

COMPUTING ADVANCED LEVEL

<p>Paper 8959/5215 Structured Practical Tasks</p>

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Many were a pleasure to read, with thorough explanations and designs, clear, understandable coding and clear proof that the programs worked. The problems that were solved were varied and interesting.

These projects gave the sense that the candidates knew what they were doing, and could write and document their programs well. The programs would be easy to maintain and reusable in other contexts.

Overall the marking of the projects was good, with most Centres having their marks agreed by the Moderators. Thank you to all those Teachers involved.

Where the Moderators disagreed with the Teachers' marks, there were three main reasons.

The coding was sometimes overmarked, as it was poorly annotated, and difficult to follow.

The testing was not thorough, or no evidence provided, and disappointingly there were still some projects that dealt with system development, and not program development.

Overall though, the quality of the projects submitted for this paper is very high, and all the candidates must be congratulated on this.

COMPUTING ADVANCED LEVEL

Paper 8959/5216

Computer Systems, Communications and Software

General comments

Once again, the presentation was excellent. Candidates seemed to understand the requirements of the questions and were able to produce sensible responses despite the fact that most are working in a second language. This continues to amaze the Examiners and we offer the candidates our congratulations for their efforts. There are occasions where the Examiners find difficulty in understanding the meaning of the response supplied, but we are confident that no candidates suffered because of a lack of English to express themselves. The examining team do try to ensure that candidates are credited for all the correct things they say rather than penalising them for any errors that they make.

Judging by the responses from the candidates and the lack of any comment on the discussion forum, there were no problems caused by cultural or social problems arising from the question material. This is something that we strive for every year but inevitably sometimes questions will be unfair for some candidates who come from particular cultures, but this was not true this session.

There was no evidence of candidates suffering from time problems, the final question being particularly well answered by most candidates.

All questions, even the ones that proved to be difficult, attracted the full range of the available marks from zero to maximum. The attention of Centres is drawn to the published mark scheme for a list of the expected mark points for each of the questions.

Individual questions

Question 1

- (a) Well answered except for the storage device. It was not enough to state that it 'stored data' as this is just a reworking of the words in the question.
- (b) When you consider the wide range of possible answers, the fact that the vast majority of scripts only mentioned laser, inkjet and dot matrix was disappointing. However, some distinctions were not accepted. 'Colour printer' and 'Black and white printer' were not acceptable as this describes the output rather than the type of printer. It would be nice to see some variation in future, particularly to include something like a Braille printer because the output is so different, being three-dimensional, not just visual.

Question 2

- (a) Well answered except for the desire to use 'character' as the data type rather than text or string. Character is used for single characters, like 'M' for male.
- (b) Too many candidates talked about fixed length files rather than records. This distinction is an important one and one that is not well understood by candidates.

Question 3

The wording of this question is very important. It should not cause any trouble, because it is quoted directly from the syllabus. However, most candidates found that focusing on the requirements of the question was very difficult. This is about work expectations, not about what the computer can do and certainly not about shopping on the Internet or about having more leisure time – that is 'leisure expectations'. A typical answer would be 'Work timings are less rigid and so that means that the worker can take time off when they want to in order to be with their children'. This is about leisure. 'Work timings are less rigid and so that means that the worker can job share more effectively' is about work expectations and hence is worthy of credit.

Question 4

- (a) This was very poorly answered. Most candidates seem to be unaware of the requirements of a dry run. A similar question was set recently and the same comment was made in the Examiner report. The form that the response should take can be seen clearly in the published mark scheme.
- (b) Well answered, although $X=10$ was often wrongly given as the condition in (i).
- (c) Similarly this was well answered except for the condition being set to 25 rather than 30.

Question 5

- (a) Menu based interface is becoming well understood, although there are still candidates who confuse it with a form based interface and also some who believe that because a GUI can have drop-down menus, it is a menu-based interface. Natural language is not very well understood and would be a useful topic for the attention of Centres.
- (b) Well answered.

Question 6

- (a) This should be the easiest four marks on the paper, but there are still an unreasonably high proportion of candidates who are not able to distinguish between the four types of transfer, many of the better candidates even getting side tracked into complex descriptions of packet switching and circuit switching.
- (b) Much better answered than in the past. The difficulty of explaining such a complex concept in a second language seems to have been overcome by the majority of candidates who are showing an understanding of the concepts rather than trying to produce a standard, rote-learned, response.

Question 7

There are basically two types of question that can be asked about an expert system. One is to ask for a description of a generic one and the other is to explain how a specific one can be used. This is an example of the latter, although most candidates simply described a generic expert system. The Examiners imagine that it was the use of the geological survey as the example that caused most problems for candidates, although it should not, because such an example is specified in the syllabus.

Question 8

- (a) The vast majority simply stated two diagrams that might be used in producing a solution to a problem. Responses that included a consideration that the question was about producing a website and correspondingly altered their responses, were rare.
- (b) Most answers were about user and technical documentation, despite the question clearly stating that it was about user documentation. The question also indicated the need to think of the two types of user of a website. There is the owner of the site who will need to carry out amendments like changing prices displayed on the site and the visitors to the site who may well need instruction as to how to use the site or fill in an application form, but would not have access to a printed version of a document and hence it would need to be on-screen. This distinction was not widely understood.

Question 9

Most candidates scored for the two formats, but the question did ask for descriptions and there were two marks available for each and very few candidates gave any further information which would have deserved the second mark in either case.

Question 10

A good discriminator with most candidates being able to pick up 2 or 3 marks, but only better candidates being able to gain all the credit.

Question 11

This concept is not understood very widely, despite similar questions being asked in the past. The problems are firstly that candidates do not generally understand the difference between bit-rate and the speed of transmission of data. The second problem is that candidates naturally imagine that the size of the file is the important thing to be considered. While this has a bearing on the answer it is actually how the file of data is going to be used that is important. Imagine the largest possible video file that needs to be transmitted and it is to be sent across a communications medium with the smallest imaginable bit rate. Does it matter? The answer is 'No' unless it makes a difference as to how the file is to be used. If the video is simply going to be stored for use in the future then it can take as long as it needs to download.

Question 12

This was intended to be one of the easier questions. It was put at the end of the paper in order to make sure that there was something for less able candidates throughout the paper. **Part (a)** was well answered by most but it was surprising to see the number of candidates at this level who mixed up validation and verification. It was also disappointing to see how many suggested that the purpose of these methods of checking was to ensure that data input was 'correct'.

COMPUTING ADVANCED LEVEL

<p>Paper 8959/5217 Structured Practical Tasks</p>

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These projects gave the sense that the candidates knew what they were doing, and could write and document their programs well. The programs would be easy to maintain and reusable in other contexts.

Overall the marking of the projects was good, with most Centres having their marks agreed by the Moderators. Thank you to all those Teachers involved.

Where the Moderators disagreed with the Teachers' marks, there were three main reasons.

The coding was sometimes overmarked, as it was poorly annotated, and difficult to follow.

The testing was not thorough, or no evidence provided, and disappointingly there were still some projects that dealt with system development, and not program development.

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COMPUTING ADVANCED LEVEL

Paper 8959/5218

Further Systems and Software

General comments

The paper did not seem to contain any problem questions. Obviously some proved more taxing than others but all questions elicited marks ranging from zero to maximum and almost all the points on the mark scheme were offered by at least some candidates. The attention of Centres is drawn to the published mark scheme for this paper to understand the expectations of the examining team.

The paper was of an appropriate length, there being no evidence of any candidates having time problems. The responses to the final question were in line with the quality of the responses for the other questions.

There appeared to be no issues caused by cultural differences adding to the difficulties of questions. At least, there were no obvious examples spotted by the examining team and no problems have been forwarded to the Examiners by Teachers on the discussion forum.

The candidates' ability with English continues to impress the Examiners and the team are confident that with very rare exceptions candidates were not penalised because of a difficulty with the language of the paper or of their scripts. Indeed the presentation of the work continues to impress: Responses are sensibly numbered; every effort seems to be made to make it easy for the reader to find the evidence and bullet pointed evidence is increasingly offered in responses. This is an excellent form of response for many of the questions because it allows the candidate to present their evidence in a realistic way and also makes the task of the Examiner easier. Such forms of response are to be encouraged along with appropriate use of diagrams, anything that makes it easier for the candidate to show the Examiner how much they know about a question.

A final word to the teachers who prepare their charges for the examination: Thank you for your efforts, the standards of presentation and of knowledge have improved considerably over the last few years and ultimately it is down to you and your efforts. Examiners feel sure that most candidates do not offer their thanks, but it is an omission that should not be made and Examiners offer it here on behalf of all the young people you have prepared for the examination.

Individual questions

Question 1

This was intended as a nice gentle starter question but it has ended up as a good discriminator. Only more able candidates scored maximum marks and there were a surprising number who could only mention one facility. One problem that candidates had was that some saw the question asking for facilities of email systems and gave lots of information. Unfortunately, they failed to see the second half of the sentence, which qualified the number of suitable responses. With a topic that is so open ended as this there will almost certainly be a qualifying statement in order to restrict the range of possible responses.

Question 2

- (a) This proved surprisingly taxing for most candidates. Object-oriented was reasonably well answered, but declarative caused most candidates to revert to saying that they were languages where the variables had to be declared at the start of a program.
- (b) Perhaps it was the term 'stepwise refinement' that put people off. Had the question asked about top-down approaches then past experience says that all candidates would score full marks. This term is used in the syllabus.

- (c) In the past, the tree question has been worded so that the candidate had to create a tree from given data. The Examiner would have thought that this way round was harder, but no, most candidates scored really well here, whereas when asked to do the example all sorts of errors creep in. Note that the form of the algorithm was irrelevant to the success or otherwise of the response.
- (d) A really good discriminator, with able candidates scoring full marks, weaker candidates managing two marks by describing the two words 'linker' and 'loader' and others not offering answers.

Question 3

- (a) Many candidates strayed from the concepts surrounding ecommerce and described working from home and video conferencing and all the other topics around this subject. Those who remained focused scored well.
- (b) Some very good responses, but most candidates were only able to mention cost cutting by reducing staff and premises.

Question 4

This question was answered particularly well. There were the occasional problems with the ER representations and particularly with secondary keys, but it was evident that most had used these concepts in their practical work and consequently were working from experience rather than simply from the point of view of theory. As would be expected, the essay type of question in **part (d)** proved a good discriminator. Although most candidates chose to answer this in prose form, it was a good example of a type of question which lends itself to the response being presented in the form of bullets or numbered points. Candidates should be aware that there are no marks to be gained for using excellent prose.

Question 5

- (a) The definition was well known.
- (b) Most candidates answered these two situations well, although weaker candidates were not able to explain the Jump instruction.

Question 6

Candidates tend to find this sort of question difficult. The question is asking for some explanatory work to be done rather than a simple production of learned facts.

- (a) These are fairly straight forward tasks; surprisingly, the one that caused the problems was the sign and magnitude representation.
- (b) Candidates struggled to explain the two terms which is surprising because they are simple definitions, although perhaps it is the inclusion of the words 'floating point' which worries candidates so much that they are put off making a serious attempt at the question itself. It was obvious from the responses given that many candidates were unaware that there are a number of floating point representations for any given value, only one of them being the normalised version. Out of all the questions on this session's paper, this one was the one that pointed to a need for the topic to be looked at again and to consider how Teachers teach it. Examiners have said before in these reports and also on other forums that if the topics that candidates find difficult can be turned into diagrams then it suddenly becomes more accessible. There were very few candidates who tried to draw column diagrams as part of their explanations. Without these it was very difficult to formulate a convincing argument as to why the number represented was 10^3 .

Question 7

- (a) Many candidates were able to gain most of the marks. Again, this was a question where a little sketch of what a Gantt chart would look like, with a few labels would earn all the credit. The Examiners thought that candidates would find no difficulty here as they almost certainly drew one of these diagrams as part of the documentation for their projects.

- (b) Similarly, candidates must have produced a user guide for their project; so this question should have been well within their experience. It was disappointing that a significant proportion of candidates seemed unable to describe what they had produced.

Question 8

A difficult question. This was intended to be aimed at the more able candidates as it not only required knowledge about simulations but also needed that knowledge to be applied to a given situation. It was encouraging to see not only some very impressive responses but also to note that even less able candidates were able to give an account of themselves and earn some credit here.

Question 9

Very well answered by most candidates. However, most could have done better. The typical answer consisted of a prose explanation of interrupt handling, most of which made sense and was credited accordingly, though not in full because not enough points had been made. This sort of question is asking for a series of points to be made and a sensible response will have a list of bulleted or numbered points. The candidate knows from the examination paper that there are 6 marks for the response and hence 6 points must be made, if the response is in prose form it is very easy to lose sight of the number of actual points that have been made.