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	**Ritianne Cardona**	**ID Number**	**0119003 L**	**Class / Group**	**4.2B**

☑	*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:	R. Cardona	**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
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

Task 1: Game Engines (KU1) – 5 marks:

1) Unreal Engine
   - C++, SkookumScript
   - Fortnite
   - The 4th Version allows both 2D & 3D

2) Unity
   - C#
   - Hearthstone
   - Both 2D & 3D

3) GameMaker Studio
   - C++, C#, GameMaker Language, JavaScript
   - Hotline Miami
   - Both 2D & 3D

4) Blender
   - C, C++, Python
   - Yo Frankie!
   - 3D

5) Construct
   - C++, JavaScript, HTML 5
   - Defense of the kingdom
   - 2D

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

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

JPG (Joint Photographic Experts Group) – This is the most commonly used image format for images because it has a high compression making the image size small therefore making it easier to share and store. This uses lossy compression which reduces the quality of the image. Other image formats in the same 'family' include JPEG, JPE and JFIF.

PNG (Portable Network Graphics) – This image format is also commonly used because it allows sections of the photo to be transparent such as the background. This is a great feature for advertisements since it can be used when editing thumbnails, logos, websites etc. This uses lossless compression which doesn't reduce the quality of the image but reduces the size, making it easier to store and share.

GIF (Graphics Interchange Format) – This image format is commonly used for moving images with no sound. This is a great feature when embedding advertisements in websites or sharing clips on social media. This image format uses lossless compression as well.

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

MP3 (Moving Picture Experts Group Audio Layer 3) – This is the most commonly used file format for audio because it has a high compression making the file size small which is easier to share and store. This uses lossy data compression which reduces the quality of the audio.

WAV (Waveform Audio File Format) – This format is used for editing and video games. It can be compressed or uncompressed and generally has a large file size.

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

Research the following in your own words:

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

Image compression is the act of reducing the size of an image.

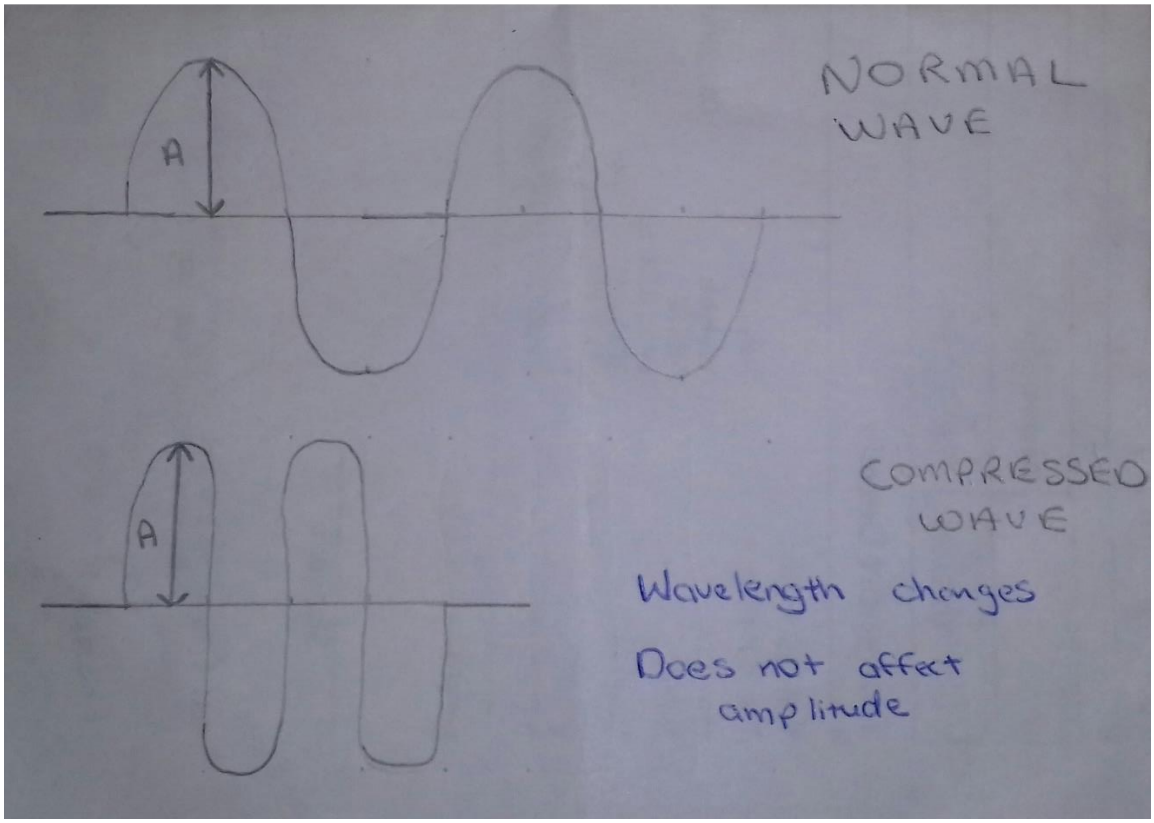
This is important because it increase the loading time of a webpage which increases rankings : Compressed embedded images load faster than uncompressed ones. This will also reduce the amount of bandwidth the page uses.

It decreases uploading time such as when uploading an image to a website like Facebook or a thumbnail to YouTube.

It reduces storage space, which is important for people and for large companies, so they don't overload their server and save space on hard drives.

Some pages do not allow images to be transferred if they have a large file size such as Gmail; compression fixes this issue without decreasing the image quality too much when using lossless compression.

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 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:

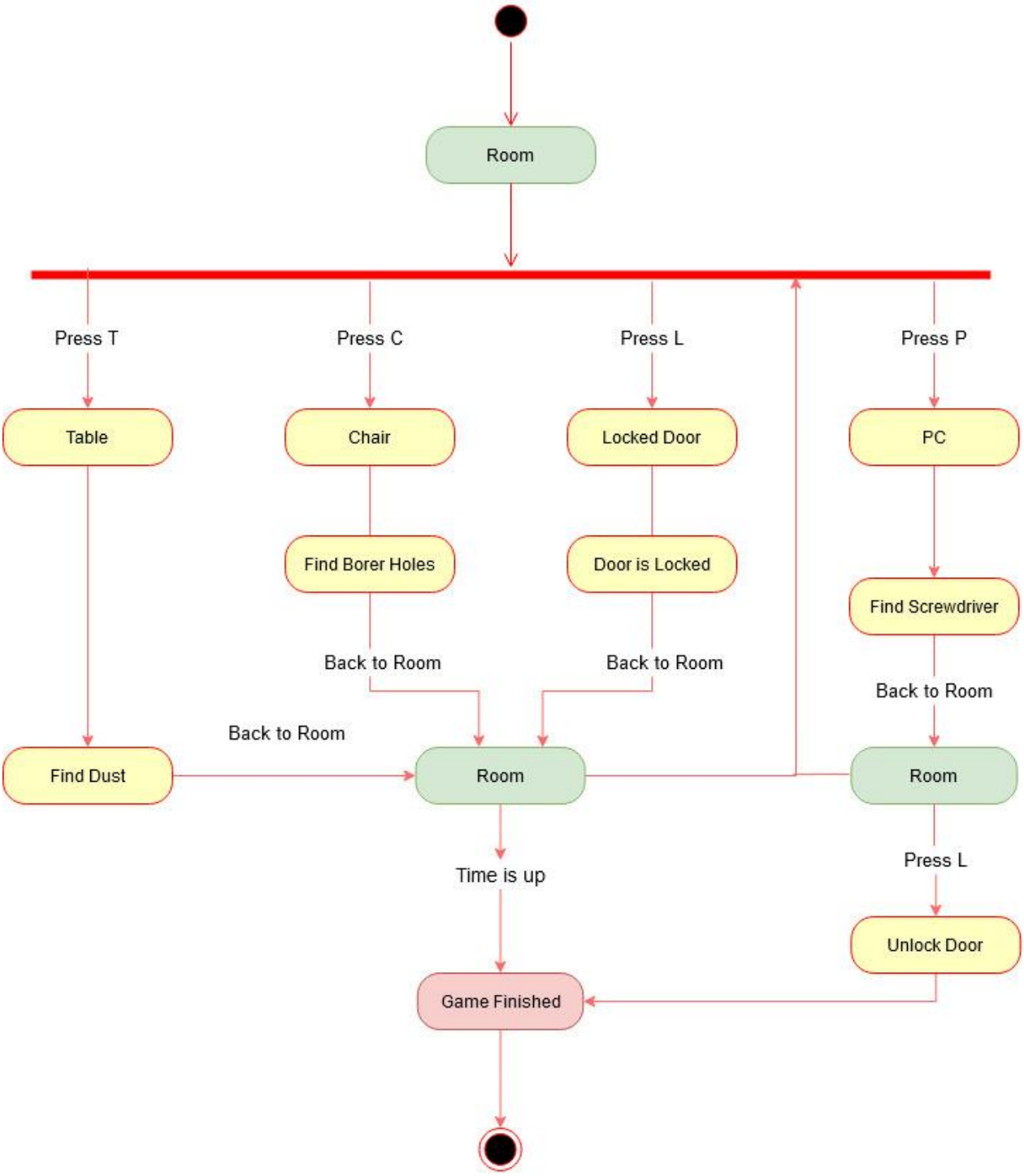
(T)able, (C)hair, (L)ocked Door, (P)C

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.


Room
Press T
Press C
Press L
Press P
Table
Chair
Locked Door
PC
Find Borer Holes
Door is Locked
Find Screwdriver
Back to Room
Back to Room
Back to Room
Back to Room
Find Dust
Room
Room
Time is up
Press L
Unlock Door
Game Finished

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