Programming for Computer Games

Home Assignment 1: Research and Design (24 hours)

Task 1: Game Engines

Game engine 1: Unity

- Programming languages used are C#, C++, Boo and JavaScript
- Game programmed using Unity is Escape from Tarkov
- Unity also supports both 2D and 3D

Game engine 2: Frostbite

- Programming languages used are C#, C++
- Game programmed using Frostbite is FIFA 21
- Frostbite supports 3D

Game engine 3: GameMaker

- Programming languages used are C#, C++ and Delphi
- Game programmed using GameMaker is Undertale
- GameMaker supports both 2D and 3D games

Game engine 4: CryEngine

- Programming languages used are C#, C++ and Lua
- Game programmed using CryEngine is Hunt: Showdown
- CryEngine supports 3D

Game engine 5: Unreal Engine

- Programming language used is C++
- Game programmed using Unreal is PlayerUnknown's Battlegrounds
- Unreal supports both 2D and 3D

Task 2: File types for media assets

Part a)

- GIF also known as Graphics Interchange Format is a type of Raster image format which also has a compression type of Lossless. GIF is also the only type of image format that supports Animation in its images.
- JPG also known as Joint Photographic Experts Group is also another type of Raster image format but in this case is the only image format that has a Lossy compression type. JPG is often used for web photographs since the files are typically smaller.
- SVG also known for Scalable Vector Graphics is a type of Vector image format which has a compression type of uncompressed. An SVG image format is good because there is no limit to scalability which means no matter how you change the size of the image, you will not lose any quality.

Part b)

- MP3 is a digital audio format that enables high-quality sound files to be created. Something that MP3 really excels at is its compression. MP3 compression can achieve from 75 to 95% reduction in size. Making MP3 very convenient and popular in downloading music on your devices

- WAV also known as Waveform Audio File Format is another type of audio format. In this case WAV's major advantage is that its audio files will not loose any audio quality since its compression type is lossless rather than lossy when compared to MP3.

Task 3: Compression in multimedia

Part a)

Then importance of compression cannot be stressed enough. When talking about compression were talking about reducing the file size of an image down in order to minimise as much as possible the amount of disk space being used by the image, By doing this you can save up to 50 – 90% more storage space depending on the image. In this case JPG has the best form of compression when trying to have the image as small in size as possible but at the cost of the image not being restored in its original form since the compression type is lossy. On the other hand, if you want the image to be fully restored to its original state a lossless compression type is suggested that is used in image format types like PNG, RAW and PSD.

Part b)