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	Mariah Muscat	**ID Number**	**291802L**	**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:	M.Muscat	**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)

	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
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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

Task 1: 5 Game Engines

1. Unity:
   - Programming Languages used in Unity are two these are the JavaScript and the C#.
   - Some games which were programmed using this Engine are the “Monument Valley 2”, “Inside” and much more.
   - This engine can be built in 2-D even so 3-D games.

2. Unreal Engine:
   - The Programming Language used in it is C++.
   - A game programmed using this Engine is “Fortnite” and there is much more.
   - This engine is built in 2-D Games.

3. Amazon Lumberyard:
   - This uses C++ Programming Language.
   - A game programmed using this Engine is “Star Citizen”.
   - This is a 3D Game Engine.
4. Godot:
   - The programming languages used in Godot are the C#, C++, and their own Programming Language GD Script.
   - “A Game of Changes” is one of the games which were built in Godot.
   - Godot games can be created in 2-D even so in 3-D.

5. Game Maker Studio
   - Game maker uses GML Programming Language which is their own language.
   - “Undertale” is one of their Games.
   - Game Maker Studio uses 2-D Games.

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.

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

Task 2

a)

1. JPG:
   JPG stands for Joint Photographic Expert Group. It is used for compressing graphic/digital images. JPG is a lossy compression because when compressing the image some information is lost during the process. It is used to store a lot of images in a small space.

2. GIF:
   GIF stands for Graphics Interchange Format. This is usually used in sprites in software programming or animated imagines on the web. GIF's is a lossless compression.

3. BMP:
   BMP standing for Bitmap. This image format is a type of memory organization and is used for creating and storing computer graphics. It is made up of matrix dots.

b)

1. MP3:
   MP3 is a compressed audio file. It is to save sounds like music in a MP3 player. When saving the sound, it will be like the original it is just compressing the sound into a smaller size.

2. WMA:
   WMA standing for Windows Media Audio file. This is for storing music which this was designed by Microsoft. Which obviously this is used in windows media player and even so portable music player. It compresses music at a high quality which does not need lots of storage space.

c.

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

Research the following in your own words:

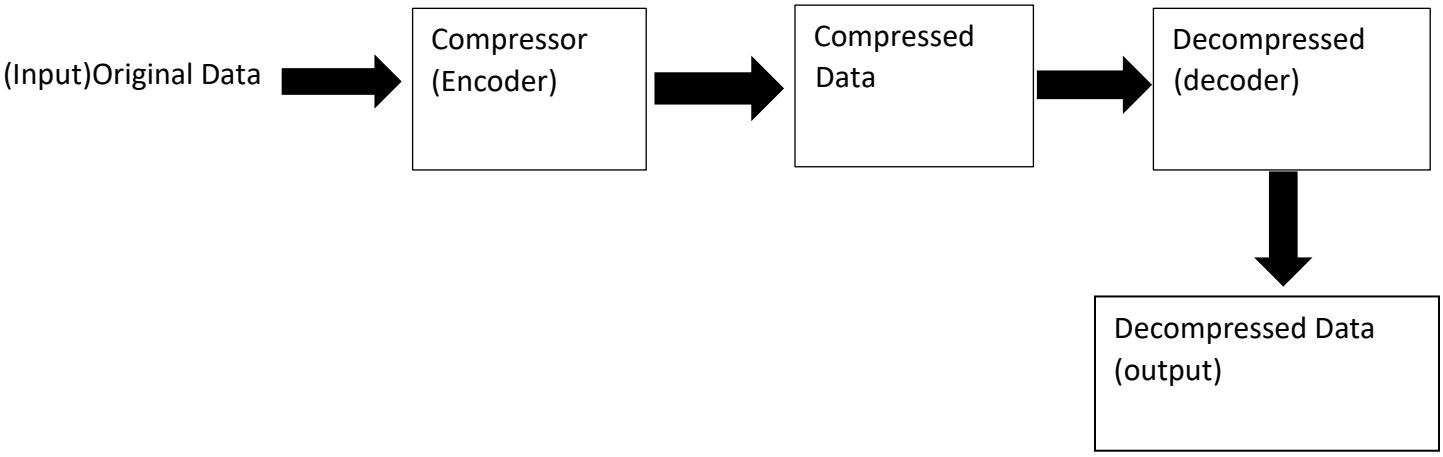
a. The importance of compression in images (100 words)

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.

Task 3:

a)The importance of a compression image is by decreasing the size of the image but leaving the images quality high. By this more images can be added/stored since the amount of memory space in the images is less. The most known and used image compression for graphic image formats are the GIF which is usually used for line art, sprits and the other format is JPG which it is used typically for photographs. There are two types of images vector and raster. Raster images uses pixels and dots, and vector images uses polygons and line segment so they connect together these are important for there different use.

b)



Task 4 – Design using State Diagram (SE1) – 10 marks

For this task you can use *https://app.diagrams.net/* or any other drawing program you like. Save the final diagram as a JPG or PNG and upload on Github as instructed.

Scenario: MCAST Break

The following is a scenario of an Adventure Game. You are to read it carefully and create a State Diagram for it. Different states can be accessed by pressing the Capital Letter of the State in brackets. Each state will give you a description of what you can do:

You wake up in the middle of the night and find yourself in an MCAST classroom on the top floor. The only things to be found are: an old PC with some cables, a table, a broken chair and a door which is locked.

You have to escape and return home before the sun rises up.

You start in a (R)oom. You can go to any of the 4 things found in the Room:

(T)able, (C)hair, (L)ocked Door, (P)C

If you go on the (T)able, the only thing you find is dust! You can return to the (R)oom.

If you go to the (C)hair, you can see a lot of borer holes.

If you search the (P)C closely you can find a number of wires and a small thin Screwdriver. You can take the Screwdriver and go back to the (R)oom or to the (L)ocked Door.

You try your luck and go to the (L)ocked Door and try to pick the lock with the

screwdriver and…. voila, the door can now be opened and you are (F)ree to go home.

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**