



General Certificate of Education

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

IT09 Software Development

Report on the Examination

2008 examination – January series

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Unit 9: Software Development (IT09)

This was the third 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 Units 5 and 10 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 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 the task set by AQA is intended to form the assessment for this unit. It is essential that candidates have studied the items listed in the specification for this unit, **prior** to attempting the assessment task.

Centres are reminded that candidates should only include work produced independently. 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 a product display system for a specified client. The system should allow the user to add and delete information about products/services to a database. The user should also be able to display product/service information in a random order of those available, suitable for use on an electronic public display.

A significant number of candidates included only two of the three requirements in the designs for their software systems. Candidates should be reminded that their designs must include all of the features listed in the assignment, even if they go on to only partially implement the software system.

Items (a) to (f) of the task should be produced during the Investigation Time, whilst items (g) to (l) should be 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. Candidates who simply reiterate the list of items listed in the Candidate Booklet will be awarded no marks.

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. Candidates are 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, but should also contain an estimate of the time required to carry out each task.

Several candidates produced two separate time plans for this unit – one for the Investigation Time and one for the Controlled Conditions. 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, and how it would influence the design of an appropriate interface for their system.

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. 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 Specification for this unit (available on the AQA website) for a description of appropriate content for a software specification. The software specification

should be created prior to implementation and therefore there should be no evidence of implemented code or similar items in any part of the candidates' software specifications.

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 in the task to be able to remove products/services 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 needs of their client (as described in item c).

It is essential that the evaluation criteria produced by candidates are sufficient to allow them to make informed, 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 for 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. Nor is it sufficient to show that plans have been made 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 re-used in their entirety in other future systems. These sections of code should also be capable of being tested independently. An example might be of 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 retained within a library of code for future use. Centres are strongly advised to refer to the section on modular implementation in the Specification for this unit.

Many candidates used templates to assist in the 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 and is unlikely to gain marks.

Part of the design process should be to 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.

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. Listings of files showing version numbers should be shown with the date/time the file was created clearly visible.

Item (f)

Candidates should produce a testing strategy. 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 to show that all constituent parts work together. 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, without also producing a test strategy, 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 before the start of the Controlled Conditions. This document can then be updated by hand as testing is being 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 extra 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 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.

Candidate 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, consequently gaining higher marks.

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 producing a software system that incorporated programmed routines, 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, demonstrating little understanding of the programming techniques and constructs used.

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 that focused on the mechanics of using their chosen development tool(s) rather than the features of their own software system.

Candidates should be advised that screenshots are often not an appropriate method of producing evidence of programming code, as statements are often truncated, and resizing images results in illegible text. Similarly, a number of candidates printed details of the structure and properties of every interface component, as well as their programming code, making it difficult to identify key features of their system.

Centres should remind candidates that the focus of this unit is Software Development. 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. If they do use any system generated code sufficient annotation should be included to clearly show that the candidate has a good understanding of what has been produced, why it was done in that way 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. 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.

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 amend or complete 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).

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.