

7105 Computing - Coursework 2002 onwards

Example 1: Student's coursework and examiner's comments

The following is an example of a student's coursework submission. The student's written work is reproduced in italics, together with scanned samples of preparatory work and printed screen shots as appropriate. The examiner's comments are shown clearly throughout, in boxes, with a full analysis and explanation of marks at the end of each section.

Section A: Problem Analysis and Specification

When I went in for my last dentist's appointment I noticed that they still used an old card file system for keeping their records and it seemed that a computer version would be a much better idea for them to use. It took ages to find my details and they wrote out the next appointment on a piece of card that I have already lost and can't remember when the appointment is for. So I asked if they would like me to create a database solution for them as it would help me with my GCE Ordinary level coursework and they agreed to help me, although they pointed out that they were not too sure if they would actually use my database when it was finished.

There seems to be other problems as well with the card system because they only kept the appointment in a diary and it would take ages for them to write out letters to everyone who has appointments. So if some people do not turn up the dentists have nothing to do and I guess they would lose money as well, which can't be good for their business. With a computer system they could send out letters to those people who had appointments to remind them of when to turn up and that must be good for their business.

One of the receptionists agreed that she would have a look at what I had created, but for the moment my family have said they would help me with telling me how good or bad the system is.

I know that I have to use a database program to make the system because I will need to search through the database to find those people who have appointments which are coming up shortly, other packages such as spreadsheets and word processors can only sort data and can't actually search for different people and so I am going to use Lotus Approach at my school to do my project on.

The things I will need to do are:

- *create a database to hold all the records of the people that go to the dentist*
- *make some letters to send to people who have appointments coming up*
- *work out how my database can be improved*
- *create something that is easy to use for people who work at the dentists.*

Examiner's comments: Problem Analysis and Specification

The problem is clearly identified.

There is some discussion about current methods and their disadvantages.

Desired outcomes are listed as "things I will need to do" but "work out how the database can be improved" is not a valid outcome.

The first two outcomes are quantitative and can be used to measure, to a limited extent, the success of the project.

The discussion about software is in the wrong place but it will be considered under Design and planning of solutions.

Mark:6/15

Section B: Design and planning of solutions

I have already said that I need to use a database to make my project on but I now need to think about exactly what I need to make so that the project works. I will need:

- *fields to go into my database. These will include name and address, telephone number, last appointment, next appointment, any money owed, dental history, allergies, date of birth, sex, customer reference number*
- *a data capture form for when the computer is not available and for people to fill in when they first come to the dentist's*
- *some letters to send out when an appointment is due and one if they owe money to the dentist*
- *an evaluation form to find out how I can improve my first database*
- *maybe even a telephone sheet so that people can be reminded over the 'phone the day before.*

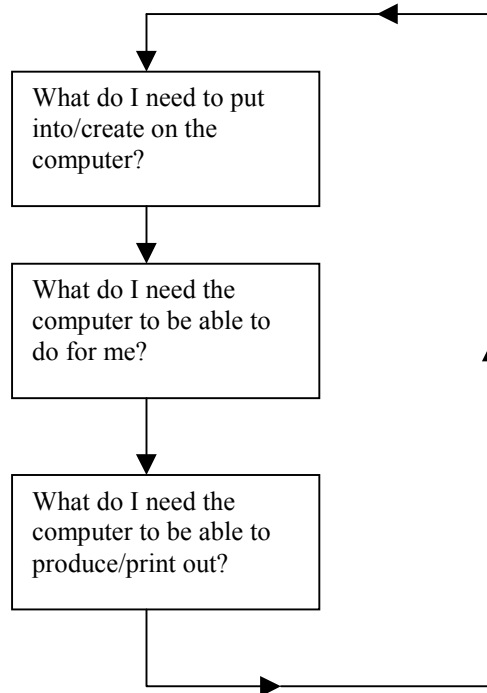
In Lotus Approach I will need to be able to do the following things to make my database work:

- *create a screen input form so data can be keyed in by people who work there*
- *do searches to find people who need to have letters sent to them*
- *print off these letters*
- *have things like macro buttons so that it is easy for the user to use*
- *I will have to use a word processing package so that I can make the data capture forms and the evaluation forms*
- *Change fields on the database if I need to if improvements have to be made*
- *Print out a telephone report when a search is done the day before.*

I will need to be able to output the following things:

- *I have to print letters, evaluation forms, data capture forms and telephone sheets*
- *I do not need to print the database but I have to let people be able to see the database on the screen so that they can add new records and do searches.*

When I have created my database I will need to find out how it can be improved, the evaluation forms will help me to do this because the comments on them will show me what changes have to be made. This gives me a diagram that looks like this:



Evaluation cycle

Examiner's comment

The "Evaluation Cycle" flowchart is not about data flow and is worthless in terms of understanding the problem.

When I have created the whole database it will also need to be put on a floppy disk so that if anything goes wrong when it is used then there is a saved copy that can be used to start again.

Examiner's comment

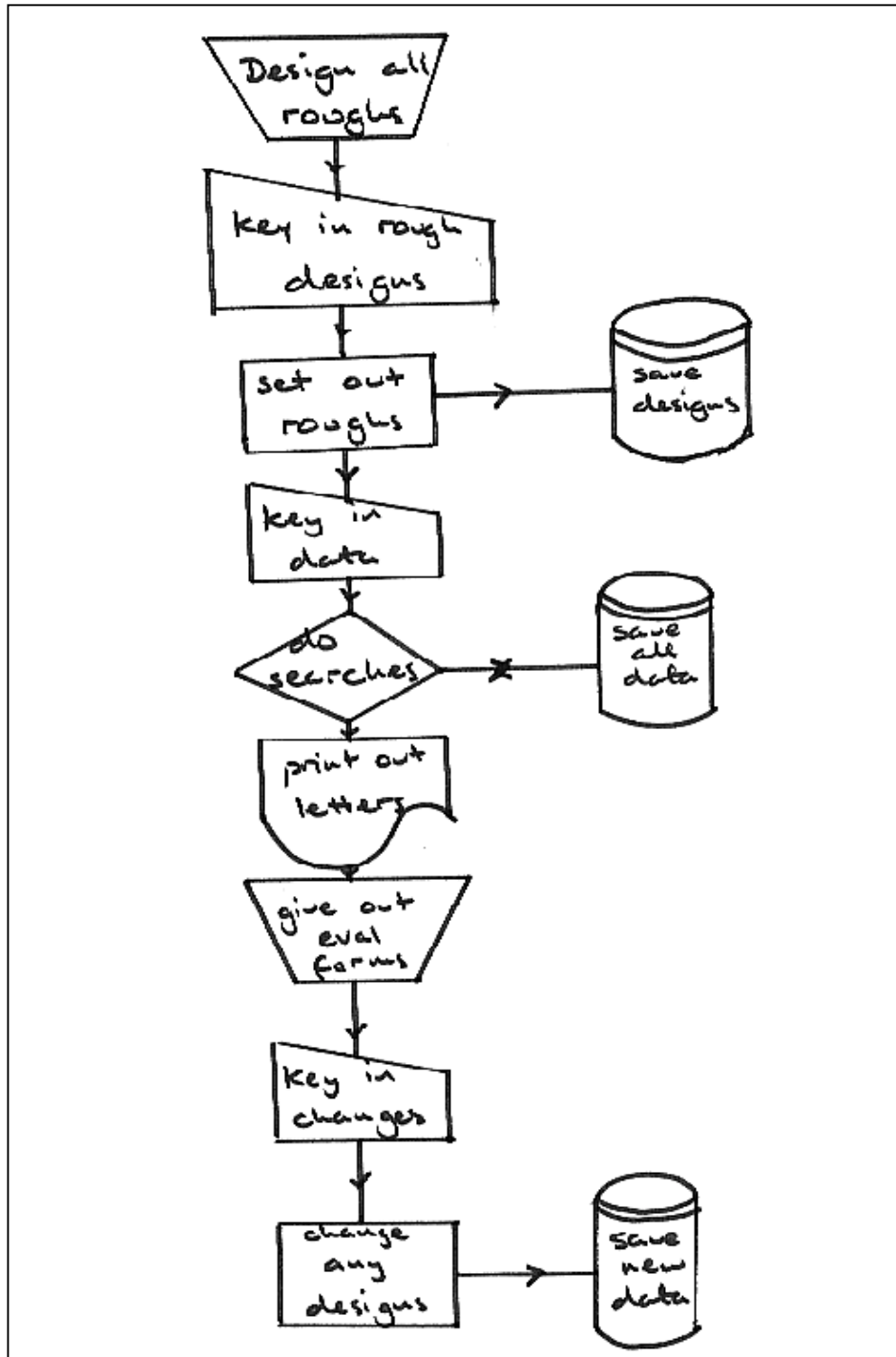
Backup is mentioned, however it does not relate to the problem but to the student's work

It does not really matter about the hardware that is used because the database will not use up much memory or need a powerful computer processor, but of course they will need a printer to print off letters!

Examiner's comment

The statement of the hardware requirements is inadequate; there is no mention of how many patients there are.

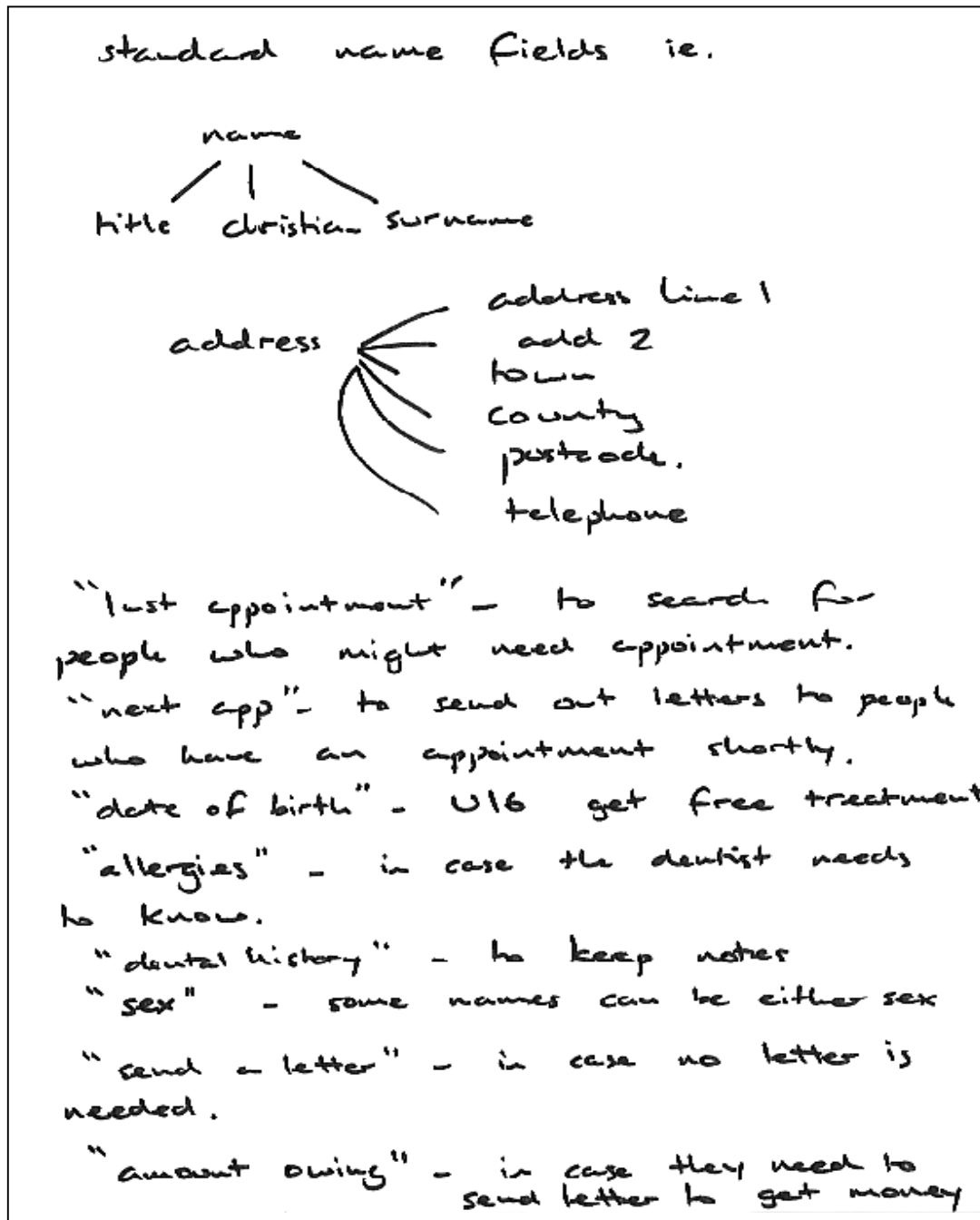
The first thing that I will need to create is a systems flowchart. This will give me an overview of the steps that I will need to take to complete this project and to put everything into the right order



Examiner's comment

Systems diagram is of little use as it is showing the candidate's method of solving the problem and not how the problem is going to be solved.

Now that I have worked out what I have to do to complete this project I can begin to design the database for the dentist. The first thing I will have to do is to set the database up, and as I have already worked out what fields will need to be included to make the database work then all I have to do is to set them up in the right way. To do this I went back to the dentist with all the fields and asked them for suggestions as to the size that they would need to be. I have attached the notes that I made on the sheets below



Examiner's comment

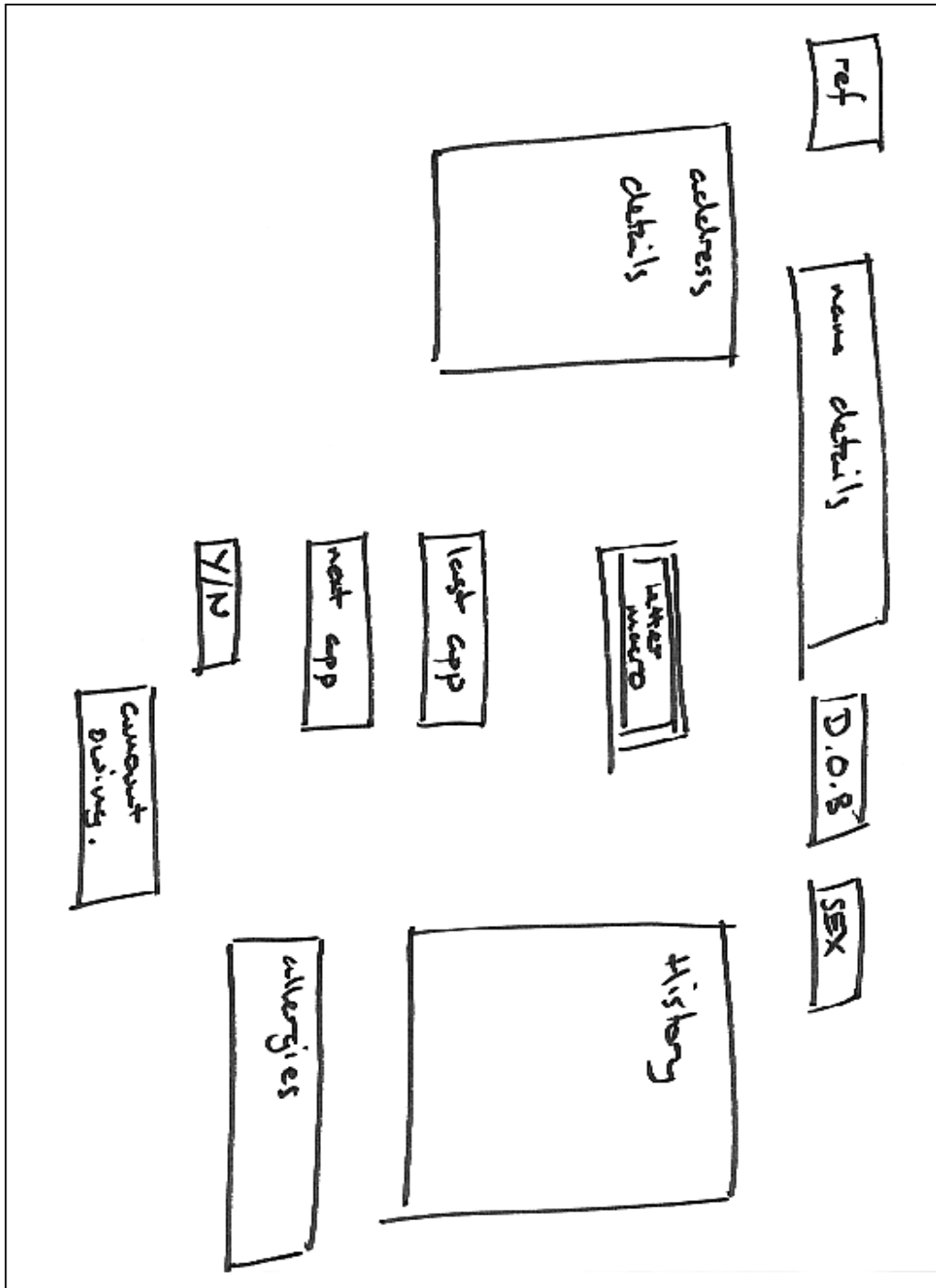
Good reasons for inclusion and use of fields.

1. Title - text field, 4 characters long because the longest is "miss"
2. First name - text field, 12, characters long because the longest name I can think of is "Christopher"
3. Surname - text field, 20 characters long because some people have two names in their surname
4. Add1 - I will have 2 address line fields because some people have a house with a name, both will be 20 characters long so that any name can be put in
5. Add2 - as above
6. Town - text, 15 characters so that all towns can be put in
7. County - text, 15 characters long so that all counties can be put in some can be shortened like Hampshire to Hants but 15 should be enough
8. Postcode - text, 8 all postcodes are 8 characters including the space in the middle
9. Telephone - text, 13 characters because you can have mobile numbers that are longer
10. Last appointment - date field
11. Next appointment - date field
12. Date of Birth - date field I did not use "age" because it changes every year
13. Allergies - text, 50 characters because people might be allergic to lots of things
14. Dental history - text, 200 characters so there is lots of room to put in problems that people might have
15. Sex - text, 1 character because it is either M or F
16. Patient reference field - numeric, 5 characters, unique, because some people may have the same name like John Smith (I shall use an auto serial option which means that every time I put in a new record then a new number is given to the record, that way 2 records can't have the same number)
17. Send a letter - text, 1 character "y" or "n" field, as some people want a reminder letter and some may not
18. Amount owing - numeric 3.2, I don't think anyone will; owe a dentist over £1,000

Examiner's comment

Shows file structure, but this may have been better presented in table format.

So now I have a database but it needs to be designed so that it is easy to look at and easy for the receptionists to key in the data. The best idea is to lay this out on a piece of paper first and to try and set it out so that all the field boxes are visible on the screen, because if some of them are not and the receptionists have to scroll down then they may not put in some important information. A rough design of how I wanted the screen to look is given on the next page. I will need to record some macros so that the user does not have to do the searches but can press a button so that the computer does it automatically for them.



Examiner's comments

Needs a little more information such as font type/sizes and screen size (pixels).
Buttons should have been included.

I have to design some letters to be sent out to those people who will need them. The dentist said that it was ok for me to design the letters myself as I did explain that they could be changed later if they were not what he wanted. I wrote them out in rough first and then typed them up in the word processor within Lotus Approach and included all the mail merge fields needed.

The diagram shows a hand-drawn letter template. At the top right is a box labeled "Dentist's address". Below it is the word "Date". On the left side is a larger box labeled "customer name & address merge fields". The body of the letter starts with "Dear [merge fields]", followed by a paragraph: "It would appear from our records that there is a small amount outstanding on your account of [field.]", then "Please call the surgery so that the matter can be settled.", "Sincerely yours.", and finally "Ian Robinson."

Examiner's comments

Needs a little more information such as font type/sizes and paper size and the fields that are going to be used from the database

I now need to consider how I will test my database to see if it actually works. Initially I will put in some dummy data and I will need to see if the results from the searches actually match what I manually worked out, and I also need to test the database to see if I can input data that is incorrect such as 31/02/01 which is an invalid date. I need to check that the letters I have designed are filled in correctly.

The next thing I need to do is put some data into the database to show that the searches work and wrong data can not be put in. To do this I will create 5 dummy records by hand and then put them in and do the searches. The dummy data is recorded on the sheet below. I have deliberately made one date of birth out of range to check that the software will pick up this problem, the rest of the search tests are shown in the screen shots as part of "Testing".

| | let? | last app | next app | owing | d. ob. |
|-------------------|----------|----------|----------|-----------|-----------------|
| ① David Smith | <u>n</u> | 11/09/00 | 11/03/01 | 0 | <u>31/02/69</u> |
| ② Vanessa Barnes | Y | 28/04/00 | 28/10/01 | 0 | 13/07/75 |
| ③ Chris Smith | Y | 17/09/00 | 17/03/01 | <u>34</u> | 24/12/56 |
| ④ Peter Lloyd | Y | 13/08/00 | 13/02/01 | 0 | 13/04/76 |
| ⑤ Yvonne Urquhart | Y | 15/10/00 | 15/04/01 | 0 | 02/11/56 |

Examiner's comment

Test data is ok, but the reason for each item in terms of testing should have been explained.

Mention is made of manually worked out results and testing sorts and searches, but a test plan is needed showing expected results.

Examiner's comments: Overall marking: Design and planning of solutions

The candidate has presented with some justification appropriate software systems and tools but hardware has only received a vague reference.

The written description concentrates on tasks and not on methods. Some ideas about sending letters are embedded in the description of the file structure.

The test data is acceptable but the reason for each item in terms of testing should have been explained. There is no test plan.

Mark 10/25

Section C: Implementation of design

I have designed how I want the screen to look. Now all I have to do is set it out on the computer so it looks like my rough design. I have put in a screenshot to show that this has been done. I have checked the rough with the receptionists first of all and they were happy with the design.

The screenshot shows a Lotus SmartSuite 96 window titled 'Approach - [BETTERPROJ.APR:Blank Database]'. The window contains a form titled 'Blank Database' with the following fields and controls:

- patient ref:
- Title:
- First Name:
- surname:
- dateof birth:
- sex:
- add1:
- add2:
- town:
- county:
- postcode:
- telephone:
- money?:
- last appointment:
- next appointment:
- send:
- amount owing:
- dental history:
- allergies:

The window also shows a status bar at the bottom with 'Record 2', 'Found 1 of 6', and 'Browse/Modify Blank Database'. The taskbar at the bottom shows the Start button and several open applications including RM Connect, Inbox, MyWork, Edexcel, Microsoft, and Approach.

Examiner's comment

There is quite a difference between the design described earlier and this screen shot. Reasons for the changes should be given.

Sometimes the receptionist said they might not be able to use the computer because it may break down so they asked what would happen then. We decided that they would simply need a sheet of paper to write the patient's details down on and they could put the information into the computer when they wanted to later on. This data capture form does not need all the fields on it as it would really be just for new people so I created a simple form on Word that they could fill in. A copy of the data capture form is shown below:

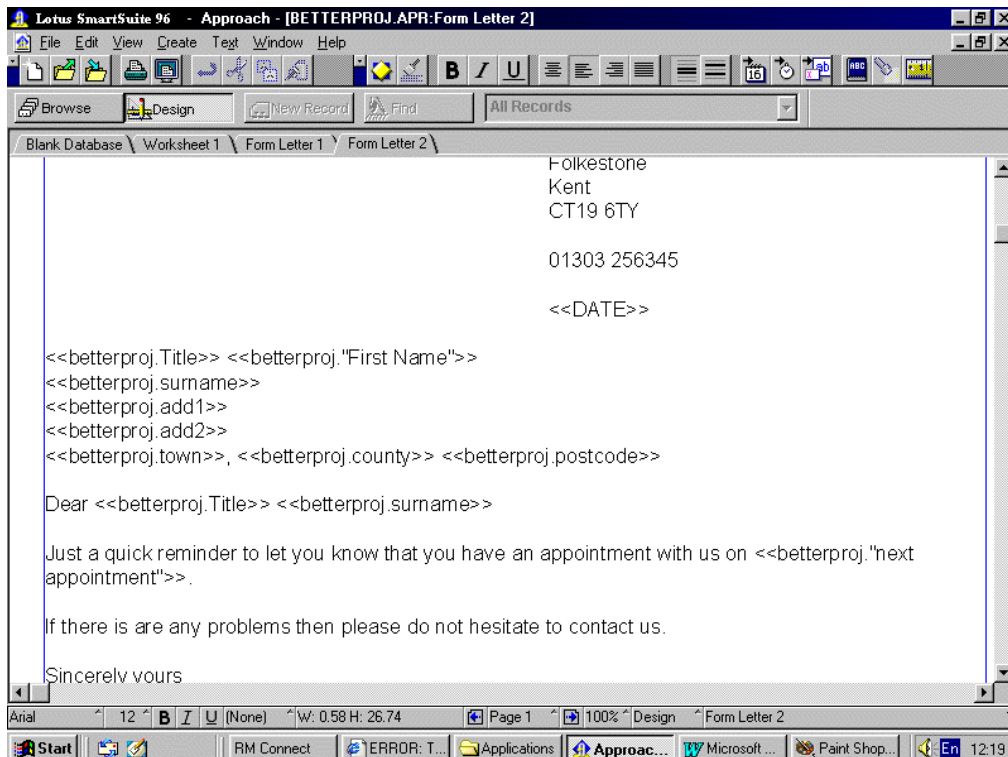
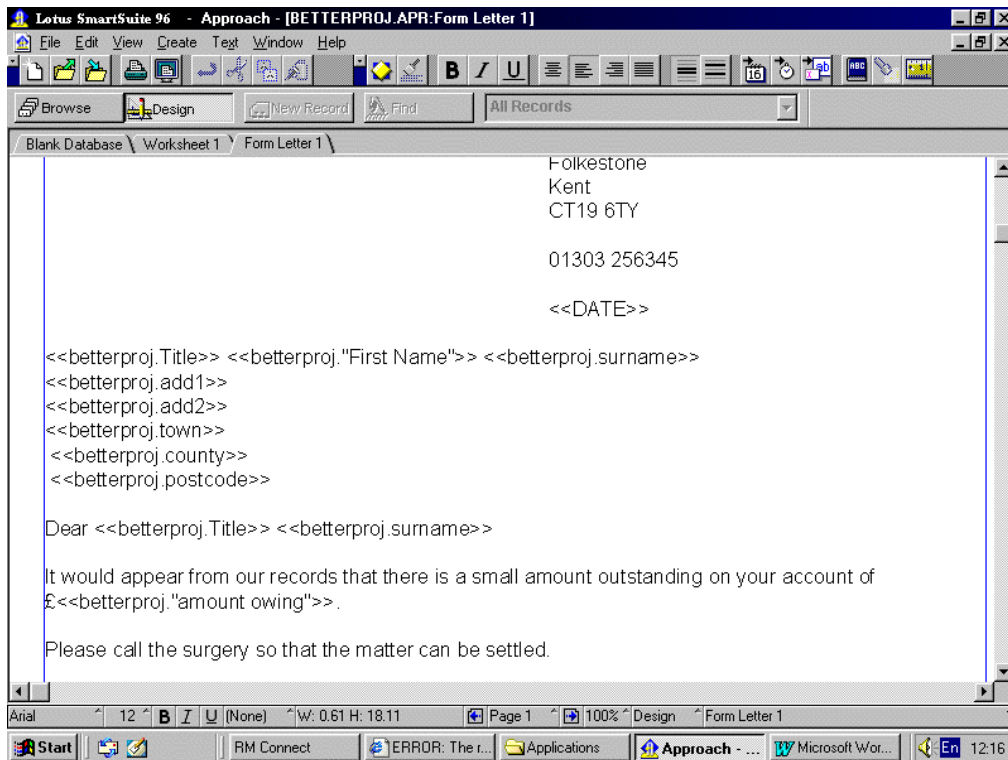
Title:
First Names:
Surname:
Sex:
Date of Birth:
Address:
Town:
County:
Postcode:
Telephone:

Any known allergies?

The next thing to do was to design the searches that needed to be done and create some macro buttons so that the receptionists would not have to type in the searches every time and they could just push a button to make the database work. I needed to find those people who owe money this was done by simply writing a macro to perform a search for those people who had "money owing" greater than "0", then I simply attached it to a button, as shown in the following screenshots. However, I could not create a button to do a date search as the date is constantly changing so a macro could not be recorded. I will have to show the receptionists how to do this manually. It was also noted that some people might not want to have a reminder letter sent to them. To enable this to happen I included a field that indicated whether a letter was to be sent or not, I could then run an "and" search so that the database picked out only the people with Y in this field and then sent letters to people who matched the data find as well.

Examiner's comments

The macro code needs to be given in detail.



I then put the information that the receptionists gave me along with the dental records into my database and have attached the completed worksheet next.

Lotus SmartSuite 96 - Approach - [BETTERPROJ2.APR:Worksheet 1]

File Edit View Create Worksheet Window Help

Browse Design New Record Find All Records

Blank Database Worksheet 1

| patie | Title | First Name | surname | add1 | add2 | town | county | postcode | telephone | last ap |
|-------|-------|------------|----------|----------------------|----------|------------|--------|----------|--------------|----------|
| 1 | Mr | David | Smith | 32 High Street | | Folkestone | Kent | CT20 2PG | 01303 234567 | 11/09/00 |
| 2 | Miss | Vanessa | Barnes | 34 Bouverie Road | | Hythe | Kent | CT18 6YH | 01303 134754 | 28/04/00 |
| 3 | Mr | Chris | Smith | 44 Forest Road | | Folkestone | Kent | CT19 6TH | 01303 | 17/09/00 |
| 4 | Mr | Peter | Lloyd | 45 The Crescent | | Hawkinge | Kent | CT19 6YH | 01303 564325 | 13/08/00 |
| 5 | Mrs | Yvonne | Urquhart | 56 Tanners Hill Gdns | Saltwood | Folkestone | Kent | CT18 7HC | 01303 245876 | 15/10/00 |
| 6 | Mrs | Karina | Witchell | 65 The Rise | Sellinge | Folkestone | Kent | CT17 5EF | 01303 278902 | 11/10/00 |
| 7 | Mr | Jeffrey | Phillips | 30 Alma Street | | Folkestone | Kent | CT20 5TY | 01303 294934 | 05/01/00 |
| 8 | Miss | Jennifer | Faulkner | 13 The Grove | | Folkestone | Kent | CT20 8YN | 01303 270404 | 13/09/00 |
| 9 | Mr | Alan | Milligan | 34 Wickham Chase | | Hythe | Kent | CT18 4QV | 01303 247895 | 01/06/00 |
| 10 | Miss | Deborah | Elliott | 4 Hayes Lane | | Folkestone | Kent | CT20 3TY | 01303 243856 | 25/09/00 |
| 11 | Mr | Paul | Welham | 46 Holland Way | | Folkestone | Kent | CT20 8KL | 01303 247122 | 22/08/00 |
| 12 | Mr | David | Marsh | 67 Sandgate Road | | Folkestone | Kent | CT20 9BN | 01303 243956 | 12/07/00 |
| 13 | Miss | Alexis | Peirce | 104 Kingsnorth Road | | Hythe | Kent | CT18 9YH | 01303 246663 | 28/09/00 |

Record 1 Found 13 of 13 Browse/Modify Worksheet 1

Start RM Connect Microsoft Word - bet... Approach - [BE... Paint Shop Pro - ba... En 10:56

Lotus SmartSuite 96 - Approach - [BETTERPROJ2.APR:Worksheet 1]

File Edit View Create Worksheet Window Help

Browse Design New Record Find All Records

Blank Database Worksheet 1

| telephone | last appoint | next appoint | date of birth | allergies | dental history | sex | send a | amount o |
|--------------|--------------|--------------|---------------|------------|-----------------------------------|-----|--------|----------|
| 01303 234567 | 11/09/00 | 11/03/01 | 14/08/69 | | check up only - no fillings requi | m | n | 0 |
| 01303 134754 | 28/04/00 | 28/10/00 | 13/07/75 | penicillin | see manual records | f | y | 0 |
| 01303 | 17/09/00 | 17/03/01 | 24/12/56 | none | 4 fillings and a crown | m | y | 34 |
| 01303 564325 | 13/08/00 | 13/02/01 | 13/04/76 | None | 2 crowns 6 fillings | m | y | 0 |
| 01303 245876 | 15/10/00 | 15/04/01 | 02/11/56 | wasps | rear 2 molars and wisdom teeth | f | y | 0 |
| 01303 278902 | 11/10/00 | 11/04/01 | 02/09/45 | none | 6 fillings | f | y | 45.12 |
| 01303 294934 | 05/01/00 | | 02/04/39 | none | whole upper plate. 5 teeth remc | m | y | 0 |
| 01303 270404 | 13/09/00 | 13/03/01 | 14/05/76 | none | perfect | f | y | 0 |
| 01303 247895 | 01/06/00 | 01/12/00 | 01/08/57 | none | 4 fillings | m | y | 0 |
| 01303 243856 | 25/09/00 | 25/03/01 | 13/12/74 | none | no major problems, watch lowe | f | y | 0 |
| 01303 247122 | 22/08/00 | 22/02/00 | 09/06/69 | none | 2 fillings - rear upper wisdom te | m | y | 0 |
| 01303 243956 | 12/07/00 | 12/01/01 | 03/03/78 | none | no problems | m | y | 0 |
| 01303 246663 | 28/09/00 | 28/03/01 | 14/01/73 | none | upper left molars filled | f | y | 0 |

Record 1 Found 13 of 13 Browse/Modify Worksheet 1

Start RM Connect Microsoft Word - bet... Approach - [BE... Paint Shop Pro - de... En 10:57

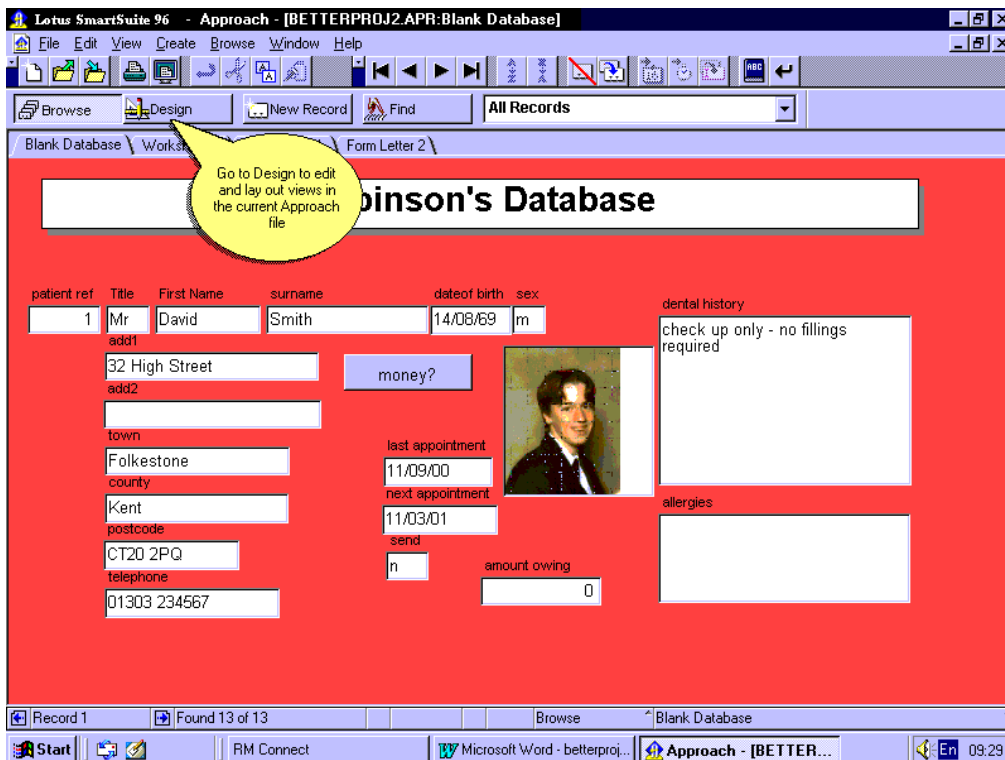
I asked the receptionist to complete an evaluation form for me to enable me to find out how to make improvements to the database that I had built. It is shown below:

| Agree- 😊 | No Opinion- 😐 | Disagree- ☹️ | |
|---|---|----------------------------------|-----------------------|
| Does the database work? Comments | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <hr/> <hr/> | | | |
| Was it any good? Comments | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <hr/> <i>Yes it works well</i> <hr/> | | | |
| The layout was easy to understand? Comments | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| <hr/> <i>A guide to searching is needed</i> <hr/> | | | |
| The database is useful? Comments | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <hr/> <hr/> | | | |
| Any other comments? | <hr/> <i>Layout is boring- a picture of the patient would be nice</i> <hr/> | | |

From the evaluation form we can see that I need to make the database a little bit more interesting in the way it looks, put in a picture field so that the receptionists can recognise each of the patients and create a brief guide on how to do searches. The guide is on the next page with a screenshot to show that the picture has been included and the background is now red.

Examiner's comment

This evaluation form is used here as part of the implementation process but it will count towards the mark for the evaluation section.



A guide to completing a search

1. Load up the database
2. Click "find"
3. Click "find assistant"
4. Select basic find (should already be highlighted) and click "next"
5. Select the field that you want to search on from the left hand list (most likely to be "next appointment")
6. Select the correct option from the second drop down list (for "next appointment" this will be "is between")
7. Select the dates that you wish to search between
8. Click done

Examiner's comment

The method of using screen shots and pasting them into a word processor is not recommended. It is better to use actual printouts and annotate them by hand. Numbering the printouts allows the candidate to demonstrate the correction cycle that should have taken place. The guide for completing the search is not relevant unless it is included as help on the database.

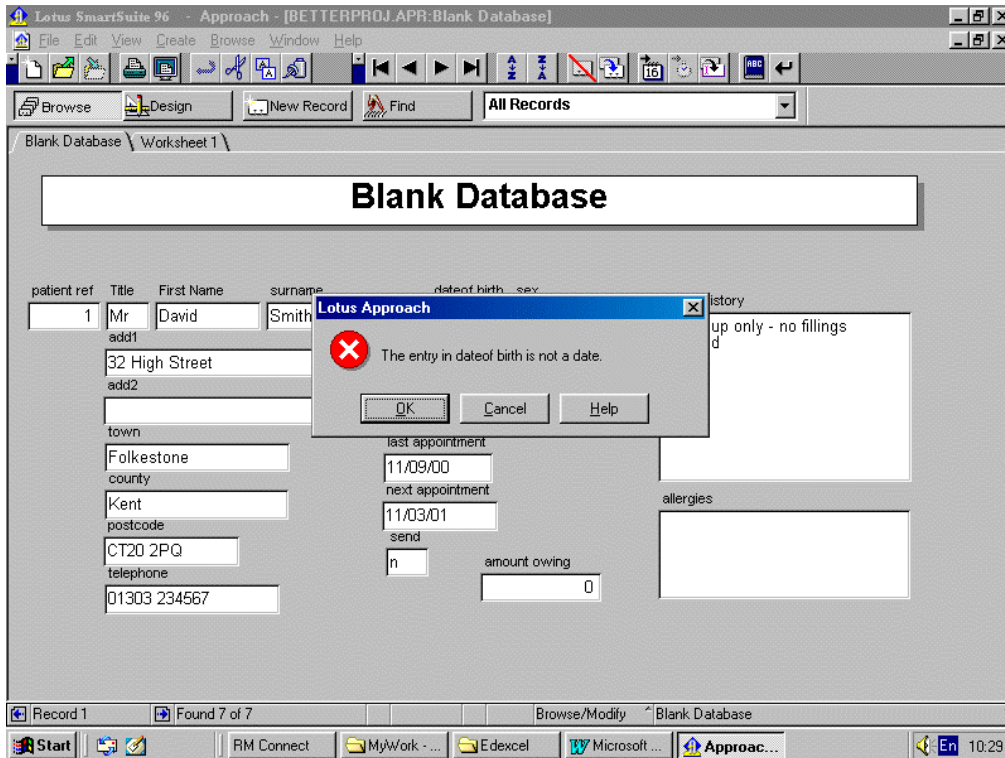
Examiner's comments: Overall marking: Implementation of the design

The tools and techniques identified in the design section have been used. There is just sufficient evidence to support the solution. There is some discussion of amendments to the original design.

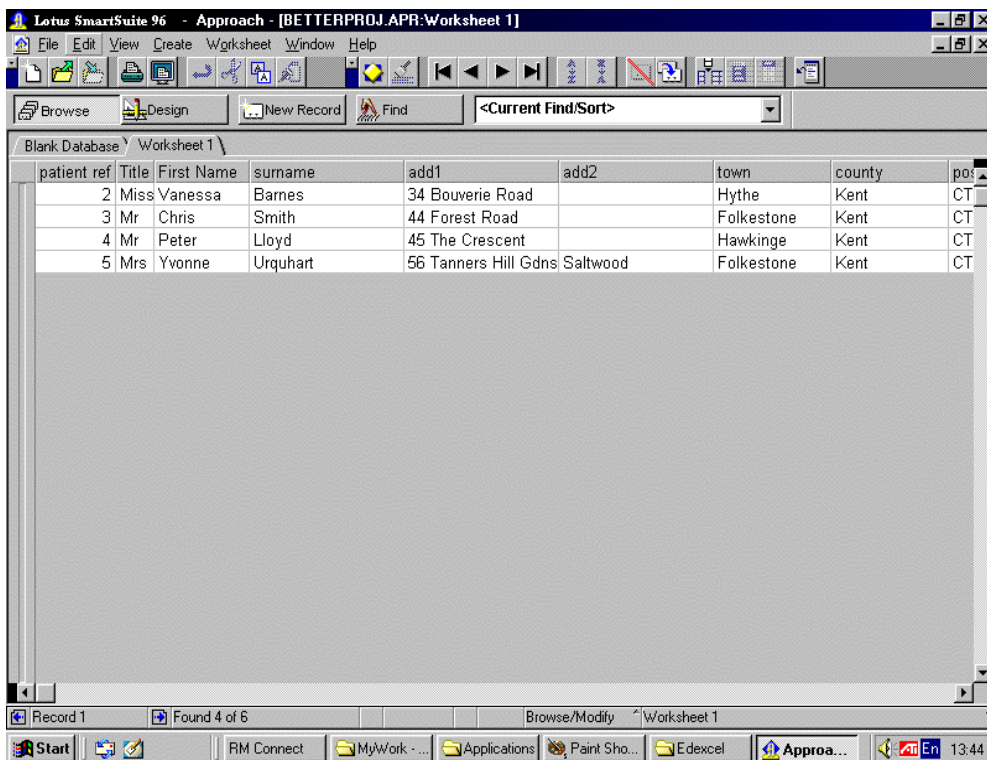
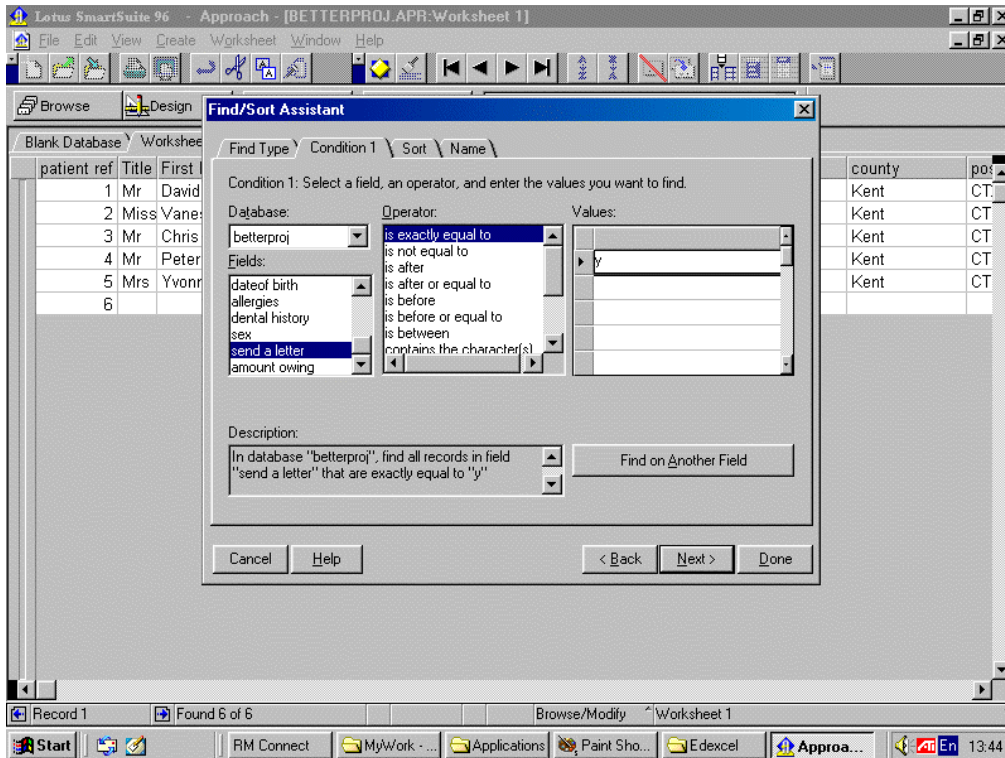
Mark:14/30

Section D: Testing of the solution

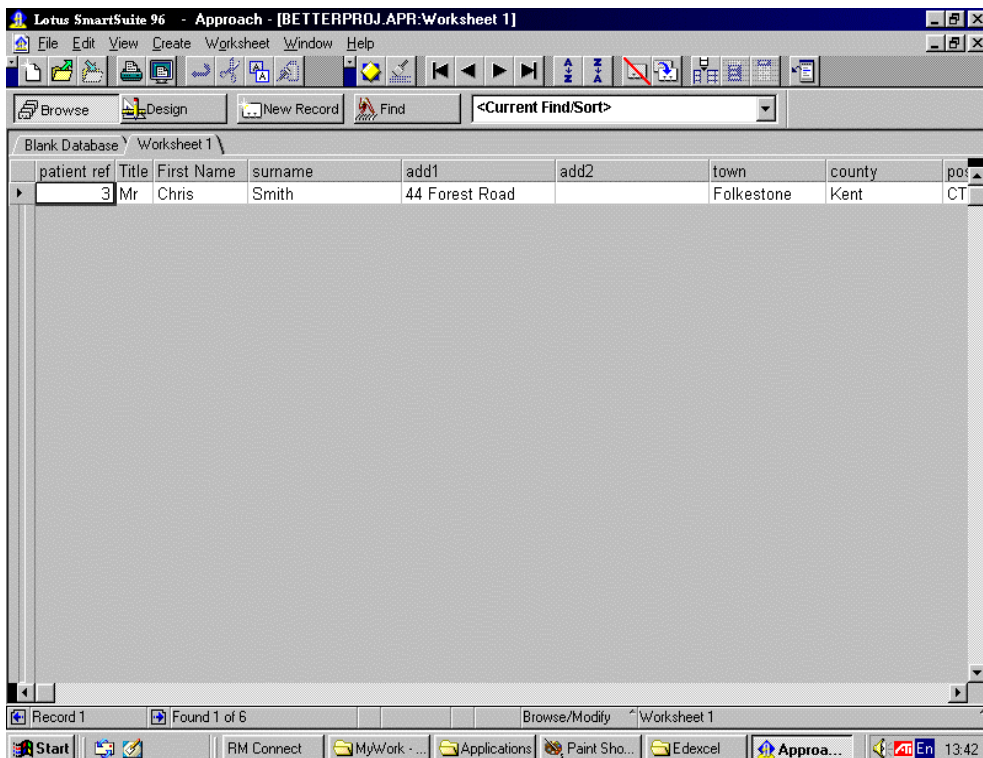
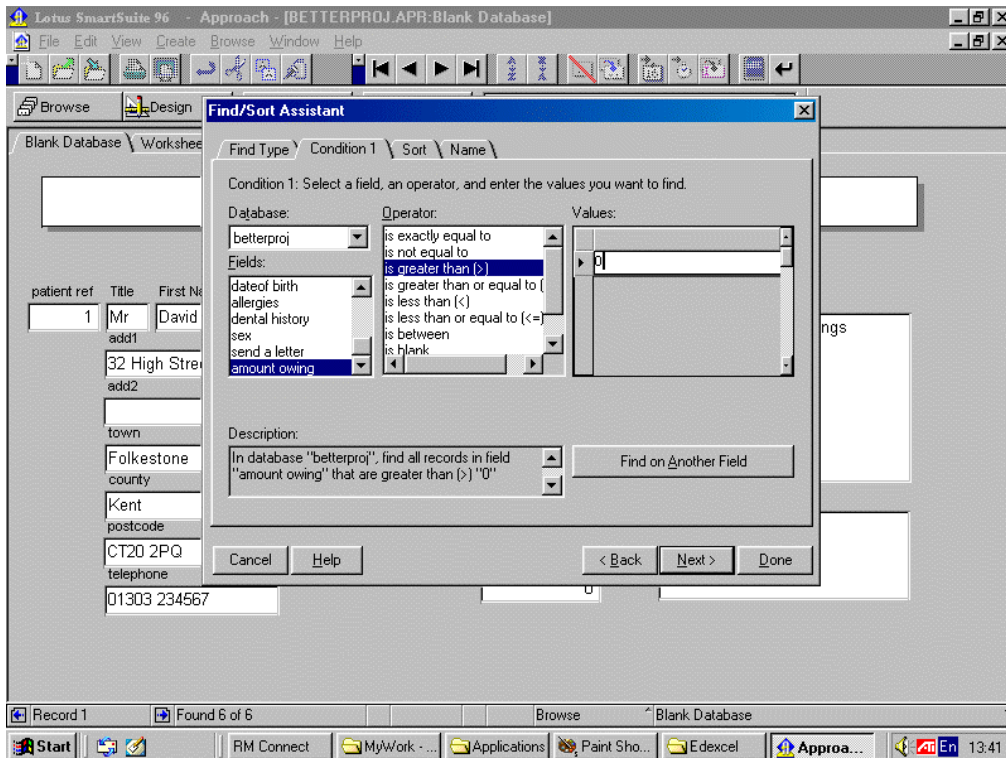
When I tried to input David Smith's date of birth as 31/02/69 I got the following screenshot so I can say that invalid dates can not be put in.



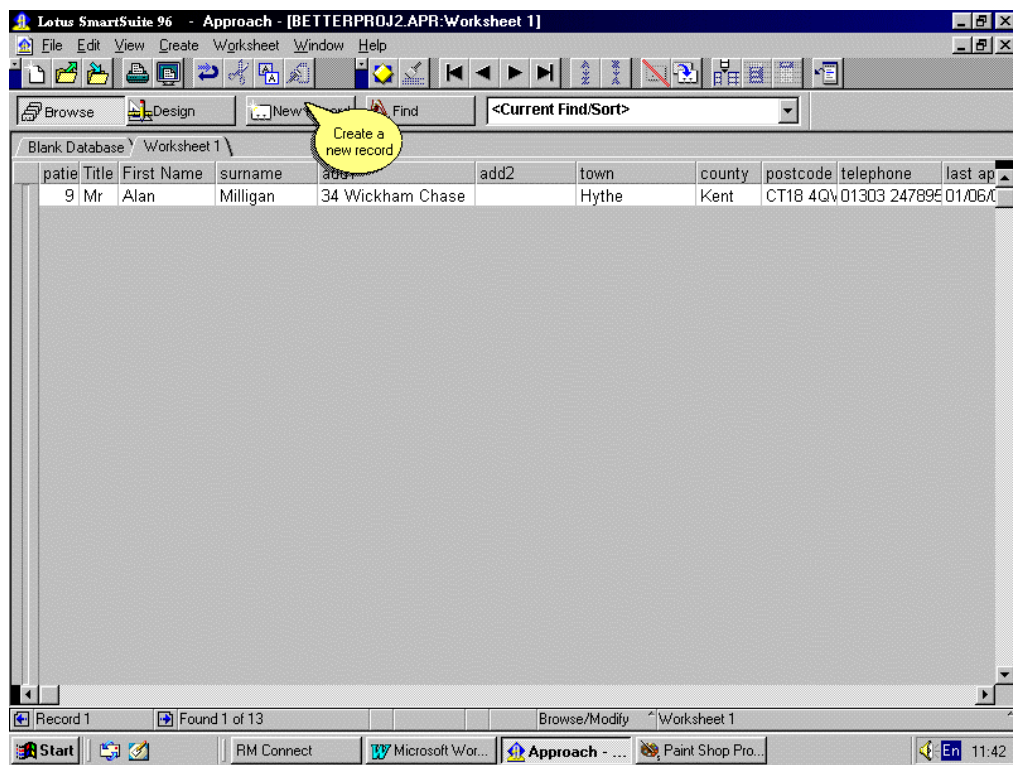
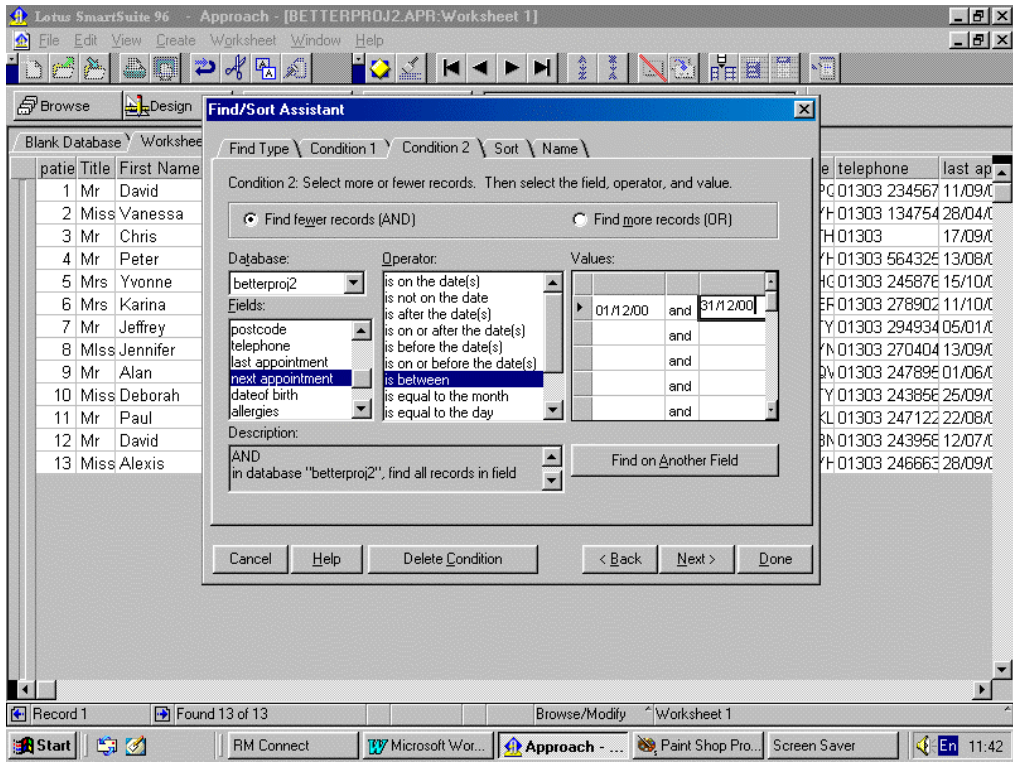
I need to test whether dummy data produced the right results to show that the database is actually working. If I search for the letter to be sent field, then record 1 of David Smith should not be picked out and as you can see from below it was not.



Next I need to test that anyone that owes money to the dentist gets picked up by the "money owing" search, again the screenshots below prove that this does happen and the database does actually work.



I then ran the searches to prove that the database works, starting with the money owing and then to send a letter to all those people who have an appointment next month i.e. December 2000. The screenshots below show this working.



I then printed out the letters which are produced when the searches are done. I have put a copy of the money owing letter and the next appointment letters below:

Robinson Dental Surgery
65 Cheriton Road
Folkestone
Kent
CT19 6TY
01303 256345

26th October 2000

Mr Chris Smith
44 Forest Road
Folkestone
Kent
CT19 6 TL

Dear Mr Smith

It would appear from our records that there is a small amount outstanding on your account of £34.

Please call the surgery so that the matter can be settled.

Sincerely yours,

Mr Ian Robinson

Robinson Dental Surgery
65 Cheriton Road
Folkestone
Kent
CT19 6TY
01303 256345

26th October 2000

Mr Alan Milligan
34 Wickham Close
Hythe
Kent
CT18 4QW

Dear Mr Milligan

Just a quick reminder to let you know that you have an appointment with us on 01/12/00.

If there are any problems then please do not hesitate to contact us.

Sincerely yours,

Mr Ian Robinson

Examiner comment: Overall marking: Testing of the solution

Some testing is described and carried out but as no test plan was given in design and planning of solution, there are no expected results to compare the hard copies with. There are no annotated hard copies to show that modifications have been made as a result of testing.

Mark: 2/10

Evaluation of the solution

I am sure that my project did work and the people who tried out my database said that it was pretty good. The receptionist said that it was much better than the system that they use already but not quite good enough for the surgery to use in real life. The biggest problem is doing searches that involve dates, as macros can not be recorded to include specific dates so the searches have to be done manually. What I would have liked to create is a couple of boxes to put dates into and then a macro button to run the search from there, I am sure that it can be done but just can't work out how to do it myself.

The original objectives were to:

- *create a database to hold all the records of the people that go to the dentist*
- *make some letters to send to the people who have appointments coming up*
- *work out how my database can be improved*
- *create something that is easy to use for the people who work at the dentist's.*

There is no doubt that the database can hold all the records required but perhaps the fields would need to be improved. The "dental history" field is a bit too vague and maybe could be broken down into sub-fields.

The letters worked fine but are very boring in their layout, ideally I would like to have created some headed paper with the dentist's logo on it and their address. This is not possible using Lotus Approach as far as I can work out and perhaps could be solved by the dentist having their own stationery printed up but this would cost a lot of money and it would be easier to use a colour printer that did it automatically.

I have worked out ways in which the database could be improved and did act on some of the suggestions made by the receptionists. But, as I stated earlier, my gut feeling is that the project is not really good enough to be used in the real world as the printed output is not really of a professional quality and the database itself is a bit limited in what it can do.

Was my database easy to use? Well as I had to create a guide for people to use then I would have to admit that it is not that simple. In the future I would like to create a custom toolbar for the user but I have no idea how to do this. Yes if you can use Lotus Approach then the database is fine to use, but it really does require the receptionist to understand Lotus Approach to use my project to its best ability.

Examiner comment: Overall marking: Evaluation of the solution

The candidate produced a sound evaluation form and made improvements as a result of feedback from it. The discussion is linked to the success criteria stated earlier and weaknesses are discussed and some sensible enhancements are proposed. The effectiveness of the software and the quality of the man-machine interface are also fully discussed.

Marks: 18/20

Total mark: 50/100