**Difference Between Animation and Video**

Animation is kind of art of drawing sketches of objects and displaying them in sequence to make them look like moving things. However, video is a recording of stationary or moving objects. This is the difference between video and animation. However, main purpose for both is show viewers objects in a motion.

The animation is a video created by an person who creates many pictures that are displayed at high-speed using the camera, so it feels and looks like a video motion. The video is made by a person with a video camera.

When an animator or artist completes a painting, they are sent to a computer where some operations are performed to explain the story. Most of the work these days is done on computers. This makes it easier to create animated videos. After the animation is converted to video format, there is no difference between the animation and the video. Animations can be upload or download like regular videos on the internet.

**https://vspages.com/animation-vs-video-1508/**

**Video format, container, codec.**

A format is basically a set of rules and parameters that define a video. Among other parameters, these are native resolution, color depth, and number of frames per second.

The video codec works as an interpreter for video formats or supported formats. Main purpose of code is compress and decompress video. Codec is used by the video player to set a rule how the video should be played correctly on the system.

Video containers intended to bundle multiple files. Some advanced containers can include video, audio track, metadata, and other data like menu. But usually, it is just video and audio track. The most popular container formats are MOV, MKV, AVI.

https://www.ghacks.net/2011/09/07/whats-the-difference-between-a-codec-container-and-video-format/

**Most common video formats.**

* MP4. Most devices and digital platforms support this format. This format can store audio and video files, images, text. Despite maintaining small file sizes, MP4 provides a high-quality video.
* MOV. This format is designed by Apple, extremely popular, was created to work along QuickTime player. This format contains video and audio, subtitles, timecode etc. This format due to very high quality takes a lot of space.
* WMV. Usually used in Windows media players, as was designed by Microsoft. This format has a better compression than MP4, provides small sizes. Extremely popular for an online video streaming, but it is not compatible with Apple devices.
* FLV. Supported by all browsers and video platform. This format used by Adobe Flash Player. This format is very good for online video streaming (YouTube), has a very small size, but not compatible with iPhones and some other devices.
* AVI. This format has an extremely large sizes, because of less compression. Can be created without any compression – lossless files, it means quality will not go down.
* AVCHD (Advanced Video Coding High Definition). This format was designed for professional high-definition video recording. By using the compression, high quality video can be stored with a usage of a small amount of space.
* WebM. Perfect for usage with HTML5. Can be used for online video streaming by any device.
* MKV. This format contain video, audio, subtitles in a single file. Very adaptive and easy to use container, support almost any audio and video format.

https://www.computer.org/publications/tech-news/trends/8-best-video-file-formats-for-2020/

**Animation**

Different formats of animation

Different types of can be used depending on the purpose. There are few the most common formats:

* SVG. It is an open 2D XML - based standard vector graphic. This format is text-based, scalable, high quality and very easy to be changed.
* JPG. The best format so far for high quality photos, extremely popular for graphic purpose. Does not support transparency.
* GIF. Is very good for icons and logos with not many colors, supports transparency, very good for small animations.
* PNG. This format supports alpha channel transparency, it means that background can be changed. Very good level of built- in color gamma .

<https://www.whale-agency.com/stories/different-types-of-animation-formats-why-svg-is-the-best-one>

**Different types of animation**

There are five major categories of animation:

Traditional animation. Also known as a cell animation. The animator draws each frame by hand so that result is animation.

2D Animation. It is type of animation that based on vectors. The animator has the option to edit frame by frame. There is no need to redraw character every time, instead of that character’s rigs can be created. Very flexible and popular for beginners in animation.

3D Animation. It is a computer animation and most popular form of animation nowadays. The process contain moving character in program, involves fewer drawing skills.

Motion Graphics. Main principle is ability to move text, shapes, and graphic elements. Examples of that graphic are animated logos, advertisement, tutorials.

Stop Motion. Contain of a still image that can be changed to show movement. That type is very similar to traditional animation, different is stop motion works with real object. Very good example of that animation is cartoon “The nightmare Before Christmas”.

<https://affordableschools.net/lists/5-types-of-animation/>

Virtual Reality

**VR** (Virtual Reality) is it is no longer something that people imagine, it has been among us for a long time and is easily accessible. Now you can visit another country without leaving your home or get behind the wheel and go where your eyes look, perform heart surgery in the simulator. There are few different types of VR on a market right now.

* Virtual Reality. VR is fully immersive and tricks your senses and mind, while being in a real world your brain and body started to think otherwise.
* Augmented Reality. Concept of AR lays in applying digital information on real world. Pokémon Go – is a very good example.
* Mixed Reality. MR combines real and digital world, it means you can interact with virtual and physical world, items, and environment.

To experience virtual reality following equipment is required:

1. A VR headset
2. Standalone VR gear
3. VR headset for use with computer
4. smartphone
5. headset
6. joystick

VR is a technology that widely used in nowadays. For example, VR can be used in Healthcare, Virtual Adventure, Professional sports, gaming, entertainment, studying purposes.

<https://www.intel.com/content/www/us/en/tech-tips-and-tricks/virtual-reality-vs-augmented-reality.html>

Написать про то,что для анимации буду использовать классическую анимацию. Для движения будут использоваться 4 картинки в разнома положении чтобы создать илюзию ходьбы,например. Для этого в юнити есть специяльная фича, нужные картинки нужно раставить в нужном порядке и засетить время между соседними картинками-скоростьююЩчень важно чтобы последняя картинка была добавлена еще раз,чтобы создалась полная илюзия.

Формат для анимации – пиксельные картинки с расширенеи PNG, качество картинок стоит на последнем месте, так как это 2D пиксельная игра.

For storyboarding I am going to use Go-Pro with a stop motion feature to create animation by changing and move objects and background.

For recording my tutorial, I am going to use screen recorder, fortunately market full of them. For example, Filmora, Gimp, Game Bar – built-in Windows 10 screen recorder, Bandicam etc. GIMP provides a wide range of features, easy to use, change size of PC screen, moreover I am using it already as my photo editor.

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| Format | Quality | Frame rate | Total bitrate | File size | Independent evaluation |
| Original format MP4 | X | 29.97 frames/second | 1309kbps | 2406Kb | Very good quality |
| MP4 | low | 25.03 frames/second | 9017kbps | 16524Kb | Good |
| MP4 | medium | 30,03 frames/second | 18113kbps | 33182Kb | Good |
| MP4 | high | 30,03 frames/second | 22116kbps | 40512Kb | Perfect quality |
| AVI | low | 25,00 frames/second | 8988kbps | 16942Kb | Good |
| AVI | medium | 29,97 frames/second | 17816kbps | 33599Kb | Good |
| AVI | high | 29,97 frames/second | 21702kbps | 40928Kb | Good |
| MKV | low | X | X | 16522Kb | Ok |
| MKV | medium | X | X | 33178Kb | Ok |
| MKV | high | X | X | 40507Kb | Good quality |
| WEBM | low | X | X | 4585Kb | Average quality, could see some pixels |
| WEBM | medium | X | X | 8506Kb | Ok |
| WEBM | high | X | X | 9135Kb | Good |
| GIF | X | X | X | 18,388Kb | Very bad, too pixelated, might be ok if pixelated video wanted. |