Version 1.0: 0807

ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Education

Applied Information and Communication Technology 8751, 8753, 8756 & 8759

IT09 Software Development

Report on the Examination

2007 examination - June series

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Set and published by the Assessment and Qualifications Alliance.

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Introduction

This was the first session with availability of all of the units for both the user and practitioner awards at A2 and the second session for AS. The general standard of work seen across the AS units showed a definite improvement over the last session. The general standard of work across the A2 units was very pleasing with much creative work seen and clear indications that candidates with a wide range of abilities are succeeding with this Specification. This of course is inevitably not true of all candidates. Many centres should be congratulated on their approach to these courses as they have embraced the meaning of Applied ICT. Some centres, however, do need to consider the approaches taken to some of the units so that they can help candidates to attain the best possible marks. Centres are encouraged to make full use of the advice, materials, such as the Teachers Guide, and training available to them and to attend the feedback meetings for the A2 units and standardisation meetings that will be held in Autumn 2007 for both AS and A2 units.

Unit 9: Software Development (IT09)

This was the second 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

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. A large number of candidates provided evidence in this series where page numbering was restarted at the beginning of Controlled Conditions. A well organised portfolio will be page numbered from start to end with a list of contents.

Some Centres appeared to have misinterpreted the requirements of the Controlled Conditions sessions for this unit. Centres are reminded that the Teachers Notes' for each examination series provide guidance relating to the organisation of Controlled Conditions sessions. Where Centres are in any doubt regarding the provision of computer facilities for the Controlled Conditions sessions, they should contact the ICT subject support team at AQA.

A number of candidates appeared to include work produced for other units as part of their submission for this unit. Centres should remind candidates that this unit is assessed using the items listed in the Candidate Booklet. Credit will only be given for work that meets the requirements of these items.

Centres are reminded that the task set for this unit is provided by AQA in the Candidate Booklet, and is changed for each examination series. Some candidates appeared to have used the task from the previous series, or to have devised their own. Candidates should be reminded that marks are awarded for producing a software system that meets the requirements of the task set for the current series, and that deviating from the task is likely to restrict the number of marks available to them.

Centres are reminded that all parts of the task set in the Candidate Booklet form the assessment for this unit, and should only include work produced independently by candidates. They are strongly advised to refer to the guidance in the Teachers Notes' accompanying the Candidate Booklet for information about how much assistance can be given to candidates during the investigation time.

The Task

The task given for this examination series was to design and produce an online product catalogue system for a specified client. The system should have allowed the user to add new items to the catalogue, and amend and delete existing items. The user should also have been able to search their catalogue for information about specific items.

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 the latter 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, which should not be just a list of start and end dates.

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. Centres should note that the task set specifically 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. Many candidates limited their description to a single generalised statement relating to ICT qualifications achieved by the users, rather than an indication of their practical skill level or their characteristics that would influence the design of an appropriate interface.

Item (c)

It is anticipated that candidates discuss the software Specification that they produce with their client. In order to do this, it is essential that the Specification is produced in a form that is easily understandable. It should not require the client to have specialist knowledge of ICT or Computing. Although there were a number of good software Specifications seen, many were written in fairly technical pseudo-code, or poorly labelled diagrams. Centres should remind candidates that the purpose of using techniques such as pseudocode is to present descriptions of systems in a form that is easy to understand, and provides clients and software developers with a common, clear definition of tasks to be undertaken.

Centres are advised to refer to the current version of the course Specification (available on the AQA website) for a description of appropriate content for a software Specification. Candidates should be reminded that there should not be any evidence of the implementation of their software system in any part of their software Specification.

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

Several candidates did not include the items described in the task in their client needs. Many candidates omitted the requirement to be able to remove or search for items from the catalogue.

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.

It is essential that the evaluation criteria produced by candidates are sufficient to allow them to make good critical judgments of the software system that they produce. It is not appropriate for candidates to use evaluation criteria as a checklist or "to do" list.

Item (e)

Where candidates had produced designs of their data structures, these were often of a high standard, many were clearly sufficient for a third party to be able to implement.

A significant number of candidates did not include designs of their data structures in the work submitted.

The majority of candidates did not produce designs for a modular software system for this assignment. It is not sufficient to show evidence of using procedures or functions that have been generated automatically by wizards or other tools, or planning to use code attached to a single button or other control. It is essential that candidates are able to create and correctly identify features of their planned software system that allow parts of the code to be reused in their entirety in other future systems, and can be tested independently. For example, a function that performs a search on an array of data, based on a parameter passed to it, and returns the value found. Such a function could be re-used in similar systems in the future. Centres are strongly advised to refer to the section on modular implementation in the Specification.

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 design work will enable candidates to implement their solutions during the time constraints of the Controlled Conditions. Retrospective design work adapted from existing program code 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 either work should be backed up or version numbering should be used. Although assessed in item e, this should be done before any development is started. 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

using version numbers will not be accepted unless the date/time the file was created is clearly visible in the screenshots used.

Item (f)

Candidates should produce a testing strategy for this item. 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 in to 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 as testing is undertaken during the Controlled Conditions.

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. Implementation of the planned software system must only be attempted under 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.

Candidates should be encouraged to test the robustness of their software systems, and test them in a way that aims to provoke failure, rather than focussing solely on success. Identifying errors, and where possible rectifying them, or suggesting ways in which they could be rectified in the future reflects well on candidates, and shows a much better understanding of the principles of this unit.

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 how the finished system was created.

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 there were a few good examples 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, demonstrating little understanding of programming techniques and constructs.

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 software was produced, and should include appropriate comments within the program code to explain its purpose and function.

Many candidates produced step-by-step guides showing how they created their software system, focussing on the mechanics of using their chosen development tool(s) rather than the features of their own software system.

Centres should remind candidates that the focus of this unit is Software Development, and thus their software systems should demonstrate the understanding and use of programming techniques. It is not sufficient to use solely 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. To gain credit for using a range of program control structures or data structures, the majority should be user-defined, or include sufficient annotation to clearly show that the student has a good understanding of what the structure is for, and how it works.

Centres are reminded that candidates will only gain marks for producing software systems that meet the requirements of the task as set in the Candidate Booklet, and that no additional marks will be given for systems that exceed these requirements. Similarly, candidates will not be able to achieve the higher marks where they create a software system that does not meet the requirements outlined in the task for the current examination series.

Item (i)

This item was very poorly done by the majority of candidates. To gain marks, candidates needed to describe how to install their system, how to access it, and how to use its main features.

Centres should remind candidates that the documentation for this item should relate to the installation (e.g. from a CD or another folder on a computer) of the software system that they produce, and not an applications package such as Microsoft Office.

As in the previous series, candidates often produced good evidence of how to access the key features of their software system, but did not provide instructions sufficient to allow their user to install the system. The term “install” appears to have been widely misinterpreted to mean “run”, or in some cases “compile”. This is not correct – the term refers to the process of transferring the completed (compiled) software system to the client’s computer.

Item (j)

Whilst many candidates attempted to evaluate their software system, very few related their comments to the needs of their client. It is recognised that the user will not be able to provide any feedback to candidates relating to 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.

A small number of candidates attempted to produce evidence of user feedback for their software system; Centres should advise candidates that 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 specifically 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 strongly 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 of the task), and annotate it by hand. This method provides a much fuller account of the changes that a candidate makes to their time planning, and provides them with useful reference material for use when attempting item (l).

For this examination series, examiners have accepted time plans produced in two parts, and time plans where some changes had been noted electronically. Centres are advised that plans that are not annotated by hand will not gain the higher mark in future series.

Item (l)

Many candidates produced only superficial evaluations of their performance, and did not consider any strengths or weaknesses other than their use of the time available. A large number of the evaluations seen indicated that candidates did not feel that they had prepared sufficiently for the Controlled Conditions – something that was often reflected in the marks awarded.

Mark Ranges and Award of Grades

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