COMPUTER STUDIES

| Paper 7010/11 |
| Paper 11 |

General comments

The standard of candidate's work was similar to that in previous years. However, many candidates used brand names such as *facebook, twitter, google* or *skype* in their answers and consequently, marks were lost. It states clearly on the front page of the exam paper: "*no marks will be awarded for using brand names of software packages or hardware*". Centres need to bring this to the attention of candidates in future years to avoid unnecessary loss of marks.

There is a continued move to questions where candidates have to apply their knowledge rather than just show their ability to simply remember facts. There is strong evidence that this is producing candidates who are now exhibiting a far better understanding of many of the topics than in past exam papers.

One final note regards the exam papers themselves. Candidates and Centres are reminded that written papers are now scanned in and marked on computer screens by Examiners. Consequently, if a candidate writes the answer to a question on an additional page they must indicate very clearly to the Examiner where their revised answer is to be found. If any answers have been "scrubbed out", the new answers must be written very clearly so that Examiners can easily read the text and award candidates the appropriate mark.

Comments on specific questions

Question 1

This question was generally well answered with a large number of candidates knowing at least 2 features of a *data protection act.* Candidates need to focus on what the question is asking, as some described the use of passwords to stop hacking or software to identify and remove viruses.

Question 2

Candidates were asked to describe four **stages** in the **creation** of an Expert System, such as: *gathering information from experts, create/populate the knowledge base* or *test the system using data with known outcomes.* A significant number of candidates wrote about *fact finding, feasibility studies, and implementation,* and others simply named four parts of a typical Expert System. These candidates needed to improve on their answers as their responses gained no marks.

Question 3

This was generally well answered. Some candidates needed to include further explanation in their answers to indicate that they had understood the significance of the named hardware items. Marks were lost by answers that were too vague, such as *used in a supermarket (second application)* or *alarm (third answer)*.

Question 4

No real problems here. Many candidates still believe that robots are more accurate than humans when, in fact, it's their consistency (all products produced are identical) which is the main advantage to manufacturers. Some candidates needed to understand that the benefits and drawbacks were to *management* and not to the workers. Thus, unemployment was not really a drawback **unless** the answer was expanded to indicate potential redundancy costs or retraining costs.

Question 5

This question produced the full range of marks from 0 to 4. The most common errors were to switch items 6 and 3 and to mix up items 2, 5 and 7.

Question 6

The only real issue here concerns the continued use of brand names (see **general comments** earlier). Many candidates lost all of their marks since they used names such as *skype, facebook, YouTube, and msn*. It is stated very clearly on the front page of the exam paper that such answers will gain no marks. It should be reinforced with all candidates that they will lose marks if they simply state brand names. Whilst it is acceptable to write: *social networking (for example, facebook)* it is not acceptable to simply write: *facebook*.

Question 7

(a) This was fairly well answered with many candidates realising that *verification* had been described. Better candidates also gained a second mark for describing examples of validation that could have been used or pointing out that typing in the same data twice would simply lead to the wrong data being typed in twice.

(b) Part **(i)** was not very well answered. Many answers referred to viruses causing the computer to switch off suddenly. The answer to part **(ii)** required the candidate to refer to some form of back up taking place. Simply mentioning the use of pen drive (or other portable device) was insufficient to gain the mark here.

(c) There were some good answers here with many candidates indicating that the user did not have the right software to open the attachment or that the file was encrypted/password protected. A large number of candidates referred to viruses and did not really indicate why that would cause problems opening the attachment (an extension to the answer such as "*the virus checker prevented the user opening the attachment since it had detected a virus*" would have been a very acceptable reason).

(d) Many candidates thought that WiFi devices (such as mouse and keyboard) used the same WiFi system as the main computer and that when the Internet went down (e.g. because of bad weather) the devices also stopped working.

Question 8

(a)/(b) These two questions could have been answered better by candidates. It was a new question this year and the answers to both parts centred on pixel densities/number of pixels used to make up the two pictures.

(c) Candidates needed to improve on their answer to this question. Many candidates gave the following as examples of **output** devices: *mouse, keyboard* and *camera*.

(d) Candidates needed to refer to memory or storage somewhere in their answer to gain the marks. Many candidates write "*uses up a lot of space*" when they are referring to memory. This kind of answer is far too vague and gains no marks.

Question 9

(a) Most candidates gained one mark for the creation of jobs in the developing countries or for referring to the fact that work can be transferred to a call centre in another country if there is strike action or other factors which stop the call centre operating.

(b) Answers to this question could have been improved on. There were many general answers about causing unemployment and competition among call centres and none of these gained any marks.

(c) Generally well answered. A significant number of candidates mentioned the risk of unemployment or the need to re-locate.

(d)   Candidates needed to improve on their answers by also providing an explanation. For example, there were answers such as *RSI*, but with no reason given as to what causes it; *headaches/eye strain caused by looking at the computer for a long time* – this would not cause a problem since it is looking at a computer **screen/monitor** that causes eye strain or headaches.

Question 10

This question was reasonably well answered; however, many marks were lost by candidates that gave the *solution to the security risk* as the actual security risk; for example: *virus checker, use of passwords* or *firewalls*.

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As in previous years, both parts of this question were very well answered by many candidates. The full range of marks was seen. Many candidates realised that part **(b)** could still be answered even if part **(a)** caused a problem or even if no attempt at all could be made. These types of questions make the candidate apply knowledge learned, so it is encouraging to see such good results.

Question 12

(a)   This was a new question and candidates will need to work on their answers. Very few gained more than one mark; this was usually obtained because of some reference to the Internet being used to stream videos or music.

(b)   As in part **(a)**, only a small number of candidates understood the advantages and potential problems of streaming videos from the Internet. Most candidates referred to hacking, viruses and health and safety as the main drawbacks to using bit streaming. Very few referred to the need for high speed broadband, inadequate buffering or the need for specific software to run some of the files.

(c)   Candidates needed to improve on their responses as many candidates ignored the phrase *another application* and suggested watching videos/films. Several mentioned watching music videos as if this was different to any other kind of video.

Question 13

(a)   There were some good answers to this question this year. Candidates seem to understand more the link between sensors, microprocessors and devices such as actuators. However, a significant number suggested that the *sound sensor* produced a sound which was sent to the computer or to the control room.

(b)   There were no real problems to report with this question. Many candidates seemed aware of the faster response possible using a computer system or the ability to have 24/7 cover for safety reasons.

Question 14

This question produced the full range of marks. Many candidates lost marks for missing out the initialisation stage in columns S and C or not inputting all of the data supplied in the question. These questions test a candidate's ability to apply their learning and the results were very encouraging.

Question 15

(a)   This question was answered well. Some candidates need to improve on their answers by using the correct signs for division "/" and for multiplication "*". Candidates also need to check any formula used is accurate by ensuring that they include brackets in the right place.

(b)   This question was reasonably well answered. Errors such as: AVERAGE(C2:C5)/5 (the division by 5 is clearly unnecessary) or C2 + C3 + C4 + C5 + C6 / 5 (in this case the brackets around the C2 to C5 were missing) are seen in candidate responses. In order to have gained more marks, candidates needed to check the accuracy of their formula.

(c)   This part of the question was not particularly well answered. Many candidates just suggested that the seat price should be increased or use a larger venue! This completely missed the point about the use of the spreadsheet. One solution was to use ROUNDUP(E2:0) or use INT(E2 + 1). Other solutions were also possible.

Question 16

(a)   Parts **(i)** and **(ii)** were not particularly well answered; many candidates got 88 200 for the first answer where the candidate had not included the fact that there were 2 tracks (one for left hand speakers and one for right hand speakers). A large number of candidates gained half marks since credit was given for making a good attempt at the calculation. Candidates needed to show their working out in order to gain more marks. It is always advisable to show working in any question were some mathematical calculation is required as the candidate may gain marks for working even if the answer is incorrect.

(b)   Many candidates referred to file compressions which gained them a mark. However, very few gained the second marks by referring to the removal of sound that humans cannot hear or removal of softer sounds when 2 sounds are played together.

Question 17

(a)   This part of the question was reasonably well answered. Although some candidates attempted to use a FOR … TO/NEXT loop which would not really work here since the algorithm needs to be terminated once the value -1 is input. Consequently, it is more appropriate to use either REPEAT/UNTIL or WHILKE/ENDWHILE looping structures.

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        Which completely ignored the hint (check if D1 v= D4 and D2 = D3) given in the question.

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COMPUTER STUDIES

| Paper 7010/13 |
| Paper 13 |

General comments

This year the paper again elicited a wide range of marks. None of the questions set denied candidates the opportunity to display their knowledge and very few candidates did not attempt to answer all of the questions. There were a few questions, detailed below, where some candidates had difficulty in achieving the maximum marks on offer. The comments below on individual questions provide a rationale on the awarding of marks, which again should prove helpful to teachers of the subject. Examples are given of responses which did obtain marks when a degree of interpretation had to be made when considered alongside the specific wording of correct responses in the mark scheme; and equally, examples of responses which did not obtain credit. Very few candidates, with the exception of question 4, made the mistake of giving trade names as opposed to generic terms when answering the questions. In those questions where a specific number of responses were asked for, again very few candidates gave a long list of answers in the hope that there would be a correct response the Examiner would find and give credit for.

Comments on specific questions

Question 1

(a)   The answers to this question could have been further improved on as few candidates obtained the maximum 4 marks. The most popular answers were related to the drawbacks of both stand-alone and Internet access computers, with unauthorised access being the most common response. A common error was to assume that the Internet connected computer could not have access to multimedia like the stand-alone computer.

Question 2

The candidates needed to develop better understanding for this question. It was clear from the responses given that few candidates had come across the top-down (modular) method of design. Incorrect responses seen included 'cheaper', 'easier to understand' and 'the program would run faster'. The most common correct response given was the idea of large complex tasks being broken down into small, more easily managed tasks.

Question 3

A majority of candidates gained maximum marks for this question. Incorrect responses confused the 'MP3' and 'music generation' connections.

Question 4

(a)   This question was well answered by most candidates. Responses which did not gain marks were those which were imprecise – 'chatting'; 'sending messages – or those that gave trade names of social networking sites and instant messaging etc.

(b)   The most common response related to security issues though all of the correct responses were seen.

(c)   This was a well answered question with a wide variety of correct responses being seen. The commonest incorrect or most imprecise response seen was to repeat the answers in part **(a)** of the question.

Question 5

(a) Few candidates gave both correct responses.

(b) The candidates needed to develop better understanding for this question. Even though there was a greater number of correct responses which could be given for this part of the question many candidates, whilst giving one of the correct responses, found it less easy to explain why a particular validation check would not be appropriate.

Question 6

The candidates needed to develop better understanding for this question as few candidates gained maximum marks. The most common error was to assume that a recipient could read his messages before first logging on i.e. stages 7 and 6 were reversed.

Question 7

(a) Candidates needed to improve on their answers to this question. Some of them seemed familiar with 'chip and pin' or 'smart card' technology, however a large majority did not realise that 'changes' to credit card technology was being looked for; a description of plastic stripes (which contains a PIN), and better encryption techniques gained no credit.

(b) Most candidates could name at least 2 correct ways in which bank account information could be accessed illegally but others needed to explain their answers more thoroughly as they were unable to describe accurately those methods named. There was some confusion between 'phishing' and 'pharming'. In order to gain higher marks, phishing needed reference to the process by which a fake website is arrived at, and pharming needed reference to the malicious code installed on a computer. Many imprecise responses were seen such as 'a person enters bank account information into a fake website' as a description for both phishing and pharming. Most candidates could give 'hacking' for 1 mark but then needed to develop their answer to describe adequately what this entailed.

Question 8

(a) This question was well answered. The most incorrect responses seen referred to 'word not in the dictionary', 'peoples names' and the use of 'slang' words which would provoke a spell checker to identify an error.

(b) This was a well answered question with accurate reasons given.

(c) The candidates responded well to this question. Some of them realised that if the errors in part **(a)** had been missed because the spell checker did not check grammatical errors a feature which would be useful in a word processor would be a 'grammar checker'.

Question 9

This question was well answered by the majority of candidates. A common error preventing marks being awarded was the omission of initialisation figures in H, T1, T2 and T3. Whilst not leading to a reduction in marks awarded candidates would be best advised to work through the flow chart logically and fill in the *rows* in the table accurately leaving blanks where appropriate. Marks were lost where candidates included <u>incorrect</u> additional zeroes in *columns* H, T1, T2 and T3.

Question 10

This question was well answered, with a majority of candidates gaining maximum marks. Most incorrect responses occurred in the reasons given for the choices selected, mainly for the printer type. Imprecise answers such as 'fast' for 'laser printer' and 'fairly good output' for an 'inkjet printer' could not be given credit.

Question 11

(a) This question was exceptionally well answered, with only a very small minority of candidates not gaining the mark. Candidates showed clear understanding of the difference between fields, records and data items.

(b)   As in 11**(a)**, this question had some very good responses with candidates showing some understanding of search conditions.

(c)   This was a very good differentiating part question. Many candidates scored half marks. A common error preventing many candidates gaining both marks was the omission of any type of quotation marks around UK. Without these, the search would not produce the required results.

Question 12

(a) (i)   This question was well answered by many candidates. Others needed to improve on their response as they used a superscript 2 in their formula which regrettably only produces an error message in the spreadsheet.

(ii)   Candidates needed to improve on their understanding of this question. If a textual output is required then the text must be in speech marks so the spreadsheet does not assume that the output is a variable to which some value has been assigned, and should be output. The structure of the formula itself does not require any other additional conditions (such as 'else' or 'the') in order to produce the required output.

(iii)   Two elements were required in order to gain maximum marks. Only a minority of candidates gave these. Many gained one mark for one of the elements to the expected response – 'draw a graph' or 'add another column' – but then did not provide a second element to gain the second mark. Candidates should be reminded that if 2 marks are available for a question then it is very likely that 2 points are expected in the response.

(b)   This question was very well answered. Most candidates were aware of a variety of additional features to be found in spreadsheet software.

Question 13

(a)   This was a well answered question where candidates correctly interpreted the information given.

(b)   This question was well answered by the majority of candidates as they were able to show the correct information.

(c) (i)   A large variety of correct responses were seen or this question, though the commonest were 'which lift is nearest the 14th floor?', 'which lifts going up?' and 'which lifts are in use?'.

(ii)   A majority of candidates correctly stated 'D' or 'Lift 3'.

(d)   Many candidates gained 1 mark for this part but then needed to improve on their answer in order to achieve the extra marking point. A majority of candidates correctly stated that if register 3 contained all 1s then floor 63 would have been entered – i.e. an error which should be identified – however, they then needed to develop their answer further to additionally state that any input to register 2 should also result in an error being identified.

Question 14

(a)   This question was well answered by most candidates. A common error was to associate the wrong response to the question in the decision boxes – statement 6 being associated with statement 10, or statement 7 being associated with statement 11.

(b)   Many candidates produced good responses to this question. Others needed to improve on their answer by not repeating statements given in the question – 'water is sprayed into the air' instead of '**a signal is sent** (to open a valve) to spray water in the air' etc.

Question 15

(a) and (b) Both parts of this question were very well answered. The vast majority of candidates showed clear understanding of logic circuits and truth tables. The few incorrect responses most commonly seen included confusing the truth table of a NAND gate with that of a NOR gate.

Question 16

This question was answered well by the majority of candidates. Common errors preventing maximum marks being awarded included; incomplete initialisation (not initialising variables for the items being sold and the totals), incorrect loop termination – for e.g. 'repeat'..'until end' and incorrect values being assigned to variables – e.g. 'if item = 'bun' then 'bun' = 'bun+1'. Some candidates, did show improvement on their answer later in their algorithm as they completed the process by multiplying the incremented value of 'bun' by the value of a bun, coffee, cake etc. (0.5, 1,20 and 1.50)) and so obtained the actual value of the takings for each item which they could then use to establish the total takings.

COMPUTER STUDIES

> **Paper 7010/02**
>
> **Project**

General comments

The coursework projects consisted of a wide variety of suitable topics with the vast majority of Centres basing the work mainly on the construction of a database.

Centres will need to obtain the centre-specific individual moderation report for details of their candidates' performance and the Centre's assessment of the projects. Moderators provide quality feedback on these reports in order that Centres can make future improvements. Many Centres acted upon last year's feedback to improve the standard of the candidates' work.

Administration

The vast majority of the coursework was received by the due date. It causes some problems in the moderation process where Centres do not meet this deadline or do not include the correct paperwork. The Individual Candidate Record Card, the Summary Sheet and the MS1 mark sheet should all be included with the coursework. Without these documents it is possible that delays in issuing results may occur.

The Individual Candidate Record Card should be fully completed for each candidate. It is important that the page numbers are entered correctly as this enables the Moderator to more easily locate the evidence in each candidate's work. The Summary Sheet should be accurately completed and the Centre is advised to keep a copy for future reference. A copy of the MS1 mark sheet should clearly list each candidate's marks. Centres should ensure that the marks have been correctly transcribed between the various documents.

Most Centres followed the instructions for providing a moderation sample. The only occasion when the entire entry's coursework should be submitted to the Moderator is when there are 10 or fewer candidates entered in total. Otherwise, Centres should submit a sample of the candidates' coursework. It is essential that Centres follow the instructions for the selection of this sample in order to ensure that candidates are not unfairly penalised. The sample should include the full range of marks that have been awarded by the Centre and therefore the coursework of the candidates with the highest and lowest marks should always be selected.

Choice of Task

There was a great variety of well-chosen projects which gave candidates the opportunity to score highly and achieve their potential. The quality of work was of a broadly similar standard to previous years and there was a very wide range of suitable topics presented, with most candidates undertaking to solve realistic problems.

The purpose of the project is to allow candidates to demonstrate their ability to undertake a complex piece of work, which is a computer-based solution to a significant problem, and to complete the solution and present their results. This project should enable the candidate to use a computer to solve a significant problem commensurate with the age and ability of the candidate, be fully documented and contain sample output for the proposed solution.

Assessment

The assessment criteria are clearly stated in the syllabus. There are many Centres that understand and interpret these assessment criteria correctly and consequently award marks accurately for each of these sections. Each section is progressive i.e. a candidate must evidence the 1 mark criterion before consideration is given to the 2 mark criterion. If there is no paper evidence for this criterion then no marks can be awarded.

There were many examples where the standard of assessment by Centres was reasonably accurate and those Centres are to be commended. On occasion, some Centres had awarded a higher mark than that warranted by the work submitted. Centres should only award marks where there is clear, relevant evidence in the documentation. It is recommended that candidates make use of appropriate annotated screenshots as evidence and include these in their documentation. Screenshots without explanation should not be included.

Some schools occasionally provide a framework/template for candidates to use for some areas of their documentation. This can usually be considered part of the normal teaching process and candidates do need to complete each of the sections in their own words. Marks can only be awarded for each candidate's own original work. Centres should also be aware that sometimes these templates can be restrictive and not allow the better candidates to provide the detail often necessary for the higher marks. Marks can be deducted where there is an overuse of such templates.

The submitted projects must be the unaided work of each and every candidate so as to avoid any case of suspected malpractice.

Analysis

Section 1 Description of the problem

The problem definition section was well done with candidates adequately describing the background to the business or organisation as well as outlining the nature of the problem to be solved.

Section 2 Objectives

This is an extremely important part of the coursework as the objectives set the direction of the work as a whole. The qualitative business-related objectives and the quantitative computer-related objectives are best considered separately.

The better candidates provided detail and justifications for each of their objectives and stated their objectives in relation to their own specific proposed solutions. Candidates who provided more generic objectives that could apply to any solution, needed to provide more detail in order to achieve higher marks.

The computer-related objectives set here, are those objectives which need to be shown to have been successfully achieved in *section 12*, tested in *sections 14* and *15* and referred to in the evaluation of *section 18*. Therefore, it is advisable to number the objectives, as this allows easy referencing to/from the evidence.

Section 3 Description of the existing solution

Many candidates provided an appropriate description. Others needed to develop a more complete description containing all the details necessary for full marks as listed in the specification. For maximum marks, candidates should provide evidence of exactly how the present solution works. Many candidates included details of interviews and/or questionnaires, and would have benefited further from the inclusion of sample documents used in the present system, with explanations.

Section 4 Evaluation of the existing solution

Most candidates provided an evaluation.

For full marks candidates need to suggest at least one realistic improvement in addition to providing advantages and disadvantages directly related to the present solution. In order to achieve high marks, as this is an evaluation of the existing solution, it is important that explicit reference is made to this system.

Section 5 Description of other possible solutions

Most candidates provided reasonably detailed relevant descriptions of the proposed new solution and at least one other solution.

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Design

Section 6 Action plan

Candidates often produced some good Gantt charts to supplement their detailed formal action plans. Some Centres mistakenly awarded full marks for the production of a Gantt chart alone. For the full marks to be awarded it is still necessary to provide the detailed (formal) action plan, including time schedule, required for 2 marks as well as a Gantt chart. A basic Gantt chart alone obtains I mark only.

A detailed action plan should consider more than the time to be spent on each of the areas characterised in the specification – analysis, design, implementation, testing, documentation, evaluation and further development. Each of these areas should be subdivided to create more detail.

Section 7 Systems flowchart

In order to achieve marks in this section, candidates need to produce the necessary systems flowchart using the correct symbols. These symbols are those defined by the British Computer Society.

Data flowcharts are not creditworthy in this section as they are not systems flowcharts.

Section 8 Description of the method of solution

Some candidates were unable to appreciate that this section is part of 'design' and mistakenly included screenshots of their final completed solution. It is in this section that candidates should be describing in detail what they are going to do. Screenshots illustrating the final solution should be placed in the implementation section.

Section 9 Hardware

In order to achieve marks in this section, candidates need to produce lists of hardware with explanations as to why each specific item is required in their solutions. The choice of hardware needs to be justified within the specific context of the system being developed.

Section 10 Software

As for Hardware above, in order to achieve marks in this section, candidates need to provide relevant justifications for their choice of software. Software descriptions should contain reference to the actual problem to be solved.

Implementation

Section 11 Method of solution

This is where candidates put into practice what they have said they are going to do in the design section. This section was often done well with candidates usually providing full descriptions supplemented by suitably annotated screenshots.

Section 12 Accurate method solution

Many candidates provided full evidence by listing each of the previously stated computer-related objectives with associated annotated screenshot(s). Other candidates, quite acceptably, referenced their objectives to evidence found elsewhere in their reports.

Where there was no evidence to indicate that any objectives had been met, no marks could be awarded.

Section 13 Programming code

Most candidates were able to gain one mark by using macros that they had created themselves. Many of these candidates then went on to gain two marks by including annotated coding for these macros.

In order to achieve the full three marks available, candidates have to code and annotate the complete solution themselves.

Testing

Section 14 Test strategy

Some candidates achieved very good marks on this section with their test strategies clearly covering all of their computer-related objectives. A few candidates demonstrated no test strategy at all.

Section 15 Test results

Most candidates managed to provide evidence for the testing of normal and unacceptable data. Many candidates did not provide correct evidence of testing for boundary (extreme) data because they appeared to misunderstand what constitutes boundary data. Boundary data are chosen to be at the limits of the normal range, but are still acceptable data and therefore no error message should occur.

It is not necessary to include evidence for every single test especially where these tests are similar. Careful selection to provide a reasonable variety of suitable examples for different types of testing is perfectly acceptable.

Documentation

Section 16 Technical documentation

The better candidates produced technical documentation which would enable maintenance or modification of the system by a competent technician. An index, together with suitable descriptions, annotated screenshots and printouts were often provided by these candidates.

Section 17 User guide

Many candidates provided excellent user guides which were both clear and complete. These often contained full descriptions and appropriate screenshots.

System Evaluation and development

Section 18 Evaluation

An improvement in the evaluations was evident with many candidates now linking their evaluation to the previously stated objectives and to their testing.

Section 19 Developments

Most candidates mentioned some possible minor improvements. Some candidates listed realistic and meaningful possible developments which were subsequently justified and/or explained.

COMPUTER STUDIES

General comments

This paper provided an alternative to submitting coursework. The candidates were advised to spend at least 20 minutes reading the information about the existing system and the proposed computer-based system. It is really important that the candidates carefully studied the information provided at the start of the paper, since answers to all parts of the single compulsory question on this paper required reference to the Doctors' Clinic Appointment system described.
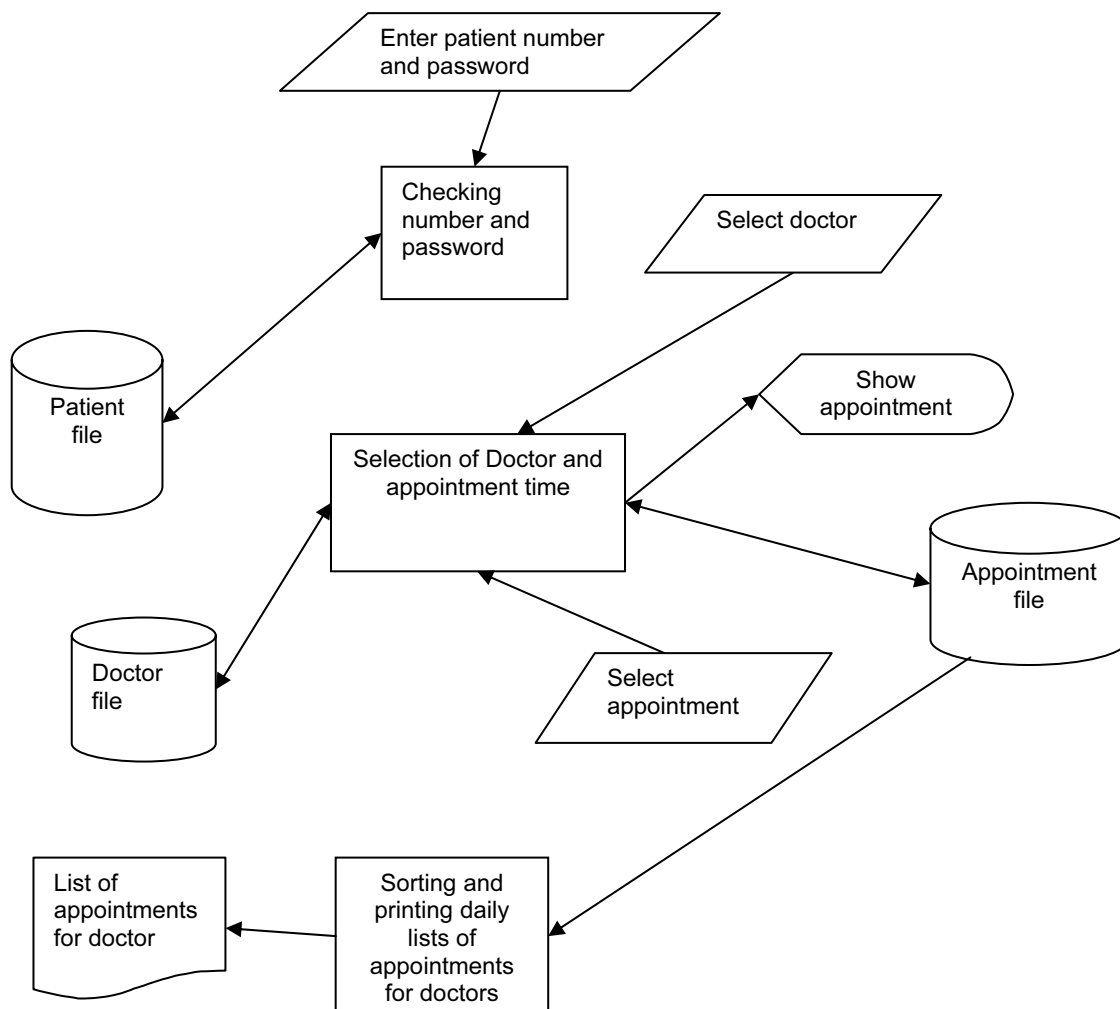
Candidates who did not use the information provided at the start about the Doctors' Clinic Appointment system described at the start of the paper could not obtain full marks for their answers.

Comments on Specific Questions

Question 1

(a) (i)   Many candidates gave good explanations of what a Gantt chart would be used for.

  (ii)   The best candidates explained what a PERT chart would be used for with 'showing the critical path' being a popular correct response.

(b)   Most candidates could identify a software tool; better candidates provided a good description in the context of the question.

(c)   Nearly all candidates correctly identified two methods of fact finding. Weaker answers did not link the explanation of how the method was used to the Doctors' Clinic Appointment system. Candidates needed to explain how the method was used in the context of the Doctors' Clinic Appointment system. For example 'Questionnaires were handed out to patients by the receptionists at the clinic, ensuring that all the patients were asked the same questions so that the responses from many patients could be analysed to give meaningful results.' would be a suitable response.

(d)   The best candidates correctly identified two items of hardware that would be needed to connect computers to the wired LAN. Candidates with weaker responses incorrectly wrote about access to the Internet. Candidates need to answer the question set; those who had prepared an answer for a different question rather than the one on the paper could gain little credit.

(e) (i)   Most candidates drew a screen that gave the patient the correct choices; **(ii)** the best candidates included all 31 days for the patient to select from; better candidates included error correction icons for one or both screens. Some candidates needed to focus more on designing the screens for the tasks given in the question rather than designing web pagers and/or including other elements that could not gain any credit.

(f)   Most candidates could identify most of the eight flowchart symbols asked for. The sort symbol was the least well known.

(g) The best candidates provided good responses for this part of the question that showed a clear understanding of how the proposed system could work. Candidates need to take care not to include processes, data stores, inputs and outputs that were not asked for. There were many ways of drawing a systems flowchart for the parts of Doctors' Clinic Appointment system identified in the question; the example below would have gained full marks.

(h) Many candidates were able to identify some steps the systems analyst had to take in order to ensure that the website was secure.

(i) The best candidates provided a good explanation of why the systems analyst would choose either bespoke or off-the-shelf software for the new computer-based Clinic Appointment system. Weaker answers were not written in the context of the Clinic Appointment system.

(j) Some excellent responses contained specific examples of test data that could have been used, for the patient code, and gave detailed reasons for choosing that data. Other candidates needed to be more specific in their answers as the question asked for examples of data that could be used to test the patient code, so other examples of normal data or abnormal data or extreme data were not creditworthy.

(k) There were some excellent responses to this question that showed a clear understanding of what should be included in Technical Documentation and why it should be included. Other candidates could identify items to be included and describe them but omitted to give a clear reason that explained why the item was included. Candidates need to answer the question set; those who had prepared an answer for a different question rather than the one on the paper could gain little credit.

(l) (i) Nearly all candidates could identify two methods of implementation for the new system.

(ii)   The best candidates provided two reasons why the method chosen was suitable for the new computer-based Doctors' Clinic Appointment system. Weaker answers were not written in the context of the Doctors' Clinic Appointment system.

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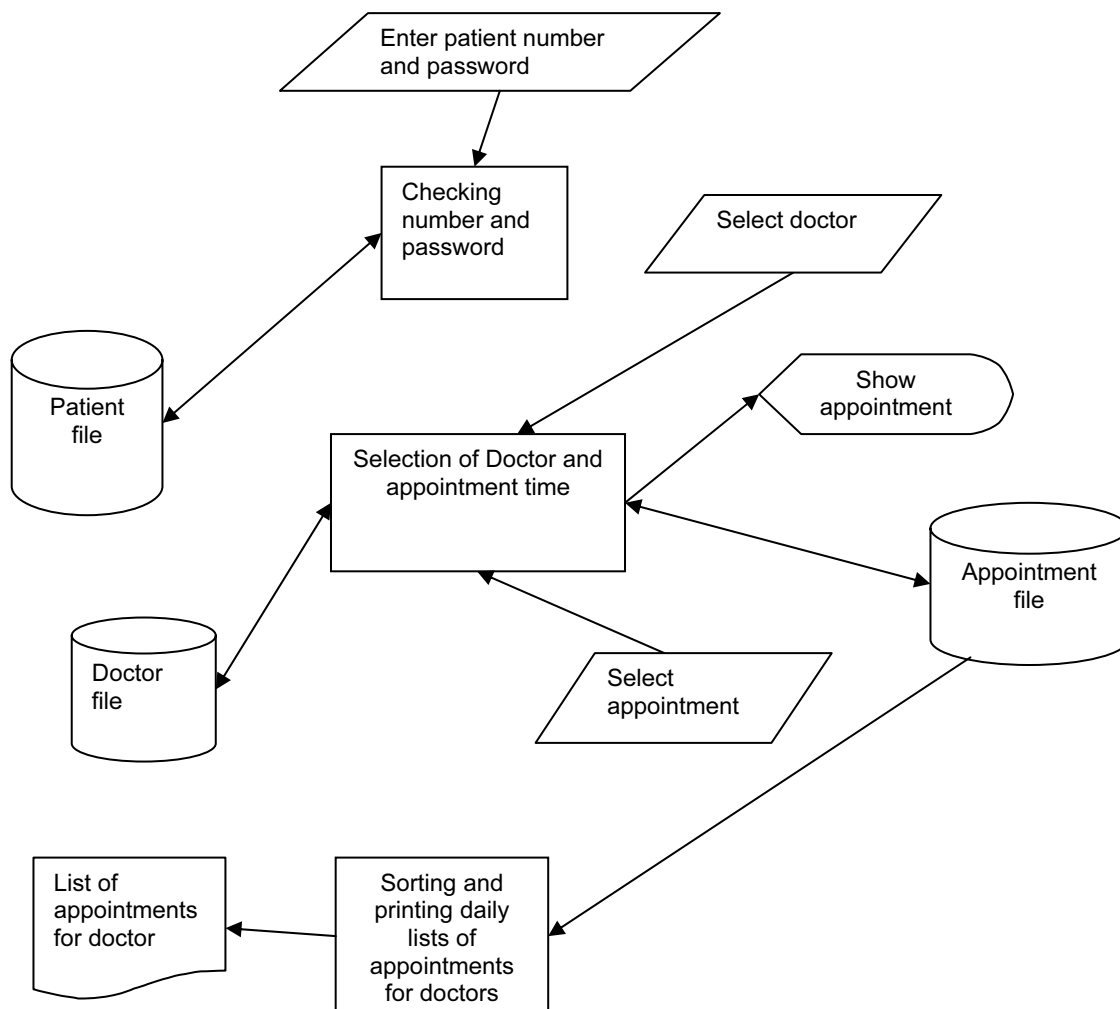
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