General Certificate of Education
2010
Advanced Award
12 Unit Award

APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY   **IT09/TN**
Unit 9   Software Development

Specimen Paper

AQA-set Assignment – Teachers' Notes

CONFIDENTIAL – OPEN ON OR AFTER dateline

This specimen is based on the June 2008 externally assessed assignment and has been modified to show how quality of written communication (QWC) will be incorporated into operational papers from January 2010.

Vertical black lines indicate a change or addition to the June 2008 version.

There are no discrete marks for QWC and in the final answer QWC will be one of the criteria used to assign a mark. Please refer to the appropriate mark scheme.

Unit 9: Software Development (IT09)
Teachers' Notes

1   Guidance for teachers

It is expected that the assessment material will be presented to candidates **only after they have been adequately prepared.** Candidates must have an understanding of the content of the unit and the necessary skills to complete the assignment including experience of the software that they intend to use to produce their solution.

Teachers are strongly advised to familiarise themselves with the contents of the *Candidate Booklet* before issuing it to candidates. In addition to this booklet, teachers are also advised to ensure their familiarity with the *Specification* and the *Teachers' Guide* for this unit. Teachers are strongly advised to contact the ICT subject support team at AQA at the earliest opportunity where they have any queries or concerns relating to the assignment for this unit. The AQA Website (www.aqa.org.uk) also provides useful information about this unit.

Teachers are not permitted to alter or vary in any way the task that comprises the assignment. The scenario given in this assignment is only valid for the current examination series.

This unit is assessed by external examiners. The unit is assessed through an AQA-set assignment which is researched and prepared by candidates in investigation time and completed during 20 hours of controlled conditions.

This is the only form of assessment for this unit. Only paper-based evidence will be accepted; the external examiners will only be able to award marks based on this evidence. This should be borne in mind when advising candidates.

It is important for teachers to ensure that candidates are aware of the time constraints for this unit, and that candidates will need to complete all of the investigation work before the start of the controlled conditions. They will **not** be allowed to bring in, or submit to the teacher, additional material after the start of the first controlled session.

Candidates are **not** permitted to carry out any work directly connected with this assignment outside the permitted period of 15 March to 5 June 2008. Work to be submitted by candidates for assessment must be sent to the AQA examiner by **5 June 2008**. Within this timeframe, the timetabling of investigation time and controlled sessions is for the centre to decide.

Centres should arrange for the scripts to be sent to the examiner using the pre-paid Parcelforce service, ensuring that the exam despatch log is signed by the Parcelforce representative upon collection.

Centres will be required to provide AQA with details of the timetabling of the controlled sessions in advance, so that this information can be used by the JCQ Examinations Inspectorate. Inspectors will be visiting centres to check that controlled conditions are being conducted in accordance with the rules set by AQA. Heads of Centres are obliged to make arrangements that will facilitate the work of the JCQ Examinations Inspectorate.

Centres are reminded that candidates' scripts will **not** normally be returned to centres. They may, however, be requested by centres under the Access to Scripts arrangements.

2   Providing guidance for candidates

It is expected that the teacher will discuss in detail the requirements of the assignment with candidates prior to starting the assignment. In particular, it should be stressed that candidates must provide paper-based evidence that proves to the examiner that they have met the assessment requirements.

As far as possible, candidates should be encouraged to identify an appropriate client to enable them to attempt the assignment. The teacher should provide support at this stage to ensure that the client chosen is appropriate. Where an appropriate client cannot be found it is acceptable, as a last resort, for the teacher to act as the client. In this case, teachers should ensure that they provide an appropriate scenario for the candidate to work from. Candidates must **not** act as their own client, or use another student as the client for their assignment.

Where the teacher or client provides the candidate with material, this should be clearly identified, and included with the work submitted to the examiner. Under no circumstances should the teacher provide pre-written client specifications for the candidates. It is recommended that, as far as possible, candidates use different clients for this assignment. It is important that teachers ensure that the design and the system produced is each candidate's own work and is not produced in conjunction with other candidates.

Candidates should be reminded that they are required to incorporate **programmed routines** in their software system to manipulate their data structures. They may do this using an object-oriented programming language, SQL or other database programming language, or a combination of these.

Whilst candidates should make every effort to produce a fully functional software system to meet the needs of their client, it is acceptable for the final system to contain some errors. However, it is essential that the candidate documents these clearly, and identifies future work required to rectify any errors.

The centre should advise candidates that they should study carefully the *What you should* hand in section of the *Candidate Booklet.* Centres may wish to advise candidates that when planning for controlled conditions they should allow sufficient time to complete all of the required items.

Candidates should be made aware that a different assignment will be set for each examination series.

3   Quality of written communication

The quality of written communication will be assessed as an important part of item (j). In this item candidates will in part be marked on their ability to use good English, to organise information clearly and to use specialist vocabulary where appropriate.

The guidance being given to examiners regarding the awarding of the range of marks for item (j) is shown below.

High mark range 8-11 marks
Candidate has evaluated their software system relating the results of testing to their evaluation criteria. Candidate has critically evaluated their system in relation to the tasks and the needs of the client identifying improvements that could be made in the future. Text is readable. There are few, if any, errors of spelling, punctuation and grammar. Meaning is clear for a reader. Candidate has

selected and used a form and style of writing and presentation appropriate to purpose and has expressed complex ideas clearly and fluently. Information is well structured with sentences and paragraphs following on from one another clearly and coherently. Specialist vocabulary has been used appropriately, including appropriate technical terms that relate to ICT.

Mid-mark range 4-7 marks
Candidate has evaluated their software system using the evaluation criteria and/or the needs of the client, making reference to the requirements of the task. Text is readable. There may be occasional errors of spelling, punctuation and grammar. Most of the meaning is clear for a reader. Candidate has, in the main, used a form and style of writing and presentation which is appropriate for its purpose. Candidate has expressed moderately complex ideas clearly and reasonably fluently. Candidate has used well-linked sentences and paragraphs so that information is generally well structured. There is some evidence of appropriate use of technical terminology.

Low mark range 0-3
Candidate has attempted to evaluate their software system. Text is readable. There may be some errors of spelling, punctuation and grammar. The reader can understand what is written but the meaning is not always clear. Candidate has used a form and style of writing and presentation is sometimes appropriate to its purpose, but with deficiencies. Candidate has expressed straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well-connected. Information presented may lack structure.

4 What candidates should hand in

When the assignment has been completed, each candidate should hand in the following.

Completed during the investigation time:

(a) A time plan to show how the candidate initially intended to complete the work for this assignment (for both the investigation time and the 20 hours of controlled conditions). The plan should indicate the time allocated to each task. *(up to 2 marks)*

(b) Background information about the client and identification of the intended user(s) of the system, including the skill levels of the user(s), and how this will affect their designs. *(up to 4 marks)*

(c) A software specification, agreed with the client, including a list of client needs. This should clearly relate to the task that has been set, and should be sufficiently detailed that a competent third party could develop appropriate designs for a solution from it. *(up to 9 marks)*

(d) Evaluation criteria to be used to test that the software system meets the client needs. *(up to 4 marks)*

(e) A detailed design for a modular software system, using standard design methods, showing where modular programming techniques will be used. The design should be sufficient for use by a competent third party to implement your system and should indicate how their design choices meet the needs of the user(s) and client. You should also identify how you will be managing files as you work on this unit. *(up to 9 marks)*

(f) Evidence of a testing strategy for their software system. This should include a full test plan, and appropriate sets of test data for modular and system testing. *(up to 4 marks)*

Completed during the controlled conditions:

(g) Evidence that the implementation of the completed software system has been fully tested using the tests described in (f), including evidence of the results produced. *(up to 8 marks)*

(h) Documentation to show how the modular software system they have designed has been implemented, including annotated listings of the program code and data structures used. The annotation should indicate where you have defined and used your own program control structures, data types, variables, objects and procedures. *(up to 13 marks)*

(i) Sufficient instructions to allow a new user to install the software system, access it, and use its main features. *(up to 2 marks)*

(j) An evaluation of their software system based on their evaluation criteria (d), the client needs (c), and the user skills (b).
The quality of written communication will be assessed in this item
(up to 11 marks)

(k) Their initial time plan (a), updated by hand to show how they actually used their time during the investigation time and the controlled conditions. *(up to 2 marks)*

(l) An evaluation of the candidate's own performance in completing the work, including their use of the time available. *(up to 2 marks)*
(Total = 70 marks)

The documentation should also provide evidence of planning and managing work effectively, such as using version numbering, and appropriate file and folder names.

The work that candidates hand in should be organised in an appropriate order and page numbered. They should put their name, centre number and candidate number on each page. Each candidate's work should be kept securely together e.g. using treasury tags. Plastic wallets and ring binders must **not** be used. Each of the items (a)–(l) should be clearly identified.

5 The investigation time

The investigation time begins when candidates are handed the *Candidate Booklet*. This must occur at the first convenient time after the date printed on the front cover of the booklet.

During the investigation time, candidates will be expected to carry out all the research, planning and design work needed for the assignment. This may include receiving advice from the teacher, as well as work undertaken at home. However, teachers should not be directing candidates as to how to carry out the work. Candidates may spend as much time as they wish on this stage of the assignment. The material produced by candidates for items (a)–(f) should be produced in hard copy format (i.e. printed or handwritten on paper), placed in a preparatory folder and handed to the teacher before the start of the controlled conditions.

6 Preparatory folder

This folder should contain, in hard copy format, all of the items (a)–(f) which candidates should have completed before starting work under controlled conditions.

The supervising teacher is responsible for checking the contents of the preparatory folders to ensure that candidates only have access to the materials that are allowed during the controlled conditions.

The preparatory folders must not contain any material that attempts items (g)-(l).

7 Providing computer facilities

Teachers must ensure that suitable equipment is available to candidates to enable them to complete their work effectively.

There is no requirement for candidates to submit work that has been printed in colour. However, candidates should be advised to annotate any black and white printouts to indicate to the examiner the colours that have been used in their software system.

Centres could create separate computer user areas (on computers or servers used by candidates) in which candidates will save their work. Centres must ensure that these user areas cannot be accessed by candidates outside controlled sessions. Access to these areas must be directed and controlled by the teacher. This is most easily achieved by the changing of passwords (which would be unknown to candidates until the start of the next controlled session), or by use of an electronic time-lock, although other electronic means are acceptable.

Candidates must **not** be able to access the Internet, intranet or any personal or shared directories during controlled sessions, and the centre must make provision for such access to be prevented.

Candidates are **not** allowed any access to removable media during controlled sessions.

8 The controlled conditions

'Controlled conditions' means 'examination conditions'. Candidates **must** work independently and in silence. However, candidates may receive appropriate assistance to resolve difficulties caused by equipment failure.

During the 20 hours of controlled conditions, candidates must complete the items (g)–(l). During this time candidates have unlimited access to the hard copy material in their preparatory folder. Candidates **must not** have access to **any** electronic files produced outside controlled conditions.

Teachers must ensure that all candidates have access to a copy of the Candidate Booklet during all of the controlled sessions. Where necessary, they should provide candidates with spare copies of the Candidate Booklet, free from annotations.

Teachers will need to tell candidates when the 20 hours of controlled conditions have been timetabled. Particularly important is the time and date when the controlled conditions will end. The final deadline set by the centre cannot exceed the AQA deadline of 5 June 2008.

The supervising teacher must collect in the preparatory folders after each controlled session, and give them out at the start of the next. During the controlled conditions, candidates may **not** have access to any additional material other than their preparatory folder. Once the period of controlled conditions has started, candidates are **not** permitted to bring any additional material to the controlled sessions. Between controlled sessions they are **not** permitted access to their preparatory folder or to the computer user areas they use for this unit's assessment work.

Teachers should ensure that any candidate who is unavoidably absent from a controlled session is given the opportunity to make up the time missed, provided that the AQA deadline is still met.

9   Authenticating candidates' work

Teachers must sign a *Centre Declaration Sheet* to authenticate candidates' work, and to confirm that the rules for controlled conditions have been followed.

The candidates must each complete a *Candidate Record Form* to confirm that the work is their own.

Teachers and candidates should have read and must adhere to the Joint Council for Qualifications documentation regarding plagiarism.

The centre must also use the *Record of Controlled Sessions* form to record the dates and times of controlled sessions. This record must be signed by both the supervising teacher(s) and the Head of Centre to confirm the dates on which the controlled sessions took place. The form must be detached from the booklet and sent to the AQA examiner with the candidates' work.

All of these forms can be downloaded from the AQA Website www.aqa.org.uk.

END OF TEACHERS' NOTES