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General Certificate of Education

Applied Information and Communication Technology 8751/8753/8756/8759

IT09 Software Development

Report on the Examination

2007 examination - January series

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Registered address: AQA, Devas Street, Manchester M15 6EX
Dr Michael Cresswell Director General.

General Comments on A2 units

This was the first series for the examination of IT09 (Double Award) and IT10 (Single Award). Centres should note that the difference in weighting of the Assessment Objectives between AS and A2 units also applies to these externally assessed units. In particular, AO4 has 28 marks allocated on the A2 units compared with 14 at AS level. This places particular emphasis on planning, testing and evaluation of the product and the candidate's own performance. Candidates who took account of this weighting generally gained higher marks than those who focused mainly on the implementation of their solution.

In order to gain higher marks in both of these units it is important that a detailed understanding of the client's needs is elicited. This later allows the candidate to formulate relevant evaluation criteria and carry out relevant testing. In producing the evaluation candidates should then use the results of testing as proof of having successfully satisfied their evaluation criteria.

Candidates who failed to understand their client needs sufficiently generally did not refer back to the client needs in their evaluations, nor cross reference the results of testing to the client needs.

Many candidates also did not annotate their work to show how the needs of the client had been met.

Unit 9: Software Development (IT09)

This was the first series for the examination of this unit. The format of the examination is an AQA-set assignment, for which candidates are allowed time for research and design work (the investigation time), then a period of Controlled Conditions during which candidates are expected to produce their software system and an evaluation of the product and their own performance.

General comments

This unit is intended to build upon the skills and principles introduced in the AS units, in particular IT05: Fundamentals of Programming. It should be noted that Section 18.1 of the Specification states that 'this unit helps candidates to incorporate programmed routines into the software solution using a recognised programming language'. Candidates are unlikely to gain high marks unless they do this.

The majority of work seen was presented appropriately, and submitted in the order that the tasks were listed in the Candidate Booklet. Centres should remind candidates however, that all pages produced should be numbered consecutively. This includes work produced during both the investigation time and Controlled Conditions, and may be done by hand if necessary.

The task

The task given for this examination series was to design and produce a booking system for a specified client. The system should have allowed the user to add, amend, and delete bookings. The user should also have been able to search for information about specific bookings.

A significant number of candidates included only two or three of the four requirements in their software systems. Candidates should be reminded that they are expected to include all of the

features listed in the assignment in their designs, even if they go on to only partially implement the software system.

Items (a) to (f) of the task should have been produced during the Investigation Time, whilst items (g) to (l) should have been produced during the Controlled Conditions.

Investigation Time Items

Item (a)

Most candidates produced some form of list of tasks to be undertaken, although a significant number merely listed the items given in the Candidate Booklet. Whilst this type of list has been accepted during this examination series, it will not be sufficient to gain marks in the future. It is important that candidates break down the tasks set to show how they will attempt them, and that they understand what they will need to produce. In future series, candidates will be expected to consider the amount of time required to complete each of the tasks that they have identified. This should be reflected in their time plans.

Several candidates produced two separate time plans for this unit – one for the Investigation Time, and one for the Controlled Conditions. This has been accepted during this examination series, but will not be accepted in future series. Candidates should be looking at the whole task and the total amount of time available. It is hoped that candidates will have learnt how to improve their time planning from studying the AS units. Centres should note that the task set requires candidates to update their original time plan (covering both the Investigation Time and the twenty hours under Controlled Conditions) by hand in item (k).

Item (b)

Whilst many candidates produced a good description of the background of the client and the intended user(s) of the new software system, relatively few candidates clearly identified the skill levels of the user(s). It is essential that candidates describe the skill level of users in relation to the software system that is to be produced, as this will affect the design of the system. Many candidates limited their description to the client's ability to use the Internet, which was not relevant to the task set.

Item (c)

It is anticipated that students discuss the software specification that they produce with their client. In order to do this, it is essential that the specification be produced in a form that is easily understandable. It should not require the client to have specialist knowledge of ICT or Computing. Although a number of good software specifications were seen, many were written in fairly technical pseudo-code, or badly labelled diagrams. Candidates need to be made aware that the purpose of using techniques such as pseudo-code is to present descriptions of systems in a form that is easy to understand, and to provide clients and software developers with a common, clear, definition of the tasks to be undertaken.

Centres are advised to refer to the current version of the Specification for this course (available on the AQA website) for a description of appropriate content for a software specification.

Evidence of the implementation of the software system should not form any part of the software specification.

Few candidates appeared to have discussed or agreed their specification with their client.

Client needs were often limited to the items described in the task. Many candidates omitted the requirement to be able to remove bookings from the system.

Item (d)

The evaluation criteria should enable the candidates to assess their software systems' suitability for purpose and audience. Criteria should be both qualitative and quantitative. To gain full marks candidates should clearly explain how the criteria are related to the requirements of their client (as described in item c).

This task was poorly done by the majority of candidates, with many failing to include both qualitative and quantitative criteria. Very few related their criteria to the requirements of their client.

Item (e)

There were some excellent examples of designs for data structures to be used by candidates, many of which were clearly sufficient for a third party to be able to implement.

The majority of candidates did not produce designs for a modular software system for this assignment.

Many candidates used templates to assist presentation of their design work, which is recognised as being good practice, and should be encouraged. However, Centres should remind candidates that the majority of marks available for design work come from clearly annotating and explaining their work. The majority of candidates failed to make any reference to their chosen client or intended user(s) in their design work.

It should be emphasised that high quality and detailed design work will enable candidates more easily to implement their solutions during the time constraints of the Controlled Conditions. Retrospective design work based on existing program code, written by the candidate, should not be produced.

Part of the design process should also include an outline of any file or folder naming conventions to be used, and an outline of how/when work should be backed up or version numbering should be used. Very few candidates included any evidence of this in their design work, although some included clear, annotated screenshots as part of their evaluation work. Candidates should be advised that file management should be a continuous process, and should not be left until the software system is finished. In future examination series, lists of files showing version numbers will not be accepted unless the date/time the file was created is clearly visible in the screenshots provided.

Item (f)

For this item candidates should produce a testing strategy for their software system. This describes what elements of the system are to be tested, how, and when. It includes testing of discrete modules using individual tests or short test plans, as well as testing of the completed (integrated) system. Test plans should be restricted to items that are required to test the functionality of the system, and any features described in the evaluation criteria produced for item (d) based on the needs of the client.

Many candidates produced a single test plan with limited examples of test data. Test plans often referred to only one module of the system to be produced. Very few candidates provided any indication of when modules were to be tested, and how testing was to be used to prove that modules were processing data correctly after being integrated with other modules in the software system.

Centres should remind candidates that no marks will be awarded for describing the different types of testing or implementation strategies that could be used. They will only gain credit for describing the techniques that they will be using.

Candidates should be reminded that this task forms part of the preparatory folder for this unit, and should be printed out or hand-written before the start of the Controlled Conditions. This document can then be updated by hand during the Controlled Conditions, as testing is carried out, by cross-referencing the plan to the results as necessary.

Controlled Conditions Items

Centres should remind candidates that they may only take printed or hand-written material in to Controlled Conditions, and that material should not be brought in after the start of the first session of Controlled Conditions.

Item (g)

Many candidates lost marks for this item because they did not comment in any detail on the results of their testing. Candidates should clearly identify test results that are not as expected, and should comment on possible causes/changes that may need to be made to their system to rectify the problems.

Centres should remind candidates that testing evidence is required in this item before they are asked to document the software system that they have produced. The documentation produced for item (h) below should concentrate on the features used in the finished software system.

Item (h)

The majority of candidates in this examination series used Microsoft Access to produce their software system. Most candidates did not provide any evidence of using any programming techniques to produce their system, although a few good examples were seen. Where candidates did provide evidence of program code, it was generally in the form of automatically (i.e. “Wizard”) generated code with little or no annotation by the candidate.

The purpose of the documentation for this item is to allow a third party to adapt and maintain the software system produced by the candidate. It should include information about how the system was produced, and should include appropriate comments within the program code to explain its purpose and function.

Centres should remind candidates that the focus of this unit is Software Development, and thus their software systems should demonstrate an understanding and use of programming techniques. It is not sufficient solely to use automated methods to generate the software system. Where candidates do use such methods, it is essential that they annotate the code produced to demonstrate an understanding of its meaning.

Candidates will only gain marks for producing software systems that meet the requirements of the task as detailed in the Candidate Booklet, and no additional marks are available for systems that exceed these requirements.

Item (i)

The majority of candidates did this item badly. To gain marks, candidates needed to describe how to install their system, how to access it, and how to use its main features.

The documentation for this item should relate to the installation (e.g. from its storage location onto the host computer) of the software system that they produce, and not the installation of an applications package such as Microsoft Office.

Item (j)

Whilst many candidates attempted to evaluate their software system, very few related their comments back to what they originally described as the needs of their client. It is recognised that the user will not be able to provide any feedback to candidates concerning the work produced during Controlled Conditions. However, candidates are expected to refer back to the client needs, user skills, and evaluation criteria that they defined during the Investigation Time. They should also be referring to their testing in order to support whether evaluation criteria have been met.

A small number of candidates attempted to produce evidence of user feedback for their completed software system but this is not appropriate for this unit as, if the Controlled Conditions requirements are met by centres, candidates will be unable to show the completed system to their client.

Item (k)

This item requires candidates to update their original time plan by hand to indicate how they actually used their time. Many candidates produced two time plans, to enable them to update their Investigation Time plan electronically, and their Controlled Conditions time by hand. Centres should discourage this practice, as it means that examiners are unable to see many of the changes made to the plan during the Investigation Time. Candidates should be encouraged to produce a single time plan that covers both Investigation Time and Controlled Conditions time (as stated in item (a)), and annotate it by hand. This method normally provides a much fuller account of the changes that a candidate makes to their time planning, and provides them with useful reference material when attempting item (l).

Item (l)

Many candidates produced only a superficial evaluation of their performance, and did not consider any strengths or weaknesses other than their use of the time available.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the **Results statistics** page of the AQA website.