SQA Advanced Unit Specification

General information for centres

Unit title: Software Development: Applications Development

Unit code: HR6X 47

Unit purpose: The Unit is designed to extend the candidate's ability to use application software packages to develop user-defined applications with efficient user-friendly interfaces. The application software package may relate to word processing, spreadsheet or database. The importance of an analytical approach to the requirements of the user will be encouraged. The development process will utilise the automated features provided by the package. The scripting or programming language of the package may also be used. The Unit is intended for candidates who may be asked to develop application packages for a particular purpose where the developed application will improve efficiency of data entry and required output.

On completion of the Unit, the candidate should be able to:

1. Analyse user requirements for creating an automated application interface
2. Produce an automated interface for use with an application software package
3. Carry out validation of data entry on automated procedures
4. Document the automated procedures

Credit value: 2 SQA Credits at SCQF level 7: (16 SCQF credit points at SCQF level 7)

SCQF (the Scottish Credit and Qualifications Framework) brings Scottish qualifications into a single framework of 12 levels ranging from SQA National 1 to doctorates. The SCQF includes degrees; SQA Advanced Certificate/Diplomas; SQA National Qualifications; and SVQs. Each SQA Unit is allocated a number of SCQF credit points at a specific level. 1 SCQF point = 10 hours of learning. SQA Advanced candidates are normally expected to input a further number of hours, matched to the credit value of the Unit, of non-contact time or candidate-led effort to consolidate and reinforce learning.

Recommended prior knowledge and skills: Access to this Unit will be at the discretion of the Centre, however it is recommended that the candidate should be proficient in the use of at least two applications packages. It would be beneficial if the candidate had achieved relevant National Units in Information Technology software applications packages, or had suitable experience gained informally or through work experience.

Core skills: There may be opportunities to gather evidence towards core skills in this Unit, although there is no automatic certification of core skills or core skills components.

Context for delivery: If this Unit is delivered as part of a group award, it is recommended that it should be taught and assessed within the subject area of the group award to which it contributes.

Assessment: This Unit could be assessed by a single instrument of assessment, which would require candidates to produce a report or reports based on a case study. The case study should set the context for the user requirements. It would be helpful if the case study problem were relevant to the rest of the group award that the candidate was taking.

However, it would be possible to break this assessment down into four separate assessment events and each Outcome could be assessed separately.

Unit specification: statement of standards

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The sections of the Unit stating the Outcomes, knowledge and/or skills, and evidence requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the knowledge and/or skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Analyse user requirements for creating an automated application interface

Knowledge and /or skills

- Understand HCI considerations with regard to selecting input technique
- Create a data dictionary from given analysis documentation
- Design an input screen for an automated application interface from given analysis documentation

Evidence Requirements

Evidence for the knowledge and/or skills in this Outcome will be provided by the production of a data dictionary and a design layout for the automated application Interface. Both of these items should be produced from given analysis documentation and should involve the use of at least three automated input techniques such as:

- Radio buttons
- Drop-down menus
- Buttons
- List boxes
- Check boxes

Candidates will also create a report describing the input techniques that are used. This report should list the situations where the particular technique is best used and any limitations of each of the techniques.

The Data Dictionary, Design for Layout and Report should be handed in at the end of the assessment.

Assessment guidelines

The assessment of this Outcome can be combined with Outcomes 2, 3 and 4 as part of a single assessment for the Unit, details of which are given under Outcome 4.

Outcome 2

Produce an automated interface for use with an application software package

Knowledge and /or skills

- Production of a user interface based on given specifications
- Use a selection of macros or scripting languages

Evidence requirements

Evidence for the knowledge and/or skills in this Outcome will be provided by the creation of an automated user interface using a selection of macros or the scripting language of the application package. This evidence should be presented as a series of screen dumps of the completed interface showing all available options – such as a selected pull-down menu or opened list box. The candidate will also be expected to provide the interface on disc for retention.

The automated user interface must be created from a given design layout. If the interface is being created as part of a holistic approach then the design layout used must be that created in Outcome 1.

The screen dumps and disk should be handed in at the end of the assessment.

Assessment guidelines

The assessment of this Outcome can be combined with Outcomes 1, 3 and 4 as part of a single assessment for the Unit, details of which are given under Outcome 4

Outcome 3

Carry out validation of data entry on automated procedures

Knowledge and /or skills

- Produce test data documentation
- Enter test data
- Record results

Evidence Requirements

Evidence for the knowledge and/or skills in this Outcome will be provided by the production, entry and recorded results of test data. A test data document must be created from a given data dictionary showing expected results and the test data must test all available options for each entry on the data dictionary. The test data must then be entered into a given interface which matches that of the data dictionary and the results recorded on the actual results section of the test data document. Screen dumps must be produced to prove results are accurate.

The test data must be created from given documentation – data dictionary and interface. If the test data is being created as part of a holistic approach, then the data dictionary must be that created in Outcome 1 and the interface used must be that created in Outcome 2.

The test data documentation and screen dumps should be handed in at the end of the assessment.

Assessment guidelines

The assessment of this Outcome can be combined with Outcomes 1, 2 and 4 as part of a single assessment for the Unit, details of which are given under Outcome 4

Outcome 4

Document the automated procedures

Knowledge and /or skills

- Creating verification checklists based on given analysis documentation and test data results
- Creating appropriate and useful user documentation

Evidence requirements

Evidence for the knowledge and/or skills in this Outcome will be provided by the production of a checklist by the candidate, which uses analysis documentation and the final created interface to verify that all analysis requirements have been met. If the verification checklist is being created as part of a holistic approach, then the analysis requirements must be that supplied in Outcome 1 and the interface used must be that created in Outcome 2.

The candidate will create a report aimed at a non-programmer who will use the solution as a tool for the purpose for which it was developed. It must contain the following sections:

- An introduction paragraph
- Hardware and software requirements specification and component files required
- Installation guide
- How to start the application
- How to navigate through the application
- Data entry requirements
- How to close the application
- List of errors (features) that may occur and how to cope with them

The candidate must provide a satisfactory response for all eight items in the form of a report.

The verification checklist and user report must be handed in at the end of the assessment.

Assessment guidelines

The assessment of this Outcome can be combined with Outcomes 1, 2 and 3 as part of a single assessment for the Unit. It would be possible, if desired, to break this assessment down into four separate assessment events, which assess each Outcome individually.

In the assessment, candidates will be required to produce a report based on given documentation. The report should cover all aspects of the evidence requirements. The format of the report is not part of the mandatory evidence requirements for this Unit and it may be presented in any suitable way.

Administrative Information

Unit code: HR6X 47

Unit title: Software Development: Applications Development

Superclass category: CB

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Unit specification: support notes

Unit title: Software Development: Applications Development

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the Centre, the notional design length is 80 hours.

Guidance on the content and context for this Unit

The Unit is primarily intended to extend the skills of the user of application software into automated application design and production.

Although the Unit is expressed in generic terms, it should be related to the particular application being utilised.

The Unit can be approached from the standpoint of how user user-friendly application software is created from analysis to general usage.

Outcome 1 looks at the way analysis requirements are broken down to produce follow-on documentation. Candidates should become aware of how to interrogate analysis data.

Outcome 2 concentrates on HCI relating to optimising the layout for the user. The candidates should become aware of bad practice and issues that might affect how the information is entered on screen.

By creating the interface, using the automated techniques the candidates will gain a better understanding of the added functionality available by the use of macros or scripting languages.

Outcome 3 enables the candidates to gain an understanding of all the possibilities that require to be taken into account when testing a system.

Outcome 4 enables candidates to gain an understanding of the problems that non-programming users will encounter when using an interface that they have created. They will also gain an understanding of how to articulate within a document how to best use that interface.

Any commercial application software package can be used to develop the solution. The package must have the ability to automate features by using such tools as macros or a scripting or programming language. If a database is used, the basics of normalisation should be included but is not part of the assessable tasks. The automated features, for example macros or wizards, must be used, but the use of the programming language is optional.

Guidance on the delivery and assessment of this Unit

The Unit is designed to assist candidates to develop the skills required to identify user needs and produce an application that will satisfy them. It could form part of a group of Units designed to broaden the candidates' programming skills, but it could also be used for candidates who will be asked to develop particularly database applications without depth of programming knowledge. This Unit should be delivered in a way that enables candidates to appreciate its relevance to the occupational area concerned. Wherever possible, links should be drawn with situations, which candidates will understand, eg the analysis requirements can be related to specific occupational issues.

Open learning

If this Unit is delivered by open or distance learning methods, additional planning and resources may be required for candidate support, assessment and quality assurance.
A combination of new and traditional authentication tools may have to be devised for assessment and re-assessment purposes. For further information and advice, please see *Assessment and Quality Assurance for Open and Distance Learning* (SQA, February 2001 — publication code A1030).

Equality and inclusion

This unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

General information for candidates

Unit title: Software Development: Applications Development

This Unit is designed to enable you to recognise all of the issues relating to designing an application interface from initial design to creation and testing. You will need to look at design issues with regard to human computer interaction (HCI), in relation to the needs of the intended user along with how to present information in the correct format. You will also develop the technical ability to enable you to create the application interface.

This Unit will enable you to gain an appreciation of a number of areas of HCI and automated interface design techniques that should help you to operate as a computing professional.

You will be expected to apply the theory of application development to workplace or case study situations.

In order to successfully complete this Unit you will be required to achieve a satisfactory level of performance on all assessed work. Your work for all Outcomes may be assessed through one project.

Outcome 1 requires you to demonstrate that you understand design issues relating to HCI design for the user and are able to read analysis documentation and create effective documentation for use when building the application interface. Your assessment will require you to write a 200 word report, to create a Data Dictionary from given documentation and to produce a design for an input screen from given documentation.

In Outcome 2, you will produce the application interface using the automated procedures available to you. The application interface will be created using the macros and/or Scripting language of the application interface.

In Outcome 3, you will produce test data from given documentation such as the Data Dictionary. You will also enter in the data, and document the results of entering the data. The evidence will take the form of Test Data documentation with proof of results.

Outcome 4 requires you to validate the automated interface. You must show that the given interface meets the requirements as set down at the beginning of the project. You will also need to produce user documentation to explain how to use the application interface. The evidence for Outcome 4 will take the form of a checklist to ensure all of the requirements of the initial design requirements have been met. You will also produce a 500-1000 word report explaining how to use the new interface system.