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	Mia Prica		**ID Number**	**0160087A**	**Class / Group**	**4.2A**

☐	*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)

Unit: IICT4016 -

Programming for Computer Games

Home Assignment 1: Research and Design

Task 1: Game Engines

Unreal Engine
- Unreal Engine uses C++ as programming language.
- One of the games and certainly the one among the most popular ones, created by this engine is Fortnite.
- Unreal is best in terms of graphical fidelity, although it is both, 2D and 3D game engine.

Unity
- From the programming languages, Unity uses C# and JavaScript, however it also supported Boo until 2014 when it got removed.
- Games created in Unity Engine include Kerbal Space Program, which is a popular game of strategy, planning and execution.
- For programming in Unity, both 2D and 3D are equally suited, but when just starting Unity people tend to use 2D more often.

Amazon Lumberyard
- Amazon Lumberyard is written in C++ and in Lua.
- The Grand Tour Game is a game programmed by this engine.
- Lumberyard is a 3D game engine.

CryEngine

- Programs in CryEngine are coded with C++, C# and Lua programming languages, however C++ is mostly used as the other 2 don't have as much access to different functions as C++ does.
- One of the newer games created with this game engine is War of Rights.
- CryEngine is 3D game engine.

Godot

- Godot games can be created with different programming languages such as C++ and C#, or any other with GDNative bindings.
- Games created with Godot are not specifically "big", but one of known games is Rogue State Revenue.
- Godot is a 2D, and a 3D engine.

Task 2: File types for media assets

a) Image file formats include SVG, JPG, PNG, WEBP, GIF and BMP, and here's some of them: SVG (Scalable Vector Graphics) is an XML based, resolution independent file format, is used mostly for building website and print graphics due to its scalability. It is also a lossless, compressed file format using GZIP compression.

JPG (JPEG - Joint Photographic Experts Group), is a most common, raster (pixelated), compressed image file format that contains images, and is used in digital cameras or for photographs seen on the web.

PNG or Portable Network Graphics is a raster or bitmap image file format, using lossless compression type, and is a file format with no copyright limitations, while being able to contain 24bit RGB colour palette and display transparent backgrounds, unlike JPG.

b) Audio file formats: OGG, MP3, WAV, ACC, WMA

WAV is (unlike MP3) a lossless audio format that doesn't use compression of the original audio, and is widely used by music companies around the world. WAV stands for Waveform Audio File Format, and is also mostly used for loops or web animations, however, WAV files carry a large size, and take more space than some of the other audio formats.

MP3 is most popular digital audio format used for creating high-quality sound files and music, because of its compression to a manageable size. MP3 is still a lossy audio format but is more practical than WAV for casual use, since the files are compact, easy to stream and won't take too much space on the device which its being downloaded on.

Task 3: Compression in multimedia

Data compression is a method used to "resize" and restructure data and is applied to images to reduce their size and leave more storage available. There is who types of transmission and they are lossy, or lossless when there is no quality loss. When compressing, the images and their parts are removed or grouped together. The compression of images is important when it comes to either transferring such files, or storing them on the device, as most businesses today rely on it. Reduction of storage requirements and time taken for transmission of images can also result in cost saving, and increasing productivity.

How audio compression works:

| Raw un-compressed audio file | Hz |
| | Raw un-compressed audio file |
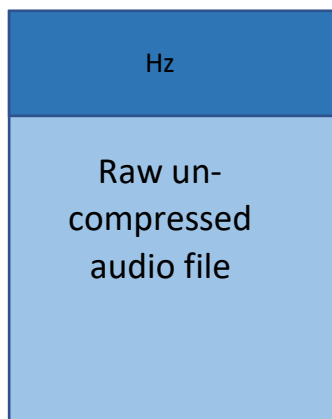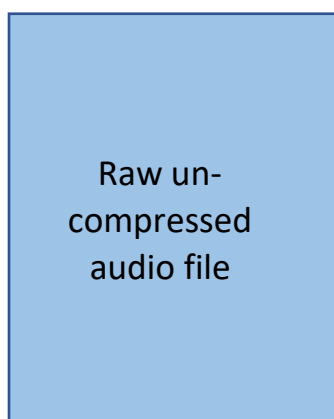
The audio file is made up out of Hz, but human hearing works in a range of 20Hz to 20kHz, so when compressing the file is losing some of the "quality" and is stripping down the excess above our hearing range, without it being noticed at the end.

Hz

Raw un-compressed audio file

Hz

Hz

Compressed audio file

File received by media players