same layout as the entry screen it was easy to see if any errors had been made. As an additional check I printed out the whole database and checked the data again. This was totally correct apart from one figure in a phone number. I edited this so that it was correct. It is important to make sure that the data is correct, otherwise the output from the database could be incorrect and this would be very important in a doctor's surgery.

Access lets you say what type of data was included in any field and also allowed me to set validation rules such as age greater than 5 and less than 115 with a message that says "This is outside the range allowed." I was not able to get any printouts to show the validation working.

3 mark minimum requirements - work showing less evidence may only be worth 1 mark
I double-checked all the data as it was typed in by comparing what was on the screen with the information on the data collection sheet. Because this had the same layout as the entry screen it was easy to see if any errors had been made. As an additional check I printed out the whole database and checked the data again. This was totally correct apart from one figure in a phone number. Here is a copy of the printout with the wrong telephone number highlighted. I edited this so that it was correct. Here is the original data collection form showing the telephone number that should have been typed in. It is important to make sure that the data is correct, otherwise the output from the database could be incorrect and this would be very important in a doctor's surgery.

Access lets you say what type of data was included in any field and also allowed me to set validation rules such as age greater than 5 and less than 115 with a message that says "This is outside the range allowed." Here is a screen shot that shows the setting on the Access table design and a second that shows the message appearing when incorrect data is being input.

Evidence showing the two techniques in use is shown on the printouts.

E(v) - Data and/or program structures (2 marks)

2   Justification given for data and/or program structures used

1   Appropriate data and/or program structures designed and used

0   No evidence of appropriate data and/or program structures

In measurement and control tasks, these marks can be awarded for the appropriate program structures and techniques, such as procedures, as well as for data structures such as files for data logging.

This will generally be either a database structure or a spreadsheet, although it is possible that the output from a multi-media authoring package could be used here. As before, 2 marks can only be awarded where clear justification, in terms of the application or in terms of the software used, is made for the structures used. Most tasks will be worth at least 1 mark if implemented.

Evidence in report and print-outs, screen dumps, listings or schematic structure of multimedia.

1 mark minimum requirements - work showing less evidence can be worth no marks
Evidence of the construction and use of the patient database, with fields appropriate to the application, will be sufficient for 1 mark.

2 mark minimum requirements - work showing less evidence may be worth 1 mark
Evidence of the construction and use of the patient database, with fields appropriate to the application, is needed together with justification for the structure. This evidence may also include the evidence for validation and verification, as here.

Access lets you identify what type of data is to be included in any field, and also lets me say the maximum length allowed for any particular field. In the database that I made, I used the following record structure and validation checks.

Field	data type	length	reason
Surname	Text	15 letters	will always be text; most surnames shorter than that
Forename	Text	15 letters	will always be text; most forenames shorter than that
Date of birth	date		special data type for dates
Sex	Text	1 letter	only M and F allowed
STD code	Text	5 letters	characters selected from list of local STD codes- must be text to cope with zero as first character
Phone number	numeric	6 digits	local codes are six digits long, range between 200001 and 889999

E(vi) - Output format (3 marks)

3   Justification for the design and use of a range of customised output formats

2   Evidence of the design and use of a range of customised output formats

1   Evidence of the use of a range of default output formats

0   No evidence of output formats

In this section the candidate should be aware that the default outputs from application software are not always appropriate and that the output should be designed with the needs of the intended audience in mind, i.e. in databases the reports do not always have to include all of the database's fields. In measurement and control tasks, these marks can be awarded for the selection of appropriate physical outputs (such as lights, sound or movement) as well as printed output.
Output in this context is output from the created ICT system rather than generated by the software.

The majority of output provided by candidates will have been significantly modified from the software default outputs so careful checking is needed to establish design and fitness for purpose before awarding 2 marks for output. 3 marks can be awarded when candidates have clearly explained why the output formats were so designed.

Evidence in report and screen dumps, printouts, photographs

1 mark minimum requirements - work showing less evidence could be worth no marks
Evidence of the output of the patient database will satisfy the requirements for 1 mark if there is more than one sort of printout and only default settings are used. E.g. all fields are printed in tables which are not modified for width.

2 mark minimum requirements - work showing less evidence may be worth 1 mark
At least two different types of output providing that they not simply default output (e.g. the candidate has chosen which fields to display and widened columns to display contents sensibly)

3 mark minimum requirements - work showing less evidence may be worth 2 marks
The outputs are accompanied by explanations which clearly show that the needs of the user have been considered in the design of the output.

I designed the doctor's screen output so that when a doctor searches for a particular patient, she is presented with the patient's name at the top (clearly identifying who it is), known allergies to medicines and then the medical details starting with the most recent visit and its date. The secretary's screen output shows the patients contact details immediately after the name as this is the information most often needed by them. The printed surgery list is sorted on the time field and simply lists their time, name and NHS number in order to make checking of attendance easier for the doctor.

F - Testing (4 marks)

4   Evidence of testing of the solution using a clearly defined, comprehensive and fully justified strategy

3   Evidence of testing of the solution using a clearly defined and comprehensive strategy

2   Evidence of testing of the solution using a defined strategy

1   Evidence of some testing of the solution

0   No evidence of any testing of the solution

To be worth 4 marks there must be a justified and appropriate testing strategy, with evidence of its use. If the strategy does not cover most of the requirements, or is not explained clearly then only 2 or 3 marks can be awarded. Random testing can be awarded only 1 mark at the most, but candidates must indicate in the report that testing has taken place if this mark is to be awarded.

Comprehensive at this level should include testing a range of data input (valid, invalid etc.) correct output and most of the specification.

Evidence in report and printouts showing testing

It is essential to have evidence of the testing that was carried out to gain marks. An absence of printouts or screen dumps (as appropriate) leads to an absence of marks. To gain any marks candidates are required to show that they understand the concept of testing in that they should know what the outcome will be before a test is carried out. Simply showing that a search works is not a test

1 mark minimum requirements - work showing less evidence can be worth no marks
I tried out the database by searching for people's names that I knew were on the database, and for surgery lists for a particular day. I counted how many there should be for the particular surgery and it gave the right number. It usually gave me details of the patient, or the right list. Some times it didn't and I found out that it was because I had typed the name in wrongly, or accidentally chose a date when there wasn't a surgery

2 mark minimum requirements - work showing less evidence may be worth 1 mark
I decided to test the system by using a range of data that would include examples that were inside and outside my specifications.

Test	Input data	Expected result	Actual result	Evidence
Insert a new record with valid data	Enter details for Stuart Smith	New patient details added	New patient details added	Printout 1
Update record with invalid data	Enter 30/02/1980 for date of birth	Error message: "No such date"	Error message: "No such date"	Printout 2
Search for a patient	Search for: S Smith	2 S Smith found	Found two Smith	Printout 3

3 mark minimum requirements - work showing less evidence may be worth 2 marks
I decided to test the system by using a range of data that would include examples that were inside and outside my specifications. First of all I tested the data input part of the system, then the output, then the editing. First of all I used valid data, entering three patients' data correctly. This worked fine. I then made up some false data, using names that were too long, and dates that couldn't exist like 3012105. The validation checks prevented these from being entered. I then searched the database using data from the patients' list. I knew what the searches should come up with, and all the outputs were as expected. These are shown in the printouts. Next I tried adding a new patient, deleting a patient and changing someone's address. Finally I checked the printing of reports. Once again, all these operations worked OK. These met most of my specifications

Test	Test Input	Expected result	Actual result	Evidence
1	Valid data "Smith"	New patient added	New patient added	Printout 1
2	Invalid data 3012105	Error message	Error message	Printout 2
Test	**Test Searches**	**Expected result**	**Actual result**	**Evidence**
3	Search for S Smith	2 S Smiths Found	2 S Smiths Found	Printout 3
4	Search for male patients	14 patients found	14 patients found	Printout 4
Test	**Test Amend/Delete**	**Expected result**	**Actual result**	**Evidence**
5	Change Sund to Sand	Corrected	Changed correctly	Printout 5
6	Delete Jones	Record deleted	Record deleted	Printout 6
Test	**Test output**	**Expected result**	**Actual result**	**Evidence**
7	Print surgery list in order	List of 9 patients in order of surname	List shows 9 patients in order of surname	Printout 7
Test	**Test specification**	**Expected result**	**Actual result**	**Evidence**
8	Search to find patient Z Smith takes under 1 min	Details of Z Smith found in 20s	Details of Z Smith found in 3s	Printout 8
9	Doctor's surgery list printed in under 5 min	Printed in 3 min	Printed in 50s	Printout 9
10	Survey ease of use	Reported easy to use	Ease of use confirmed	Printout 10

4 mark minimum requirements - work showing less evidence may be worth 3 marks
I decided to test the system by using a range of data that would include examples that were inside and outside my specifications as this would test the data input aspects of the system. First of all I will use valid data, entering three patients' data correctly. These inputs should be accepted. Then I will make up some false data, using names that were too long, and dates that couldn't exist like 3012105. The validation checks should prevent these from being entered. This will test all the types of validation checks I have built into the system. I will then search the database using data from the patients' list. I know what the searches should come up with as I will look for the data manually and then write down the outputs expected. Next I will try adding a new patient, deleting a patient and changing someone's address because I need to know if the system functions properly. I will then check the printing of reports because it is important that the lists are accurate and well laid out so the doctors can use them easily. Finally I will test that the system meets all the specifications I mentioned earlier.

Test	Test Input	Expected result	Actual result	Evidence
1	Valid data "Smith"	New patient added	New patient added	Printout 1
2	Invalid data 3012105	Error message	Error message	Printout 2
Test	**Test Searches**	**Expected result**	**Actual result**	**Evidence**
3	Search for S Smith	2 S Smiths Found	2 S Smiths Found	Printout 3
4	Search for male patients	14 patients found	14 patients found	Printout 4
Test	**Test Amend/Delete**	**Expected result**	**Actual result**	**Evidence**
5	Change Sund to Sand	Corrected	Changed correctly	Printout 5
6	Delete Jones	Record deleted	Record deleted	Printout 6
Test	**Test output**	**Expected result**	**Actual result**	**Evidence**
7	Print surgery list in order	List of 9 patients in order of surname	List shows 9 patients in order of surname	Printout 7
Test	**Test specification**	**Expected result**	**Actual result**	**Evidence**
8	Search to find patient Z Smith takes under 1 min	Details of Z Smith found in 20s	Details of Z Smith found in 3s	Printout 8
9	Doctor's surgery list printed in under 5 min	Printed in 3 min	Printed in 50s	Printout 9
10	Survey ease of use	Reported easy to use	Ease of use confirmed	Printout 10

Justifications are provided on each test printout.

G - User documentation (3 marks)

3   Clear and logical instructions as to how to use the ICT system, and how to amend the ICT system if necessary including the technical aspects of the use of the ICT system.

2   Clear instructions as to how to use the ICT system, and how to amend the ICT system if necessary

1   Some simple instructions as to how to use the ICT system

0   No evidence of any user documentation

To be awarded marks in this section there must be separate and identifiable documentation that would enable an unfamiliar user to operate and adapt the ICT system designed.

Trivial documentation which simply gives instructions on how to use the software and is inadequate for an unfamiliar user to make appropriate use of the system that has been created can be awarded no marks.

Evidence in supporting documentation and possibly report

There is no need for candidates to include any commentary on their documentation within the report, although there may be justification for the content of the documentation. This is not necessary for the award of marks.

The user documentation including the technical aspects does not need to occupy more than a side or two of A4. The expectation is that, in each case, the support given would be sufficient to enable an unfamiliar user to run the system and carry out appropriate basic functions. For the context of the doctor's surgery, these would be as follows:

1 mark minimum requirements - work showing less evidence can be worth no marks
This will be task orientated, showing how the software is used for the specific task. It will probably give instructions that allow an unfamiliar user to run the system (assuming that Windows was already running) by double-clicking on the icon and how to search for a particular patient.

2 mark minimum requirements - work showing less evidence may be worth 1 mark
This will be task orientated, showing how the software is used for the specific task. It will probably give instructions that allow an unfamiliar user to run the system (assuming that Windows was already running) by double-clicking on the icon and how to search for a particular patient. The documentation should provide clear instructions on how to add a new patient, how to delete a patient and how to edit a patient's details.

3 mark minimum requirements - work showing less evidence may be worth 2 marks
In addition to the work of both sections above, instructions on the technical aspects are included.
This section will be more system-orientated and provide clear and logical instructions. It might provide full details that allow an unfamiliar user to add new fields to the existing database and alter validation criteria.

H - Evaluation (3 marks)

3   An evaluation of the ICT system based on the specification with suggestions for future refinements

2   An evaluation of the ICT system based on the specification

1   Some evaluation of the ICT system, without reference to the specification

0   A cursory or no evaluation of the ICT system

In this section the candidate should refer to the evaluation criteria provided in Section C of the assessment criteria.

The maximum mark available if no evaluation criteria are given is 1. The criteria for evaluation must have been defined prior to implementation if more than 1 mark is to be awarded, this is normally done in Section C – Specification of the report. If 3 marks are to be awarded then the suggestions for refinements should clearly arise from the evaluation.

Evidence in report

1 mark minimum requirements - work showing less evidence can be worth no marks
My solution is successful because the testing shows that it does work properly. As the number of patients in the database was much smaller than the real system it was not fair to carry out a direct comparison of the times, but my system was a lot quicker than the average time taken by a receptionist. The surgery list was much quicker, since it took less than a minute to print out the full list. The receptionist tried using the system. She is used to a keyboard because she does a lot of typing and so she found it quite easy to enter patients' names, but she wasn't used to the mouse. She thought that after a few days she would find it very easy to use.

Because of all this I have decided that my solution is successful.

2 mark minimum requirements - work showing less evidence may be worth 1 mark
When I first investigated this project I decided that I would evaluate it by comparing it to the following points:

Whether it works properly, if it is faster in finding a particular patient than the existing system, that it is faster in generating a surgery list than the existing system that the doctors and receptionists find it easy to use.

The testing shows that it does work properly, since I tried it with a range of different data and it always gave the response that I expected. Because the number of patients in the database was much smaller than the real system it was not fair to carry out a direct comparison of the times, but my system took less than 30 seconds to type in a name and get the details displayed on screen. This was a lot quicker than the average time taken by a receptionist. Sometimes it takes them several minutes, especially when the envelope has been put back into the filing cabinets in the wrong place. The surgery list was much quicker', since it took less than a minute to print out the full list. The receptionist tried using the system. She is used to a keyboard because she does a lot of typing and so she found it quite easy to enter patients' names, but she wasn't used to the mouse. She thought that after a few days she would find it very easy to use. Because of all this I have decided that my solution is successful.

3 mark minimum requirements - work showing less evidence may be worth 2 marks
When I first investigated this project I decided that I would evaluate it by comparing it to the following points:

- Whether it works properly, in that it is faster in finding a particular patient than the existing system.

- That it is faster in finding a surgery list than the existing system that the doctors and receptionists find it easy to use.

The testing shows that it does work properly, since I tried it with a range of different data and it always gave the response that I expected. Because the number of patients in the database was much smaller than the real system it was not fair to carry out a direct comparison of the times, but my system took less than 30 seconds to type in a name and get the details displayed on screen. This was a lot quicker than the average time taken by a receptionist. Sometimes it takes them several minutes, especially when the envelope has been put back into the filing cabinets in the wrong place. My system, however, did not find patients if their names were typed in with spelling mistakes. I expected this to happen, but it could cause problems and confusion, and so I think that a more flexible search that finds near misses (like the spell-checker) would be a good idea. I don't know what software would allow me to do this.

The surgery list was much quicker, since it took less than a minute to print out the full list. The receptionist tried using the system. She is used to a keyboard because she does a lot of typing and so she found it quite easy to enter patients' names, but she wasn't used to the mouse. She thought that after a few days she would find it very easy to use.

The system, as set up, allows for five visits per patient. In real life there are some patients who visit the doctor once every five years or more, while others are there twice a week. A more flexible database structure, such as a relational database, would allow a patient's whole medical history to be retrieved.

Some queries could be set up and stored so that many common searches could be performed much quicker. For example if, every year, the receptionist wanted to find all the men who are more than 60 years old so that she can send then a letter about a certain test then a query could be set up. All the receptionist has to do is run it. If the patients' addresses were stored then the letters could be printed automatically using mail merge.

Because of all this I have decided that my solution is successful.

J - Communication within the report (3 marks)

3   Presentation of the report is of a high quality and uses a varied range of techniques. The needs of the intended audience are catered for and spelling, punctuation and grammar is used with consistent accuracy

2   Presentation of the report is good and uses a range of techniques, and spelling, punctuation and grammar is used with accuracy

1   Presentation of the report uses a limited range of techniques, and spelling, punctuation and grammar is used with reasonable accuracy

0   Presentation of the report is basic with inaccurate use of spelling, punctuation and grammar

1 mark minimum requirements - work showing less evidence can be worth no marks
A report that uses some of the headings supplied but has a number of spelling errors and generally seems to just about communicate the concepts

2 mark minimum requirements - work showing less evidence may be worth 1 mark
A report that uses all the headings supplied and has few if any spelling errors or grammatical errors. The headings are clear and the text is understandable. Diagrams and screen shots are reasonably well used.

3 mark minimum requirements - work showing less evidence may be worth 2 marks
Using sensible headings there are almost no spelling or grammatical errors. Each section is clear and the wording clearly indicates that the candidate can communicate their ideas in an unambiguous manner. Diagrams and screen shots are well used to illustrate the points made in the report and, in general, the report is well written.