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	Daylen Mejlak	**ID Number**	276603L	**Class / Group**	4.2B

X ☐	*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:		Date :	18/12/2020

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)

Task 1: Game Engines

Unity:

- The programming language C# and C++.
- A game produced using unity is Fall guys
- Unity is a 2D and 3D engine.

Frostbite:

- The programming languages for frostbite is C++ and c#.
- A game produced by frostbite is FIFA.
- Frostbite is a 2D and 3D engine.

Unreal engine:

- The programming language C++.
- A game produced by Unreal engine Fortnite.
- Unreal engine is a 2D and 3D engine.

Hero engine

- The programming language for Hero engine is C++ and C#.
- A game produced by Hero engine is Star Wars: The Old Republic.
- Hero engine is a 3D engine.

Godot:

- The programming language for Godot is C++ and C#.
- A game produced by Godot is Gravity Ace.
- Godot is a 2D and 3D engine.

Task 2: File types for media assets

A.)

SVG: SVG stands for Scalable Vector Graphics, this image format behaviours are defined in XML text files, this means that this type of image format can be indexed, scripted, and compressed. SVG can be created and edited with any editor such as text or drawing software. SVG is a text-based, open Web standard which describes images that could be rendered well at any size and designed to work well with CSS, DOM, JavaScript and SMIL.

JPG: This type of file format is a compressed image format used for digital images. JPG is used a lot in digital cameras. JPG has compression ratio of 10:1 this is good because it could be applied to JPG images without losing any details. An advantage of JPG is that it has a small file size which this fortunately results having image sharing and storing much easier. JPG images are great for realistic paintings as well.

GIF: GIF stand for Graphics Interchange Format. This type of file format uses lossless compression that does not use the quality of the image. GIFs are suited for banners on websites, since these types of images typically do not have a lot of colours. A GIF image can store more than 256 colours.

B.)

MP3: The compression of an MP3 file format is $1/10^{th}$ the size of .WAV or AIF files. MP3 can be used for streaming audio files over the internet for online listeners that before it was not possible due to larger file sizes of audio files. MP3 files contains frames where each frame contains a header and a data block. These data blocks of files contain information about the audio in terms frequencies and amplitudes.

WAV: This audio format is a lossless audio format that does not compress the original analog audio recording from which it is taken. Since WAV is a lossless format, it offers a very high sample rate and bit depth, which this gives the permission to include all the frequencies heard by the human ear. A WAV file format has a very high-quality audio.

Task 3: Compression in multimedia

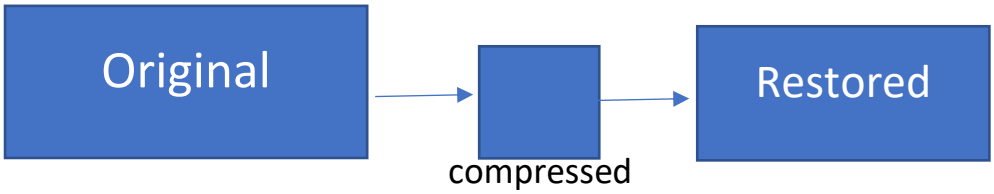
A.) Image compression is important because it minimizes the size in bytes of a graphics file without effecting the quality of the image. The reduction of file sizes allows more images to be stored in an amount of memory space. It will also reduce the time required for images to be sent over the internet. When compressing an image, it takes up less space on one's hard drive and retains the same physical size. Image compression could also be important because it requires less storage than uncompressed files, this means having a decrease in expenses for storage.

B.)

Lossless

What is happening here? Lossless compression reduces a file size with no loss of quality. Lossless compression basically rewrites the data of the original file in a more efficient way. Since there is no loss of quality, the final files are typically much larger than the images and audio files compressed with lossy compression.

Lossy



Lossy file compression results having loss of data and quality from the original version. Lossy compression can be used images files such as JPEGs and also audio files like MP3 and ACC. In audio lossy files reduce the dynamic range of the audio itself. Lossy compression removes data from the original file, the resulting file sometimes takes up less storage space/disk space than the original.