Home Assignment 1: Research and Design

Task 1: Game Engines

- Unity
  C++, C#
  Game programmed using Engine: GooBall
  3D, 2D
- Frostbite
  C++, C#
  Game programmed using Engine: Battlefield
  3D, 2D
- Unreal Engine
  C++, Python, LUA
  Game programmed using Engine: Dragon Ball FighterZ
  3D, 2D
- Phaser
  JavaScript, TypeScript
  Game programmed using Engine: Labyrinth
  2D
- Godot
  C++, C#, Python
  Game programmed using Engine: RUN
  2D

Task 2: File types for media assets

a.

- GIF
  GIF is an image file format that is mainly used for animations and it uses lossless compression. GIF stands for Graphics interchange format.
- PNG
  PNG is the most common file format as it supports transparency in an image and it is an uncompressed raster image. PNG stands for Portable Graphics Format
- JPG
  JPG is a raster format that is mainly used for photographs. JPG stands for Joint Photographic Group.

b.

- MP3
  MP3 is the most common way to store music files on music players, mobile phone or computers. It is a compressed audio file format.
- WAV
  WAV is an audio file format standard that is used for storing an audio bitstream on PCs.

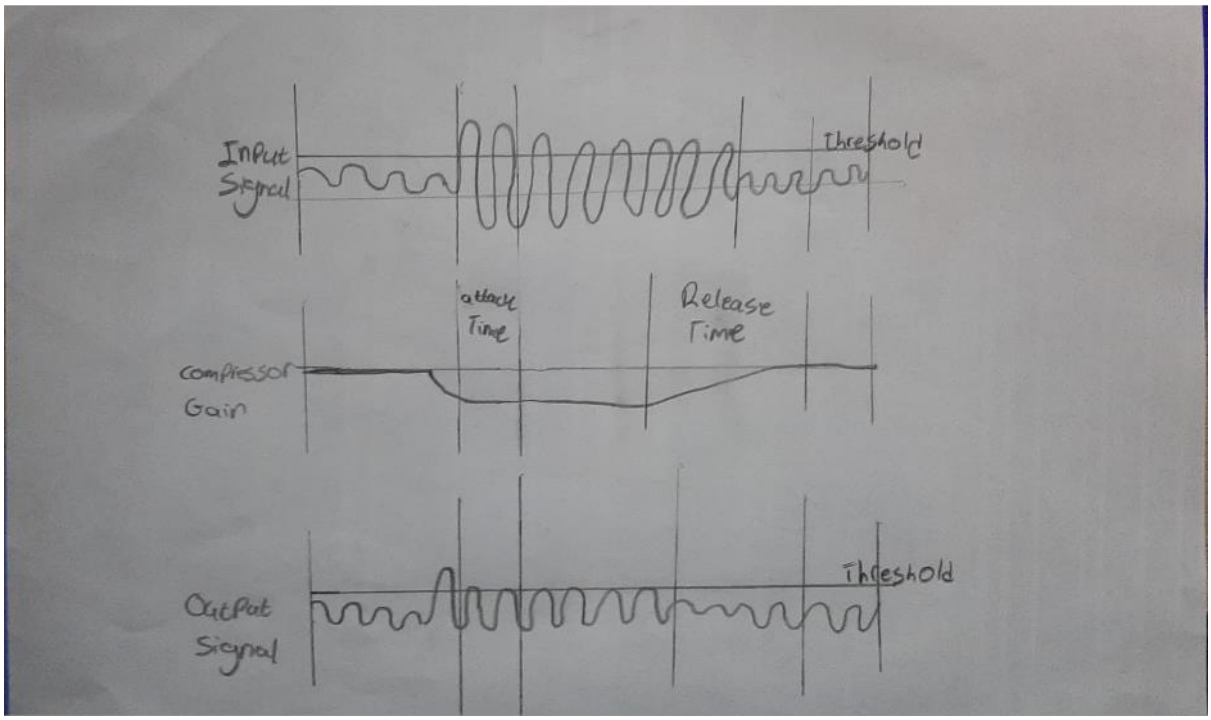
Task 3: Compression in multimedia

a.

Compression in images is used to reduce the size of a file therefore it allows you to store more images in a given amount of disk or memory space. Image compression also allows you to reduce the time it requires for images to be sent over the internet for example sending an image via Messenger to your friends or downloaded from Web pages. Compressions can be lossy or lossless, lossless compression means that when the image is compressed the picture quality remains the same while lossy compression permanently removes the data but the file size is significantly reduced, this also means that there is quality loss in the image.

b.

Audio files are compressed by having a threshold that sets the level at which the compression effect is engaged, when the level passes above the threshold it will be compressed. The Knee refers to how the compressor transitions between the non-compressed states on an audio signal running through it. Attack time refers to the time it takes for the signal to become fully compressed while Release Time is the opposite of that, it refers to the time it takes for the signal to go from compressed to its original state, non-compressed signal. When compressing the audio file it will make the audio sound better.


Input Signal
Threshold
attack Time
Release Time
compressor Gain
Output Signal
Threshold