RECOGNISING ACHIEVEMENT

GCSE

Computing

General Certificate of Secondary Education **J275**

OCR Report to Centres

January 2012

J275/R/12J

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This report on the examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the examination.

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Overview

I am pleased with the way the specification is going in so far that many candidates are producing some first rate work. The top end showed considerable depth and breadth of knowledge in the A451 paper.

The controlled assessments at their best, showed some superlative work. Many candidates have quite clearly worked hard at these and even better, have clearly learned a lot, showing technical understanding as well as an appreciation of wider implications of the scenarios.

Work in the middle suggests that the specification is doing what we hoped and is engaging the interest of large numbers of candidates who are showing a reasonable grasp of the principles.

Marking of the controlled assessments was mostly realistic although some of the weaker centres over estimated what their candidates could do.

Unit A451

This was the first session where a significant number of candidates were entered for this unit and this provides an opportunity to feedback more fully on questions that the candidates performed well on, as well as common errors which centres and candidates should avoid.

There was a good range of responses indicating that the paper was able to discriminate fairly well across the whole ability range from G to A*. While the performance of some candidates was outstanding, it would have been pleasing to see more candidates produce answers that were clearly of A and A* standard.

There was some evidence that some candidates were not adequately prepared for the examination, in that they seem not to have studied areas of the specification to which the question referred and demonstrated this by giving answers which suggested they were guessing based on their background knowledge rather than their study of the subject. Centres are advised that candidates are unlikely to perform to the best of their ability in this unit unless they have studied the entire specification, even if they have considerable experience and interest in computers. This is illustrated in detail in some of the comments about specific questions below.

Question 1

Question 1, which was aimed at the lower end of the ability range, was very well answered. In 1(a), candidates showed a clear understanding of the relative size of the three examples of data to be stored and were therefore able to state appropriate units. It was noticed, however, that candidates who did not get all three marks tended to get 2 questions wrong indicating that candidates are making the assumption that each of the units given was to be used only once. Although in this case this assumption turns out to be correct, centres should note that when a question contains a range of possible answers, it is not always the case that each answer is to be used once, and only once, unless the question specifically states this. Candidates who obtained 1 mark out of 3 may have obtained a further mark if they had considered each question on its own merit rather than make inferences from other wrong answers.

In 1b, it was pleasing to see that candidates not only showed their working as required by the question. Most candidates used 1TB = 1024GB the rest using 1000GB. We recognise the fact that there is inconsistency in the way the term is used and both methods were considered acceptable, demonstrating the essential knowledge which is the order of magnitude involved.

Question 2

In 2(a), most candidates knew what multi-tasking is, although some were imprecise in omitting to mention that the tasks need to be simultaneous. However, most candidates did not provide a detailed enough explanation beyond simply stating what multi-tasking is.

In 2(b) the answers were more disappointing. It was expected that middle ability candidates would be able to remember at least two of the functions of an operating system listed in section 2.1.3 of the specification and simply state these. The candidates' responses suggested that these had not been learnt and that candidates were attempting guesses based on their own experience, often in wordier descriptions which sometimes fell short of being clear and precise enough for the mark to be awarded. Centres are reminded that candidates are not only required to know these functions, but should also be able to explain why they are needed to a reasonable level of detail.

Question 3

In 3(a)(i) most candidates obtained at least 1 of the 2 marks available, usually for stating that the value of a variable can change. There was however, a significant minority of candidates who wrote answers that were too vague to gain credit such as "a variable is something that can change." Some candidates suggested that a variable is the same as an input to a program. While it is the case that all the variables in the algorithm in this question were inputs, this is not true in general and so suggests again that these candidates were trying to derive the answer from the question rather than applying the knowledge they have acquired through studying the subject. 3(a)(ii) was generally well answered with about half the candidates obtaining full marks. Candidates who didn't get full marks often chose incorrect data types such as Boolean for country of origin or, disappointingly, number rather than Integer, for size. There seemed to be an assumption among weaker candidates that natural numbers such as 1,2,3,4 etc… are the "real" numbers (using a simplistic understanding of the term "real").

3(b) was very well answered, with most candidates gaining full marks. A small minority of candidates did not realise that if none of the IF statements is executed, then the value of Size would remain unchanged. Possibly, they did not follow the algorithm step by step and assumed the results by looking at the algorithm as a whole.

Question 4

In 4(a) it was disappointing to see that the majority of candidates thought the internet is the same as the World Wide Web. Centres should emphasise that this is not the case when they deliver section 2.1.5 of the specification. Otherwise, the question was well answered. In 4(b) it was obvious that the majority of the candidates did not know what a DNS server is. Explaining this and its advantages is difficult of itself, but it was expected that middle and higher ability candidates would be able to demonstrate enough knowledge and understanding to score some of the marks. Instead, over half of the candidates scored no marks because their response failed to communicate any understanding of the topic in question. Typically, candidates suggested that DNS servers either host web pages or retrieve web pages on behalf of the user. These responses were what one would expect if the candidates had not studied the material and were trying to guess an answer from reading the question. Centres should note that in a 'levels of response' question such as this where the quality of written communication is assessed, this refers to how well the candidate communicates the correct answer to the question asked as described in the mark scheme. Candidates are not awarded any mark just for good spelling, punctuation and grammar if they have a completely wrong answer.

Question 5

Question 5(a) was very well answered with the majority of candidates gaining 5 marks out of 5. Question 5(b)(i) asked candidates to state the meaning of the resolution of a picture. A large number of candidates stated that this was the number of pixels in the image, either for example in megapixels, or expressed as a product of the number of pixels horizontally and vertically. At this level, it was enough to state that the resolution is the number of pixels relative to the size of the image. Despite giving an imprecise definition for b(i), most candidates were able to explain the effect of the resolution on file size, although some did not give a full explanation, for example by stating that a higher resolution will increase the file size, but did not justify this.

Question 6

In 6(a) about half the candidates demonstrated an understanding of what validation is. Other candidates confused it with verification, or simply gave completely irrelevant answers. Candidates who had learnt the correct names for different types of validation check such as presence check, range check etc were able to score relatively well by stating the name of the validation and how it applied to the field in the question. Other candidates struggled to describe

the check in their own words, clearly and accurately enough. Candidates found 6(a)(i) (validating sex as either male or female) was easier than 6(a)(ii) (validating the weight of the dog).

6(b) was quite well answered by middle and higher ability candidates who were well prepared. Many candidates described the role of the field DogID in the DOG table (ie a primary key) rather than in the JOB table (where it is a foreign key). 6(c) was well answered by most candidates.

Responses to 6(d) were sometimes disappointing. It had been expected that even low ability candidates would receive the majority of the marks here. Instead, many candidates appeared not to know what form a report should take, sometimes giving input screens or queries and algorithms for obtaining the data. Of those who did attempt a report design, the majority proposed a "datasheet" display with no title, date, grouping or consideration of the most appropriate layout. That said, candidates who had obviously had prior experience of designing reports either on paper or using database software were able to demonstrate their understanding and creativity through some very well thought-out designs.

Question 7

Section 2.1.1 of the specification requires candidates to be aware of developments in computer technology so that they can describe the importance of computer systems in the modern world. Most candidates referred to the use of a database in 7(a) – which although not a "modern" technology is still heavily used within schools and so they obtained the marks. Weaker candidates were unable to give any other potential use of computers in school. Some candidates were able to demonstrate a good knowledge of various learning technologies or better still an understanding of modern computer technology and an ability to apply this by creating original and viable solutions such as the use of facial recognition software to take registers. Centres should advise candidates that when a question asks for more than one answer (such as 7(a) asking for two ways), candidates should aim to make distinct different answers.

7(b)(i)was generally well answered, most students being able to state at least one advantage of off-the-shelf software. Centres should advise candidates that when asked for an advantage, potentially generic answers such as "cheaper", "faster" or "more efficient" without further clarification are not enough to gain a mark. Candidates need to demonstrate their understanding by qualifying these, such as stating what it is cheaper in comparison to, or by explaining why it is cheaper. 7(b)(ii) was less well answered. Some candidates appeared, in this part of the question, to not have read the question carefully and gave advantages of custom software. Others gave answers which indicated that they considered that if software is not off-the-shelf, it would be open source.

7(c), which was also a quality of written communication question, was answered considerably better than 4(b). Candidates were aware of data protection legislation and were able to list some measures that schools should take The strongest candidates were able to select the most relevant legal issues, and relate the measures to these issues, describing in detail both what the school needed to do, and why.

Question 8

In 8(a) while most candidates clearly knew what RAM is, some candidates did not read the question carefully and instead of describing the purpose of RAM as required, made several correct statements about RAM which do not answer the question, such as describing what it is or comparing it to ROM. In 8(b) virtual memory was much less well understood. Here again, candidates appeared to be guessing the answer by using other everyday uses of the word "virtual" such as saying that it is memory which is on the internet and not in the computer. Other candidates confused virtual memory and the CPU cache. The answers to the last part of the question on how an upgrade would affect the performance were significantly better. In questions such as this, candidates should be careful to ensure that they have demonstrated their

understanding beyond what is immediately derivable from the question. It is trivial to say that if you upgrade the RAM from 4GB to 6GB, the computer will have more memory – candidates needed to explain what the effect of the increased memory will me.

Question 9

In 9(a) candidates needed to demonstrate that they understand how the array Coins is used (which is essential for answering the remaining questions correctly). The majority of candidates got this right. The most common wrong answers were Coins(4)=40 and Coins(10)=100, suggesting that candidates did not know that the index refers to the position of an element within the array and guessed that if coins(1) = 10, they needed to multiply the number within the brackets by 10.

Only about a quarter of candidates could state what a logic error is, most candidates gave a more general description of an error (eg “when something is wrong”) or attempting to use an everyday meaning of the word logic (eg “it is when the code does not make sense”). Even fewer candidates were able to spot the logic error in the algorithm given. Most candidates thought an assignment such as i=i + 1 was wrong because it was mathematically impossible, indicating that they are confusing equality with assignment. In particular, assignments such as i=i+1 are so common that one would expect a candidate who has studied the specification to have met this on several occasions.

There were a range of answers to question 9(c), which worked well as a discriminator of candidates. The weakest candidates were able to use the other algorithm within the question as a template to model their solution on and were thus able to gain a few marks. Middle ability candidates produced generally correct algorithms with some flaws, most commonly, ignoring to initialise the running total. Others went for the simpler solution of adding the array elements exhaustively. The most able candidates produced a complete and clear solution.

Unit A452

There was quite a lot of variation in the standard of work presented. Some was superlative, but even the weaker candidates seem to have achieved something of value.

The marking was mostly acceptable, although there were centres which erred on the generous side. The presentation of the work was varied, with some where all the material had been organised into a Powerpoint display. This was very effective and easy to follow. Some presented avi screen captures. Some centres made things more difficult than it need be by spreading the parts of the work across many files, sometimes in sub folders, which made it difficult to find all the evidence that was needed.

For the highest marks, it is necessary for the candidates to complete all the tasks. Some failed to complete the division task with the LMC.

Evaluation was occasionally good. The best candidates showed evidence that they understood the implications of the scenario and backed this up with detailed, technically correct writing.

Unit A453

There was a small entry for this unit with most centres interpreting the marking guidance fairly accurately. Many centres provided electronic evidence of the solutions but many also relied on documents with screen shots.

Candidates should produce designs, in the form of algorithms, for each section of the task set and should consider the success criteria in order to focus testing and evaluation more effectively.

Test evidence was the weakest area for evidence in the sample of work seen and where candidates can demonstrates the working solution more effectively using screen capture then we are happy to receive this.

The most effective reports were well organised into a single commentary on the process describing the development illustrated with elements from the programs being written and tested at various stages.

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