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	**Nathan Abela**		**ID Number**	**439799M**	**Class / Group**	**4.2C**

■	*Student's declaration prior to handing-in of assignment:* ❖ *I certify that the work submitted for this assignment is my own and that I have read and understood the respective Plagiarism Policy*
☐ ☐	***Student's declaration on assessment special arrangements (Tick only if applicable)*** ❖ *I certify that adequate support was given to me during the assignment through the Institute and/or the Inclusive Education Unit.* ❖ *I declare that I refused the special support offered by the Institute.*

Student Signature:	N.Abela	**Date:**	19/12/2020

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

Assessor's feedback to student
(If necessary, use reverse side of page for IV feedback on assignment brief / sample of assessment decisions)

	Name & Surname	Signature	Date
Internal Verifier : Approval of a*ssignment brief*		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 *assessment decisions (Sample)*		For approval signature, please refer to electronic audit trail	
Learner's signature upon collection of corrected assignment.			

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

Unit: IICT4016 - Programming for Computer Games

Home Assignment 1 – Research and Design

Task 1: Game Engines

Game Engine 1**: Unity**

- In **Unity** the standard scripting language used is **C#**.

- The game '**Hearthstone**' was made using **Unity**.

- **Unity** supports **both 2D** and **3D** games.

Game Engine 2**: Unreal Engine**

- In **Unreal Engine** the standard scripting language used is **C++**.

- The game '**Tekken 7**' was made using **Unreal Engine**.

- **Unreal Engine** supports **only 3D** games.

Game Engine 3**: CryEngine**

- In **CryEngine** the standard scripting language used is **C++**.

- The game '**Crysis**' was made using **CryEngine**.

- **Unreal Engine** supports **only 3D** games.

Game Engine 4**: Frostbite**

- In **Frostbite** the standard scripting language used is **C++**.

- The game '**Battlefield V**' was made using **Frostbite**.

- **Frostbite** supports **only 3D** games.

Game Engine 5**: GameMaker**

- In **GameMaker** the standard scripting language used is **Game Maker Language**.

- The game '**Undertale**' was made using **GameMaker**.

- **GameMaker** supports **both 2D** and **3D** games.

Task 2.A: File types for media assets

Image Format 1: **JPG**

The **JPG** image format stands for **J**oint **P**hotographic **G**roup, it is of type **raster** format. This image format is a **lossy** compressed version of an image which means that the image format will **lose quality** when **compressed**. In addition, **JPG does not** support **transparency** and is **small** in **size**.

Image Format 2: **PNG**

The **PNG** image format stands for **P**ortable **N**etwork **G**raphics, it is of type **raster** format. The PNG file format is a **lossless** compressed version of an image which means that the image does **not compress** that much, but **keeps** all most of **data**. **PNG supports transparency** and is usually **high** in **size**.

Image Format 3: **SVG**

The **SVG** image format stands for **S**calable **V**ector **G**raphic, it is of type **vector format**, which means that the image format can be **scaled without losing quality**. The SVG file format is also **small** in **size** since it does not store what colour each pixel in the image is, unlike the two file formats mentioned above (JPG, and PNG).

Task 2.B: File types for media assets

Audio Format 1: MP3

The **MP3** audio format stands for **MP**RG Layer-**3**, it is the most popular audio format, it is mainly used for **storing music**. MP3 is **lossy**, which means that the compression **takes away** the **data** which **cannot be heard by humans**, this is why MP3 files are able to be **smaller** in **size**.

Audio Format 2: WAV

The **WAV** (Waveform Audio File Format) is the standard audio format used mainly in Windows PCs, it is mainly used for **CD-quality sound files**. WAV is commonly used for storing **uncompressed** sound files, which means that it's **large** in **size**, thus, the it produces the **highest quality** possible. It's a **lossless** file format, meaning there is **no data loss**.

Task 3.A: Compression in Multimedia

The importance of compression in images:

The main goal of compression is to **reduce file size**, this is done by removing redundant information from the image file. One of the most common contributors to a **slow website** is **large images** which are not **optimized**, this adds up to images having a **high loading time**. Compression is also important as it requires **less time** for **transfer** while **consuming less network bandwidth**. **Supporting old** or **slow devices** is crucial as most older devices are **unable** to **load uncompressed images** quickly. Image compression is also important in **communication platforms** companies were **storing** all the **images** sent between multiple users have to be **saved** on the **servers without taking much storage**.

Task 3.B: Compression in Multimedia

How compression in an audio file works:

As can be seen in the diagram below, the threshold set will scale the **whole audio** down below -15db, making the audio compressed since it will **not exceed** the **threshold**.