National Unit Specification: general information

UNIT Computer Games: Development (SCQF level 4)

CODE F917 10

SUMMARY

This aim of this Unit is for candidates to gain an understanding of processes involved in the final stages of computer game development. Candidates will learn how to use their chosen game development environment to assemble all the elements and produce a working game. Candidates will acquire an understanding of the evaluation process and plan and deliver an activity to promote a computer game.

OUTCOMES

1 Create a working computer game.
2 Evaluate a computer game.
3 Promote a computer game.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, it would be beneficial if candidates had the following IT skills:

D01D 09 *Information Technology (Access 3)*

or equivalent qualifications or experience.

Administrative Information

Superclass: CB

Publication date: January 2011

Source: Scottish Qualifications Authority

Version: 02

National Unit Specification: general information (cont)

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CREDIT VALUE

1 credit at Intermediate 1 (6 SCQF credit points at SCQF level 4*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

CORE SKILLS

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes of this Unit Specification.

National Unit Specification: statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME 1

Create a working computer game.

Performance Criteria

(a) Construct a working game based on a game design document and adhering to the game design brief.
(b) Correctly add media assets as specified in the game design document.
(c) Carry out testing to eliminate all major errors, and ensure that the game is playable.

OUTCOME 2

Evaluate a computer game.

Performance Criteria

(a) Accurately evaluate how well the completed game meets the requirements of the game design brief.
(b) Accurately evaluate how well the completed game matches the game design document, justifying any changes from it.
(c) Clearly describe feasible improvements that could be made to the game.

OUTCOME 3

Promote a computer game.

Performance Criteria

(a) The aims of the promotional activity are clearly stated.
(b) Identify a suitable and feasible activity to promote the computer game.
(c) Produce a clear plan for the activity to promote the computer game.
(d) Carry out the activity in accordance with the plan.
(e) The activity satisfies the stated aims.

National Unit Specification: statement of standards (cont)

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EVIDENCE REQUIREMENTS FOR THIS UNIT

The Evidence Requirements for this Unit will be the production of a digital or paper portfolio containing the following items:

1 The working computer game.

2 A list of the media assets that have been added.

3 An observation checklist to show that testing has been carried out.

4 A short report
- ♦ evaluating how well the completed game meets the requirements of the original game design brief
- ♦ evaluating how well the completed game matches the game design document, justifying any changes from it
- ♦ identifying at least four feasible items for improvement from the five observable areas of design (narrative, character, level/environment, gameplay/mechanics and user interface)

5 A short report
- ♦ identifying a suitable and feasible promotional activity for the computer game and stating the aim of the promotional activity
- ♦ containing a clear plan of the promotional activity

6 Evidence that the promotional activity has been carried out.

National Unit Specification: support notes

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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 40 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This Unit is a mandatory Unit in the NPA in Computer Games Development at SCQF level 4. It is included in the optional sections of Digital Media Computing frameworks and can be taken as a standalone Unit.

Outcome 1

If this Unit is part of the NPA in Computer Games Development at SCQF level 4 then the working game will be based on the games design document and games design brief used in the Unit *Computer Games: Design.* If taken as a standalone Unit, refer to the Unit *Computer Games: Design* for information on what tutors should supply in the games design document and games design brief.

Centres should choose games development environments best suited to their local situation. Further information on games development environments is given in Appendix 1.

Candidates should be given the opportunity to develop the skills necessary to work with the chosen games development environment.

The working game computer containing the required media assets will be regarded as evidence that they have been correctly added to the game; the list of media assets may be used as the basis of a checklist. Candidates may use the assets already prepared during the Unit *Computer Games: Media Assets.* If taken as a standalone Unit, tutors should provide the media assets, for example:

- sprites
- sky boxes
- textures (and associated files)
- 3D models
- sound files
- music files
- text files
- video files/animations
- script files

A game at this level may have 'rough edges' but the game should be in a playable state and generally achieve the objective of the brief.

An observation checklist should be used to provide evidence that testing has been carried out.

If the game is the product of several candidates then there must also be documentation of the work that each candidate is responsible for producing. The tutor should keep an observation checklist to verify the work of each candidate.

National Unit Specification: support notes (cont)

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Outcome 2

Candidates will produce a report evaluating

- how well the completed game meets the requirements of the original game design brief. If the game has been produced by a group then each candidate should evaluate the whole game, not just their individual contribution.
- how well the completed game meets the requirements of the game design document, justifying any changes from it
- identifying at least four feasible improvements from the five observable design areas: narrative; character; level/environment; gameplay; mechanics; user interface

The report may be in any of the following forms:

- a hand written or word processed report
- a recorded video
- an audio recording
- a blog
- a diary

Outcome 3

Candidates will produce a short report identifying

- a suitable and feasible activity to promote a game and stating the aim of the promotional activity

The promotional activity may be one or more of the following:

- producing a slide presentation
- producing a website
- creating a packaging design
- producing an animated trailer
- producing a flyer
- producing a magazine advert
- delivering an oral presentation

This list above is not restrictive and candidates may select any promotional activity which is both suitable and feasible.

The aim of the promotional activity might be:

- to promote the game as a product to consumers
- to support owners of the game by providing assistance (technical and with the game)
- to promote the game to retail outlets who may wish to sell the game

The promotional activity can also be delivered as a group activity, with each individual producing a different part of the same promotional activity for the same game (eg different parts of a website) or undertaking different promotional activities for the same game.

However it is delivered, the work that each candidate has produced must clearly be identified.

Candidates will provide a clear plan of the promotional activity, which may take the form of:

- slide presentation
  - — slide content plan
  - — slide layout plan
- website
  - — navigation map
  - — page layout
  - — content plan
- packaging design
  - — development sheet
  - — net of layout
- animated trailer
  - — storyboard
  - — content plan
- flyer
  - — layout plan
- magazine advert
  - — layout plan
- oral presentation
  - — paragraph plan

This list is not restrictive and the candidate's plan may take another form, providing it clearly expresses the plan for the promotional activity.

The plan can be graphic or text based. At this level the detail in the plan need not be excessive and the plan may only be a starting point for the implementation – some deviation from the plan is natural and expected. There should be sufficient detail in the plan for it to be used by a third party to create a basic/similar promotional product.

Candidates will provide evidence that the promotional activity has been carried out.

This could be:

- slide presentation — a minimum of one of the following:
  - — digital copy of the presentation
  - — printout of the presentation
  - — video of delivery
  - — instructor's record of the event
- website — a minimum of one of the one of the following
  - — printout of the web pages
  - — digital copy of the website

- packaging design — a minimum of one of the following
  — a printout of the packaging
  — construction of the packaging
  — animated trailer
  — digital copy of the animation
- flyer
  — printout of the flyer
- magazine advert
  — printout of the advert
- oral presentation — one of the following:
  — video of delivery
  — instructor's record of the event

These are suggestions of the type of evidence that may be retained. If undertaken as a group project a clear record of the content each candidate is responsible for should be held.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

If this Unit is undertaken in the context of the NPA in Computer Games Development at SCQF Level 4, the following sequence of delivery is recommended:

1 Computer Games: Design
2 Computer Games: Media Assets
3 Computer Games: Development

If this Unit is part of the NPA in Computer Games Development at SCQF level 4 then candidates will have designed and prepared the media assets for in the Unit *Computer Games: Media Assets*, though this is not a requirement.

There are ample opportunities for delivering this Unit in groups and in a vocational context. Candidates could already have formed groups (studios) to design a game and produce media assets for it. It would then be natural for them to all contribute to the development of the actual game. One approach might be to contribute a distinct level for the game.

It is essential that each candidate identifies their own contribution to the task if working in a group and that they provide evidence for their own portfolio.

The actual distribution of time between Outcomes is at the discretion of the centre. However, the following distribution and order is suggested.

Outcome 1 25 hours
Outcome 2 5 hours
Outcome 3 10 hours

National Unit Specification: support notes (cont)

UNIT Computer Games: Development (SCQF level 4)

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

In this Unit candidates are required to create a computer game which can provide opportunities to gather evidence towards aspects of *Information and Communication Technology* and *Problem Solving* at SCQF level 4.

The candidate should provide evidence of a promotional activity which could provide opportunities to gather evidence towards aspects of *Communication* at SCQF level 4.

This Unit may be delivered in the context of a larger game with each candidate developing a level of a computer game. This would provide opportunities to gather evidence towards aspects of *Working with Others* at SCQF level 4.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

A portfolio approach to assessment should be taken. The portfolio may be paper or electronic (digital). The portfolio should be constructed over the period of the Unit, with candidates contributing material to the portfolio on an on-going basis. The contents of the portfolio should be clearly labelled and related to specific Evidence Requirements. The inclusion of specific items in the portfolio should be negotiated between candidate and tutor with only the 'best' example of work stored.

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003), SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

If an e-portfolio is used to capture candidates' work, it may take one of a variety of forms, ranging from general purpose digital repositories to specialised e-portfolio products. For example, a web log could be used to record candidate activity over the duration of the Unit. Specific entries to the blog could provide sufficient evidence in their own right (for example, a required identification) or could link to a file stored in another web service (such as a file hosting site). The use of a blog would aid authentication since any record of a candidate's day-to-day activities would provide implicit evidence of participation and ownership

If a candidate is undertaking this Unit as part of the NPA in Computer Games Development at SCQF level 4 then the evidence should be retained as part of a portfolio of work required for the Units *Computer Games: Design* and *Computer Games: Media Assets* (SCQF level 4).

DISABLED CANDIDATES AND/OR THOSE WITH ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website: **www.sqa.org.uk/assessmentarrangements**

National Unit Specification: support notes (cont)

UNIT Computer Games: Development (SCQF level 4)

APPENDIX 1

There is a vast range of games development environments (GDEs) available. It is up to the centre to choose a GDE that is best suited to their local situation. A task that is trivial to create in one GDE may involve considerable complexity in another. This section tries to categorise these development environments and to give guidance on what would constitute suitable activities/responses for this level.

There are four main categories of games development environment:

1 **General purpose programming tools** are the original games (and everything else) development environments. These are often supplemented with the use of special games oriented libraries of specialised routines, such as OpenGL or DirectX — although these ease aspects of game creation for professionals — they are an extra layer of complication and learning for amateurs. For example C#, Visual Basic, php or Java. This is the most flexible and professionally accepted method and would best prepare candidates for careers in this area. It is also the most technically difficult to master with a steep and long learning curve. The quality of games that can be created depends heavily upon the time available and on the technical expertise of the programmer. Visual design tools are either built into the programming development environment (IDE) or available as separate applications.

2 **Game specific development environments** are designed for enthusiastic amateurs. This category probably has the widest coverage from in-game editors, stand alone level editors and special graphical games development environments, some can even be downloaded from xbox live to run on an xbox 360 (for example). These are often extensible through scripting of varying complexities, while easing the creation of a game by utilising a professionally created game engine. The quality of games created can easily reach professional quality.

3 **Multimedia development environments**, through their own evolution, have developed enough flexibility and capability to be able to author complete games. The boundaries between some of these and some games development environments are blurring, for example Flash, a multimedia development tool, is capable of producing higher quality games than some of the lower-end specialist games development environments. The main difference is that games development environments already have defined games engines (with rendering, collision detection, games rules and so on available or built in) whereas multimedia development environments will certainly have animation routines/capabilities and interactive capabilities but will be lacking specialised games capabilities. As in #1 the quality of games developed depends on the time available and on the technical expertise of the programmer — although the technical knowledge is perhaps less demanding than by using a general purpose programming environment.

4 **Educational games development environments**. These are aimed for children and although the quality of the games produced is the lowest of all the methods mentioned here, it takes much less effort to produce a playable game than if using a general purpose programming tool. These are suitable for introducing programming concepts in a motivating environment where candidates can see immediate rewards.

Notes on the expected results from using each of these types of GDE:

1 General purpose programming tools
If a general purpose environment is selected candidates should have already developed programming skills.

It is expected that the complexity of games produced at this level will be basic but the game's visual appearance and/or game play and/or interface will be more advanced than that evident at level 4. For example, the game's scoring system may be more sophisticated, perhaps rating a player's score in comparison to other players.

2 Game specific development environments
This is the widest single category here. In many of these environments code and scripting (or scripting mechanisms) are hidden from the developer. Tutors are encouraged to make candidates aware of game logic control mechanisms and, if possible, allow some experimentation with it. The game play and game mechanics are usually only accessible through scripting (if at all).

Importing media assets into these environments is likely to cause the most issues. Sometimes the media is created and/or edited directly within these environments.

The types of games designed for these environments will, in most cases, be restricted to the type of game most easily offered by the built-in game engine. The final game is likely to be much more complex than those created using general purpose programming tools, but the actual design of the games does not have to be overly complex. For example, if using a level editor for a 3D first-person game then a complete and playable level should be expected that is free of bugs (for example inescapable locations) and has all the required media assets (eg textures or 3D objects) in place. The size of this example level need not be restricted to two or three locations/rooms but will depend on the amount of detail, for example a single large area with a large amount of detail may be more acceptable than four plain rooms with hardly any detail in them. The locations should be well finished and match the design/brief but this should be balanced against the number of locations and overall complexity of the level.

3 Multimedia development environments
As with general purpose programming tools the response of candidates using this particular GDE will depend on their ability to manipulate the code. In some developments, like Flash, inserting the code can be tricky for candidates at this level as it is applied to individual objects, although this can be seen as similar to the way Scratch uses the blocks of code. When creating games these environments can be the most complex of all those featured here. The methods for defining the behaviour of objects will depend on the development environment and may be through the setting of attributes in the graphical designer screen or through the setting of variables in the code. The exact method used will depend on how the game has been designed and on the specific development environment.

4 Educational games development environments
These are generally designed to be accessible to candidates. Candidates are expected to demonstrate a clear grasp of the program code. As in previous development environments the exact methods used to control the behaviour of objects will depend on the specifics of the development environment. To match the level of games produced in other GDEs the games might have to be more complex — although this can be balanced by how much control a candidate has had over the logic of the game (ie the code).

National Unit Specification: support notes (cont)

UNIT Computer Games: Development (SCQF level 4)

History of changes:

Version	Description of change	Date
02	Header on pages 6 and 7 of the Computer Games: Development (SCQF level 4) changed from statement of standards (cont) to support notes (cont).	12/01/2011