



### ASSESSMENT AND INTERNAL VERIFICATION FRONT SHEET (Individual Criteria)

Course Title	Advanced Diploma		Lecturer Name & Surname	NEIL AQUILINA	
Unit Number & Title	Programming for Computer Games				
Assignment Number, Title / Type	Research and Design – Home (24 Hours)				
Date Set	18/12/2020	Deadline Date	19/12/2020		
Student Name	Jerome Busuttill	ID Number	341003L	Class / Group	4.2C

<input checked="" type="checkbox"/>	<b>Student's declaration prior to handing-in of assignment:</b> ❖ I certify that the work submitted for this assignment is my own and that I have read and understood the respective Plagiarism Policy
<input type="checkbox"/>	<b>Student's declaration on assessment special arrangements (Tick only if applicable)</b> ❖ I certify that adequate support was given to me during the assignment through the Institute and/or the Inclusive Education Unit.
<input type="checkbox"/>	❖ I declare that I refused the special support offered by the Institute.
Student Signature:	Jerome Busuttill
Date :	18/12/2020

Assessment Criteria	Maximum Mark	Mark Achieved
<i>KU1: Identify and describe different game engines for different tasks</i>	5	
<i>KU3: Describe file types for media assets</i>	5	
<i>KU4: State the relevance of compression settings in media assets</i>	5	
<i>SE1: Design and specify the details of the game to be developed, including a state machine</i>	10	
Total Mark	25	

<b>Assessor's feedback to student</b>          <i>(If necessary, use reverse side of page for IV feedback on assignment brief / sample of assessment decisions)</i>
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	Name & Surname	Signature	Date
Internal Verifier : Approval of <u>assignment brief</u>		For approval signature, please refer to electronic audit trail	
Lecturer / Assessor : Issue of results and feedback to student		For approval signature, please refer to electronic audit trail	
Internal Verifier : Approval of <u>assessment decisions (Sample)</u>		For approval signature, please refer to electronic audit trail	
Learner's signature upon collection of corrected assignment.			

Assessment Criteria
<i>KU1: Identify and describe different game engines for different tasks</i>
<i>KU3: Describe file types for media assets</i>
<i>KU4: State the relevance of compression settings in media assets</i>
<i>SE1: Design and specify the details of the game to be developed, including a state machine</i>

## Task 1

### Game Engines

#### 5 game engines are:

##### Unity:

- Programming Languages used:
  - C#
  - Java
  - Boo
  - IronPython
  - Lua
  - C/C++
  - Rust
- Game programmed:
  - Firewatch
- 2D/3D:
  - Both

##### Frostbite:

- Programming Languages used:
  - C#
  - C++
- Games programmed:
  - Battlefield 1
- 2D/3D:
  - 3D

**Construct:**

- Programming Languages used:
  - C++
- Games programmed:
  - Guinea pig parkour
- 2D/3D:
  - 2D

**Phaser:**

- Programming Languages used:
  - Java Script
  - TypeScript
- Games programmed:
  - X-Trench Run
- 2D/3D:
  - 2D

**Unigine:**

- Programming Languages used:
  - C++
- Games programmed:
  - Guinea pig parkour
- 2D/3D:
  - 3D

## Task 2

### File types for media assets

(a)

JPG:

JPG (Joint Photographic Express Group) is an image format that supports 8-bit grayscale images and 24-bit colour images. It uses a lossy file compression but also provides a lossless compression but isn't very supportive. JPG also suffers from degradation when it is repeatedly edited and saved, it also does not support transparency.

PNG:

PNG (Portable Network Graphics) is an image format which supports 8-bit colour, with transparency, 24-bit colour and 48-bit colour. This file format uses a lossless file compression.

GIF:

GIF (Graphics Interchange Format) is an image format which is great for storing graphics with a few colours. The image format also makes use of a lossless compression while also being able to support animation and transparency.

(b)

MP3:

MP3 is the most popular digital audio format on the internet. It also uses a compressed file format which makes it a lossy file format.

WAV:

WAV is a very high-quality digital audio format. It is also known as an uncompressed file format which means that it is lossless.

## Task 3

### Compression in multimedia

#### (a)

The importance of image compression is to minimize the size in bytes of any graphic and or image file. This is done without losing the image quality to an unacceptable level. By compressing the file size, it also allows more images to be stored in a given amount of hard disk and or memory space while also saving space for any other files. One example for why image compression is important is for their use in websites. This is because compressing an image also reduces the time required for the images to load and also the time required for them to be downloaded.

#### (b)

Audio compression works by reducing the dynamic range between the loudest and quietest parts of the audio signal. This works by boosting the quieter wavelengths and signals and reducing the louder signals. Controls to compress audio are usually:

Threshold → This is how loud the signal is before the compression

Ratio → This is the amount of compression applied

Attack → This is how quickly the compressor works

Release → This is how soon the signal dips below the threshold

Knee → This is to set how the compressor reacts to the signals once the threshold is done

Make-Up Gain → This allows you to boost the signal of the compression

Output → This allows you to adjust the level of signal output

How it works:

- 1) The compressor is inserted on the channel that wants to be compressed
- 2) The threshold is adjusted until the signal is pushing over
- 3) The ratio is set to suit the compression wanted
- 4) The ratio and threshold work together and are also adjusted
- 5) The attack reacts shape up on how the compressor reacts
- 6) The release control comes into effect as it effects on how the compressor sound is working
- 7) The make-up gain and output control are used to sit the signal back without any unnecessary noise
- 8) The knee is set to adjust the hardness and transparency of the sound
- 9) Finally, it is outputted with a slight time delay in order to give the compressor a preview the full expected output

Diagram:

