



Higher National unit specification

General information

Unit title: Game Customisation and Scripting (SCQF level 8)

Unit code: HH3E 35

Superclass: CB

Publication date: November 2016

Source: Scottish Qualifications Authority

Version: 02

Unit purpose

This unit is designed to develop the learner's knowledge of level design within a scripting and editing environment. The unit will provide learners with the knowledge and skills to interpret a level brief and produce an environment with customised interactive elements. It is primarily intended for those who wish to follow a career within the computer games development industry as a level designer or similar role.

This unit is valuable for progressing to further studies at university in games or software development disciplines.

Outcomes

On successful completion of the unit the learner will be able to:

- 1 Produce a technical reference for a game level from a brief.
- 2 Create objects and actors as specified in the technical reference.
- 3 Implement custom behaviour scripts for objects and actors as specified in the technical reference.
- 4 Apply iterative end-user testing techniques to the customised game.

Credit points and level

2 Higher National unit credits at SCQF level 8: (16 SCQF credit points at SCQF level 8)

Higher National unit specification: General information (cont)

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Recommended entry to the unit

Access to this unit will be at the discretion of the Centre. However, it is recommended that learners have experience of current games construction in terms of environment maps or levels. It is also beneficial to have an understanding of computer games technology. This may be demonstrated by completion of the following units:

F869 34 *3D Level Editing*
F8M3 34 *Game Technology*

Core Skills

Achievement of this Unit gives automatic certification of the following Core Skills component:

Complete Core Skill	None
Core Skill component	Critical Thinking at SCQF level 6 Planning and Organising at SCQF level 6

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit specification.

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.

The Assessment Support Pack (ASP) for this unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable assessment. Centres wishing to develop their own assessments should refer to the ASP to ensure a comparable standard. A list of existing ASPs is available to download from SQA's website (<http://www.sqa.org.uk/sqa/46233.2769.html>).

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.

Higher 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

Produce a technical reference for a game level from a brief.

Knowledge and/or Skills

- ◆ Analysis of a brief for a level
- ◆ Construction of technical references
- ◆ Use of technical references in level design
- ◆ Game development environments

Outcome 2

Create objects and actors as specified in the technical reference.

Knowledge and Skills

- ◆ Environment building
- ◆ Object placement
- ◆ Actor placement
- ◆ Trigger placement
- ◆ tag placement
- ◆ Scripting techniques
- ◆ Event Handlers

Outcome 3

Implement customised behaviour scripts for objects and actors as specified in the technical reference.

Knowledge and Skills

- ◆ Animation
- ◆ Spawning
- ◆ Interaction and Response
- ◆ Setting objectives
- ◆ Timed events
- ◆ Recurring events
- ◆ Library scripts
- ◆ Modification of resources

Higher National unit specification: Statement of standards (cont)

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Outcome 4

Apply iterative end-user testing techniques to the customised game.

Knowledge and/or Skills

- ◆ Interaction Processes for objects and actors
- ◆ Methods of observing interactive software under test conditions
- ◆ Scripts review and revision
- ◆ Iterative design processes
- ◆ Documentation of refinements

Evidence Requirements for this unit

The Evidence Requirements for this unit are practical and project based. The Outcomes are sequential in nature but a holistic approach should be taken where the candidate will be issued with a project brief then produce a portfolio of evidence to demonstrate:

- 1 The interpretation of a given brief evidenced by the creation of a technical reference. The technical reference must contain:
 - ◆ An environment map created outside of the development environment which shows all points of interest including objects and actors.
 - ◆ A list of all non-static objects and actors which contain:
 - a count
 - Position
 - customisation to attributes
 - Added Scripts
 - ◆ Pseudo-code for all custom behaviour scripts.
- 2 Use of the tools and resources provided by the editor and game engine to construct a playable level, compiled or prepared as appropriate for redistribution, the level will contain:
 - ◆ The created environment specified in the technical reference.
 - ◆ Effectively named and tagged game entities for use by scripts.
 - ◆ Effectively implemented scripts into game event handlers.
 - ◆ Evidence of implementing the skills as listed in Outcome 3.
- 3 Diagrammatic representation of an interactive process within the game which could be by making use of a flowchart, object modelling diagram, use case scenario or by any other suitable means. Player Observations can be evidenced by:
 - ◆ Completion of a player observation sheet for full playtests by at least two players.

Higher National unit specification: Statement of standards (cont)

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- ◆ Implementation of an assessor checklist may be the best way to assess good observation practices of the candidate; however other methods such as video recording or open questioning could be used as an alternative.
- ◆ Documentation detailing adjustments to their playable level as a result of player observations.
- ◆ Updating and amending their playable level as appropriate.

The assessment should be completed on an individual basis under open-book supervised conditions. Assessors should assure themselves of the authenticity of the candidate's evidence. Further details and Guidance on assessment evidence can be found in the support notes section.



Higher National unit Support Notes

Unit title: Game Customisation and Scripting (SCQF level 8)

Unit Support Notes are offered as guidance and 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

This unit is intended to develop skills in game level design and aims to extend the learner's confidence in making the transition from the design elements of the course to the programming elements. In addition, it is intended that on completion of this unit the learner will have a valid artefact that can form a part of their portfolio for entry into the industry.

Scripting is an essential aspect of video games development. The production of new content for existing games and the ability to adapt pre-existing scripts has become a valid entry route into the industry. It is important that any individual seeking a career in the computer games industry should be able to demonstrate an advanced understanding of programming code and be able to modify existing code to suit the needs of any project; this has become an expectation for level designers who are expected to be able to assist with the modification and implementation of code.

The choice of engine/game scripting software to be used for this unit should be left up to the discretion of the centre. The toolset should be expansive enough to allow the learner to successfully meet all Evidence Requirements for this unit. Any recommendations here will change over time therefore centres are encouraged to source and choose the toolkits available, prior to delivery.

Guidance on approaches to delivery of this unit

This unit is best delivered in the second year of an HND programme, following on from or in association with the unit F869 34 3D *Level Editing*. This unit could be delivered on a weekly or bi-weekly basis at the discretion of the centre. A typical delivery for the unit might follow the following pattern:

Stage 1 — Pre-production Design

Learners should be encouraged to become familiar with the editor and scripting environment by playing a game. Although centres are advised to provide unsupervised time for this activity, it is recommended that they provide initial guidance on effective analysis of a game through play.

Higher National unit Support Notes (cont)

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Stage 2 — Development and Production

Learners must develop technical programming skills to be used in the scripting environment. The Knowledge and Skills required should be delivered through tutor-led demonstrations and practical tutorials. However, opportunities for support through Internet research and community participation should also be encouraged. It is envisioned that this section will constitute the majority of the taught element of this unit.

Stage 3 — Post-Production Evaluation

Learners must observe playtests of their level and adjust their scripts to be robust.

The emphasis in delivery would be for explanations and discussions on iterative design, player testing, observation methods, and carrying out observations. At this stage, learners should be encouraged to work co-operatively with each other and set aside time for play testing each other's levels.

Guidance on approaches to assessment of this unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to candidates.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where candidates experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

It is recommended that centres consider providing candidates with the project brief and assessment requirements early on in the delivery schedule to focus their learning and allow for planning of work.

Assessment is holistic where a portfolio of evidence is generated; however, it is best carried out sequentially as the candidates' works through the stages of the project. Outcome 1 is analytical and forms Stage 1 — the pre-production or design stage. Outcomes 2 and 3 can be assessed together as one holistic practical assignment to develop the interactive playable level. Outcome 4 is evaluative and iterative and is best carried out in the third stage — post production. The assessment should take a substantial number of weeks to complete and deadlines should be set for completion of each of the stages.

For Stage 1, covering Outcome 1 — the design and planning stage, the evidence is produced in the form of a technical reference and outside of the development environment where the candidate produces sketches, maps, flowcharts, interaction diagrams and any other method that will help plan for development. The technical reference will include all of the Evidence Requirements as listed.

For Stage 2, covering Outcomes 2 and 3 — the development stage, a checklist could be utilised to ensure the candidate has covered all of the Evidence Requirements and has a playable level of sufficient depth. They are required to evidence all of the Knowledge and Skills for Outcome 3.

Higher National unit Support Notes (cont)

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For Stage 3, covering Outcome 4 — the evaluation of work, it is necessary for the assessor to observe the candidates observing at least two players testing their game level and that they then implement updates as a result of this. The candidate cannot and should not test his/her own completed level.

Authentication of the candidate's work can be carried out by the assessor's contact, observation and questioning throughout the duration of the assessment.

Centres must ensure that candidate's level briefs and technical references provide sufficient complexity to ensure all Outcomes are covered effectively and are attainable within a reasonable timeframe.

The project level brief

The level brief should be provided by the assessor and should form a descriptive 'narrative walkthrough' of how the player is expected to interact with the environment. It should describe:

- ◆ between two and four 'scenes' (in the case of levels where traversing the environment is the player's goal).

and/or

- ◆ complex interactions (where the player must investigate through conversation).

A project brief of 200 to 400 words is recommended to ensure there is enough guidance to meet the complexity required yet without limiting the scope of work required. Two sample project briefs are included below. These illustrate how a level brief can be constructed to effectively integrate all aspects of the assessment for different environments.

The list below which covers all of the Knowledge and Skills for Outcome 3, has been superscripted and referenced in the two sample briefs which follow:

- 1 Trigger animations or spawn actors and/or objects based on player position.** This is commonly typified by game events like a door opening or a movie playing on a 'screen' as a player approaches or an enemy appearing in a side room when the player passes a certain point.
- 2 Cause actors and/or objects to respond in a variety of ways to player interaction.** This is frequently running or fighting if attacked, but talking if the player is not hostile.
- 3 Have actors and/or objects recognise player progress through objectives.** A non-player character (NPC) should be able to remember whether they have met before, and react appropriately.

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4 Modify player resources/attributes during play.

Frequently, this is removing or adding 'inventory' items, but equally valid are changes like scripted removal/restoration of 'health' or sudden involuntary movement ('teleporting').

5 Create timed events and recurring events.

Examples could be doors opening on a timed switch, explosion countdowns, respawning enemies or moving platforms.

6 Create 'library' scripts capable of being generically applied.

Scripts such as 'run away when attacked' should be constructed so they can be easily re-used with different game entities.

Level Brief 1: The Cuckoo's Nest Tavern

This traditional tavern is owned by the human mage 'Felix' assisted by the bartender 'Faith' and tables waited by 'Barwell'. 'Kestrel' the bard is singing in the corner. Player should be able to talk to Felix, Faith and Barwell. None should have previous knowledge of the players.

Felix should quiz the player and if they admit to being an adventurer, will offer to pay them to travel to Arentia with a package for 'Adil' in the Explorer's League.

If the players accept, 'Package for Adil' should be added to their inventory and their quest log updated appropriately. Further conversations after accepting the quest with Felix should encourage the player to get going. Further conversations after rejecting the quest or denying being an adventurer, Felix will be polite, but not conversational.

Faith will welcome the player to the cuckoo's nest and allow them to buy food or drink or rent a room for the night (reset health to full).

Barwell will randomly 'wait tables', talking to the patrons, then returning to the bar. This should be signalled though text emotes as he takes an order, then gives it to Faith, then returns to the patrons. If the player is currently talking to Faith, he should wait for them to finish grumbling about the 'thirsty regulars' if they take too long.

If the player goes behind the bar, Faith should tell them to leave. If the player attacks anyone all the patrons should run randomly in fear. Felix and Barwell should attack them and Faith should run to the door shouting for guards.

Level Brief 2: The Docks

This area should consist of a docked ship, and a semi-stocked warehouse with an overhead walkway fenced off with chain link fences and other warehouses. To gain access to the ship, the player must cross the docks, travel through the warehouse, up and across the overhead walkway and out to the ship's berth.

Two enemy types should patrol the area — dockers and guards in various groups. Dockers should run and cower if shot at, guards will return fire and seek cover as appropriate if shot at or sighting the player.

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Players should enter from a guarded security hut with mounted machine gun next to it. There should be a guard on the mounted machine gun. If he sees the player he should try to run from the machine gun to the hut, trigger an alarm and then return to the machine gun and start shooting. Note that if the player manages to kill the guard before the alarm is triggered, and then walks up to the alarm and triggers it themselves, the same thing happens.

If the alarm is triggered, two waves of four guards should spawn in the warehouse and seek the player. This will continue until the player disables the alarm in the hut. All guards from that point on should be upgraded with Kevlar body armour.

After passing the security hut, their mission status should update to 'Gain access to ship'. Some crates should explode when shot, issuing a brief green cloud of smoke that will reduce the players health immediately to 1% if they are close enough. Their health should then slowly return to normal over the next 60 seconds.

The doors from the warehouse to the ship are locked. They must use the crane hatch at the end of the covered walkway. However, the crane hatch must be opened from the other end of the walkway via a switch which will only hold the door open for 10 seconds — long enough for the player to make it if they sprint!

Opportunities for e-assessment

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 social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

Opportunities for developing Core and other essential skills

In this unit learners are required to develop a solution to specified criteria with limited resources, and within a proscribed environment. The achievement of this unit may give opportunities for learners to gather evidence towards the Core Skill of *Problem Solving* at SCQF level 6.

This Unit has the Critical Thinking and Planning and Organising components of Problem Solving embedded in it. This means that when learners achieve the Unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 6 and Planning and Organising at SCQF level 6.

History of changes to unit

Version	Description of change	Date
02	Core Skills Components Critical Thinking and Planning and Organising at SCQF level 6 embedded.	21/02/17

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General information for learners

Unit title: Game Customisation and Scripting (SCQF level 8)

This unit is designed to develop your knowledge of immersive level design within an industry standard scripting and editing environment.

The aim of the unit is to provide you with the knowledge and skills to interpret a level brief and then go on to develop and script a level within the chosen editing environment.

You will be assessed on developing a working level based on a given design and using the knowledge and practical skills you have learned in this and other units.

There is one portfolio of evidence you will collate in the assessment for this unit. This will cover all of the Outcomes.

- ◆ Outcome 1 — you interpret a given level brief to produce a short technical reference detailing level environments, objects, actors and details of all proposed behaviours.
- ◆ Outcome 2 — you will build the level you have designed within the chosen level editing software package and include the required number of features and elements.
- ◆ Outcome 3 — you will create and apply custom behaviour scripts to the objects and actors within that level
- ◆ Outcome 4 — you will allow your level to be play tested, observe the results, and adjust your scripts as necessary.

On completion of the unit you should be able to:

- ◆ Create a technical reference from a given project brief.
- ◆ Create a prototype level within a level editor software package.
- ◆ Add customised effects, actions and reactions to objects and actors for a given project brief.
- ◆ Playtest and refine the level you have created.

This unit provides you with the valuable experience of scripting and editing within an environment commonly used in the games industry. Therefore, it is relevant for future work in the industry or for preparation for future higher education courses in this field. Transferable skills include those of problem solving, planning and organisation of workload.

This Unit has the Critical Thinking and Planning and Organising components of Problem Solving embedded in it. This means that when you achieve the Unit, your Core Skills profile will also be updated to show you have achieved Critical Thinking at SCQF level 6 and Planning and Organising at SCQF level 6.