MCAST Technical College

INSTITUTE OF INFORMATION AND COMMUNICATION TECHNOLOGY

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	Kimberley Collins	**ID Number**	**59102L**	**Class / Group**	**MSD 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:		**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 *assignment 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 (24 hours)

Assignment Submission:

On your Assignment Repository, create a folder *Research and Design* and in it upload:

a. **Task 1, 2 and 3 as a single PDF**
b. **Task 4 as a JPG or PNG**

Task 1: Game Engines (KU1) – 5 marks:

Research 5 Game Engines. In point form, and in your own words, for each engine list:

- The Programming Language(s) used in it
- A game programmed using that Engine
- Whether it is a 2D/3D (or both) Engine

1. **IW engine.**

- IW engine its programming language is C++ .
- A game that is programmed with IW engine is Call of Duty series.
- And it is a 3D game.

2. **Moai SDK.**

- Moai SDK its programming language is C++.
- A game that is programmed with Moai SDK is Broken Age
- And it is a 2D game.

3. **Blender.**

- Blender its programming languages are c and C++.
- A game that is programmed with Blender is Yo Frankie!
- And it is a 2D and a 3D game.

4. **4A Engine.**

- 4A Engine its programming language is C++ .
- A game that is programmed with 4A Engine is Metro: Last Light
- And it is a 3D game.

5. **Creation Engine.**

- Creation Engine its programming language is C++ .
- A game that is programmed with 4A Engine is Fallout 4 Light
- And it is a 3D game.

Task 2: File types for media assets (KU3) – 5marks

a. Choose 3 types of image formats from SVG, JPG, PNG, WEBP, GIF, BMP and explain each image format, in your own words.

- **JPG** – stands for Joint Photographic Group. This file format provides lossless compression. It supports 8-bit images which are grayscale and 24-bit colour images however it does not support transparency. It is a lossy compression due to it can result in a reduction in the fil size and it is a raster file format. The result of the JPG, sometimes it can have a poor quality because of the high compression. JPG can also be referred to JPEG which stands for Joint Photographic Experts Group.

- **SVG** – stands for Scalable Vector Graphics. Many browsers support SVG file format directly and it can also support animation and interactivity. It

is a XML based image file format which can be used for 2D graphics. Text and numbers can be saved in this file which is related to the coordinates of the paths or the anchor points. It is a vector file format.

- **BMP** – stands for Bitmap or Bitmap Image File and it can also be called as raster graphic. In fact it is a raster file format. BMP handles graphic files within the Windows operating system only. BMP files are larger because they are not compressed. BMP is a type of image file format which composed the image with matrix of dots, these dots are combined together to form and represent an image or a shape.

b. Choose 2 types of audio formats from OGG, MP3, WAV, AAC, WMA and explain each format, in your own words.

- **MP3** – it is an audio file format which is used to create high quality of audio files. MP3 file format has the ability to compress files by making them more flexible, appropriate and more well-known of the way of storing different music, therefore it uses lossy compression algorithm. It is usually referred to MPEG-1 Audio Layer 3 which stands for Moving Picture Experts Group Layer-3 Audio.

- **OGG** – it is a free, open format which is sustained by the Xiph.Org Foundation. It is developed to provide a good manipulation of high quality digital multimedia and it is also used to stream efficiently. It is a compressed audio format for keeping and storing the sound file. OGG audio file format can store the track information, the artist name and the metadata information. OGG stands for Origin Graphics File.

Task 3: Compression in multimedia (KU4) – 5 marks

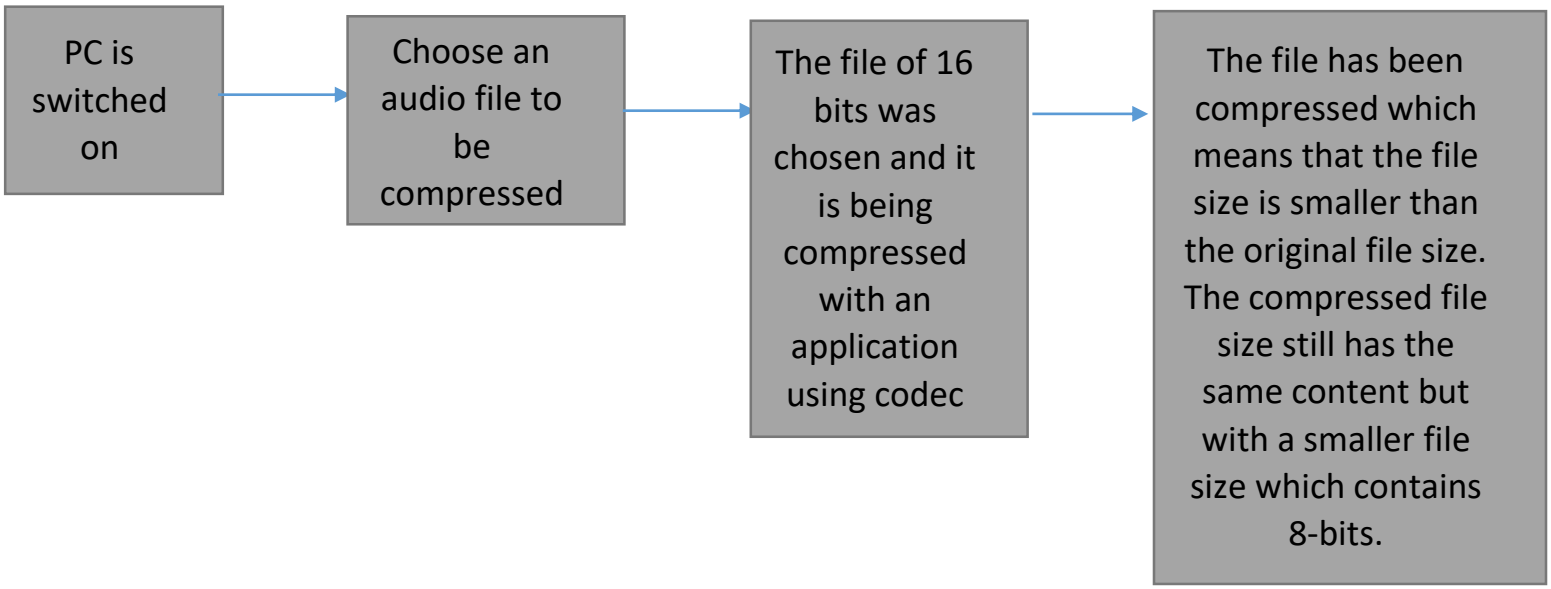
Research the following in your own words:

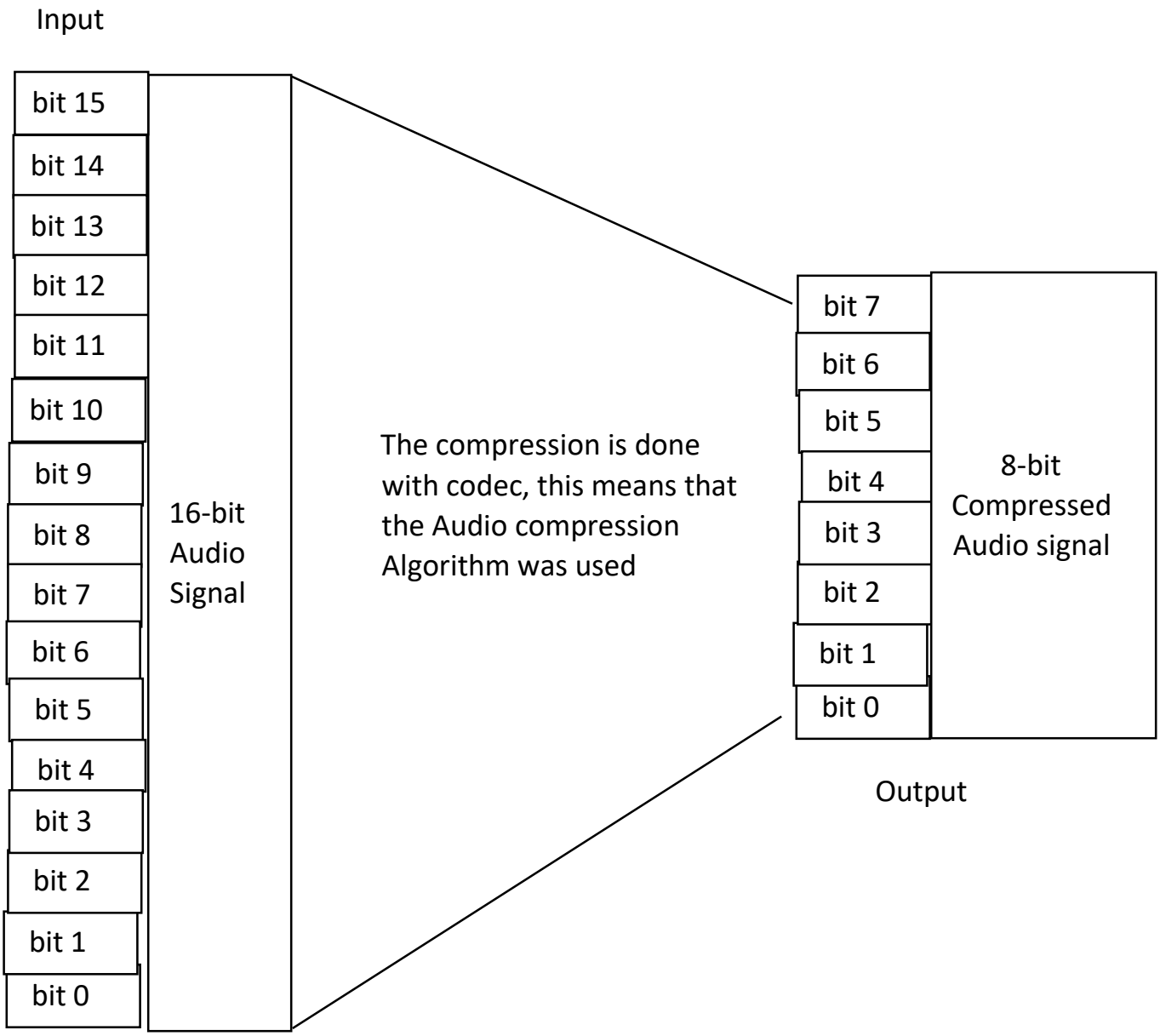
a. The importance of compression in images (100 words)

The importance of compression in images because it reduces the file sizes and the images will transfer very quickly. When you compressed an image, the file size will be smaller, moreover this will result that the images will take less memory space on the computer hard drive or in any external storage drive and so many images can be saved and stored in the hard disk. Images that are compressed make them more easier to edit or work with them in an editor software. The smaller the picture the less CPU and RAM time required to be processed. The importance of compressing an image is not only that the file is smaller but the transfer of a particular image will be faster than an image file without a compression. When uploading a compressed image file to a website, the image will upload rapidly compared to an uncompressed image file format even when downloading a compressed image from the web can be very quickly. Apart being very quickly of transferring the images through web, it can also be very fast to transfer an image which is located on the hard disk folder in the Documents folder to the Downloads folder.

b. Explain in detail using diagrams how compression in an audio file works. The diagram must be originally drawn by yourself, and not copied and pasted.

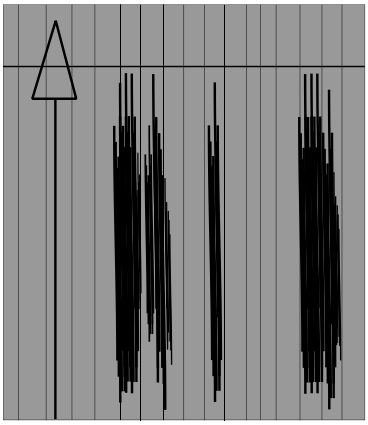
Diagram for the audio file compression




Input
bit 15
bit 14
bit 13
bit 12
bit 11
bit 10
bit 9
bit 8
bit 7
bit 6
bit 5
bit 4
bit 3
bit 2
bit 1
bit 0
16-bit
Audio
Signal
The compression is done with codec, this means that the Audio compression Algorithm was used
bit 7
bit 6
bit 5
bit 4
bit 3
bit 2
bit 1
bit 0
8-bit
Compressed
Audio signal
Output

Uncompressed audio file format

The waves of the song are bigger when the file is uncompressed compared to the file when it is compressed, therefore the waves will be smaller.



Compressed audio file format

When compressing the audio file format, and then open the file with an audio editor, the waves of the song, will be smaller than the waves of an uncompressed file.

Assignment Rubric:

Criteria and tasks	**Marks**
KU1: Identify and describe different game engines for different tasks	
For 5 Game Engines list:	**5**
The Programming Languages used in it	
A game programmed using each Engine	
2D/3D Engine	
KU3: Describe file types for media assets	
Explain 3 image formats	**3**
Explain 2 audio formats	**2**
KU4: State the relevance of compression settings in media assets	
Research the importance of compression in images	**2**
Explain in detail using diagrams how compression in an audio file works	**3**
SE1: Design and specify the details of the game to be developed, including a state machine	
Create a good State Diagram for the scenario	**5**
All states must be listed in the State Diagram	**2**
All triggers must be correct in the State Diagram	**3**
TOTAL MARKS:	**25**