



General Certificate of Education
June 2012
Advanced Award
12 Unit Award

Applied Information and Communication Technology

IT09/TN

Unit 9 Software Development

15 March 2012 to 5 June 2012

AQA-set Assignment – Teachers' Notes

CONFIDENTIAL – OPEN ON OR AFTER 15 March 2012

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.

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 not permitted to alter or vary in any way the task that comprises the assignment.

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 materials 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 2012. Work to be submitted by candidates for assessment must be sent to the AQA examiner by **5 June 2012**. Within this timeframe, the timetabling of investigation time and controlled sessions is for the centre to decide.

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 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 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 prior to candidates 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 are each candidate's own work, and 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.

The teacher should ask candidates to make sure that printouts of screenshots are clear for an examiner to read.

3 The quality of written communication

The quality of written communication will be assessed as an important part of item (k) (see Section 4 *What candidates should hand in*). 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.

Guidance on the range of marks for item (k), taking into account the quality of written communication used, is shown in the specimen paper found on the AQA Website.

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 amount of time allocated to each task. *(2 marks)*
- (b) Background information about the client and why the software system in the task is needed. *(2 marks)*
- (c) A description of the intended user(s) of the system and their skill levels, explaining how their skill levels will affect their designs. *(2 marks)*
- (d) A software specification, agreed with the client. This must include a list of client needs, input, processing and output requirements. The specification should clearly relate to the task that has been set, and should be sufficiently detailed such that a competent third party could develop appropriate designs for a solution from it. They should explain how the proposed system will meet the client needs. *(9 marks)*
- (e) Appropriate qualitative and quantitative evaluation criteria to be used to test that the software system meets the client needs. They must state why these are appropriate to assess if client needs have been met. *(4 marks)*
- (f) A detailed design for a modular software system, using standard design methods, showing where modular programming techniques have been used. The design should be sufficient for use by a competent third party to implement the system and should be annotated to explain the key features of the design. They should indicate how the modular structure and design choices they have made meet the needs of the user(s) and client. They should also specify how they will manage the files as they work on this unit. *(7 marks)*
- (g) A testing strategy for their software system. This should include a full test plan, and appropriate sets of test data, for modular and system tests. *(4 marks)*

Completed during the controlled conditions:

- (h) Evidence that the implementation of the completed software system has been fully tested using the tests described in (g), including evidence of the results produced and any changes that may need to be made as a result. The evidence of testing must show that the system produced performs the functions specified in the task and meets the client needs (d). *(8 marks)*
- (i) Documentation to show how the software system they have designed has been implemented, including annotated listings of the program code and an explanation of the data structures and key features used in the software system. The annotation should indicate where they have defined and used their own modules, program control structures, data types, variables, objects and procedures. Where necessary they should justify their choice of program control structures and data types. *(15 marks)*
- (j) Sufficient instructions to allow their identified user(s) to install the software system on their computer, access it, and use its main features. *(2 marks)*

- (k) An evaluation of their software system based on their evaluation criteria (e), the client needs (d), the user skills (c) and conclusions drawn from their testing (h).
The quality of written communication will be assessed in this item.
(11 marks)
- (l) Their initial time plan (a), updated by hand to show how they actually used their time during the investigation time and the controlled conditions. (2 marks)
- (m) An evaluation of their own performance in completing the work, including their use of the time available. (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.

A completed *Candidate Record Form* must be attached to the front of each candidate's work.

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 eg using treasury tags. Plastic wallets and ring binders must **not** be used. Each of the items (a)–(m) 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, designing and testing of designs needed for the assignment. This may include receiving advice from the teacher, as well as undertaking work 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)–(g) should be produced in hard copy format (ie 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)–(g) which candidates should have completed before starting work under controlled conditions and a copy of the *Candidate Booklet*.

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 controlled conditions.

The preparatory folders must **not** include any material that attempts items (h)–(m).

Turn over ►

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.

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 (h)–(m). During this time candidates have unlimited access to the hard copy material in their preparatory folder.

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*.

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 2012.

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, each candidate must **not** have access to any material other than the paperwork in 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 on page 8 of this booklet 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



Record of Controlled Sessions

2012

GCE Applied ICT

Unit 9: Software Development (IT09)

Centre name:

Centre Number:

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Date	Time (from/to)	Number of hours and minutes	Signature of supervising teacher(s)
Total number of hours			Use additional sheets if necessary

Declaration

I confirm that, on the occasions listed above, candidates' AQA-assessed work was produced under controlled conditions as specified in the *Teachers' Notes* and in the terms and conditions of the *GCE in Applied ICT Specification*, and that every reasonable step has been taken to ensure that the work presented is that of the candidates named. Any assistance given to candidates beyond that given to the class as a whole and beyond that described in the Specification has been recorded on the *Externally-assessed work: Candidate Record Form*.

Signature of Head of Centre: Date: