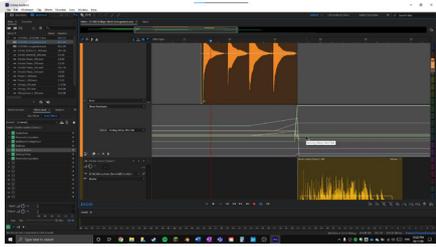
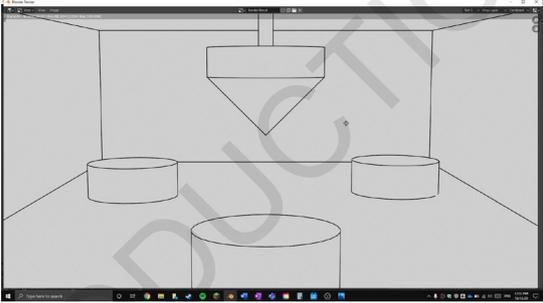
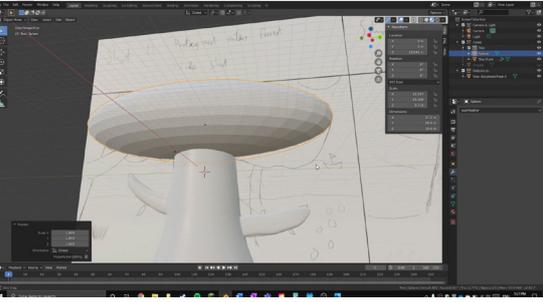


Record of Production

Term 4, Week 6	Min.
<p> I began the project by creating a multitrack Adobe Audition file with a sample rate of 88200Hz, a bit depth of 32 bits (float) and 5.1 audio channels. This was done to allow for maximum customisation with the quality of audio and surround sound. Once created, I added multiple 5.1 audio tracks that corresponded with the instruments listed in the sheet music and colour coded the tracks to allow for ease of navigation amongst the multitrack session. I recorded and mixed the distorted and clean electric guitar tracks after setting the tempo of the multitrack session to 100bpm. Once the audio had been recorded using the Gibson 2009 SG Faded and the Yamaha Steinberg UR44 Audio Interface, and the audio had been reduced using the noise reduction feature in the waveform session, I experimented with different effects to achieve a desired tone. Keyframes were added for the pan angle and the Pitch Shifter's transpose ratio to cause the audio to rapidly increase and decrease in pitch as well as go in a clockwise circle around the listener.</p>	<p>140</p> 
<p> After the getting started this week, I have high hopes for the outcome of the audio. As I see myself putting in maximum effort into this portion of the project, I believe that I will easily meet the deadline stated in the timeline plan, especially considering that I have started slightly earlier.</p>	

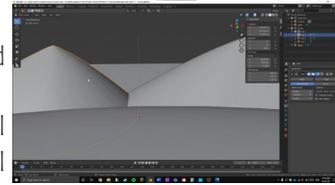
Term 4, Week 7	Min.
<p> Further keyframes were added to different aspects of the effects within the guitar tracks to create development throughout the sections of the song. The exact delay time required for the Analog Delay in the original clean electric guitar track was calculated through determining the amount of time taken by a dotted quaver in milliseconds, using the result as the delay time of the effect (450ms). Tracks that required the Yamaha P-45 Digital Piano were then recorded, which included the vibraphone, electric piano, piano, and string tracks.</p>	<p>475</p> 
<p>A synth part was created using Garage Band on my Apple iPhone 6s Plus. I used these materials as Garage Band was the only available DAW that was able to produce the audio that I desired, and my Apple iPhone 6s Plus was the only device available that was able to run the necessary programs. Using Garage Band, I created a song and added two alchemy synth tracks: an atmospheric synth track (using the Aquaculture synth) and a bass drop track (using the Agile synth bass). I then recorded the motion of Aquaculture synth's effects pad before individually adding the notes into both MIDI tracks.</p>  <p>I set up my drum mics around my drum set for recording later in the week. To do this, I mounted the Shure SM57 onto a microphone stand and placed it so that the diaphragm of the microphone was perpendicular to the centre of the snare drum and directly above the rim of the drum. I then mounted the CAD TSM11s to their included drum microphone clips which allowed me to mount the microphones directly to the toms. The CAD D12 was then mounted on a stack of items and place it in front of the bass drum, as I had run out of microphone stands. CAD GLX1200s were mounted to microphone stands as I placed them so that they were spaced apart above different groups of cymbals so that the diaphragms of the microphones were both exactly 1m from the centre of the snare drum, ensuring that the two overhead microphones were as closely in phase as possible.</p>	
<p> After this week, it is clear that I will meet the timeline plan's guidelines with completing the audio. Despite this, I am mildly concerned with the quality of the audio, as I want it to sound as professional as possible. To overcome this, I will seek the opinions of my peers and teacher to gain advice about how the quality of the audio can be improved.</p>	

Term 4, Week 8	Min.	
 <p>This week was spent finalising the audio of the project, recording extra tracks with the electric bass and acoustic guitar, mixing, and mastering the audio with school's PreSonus HD7 headphones. When micing up the acoustic guitar with Shure SM57s, I ensure that the phase between the microphones was kept in place by measuring the distance between the diaphragms of the microphones with the porthole of the guitar.</p>		165
	<p>By the end of this week, I have set aside the audio and have begun focusing on the animation of the project, as my teacher and I are both satisfied with the quality of the audio and believe that there is no need to improve upon it. Despite meeting the timeline plan's guidelines, I am concerned that I will need more time for animating.</p>	

Term 4, Week 9	Min.	
 <p>I began 3D modelling the scenes of the project using Blender. Using the storyboard as a reference, I 3D modelled the road, pathway, and the exterior of the restaurant from the first shot of the storyboard. I used plane meshes to model the ground and the road before using cube meshes to model the pathways and the restaurant. I also experimented with the freestyle parameters within Blender to create a desired toon look. When modelling the chandelier of the restaurant, I did not model the full chandelier as I plan to simply export the scene in blender and use it as a reference when 2D animating. I attempted to create a bathroom with realistic dimension, with the height of the room being 4m and the width being 5.5m.</p>		135
<p>To 3D model the main tree in the forest scene, I added in a large cylinder mesh and created multiple horizontal loop cuts so that I would be able to fit the mesh to the tree's shape. I then began to move and scale the cuts so that the mesh aligned with the tree in the image plane. Once the trunk was aligned, I selected faces on the side of the mesh and began to extrude them to create the branches. I then created a sphere mesh and scale it horizontally to fit the shape of the leaves of the tree. I then added a displace modifier to the sphere mesh to randomize the shape of the leaves.</p>		
	<p>After this week, it is clear that I will meet the timeline plan's guidelines with completing the audio. Despite this, I am mildly concerned with the quality of the audio, as I want it to sound as professional as possible. To overcome this, I will seek the opinions of my peers and teacher to gain advice about how the quality of the audio can be improved.</p>	

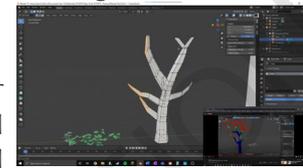


To 3D model the hills of the home scene, I created a cone mesh, used edit mode to scale and adjust the shape of the mesh, added a subdivision surface modifier to round off the hill, and then added a crease to the bottom edge of the cone so that the bottom of the hill does not get rounded off by the subdivision surface modifier. To 3D model the trees for the forest, I followed a YouTube tutorial titled 'How to Create a Low Poly Tree in 1 Minute' uploaded by 'CG Geek'. Through following this tutorial, I added in a cube mesh with a single loop cut which was scaled outwards. The top face was extruded upwards as I moved and scaled each extrusion to create the shape of a tree. Once the trunk was created, I began creating branches by extruding the sides of the trunk outwards, moving, and scaling each extrusion so that the branches would grow upwards and thinner.



405

I created textures for the leaves that were added onto the tree using hair particle systems. To do this, I continued following the previously mentioned tutorial, downloading the PNG file of the leaves that was used in the tutorial and, to make the trees look more cartoon, traced over the image in Adobe Photoshop through creating layers and outlining the leaves before filling in the outlines with solid colours. I then exported the finalised leaf texture and imported it into Blender through an image plane.



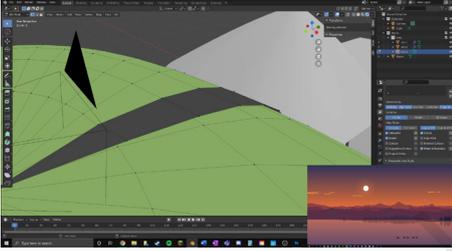
On the image plane, I added in four loops cuts and began to cut the mesh so that its outline would surround the leaves with little excess mesh. I then grabbed vertices from the mesh in edit mode and began to slightly randomize the height of certain points of the branch, adding dimension to the branches. I then created a vertex group for the tree and assigned the branches of the tree to the vertex group. Weight paint mode was used to adjust the density of the leaves in certain areas of the tree branch. An advanced hair particle system was created for the tree with the leaves as the object. Adjusting the rotation, scale, and number of leaves allowed me to tweak and finalise the position of the leaves in the tree.

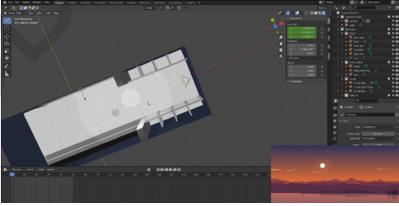
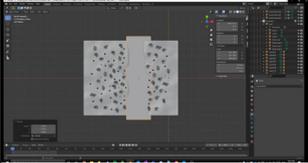
The UV map of the tree was exported to allow for the creation of an image texture. After importing the UV map in Adobe Photoshop, I traced over the map to create the tree's texture and exported the final image as a PNG. The image was imported into Blender through an Image Texture node in the tree's material with the colour node joining to the colour input of the Principle BSDF node. I then used the texture in the Adobe Photoshop file to create a normal and displacement map from the original image, being imported into Blender through Image Texture nodes. These nodes then went into a bump node (with the displacement map connecting to the 'Height' input and the normal map connecting to the 'Normal' input via a Normal Map node). The output from this bump node then went into the 'Normal' input on the Principle BSDF node that was still in place. Finally, I rendered a frame with the tree in the shot using the Cycles render engine to see the final result.

I then began texturing the exterior of the restaurant by unwrapping and applying an image texture to the roof. In doing this, I ran into an issue pertaining to the proportions of the UV map, as they did not change to better represent to true mesh of the roof, meaning that drawing over the UV mesh would result in the image texture appearing drastically scaled in an undesirable manner. To solve this, I researched potential ways of matching the proportions from a mesh with the proportions of an object. I then found a possible solution on the website 'Blender Stack Exchange' (<https://blender.stackexchange.com/questions/22872/unwrap-uv-map-proportionally-to-object-size>) which entailed downloading an addon for Blender called Magic UV and using it to match the UV map's proportions with the scene. This was unsuccessful in creating realistic proportions in the UV map.



After this week, my concerns about the outcome of the 3D animation have been somewhat eased, however I am still concerned about the time it will take to animate as 3D modelling is not a skill I am overly familiar with. My goal for the end of the holidays is for me to be comfortable with the state of each of the scenes that I am required to 3D model.

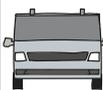
Holidays, Week 3	Min.
 I experimented with the Freestyle settings within Blender by taking advice from the YouTube video 5 Cool Tips with Freestyle in Blender uploaded by Blender Made Easy. This video demonstrated how to add a thickness modifier to Freestyle, allowing the strokes to appear more organic and hand drawn. <p>As I was working on the home scene within Blender, I textured the main hill by creating an image texture using the same method that I used to create the previous image texture with Adobe Photoshop, however this was unsuccessful as the mesh was so large that it required an unreasonably large image to create the required amount of detail. To solve this, I subdivide the mesh and duplicated some of the faces that I required to be coloured. I then applied a separate material to these duplicated faces to create the desired amount of detail.</p> 	230
 Through the failures that I have made this week in the production process, I have realised that I will need to put in more effort than I first thought. Though I am still able to envision these scenes coming together in Blender, I will need to search for answers in order to find how to execute exactly what I am envisioning.	

Holidays, Week 4	Min.
 I added a location keyframe to the camera of the bathroom to create an animation. The results of the animation showed the effect of the thickness modifier on the Freestyle, demonstrating a desired toon effect. I created the keyframes of the camera by setting a Location keyframe to the camera's placement on the first frame before moving it slightly forwards and adding in a second Location keyframe on the 50th frame. <p>Experimenting with different types of water within the forest scene in Blender involved watching a tutorial that demonstrated how to create waves titled 'Animated Cartoon Ocean Effect Blender 2.81 Eevee' uploaded by TutsByKai. After watching this, I decided to simply add a solid colour to the water with no 3D animation as I felt that this was too complicated for a simple scene, adding a flat plane with a Diffuse BDSF material to act as the water in the river.</p>   <p>I then continued to duplicate the trees around the forest as the forest seemed too empty. Once the trees were in place, I noticed that the leaves appeared too white from far away. To solve this, I increased the subsurface colour of the leaves and made the subsurface colour a desired green. This caused the leaves to glow a dim green, causing the whiteness from far away trees to dissipate.</p>	215
 As the forest scene is coming along as I have envisioned it, I believe that I will be able to animate each of the scenes will relative ease as the forest scene is the most complicated scene. My main concern at the moment involves the 2D animation as I have not started this, and the render times for the 3D animation as this will only increase as the scenes get more complex.	

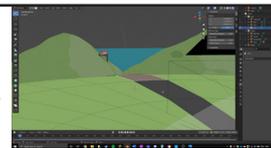
Holidays, Week 5	Min.
 After adding leaves to the big tree in the forest, render times increased to one hour per frame with Freestyle enabled. Through adjusting the weight paint of the big tree's particle system and the strength of the leaves' subsurface emission, I was able to create a clearer scene. 	120
 As the render times have drastically increased this week, I am concerned that I will need to spend a great deal of time rendering the animations. I am also concerned that if I add more to the scene, it will prevent the scene from being renderable. I am however very pleased with the results of these renders.	

Holidays, Week 6 / Term 1, Week 1

Min.



After adjusting the hills in the home scene in Blender, I experimented with adding a displace modifier to the hills to observe the results when Freestyle would take effect. The results showed that the displace modifier added some realism to the hills, increasing detail.



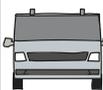
60



Through experimenting with the hills and stylistic choices in the home scene, I have been able to make more informed decisions pertaining to the outlining of the hills. I am happy to see the scene coming together.

Term 1, Week 2

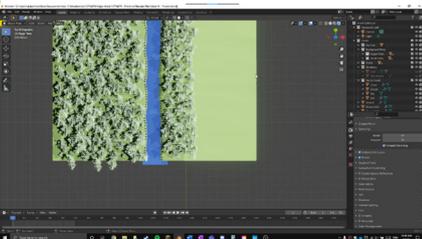
Min.



Through adjusting the lighting in the forest scene in Blender, I turned on the Ambient Occlusion and Bloom options in the Render Properties tab. This immediately turned the majority of the scene green as the subsurface shading from the trees was causing the trees to bloom. To solve this, I had to reduce the subsurface strength of the material so that the scene would not be overly saturated, but the trees would still retain their colour. I then added a sun and clouds to the scene by adding in sphere meshed and applying toon shaders and displace modifiers to the clouds. An emission shader was added to the sun to counteract shadows.

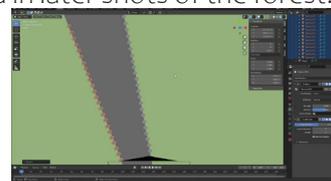


235



I then expanded the forest by duplicating all the trees and rocks at once throughout the scene and extending the river. I also extended the ground by duplicating it and flipping the y-coordinates of the mesh so that the ends of the displaced ground would line up. This extension of the forest will be used in later shots of the forest.

When creating the path of rocks in the home scene, I added in an Array modifier to a single rock and made it follow a path, allowing for the automatic randomization of the rotation of the array.



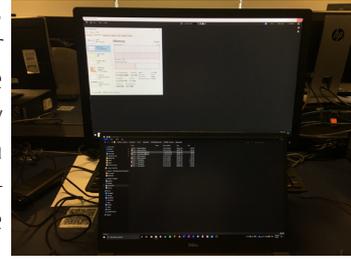
After experimenting with rendering techniques, I am now very concerned that I will need to make drastic adjustments to the forest scene in order to make it renderable. I still have hope that I will be able to render the scene using the school's HP EliteDesk 800 G3TWR, as this computer has 32GB of RAM which is required for the rendering of the Freestyle.

Term 1, Week 3

Min.

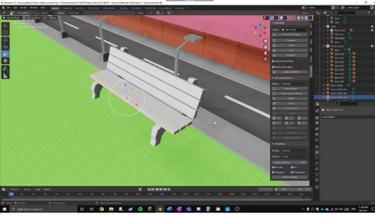


I began experimenting with rendering methods regarding the forest scene. As the forest scene has taken an hour on average to render a single frame, assuming Blender does not crash, my multimedia teacher Mr Ahmed Hamed and I began brainstorming ideas on ways to reduce the render time and prevent Blender from crashing. We began by using the school's HP Omen 17C-CB0062TX to attempt to render a frame. This resulted in Blender crashing on this device. I then proceeded to remove the extended forest from the shot, as this portion of the scene was not being rendered and was only using up needed RAM.



350

The saturation of the image texture of the trees in the forest scene was adjusted due to their apparent darkness in rendered frames. This was done by intercepting the colour output of the Image Texture node with a Hue Saturation Value node before adjusting the Value component.



A bench that will be used in the exterior of the restaurant was modelled by following a tutorial on YouTube titled 'Blender Modeling Park Bench (Low Poly)', uploaded by Jayanam. Through following this tutorial, I used the circle mesh to create the shape of the bench by removing a selection of the vertices and extruding the rest. Once the outline was finished, I added a face within the outline before applying a Solidify modifier to give it 3 dimensions. The 'Fast Carve' addon for Blender was used to carve the shape of a cylinder in the side of the bench to turn the single thick leg into two thinner legs. A bevel was then added to some of the edges of the bench to give it more realism and shape.

Whilst this was being completed on my own laptop, I attempted to re-render the forest scene on one of the school's HP Elite Desk 800 G3TWR computers to see if I would be able to create a render farm that utilises all the available computers in the school. This caused Blender to crash on the school's computer as there was not enough RAM to support the Freestyle rendering.

I experimented with the lighting in the forest scene, adding in a volumetric cube that surrounds the entire scene. I then began to adjust the parameters of the volumetric within the cube's material until it created a desired look. As I wanted the light beams to be visibly beaming through the leaves of the trees, I researched volumetrics on YouTube and found a video titled 'Mountains and Sunrise Blender 2.8 Tutorial - Part 1', uploaded by DCP Web Designers. Through following this tutorial, I changed the Sun light in the forest scene to a Spot light, before increasing its power from 10W to 1GW to light up the forest. A Sun light was then added into the scene with a power of 3 so that the shadows would not be as harsh. The volumetric was then removed after the material properties of the volumetric were copied to the World material. I then proceeded to fiddle with the positioning of the Spot light, the strength and colour of the spot light, the emission strength of the Sun's material (the object and not the light) and the density of the Volumetric node in the World material. I was ultimately disappointed with the results and preferred the original lighting over the new lighting, leading me to copy the Blender file onto my desktop and then copying the backup file from my Education OneDrive account to my original file location.

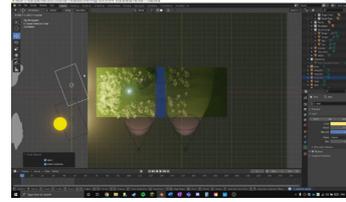
To create the chandelier for the restaurant, a circular path was added to direct an Array modifier that was added to the glass light, surrounding the chandelier's circumference with the lights. Materials were then made for the chandelier. Within the Principle BDSF node of the chandelier light material, I set the Base Colour to a golden brown and the transmission to 1. Screen Space Refraction was enabled to allow for transparency with Eevee. Screen Space Reflections was then enabled in the Render Properties tab along with Refraction.



I am very glad to see the scenes start to come to life. I have high hopes for the final result of the 3D animations. Lighting seems to be the main issue that I am facing at the moment, which is what I intend to fix in the following weeks. Despite having skewed greatly from the timeline plan, having spent a great deal of time creating the 3D animations as opposed to 2D animating, I believe that I will finish the project in time.



With the help from Mr Hamed, I began experimenting with the lighting in the forest scene. We first removed the Sun lighting and replaced it with an Area light, of which we set the power to 30MW as this was required to light up the gigantic scene. We moved and rotated the Area light to the position of the Sun before adding in another Area light that will serve as the reflections that are supposed to come from the sunlight reflecting off of surfaces in the forest. This light was set to a bright green and has a power of 200624W. The third Area light was added to represent the light reflecting from the river. This light has a colour of light blue and a power of 3MW. The fourth and final Area light was added above the entire scene and was scaled up greatly. This light has a golden yellow colour and a power of 30MW.



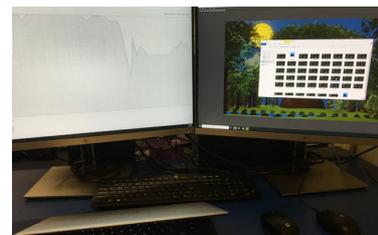
435

A Point light was then added in front of the big tree in the scene to light up the big tree. This light had a light aqua colour and a power of 500000W. Two Spot lights were then added to represent sunlight coming in from the side of the forest; these lights were scaled up greatly, had a slightly yellowish pink colour, and a power of 30MW. To finalise the look of the scene, thetoon shaders of the trees and the leaves were replaced with simple Diffuse BDSF nodes. This got rid of the unwanted glare that reflected off of the objects.



I then attempted to render farm the forest scene. The school's network was used to allow four different computers in the classroom to render the same animation at once, whilst a fifth computer was being used to render a single frame for testing purposes. I first used a flash drive to transfer the scene from my laptop to the school's HP EliteDesk 800 G2 and HP EliteDesk 800 G3TWR. On the HP Elite Desk 800 G3TWR, I moved the file into my folder on the Collaboration space on the school's network. Within the Blender file, I set the output of the image sequence to a designated folder (as well as the cache files), rather than a temporary folder. Three more of the school's HP EliteDesk 800 G2s were turned on and used to open the same Blender file on the network, before I selected Render Animation on all of the computers. The school's HP EliteDesk 800 G2s were drastically underperforming compared to the HP Elite Desk 800 G3TWR, and my multimedia teacher and I concluded that it would be better for us to only render the animation on the HP Elite Desk 800 G3TWR and possibly the HP Omen 17C-CB0062TX.

The results of the render farm showed that there was an issue with the Freestyle component that came into effect at the second frame. I believe that something has occurred in this frame that has caused the data of the mesh to become corrupt, thereby causing the Freestyle to cover the entire frame. The issue may also be caused by the volumetric. To test these hypotheses, I decided to remove the Freestyle and the volumetric before beginning to render the same frames. The results showed that the second frame would produce a dead frame when rendered. I then began to re-render the animation with Freestyle enabled, the volumetric still removed, and the frames beginning at frame three and ending at frame 75. Before I started to render, I set the framerate to 15fps. As each frame in the forest scene takes an hour to render, and there are 72 frames in the shot ($9 * 8 = 72$ frames for two bars of the song), the shot will take 3 days to render on the school's HP Elite Desk 800 G3TWR. Whilst this was rendering on the school's desktop, I began to adjust the Dimension and Output settings in the Output Properties tab of every scene.



I am glad to the scenes truly come to life. I am now comfortable with the amount of detail in each scene. I only need to apply finishing touches to each scene in order to complete the 3D animations for the project.



Term 1, Week 5

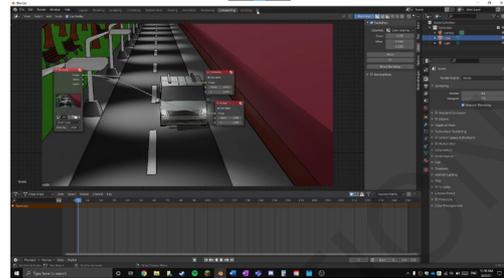
Min.



I began to experiment with different ways of exporting footage with Adobe Media Encoder and Blender. I did this by exporting the rendered PNG image sequence from the forest scene with different formats such as H.264, AVI, GIF, and MPEG2. H.264 produced an accessible video file that had noticeable reduction in quality. AVI produced a less accessible video file with reduction in resolution. GIF and MPEG2 produced a reduction in quality that was unusable. H.264 seemed to be the best result, however I wanted to achieve complete lossless footage.

90

My classmate Cameron Youell showed me how to compile an image sequence using Blender and have it render a completely lossless and accessible AVI video. With his assistance, I opened a new Blender file and went to the Compositing viewport before enabling 'Use Nodes'. The Render Layers node was replaced with a Movie Clip node, in which the image sequence was imported into. A viewer node was added to help debug any issue with the compositing. This helped find the issue that the Movie Clip was stuck on the first frame of the image sequence. To solve this, I dragged the image sequence from its file location into the Compositing viewport and replaced the Movie Clip node with the new image sequence node. The Motion Capture viewport was used to debug the image sequence, as I opened the image sequence and selected 'Reload', 'Set Scene Frames', and 'Prefetch'. This solved the main issue. I then replaced the image sequence node in the Compositing viewport with the original Movie Clip node before setting the resolution to 4k, the file format to AVI, the output file to the desired location, and the fps to 15.



By the end of this week, I have set aside the audio and have begun focusing on the animation of the project, as my teacher and I are both satisfied with the quality of the audio and believe that there is no need to improve upon it. Despite meeting the timeline plan's guidelines, I am concerned that I will need more time for animating.

Term 1, Week 7

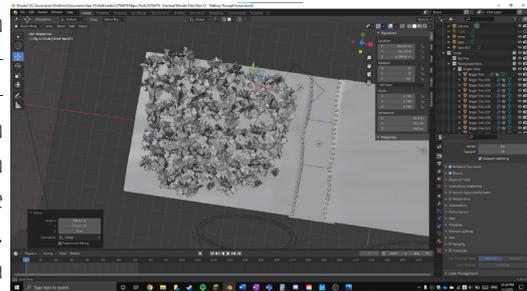
Min.



I began to add doors and windows to the house of the home scene as well as matching doors to the restaurant and bathroom, as these are the same door. This was done through adding various cube meshes that were moved and scale to create the desired shapes of the doors and windows. The window in the home scene seemed to appear jagged when rendered, and I was unable to find a solution to this problem.

70

I began creating the generic forest for the scene in which the character walks through the forest. I did this by copying the Blender file of the original forest scene and deleting the big tree. The trees around the forest were then reorganised by moving them out of the forest and then moving them back in in the correct position (this was done from the top-z view to allow for a full view of the trees). This was done as in the original forest scene, there is a large gap in the trees so that big tree can be seen. I then began to render an image to see how long it would take, however it was unable to finish rendering before I had to shut down my computer.



After making edits to the home and forest scene, I am starting to realise the issues that need to be resolved for each of the scenes in order to create a high-quality animation. I believe I may need to remodel the home scene and reduce the size of the forest scene to decrease render times.

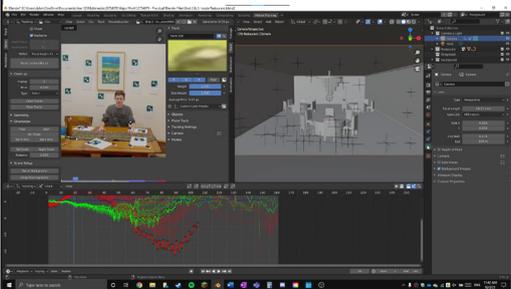


A new Adobe Audition multitrack session was created and titled 'Foley'. 3 5.1 audio tracks were then added and titled 'Distant Music', 'Traffic', and 'Restaurant', as I plan to record foley of these three sources. I experimented with creating distant music by importing a song that I had created for my school's promotional video and applying a parametric equalizer to the track that cuts out all frequencies above roughly 1000Hz. This creates a sense of distance as bass frequencies are able to travel further distances whilst retaining their amplitude due to their longer wavelengths.

60



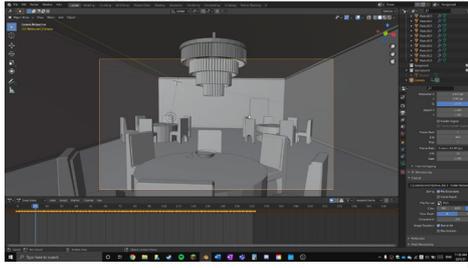
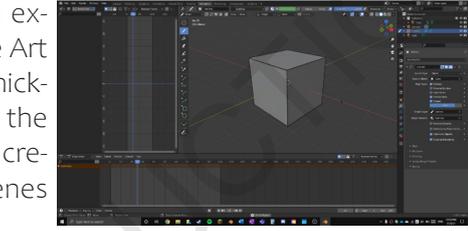
This week, I began to film and track the inside restaurant scene. After printing off tracking markers and setting 14 of them up around my dining room, I sat at my dining table as Bettina Celia filmed the shot with my iPhone 6s Plus at 30fps with a 4k resolution. Having this shot taken by a cameraman creates dynamic movement in the scene, adding a sense of realism to the shot. Other shots that were taken today were filmed with a still iPhone holder.



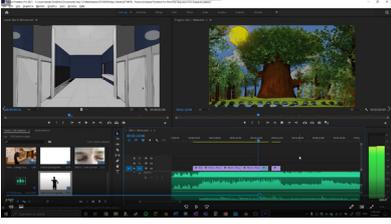
The captured footage was emailed to my school email account and imported into the corresponding Blender files. A motion tracking workspace was added to the Blender file where the video was imported. 'Set Scene Frames' was selected to match the frames of the video the Blender file, and the video was prefetched and reloaded to increase the efficiency of the motion tracking. I attempted to detect the features of the video automatically with keyframes of location, rotation, and scale, with a correlation of 0.9, however this was unsuccessful at producing a smooth motion track. I then opted to manually add in each tracking marker, with prepass and normalize enabled, before automatically tracking each of the manually added in tracking markers. Each time the tracking marker would disable, I would move it slightly and resume the automatic tracking. Perspective tracking markers were added in for the markers that were on the table, as having a variety of tracking markers will produce a more stable motion track. Once there was a sufficient number of enabled tracking markers in each frame, I set up the tracking markers in the scene and I attempted to solve for the camera motion. Once this was complete, I adjusted the objects in the scene to accommodate for the location of the camera, as the motion tracking caused the camera to flip upside down.

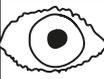


After filming and motion tracking my first shot, I have realised how long it is going to take to film and motion track each of the scenes, increasing the amount of time required to spend on this portion of the project compared to what is stated in the timeline plan. I am however, very pleased with the quality of the dynamic shot and believe that this method will produce a highly satisfying product.

Term 1, Week 9	Min.
<p> Within the motion tracked Blender files, I converted the camera motion into individual key-frames by selecting 'Constraint to F-Curve' under the 'Object Constraint Properties' tab in the camera object, allowing me to visualise the motion of the camera on a graph and make necessary adjustments.</p> <p> I also began experimenting with the alpha version of Blender 2.93.0 as this version of Blender features a grease pencil that achieves the same stylistic outlines as Freestyle but requires less RAM and less processing power to render, as the grease pencil only renders objects that are in frame and can utilise the GPU when rendering. The YouTube tutorial titled 'Grease Pencil – Line Art Modifier in Blender 2.93 Alpha', uploaded by 'Paul O Caggegi', demonstrated how to add a grease pencil, how to add a material/layer, how to use the Line Art modifier, and how to apply the grease pencil to different objects/collections. As I experimented with the material of the grease pencil and the Line Art modifier, I was able to determine how to change the colour, thickness, and add a Noise modifier to the grease pencil to replicate the Noise modifier of the Freestyle. Overall, this new process of creating outlines will speed up the process of rendering large scenes such as the forest scenes, saving time and processing power.</p>	<p data-bbox="1374 163 1465 208">50</p>  
<p> After experimenting with the alpha version of Blender 2.93.0, I believe that I will be able to significantly decrease the render times for certain scenes and increase the workflow of shading, as I will no longer need to render an image to view the outlines since the Grease Pencil is viewable in the viewport of Blender. This will save a lot of time, which I am very happy with.</p>	

Holidays, Weeks 1 & 2 w/ Term 2, Week 1	Min.
<p> After filming the still shot of the character walking into the bathroom, I was able to adjust the camera in the corresponding Blender file so that the door and the bathroom would match the position of the door and the room in the footage through using camera view mode and keeping the video as a background in the camera. Measurements were taken of the door in real life to ensure that the door in Blender was the correct size. When filming the shot of the character falling out of the window, I had set up a mattress to fall onto to prevent injury as I fell out of the window. The shots of the character lying on the floor were taken by tying my phone to support beams that went across the ceiling of a room. This was done as it was the only available method of achieving the shot.</p> <p> Adobe Animate files were created for rotoscoping, with each file set to 4k resolution with 15fps. Adobe Animate was used for rotoscoping as it utilises vector-based animations which I find are easier to work with and produce cleaner animations. Once I had created two layers in the Animate files, called 'Reference' and 'Character', I followed the tutorial on YouTube titled 'Rotoscoping using Adobe Animate' uploaded by CyberdogStudios in order to import the footage into the Animate files. I then began to rotoscope over my movements whilst refereeing to the character models at all times. Before the videos were imported in Animate, Adobe Media Encoder was used to convert to footage from 30fps to 15fps in order to match the animation. This was very successful as Media Encoder changes the framerate of a video by removing frames instead of retaining the frames and lengthening the duration of the video. This meant that my movements were not slowed down in the footage.</p>	<p data-bbox="1374 1097 1465 1142">1080</p>  
<p> I have now realised the sheer amount of time required for producing a clean rotoscoped animation. This will change the course of the timeline plan as I will now have to spend more time on this portion of the project. Despite this, I am pleased with the nature of rotocoping, as it is a simple task that I am able to complete in long segments of time whilst focusing on other things simultaneously.</p>	

Term 2, Week 2	Min.
<p> This week, I began to create an Adobe Premiere Pro file that compiled all of the assets created for the project into the most complete version of the final video that I am able to make. This was done to highlight areas of the video that need to be worked on in order to fully complete the video. After importing all of the available videos, image sequences, and audio into the Premiere Pro workspace, and modifying all of the image sequences to be 15 fps, I dragged each asset into the video workspace to create the most complete version of the video possible. The video was then exported using Adobe Media Encoder, set to the default H.264 format settings with the preset 'Match Bitrate – High bitrate'.</p> 	280
<p> Before beginning the compiling stages of the project, I thought of this process as merely dragging the footage into the Adobe Premiere Pro file sequentially and selecting export. Now that I have begun this process I have realised the techniques that go into this post-production process. Now that I have compiled this footage, I can see where each flaw in the animation is and the edits that I am required to make.</p>	

Term 2, Week 3	Min.
<p> As I was rotoscoping over the footage of myself in Adobe Animate, I realised that it was difficult to see what I was rotoscoping as the black shirt that I was wearing in the footage provided minimal contrast to the colour of the character, making it hard to distinguish myself from the lines of the character. To solve this, I began rotoscoping the character with the colour white to provide maximum contrast between myself and the character. Once I had stopped rotoscoping, I would then select each frame in the 'Character' layer that was white and change the 'Fill' to black.</p> <p>As I was rotoscoping, I realised that this shot required the character to open his mouth and eat soup, meaning that the mouth had to be a visible aspect of the character (something that is not a part of the character design in other shots). To solve this, I began by drawing the mouth of the character in the frames where I am pretending to drink the soup from the spoon. I did this by drawing a mouth that extends from my ear, over my mouth, and to my other ear, as this was how I achieved the character's uncanny large grin when creating the character models. This allowed me to draw around the mouth instead of over the mouth in these shots so that the mouth would appear to be truly open. In other shots of the animation, I rotoscope as normal and created a new layer in which the mouth will be drawn. This was done so that if I later decided to remove the mouth when it is not open, I could simply hide the layer of the mouth.</p>	170
<p> After fully compiling the assets of the shot of myself eating soup, I copied the Blender file of the restaurant scene and removed the previously motion tracked video as well as the keyframes of the camera from the scene. The footage taken of myself pretending to eat from the bowl of soup was then imported into the Blender file as the source of the movie clip for the background image of the camera. The depth of this footage was set to front, and the opacity was set below 0.5, allowing me to view the video through the lens of the camera whilst being able to view the scene of the restaurant behind this. Using this, I was able to align the 3D modelled restaurant with the table and bowl of soup in the video, allowing me to eventually export the animations from the respective Blender and Adobe Animate files and compile them in Adobe Premiere to create a complete shot.</p> 	
<p> Despite having a few minor hiccups in the rotoscoping process, I was able to work successfully on multiple different shots. Creating the scene of the character eating soup allowed me to finish a relatively large aspect of the storyboard in a short amount of time. After this week, I am beginning to see my skills develop as my efficiency increases.</p>	

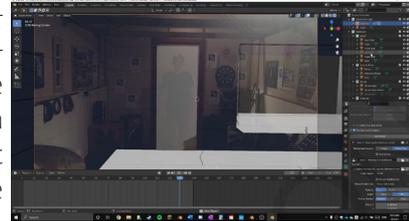
Term 2, Week 4

Min.

 In order to export the Adobe Animate animation as a transparent image sequence, I selected 'Export Movie' which exports the animation as an image sequence, and then set the format to PNG which automatically creates transparent backgrounds. Doing this allowed for each frame to be rendered independently at maximum resolution with transparency, decreasing the loss of footage if the rendering process were to fail, increase the image quality, and allowing for ease of use when compiling footage.

165

 To create the animation of the door opening in the bathroom, I used the footage of the door opening as a reference to manually create individual rotation keyframes in the door. Before I began this process, I had to set the origin of the door the centre of the right face of the door, so that the door would rotate around where there are hinges in the door in the footage. Once I had set four keyframes in place, I set the interpolation of the keyframes to a linear gradient to reflect the sudden changes in motion of the door in the footage. The resulting animation of the door was highly satisfying.



 After setting up the grease pencil with the Line Art modifier in the forest scene, I was unable to see the effect of the grease pencil. I soon noticed that this was because the scale of the objects was so large the grease pencil was practically inconceivable when viewed through the lens. Unlike Freestyle, the thickness of the grease pencil is not absolute but depends on the object's displacement from the camera. I tried to increase the thickness of the grease pencil but was unable to increase it to a satisfactory degree. The only solution to this problem was to downscale the entire scene. Downscaling the scene gave me greater control over the lighting and the grease pencil, as well as decreasing render times from an hour per frame to a few minutes per frame. To downscale the scene, I simply selected all objects, selected 'S' to scale the objects, and entered '0.1' to downscale to objects by a factor of 10. This was done multiple times until the scene was scaled down to the size of a few metres. Once the scene was downscaled, I decreased the power of each light drastically until the lighting of the scene matched as closely as possible to the previous lighting.



 This week exhibited many examples of problem solving, as I managed to export the 2D animations with transparent backgrounds, manually track the motion of the opening door to create a clean animation that blends the 2D and 3D aspects of the project together, as well as decrease the render times of the large forest scene through the incorporation of the Grease Pencil. I am noticing that my efficiency and understanding of these processes is further increasing.

Term 2, Week 5

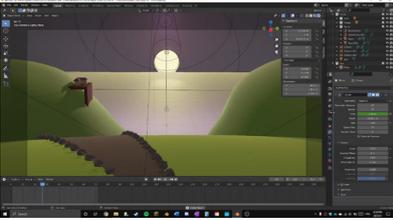
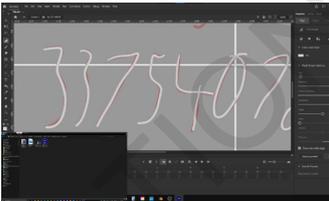
Min.

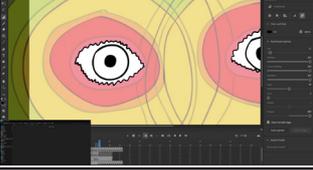
 Because the rocks in the forest had become disproportionate in scale once they had been scaled down, I adjusted the scale of all the rocks (with Individual Origins selected so that the rocks would not move but simply be scaled down) and then set the scale of all of the objects.

150

 Once this was complete, I began to rotoscope an extreme close up shot of me opening my eyes. This took me a while to complete to a satisfactory degree as I was required to add extra detail to the eyes to make them appear more realistic. The footage was taken on a slight angle, meaning that I had to compensate for this by rotating the video graphic in the Animate file until the eyes were level with the frame. In order to be more consistent with my drawings of the eyes, I decided to use onion skinning so that the previous frames of the animation would be visible to trace over.

 This week exhibited the first instance of purely organic 2D animation. Although it was a very simple animation of the character's eyes and face, I am happy to see myself utilise the intended software to its fullest extent and to see my skills further develop.

Term 2, Week 6	Min.
 <p>An Ocean modifier was used to create an ocean in the home scene in Blender. Adjusting the time, depth, and size parameters allowed me to create dynamic waves in the animation, however I was somewhat unsatisfied with the displacement of the horizon. To solve this, I attempted to create waves using the Wave modifier, however these waves did not appear natural. I was unable to produce a satisfactory ocean animation.</p>	 <p>1,100</p>
 <p>After creating a new Adobe Animate file with for the title sequence and adding in four layers, I filled the background layer with a grey rectangle and drew two light grey lines that went down and across the middle of the frame to guide the location of the title. I then wrote 'Dissociate' on the title layer and created a symbol out of the writing. Within the symbol, I used onion skinning to write the same word with the same handwriting in the same location, with very slight variations to make the title appear animated. Once I had drawn 9 frames, I began copying frames so that the symbol would revert back to its original shape naturally, like a boomerang animation. This also saved time in the animation process. I set the symbol to loop for 72 frames (2 bars of the song).</p>	
 <p>I then began to work on the inside restaurant scene, as I noticed that the protagonist was overlapping the bowl that was in front of him in the shot. I began by simply erasing the parts of the protagonist that overlapped the bowl in the Adobe Animate file, before realising that I would simply be able to hide all of the objects within the Blender scene besides the bowl, set the background to transparent, and compile the rendered footage of the bowl a layer above the protagonist and the scene. This solved the issue in a very efficient manner.</p>	
 <p>I then attempted to track the footage of myself climbing through a window using the previous method of motion tracking, however this was unsuccessful in producing a smooth camera movement as there a lack of useable tracking markers in the shot. I have yet to find a solution to this problem.</p>	
 <p>Creating the ocean in the home scene and the title sequence, as well as solving the compiling issues, has allowed me to extend myself in my production skills as I explore further into the features of the intended software. Solving these problems has allowed me to gain a greater understanding of the production process.</p>	

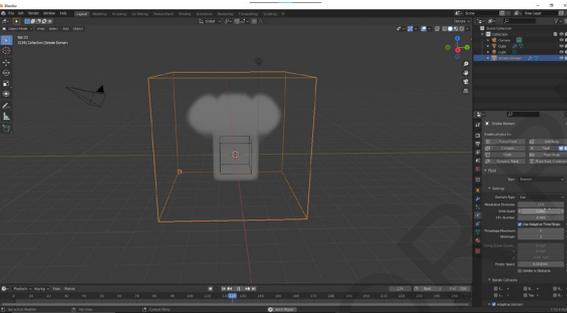
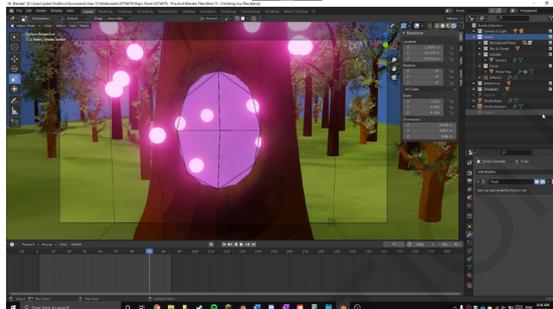
Term 2, Week 7	Min.
 <p>To create a hypnotized effect in the protagonist in an extreme close up shot, I decided to animate brightly coloured circles around the protagonist's eyes in the Adobe Animate file, with the circles caving into the eyes. This process involved drawing circles around the eyes, and with onion-skinning as a reference, drawing the same circles with a larger radius in the previous frame. The other shots were animated in the same manner as previous shots.</p>	 <p>320</p>
 <p>This week, I was able to further develop my organic 2D animation skills through the use of onion skinning in Adobe Animate. The efficiency of my skills have increased significantly over the course of the production process. The variation of style in this shot has allowed me to think creatively to produce a unique desired effect in the animation.</p>	



I attempted to manually create the motion of the camera for the portal shot as the motion tracking was unsuccessful. This involved adding the filmed footage that was used for rotoscoping as an image in the camera, deciphering which frames were used in the rotoscoping, and aligning the captured movements with the portal through adjusting the location of the camera between frames with keyframes. This method will require more refining in order to produce a satisfactory result.



I then began to experiment with particle simulations within Blender in order to produce a dynamic portal. In a new Blender file, a particle system was added to the default cube with the particle type set to 'Emitter'. Adjusting the number, lifetime, velocity, physics settings, and field weights, as well as experimenting with various force fields, gave me a deeper understanding of the methods used to control particle simulations. With this knowledge, I applied an emitting particle system to the portal tree, using a vertex group with weight paint to restrict the origin of the particle system to the face of the portal. Once a basic simulation of the particle spurring out of the portal had been created, I decided to apply an object to the particle system. A sphere mesh was added and selected as the rendered object for the particles. In an attempt to make the particles a gas, I replaced the Principle BSDF node within the sphere's material with a Principled Volume node which outputted to 'Volume' of the material output. To make the particles glow, I added in an Emission node, changing the colour to purple and the strength to 100. Further experimenting with the velocity of the particles, I added in a vortex force field that caused the particles to swirl around the portal. This produced a satisfactory effect.



I attempted to create a smoke simulation in the portal to create a desired mystical effect. Following the YouTube tutorial '[2.82] Blender Tutorial: Quick Smoke for Beginners, Mantaflow', Quick Smoke was added to a cube in a new Blender file. Through adjusting the scale, resolution, and other parameters, as well as baking the simulation, I was able to produce a satisfactory smoke simulation. Replicating this simulation in the forest scene and having the smoke come out of

the portal was a challenge, however I was able to complete this to a somewhat satisfactory degree through following the same steps.

Through attempting to adjust the colour, scale, and velocity of the smoke simulation, I decided to remove the simulation from the scene as it was unable to produce a satisfactory result. I spent today attempting to find a way to render the portal scene with the base of the portal left blank. The Render Layers node in the Compositing viewport was duplicated and connected to the Viewer node via various Alpha Over, Separate RGBA, Combine RGBA, Cryptomatte, and Math nodes in an attempt to separate the background image with the alpha channel created via the portal, however this was unsuccessful.

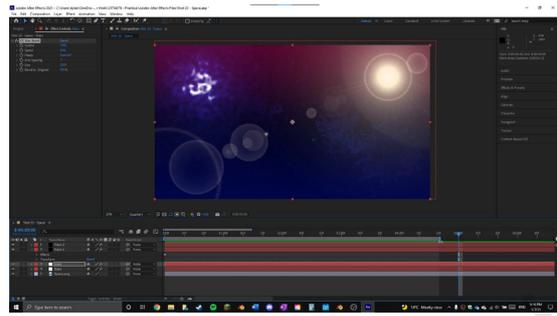


This week has exhibited a grand development in skills as I have begun working on the simulations of the project. This is the first time utilising this technique. My skills in 3D modelling with Blender have proved to be useful when creating these simulations as a lot of similar concepts of applying various modifications to certain objects is involved in creating simulations.

Holidays, Week 1

Min.

 Today I began creating the space scene within Adobe After Effects. Through following the YouTube tutorial 'Create Space Universe Scene in After Effects | Tutorial' uploaded by Sonduckfilm, I created a new After Effects composition and used the CC Starburst effect, Lens Flare effect, Tritone colour correction, and Turbulent Displace effect to create a space scene. Adjusting the parameters of the simulations and adding keyframes to different components allowed me to create a dynamic scene of high quality. The gradient tool within Adobe Photoshop was used to create the colourful background of the space scene.



225

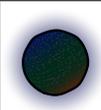
 Through following the YouTube tutorial titled 'Create Cinematic Planets in Blender – Iridesium', I used icospheres and imported image textures to 3D model the Earth and the moon in a new Blender scene. Through duplicating the sphere and adjusting the image textures with the Principle BSDF node, I was able to create a realistic planet with clouds and an atmosphere. The planet was copied to create a moon, and the lighting in the tutorial was copied with multiple spotlights lighting up the scene. Enabling Freestyle, adding location keyframes to the camera, and setting the world to a transparent background, allowed me to render the scene and compile it with a copied space scene to create the full planet shot.



 Further skills in creating simulations have been developed throughout this week through creating 2D simulations of space in Adobe After Effects. I have had very little prior experience with After Effects, so this week has shown a dramatic increase in abilities in this field. I have also developed skills in compiling and planning shots as I only decided to model the planets once I noticed the gap in the storyboard.

Holidays, Week 2

Min.

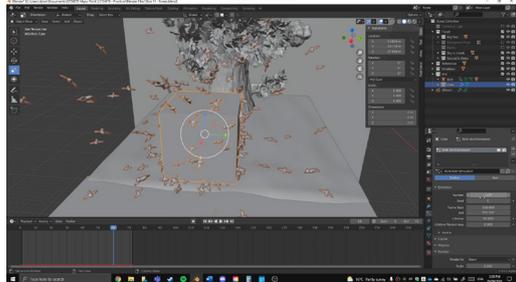
 After completely updating the final sequence Adobe Premiere Pro file, I went back and rendered all of the shots that were required to fill in the blank spaces. After finalising and setting up each of these shots for rendering, I followed the YouTube tutorial titled 'How To Batch Render Multiple Blender Files (I'm Not Dead)' to batch render each of the Blender files. After creating the BAT file with the necessary coding, I began rendering the scenes. The scenes that required external images for textures failed to load the images, resulting in pink textures. To solve this, I simply rendered these scenes within the Blender files.

300

Through attempting to find a way to render the final sequence Adobe Premiere Pro file into a lossless video file at 4k through Adobe Media Encoder, I exported the video as an H.264 file, an uncompressed AVI file, and an H.265 file. The results for the H.264 and AVI were the same as before, although the H.265 showed some improvement in quality. Increasing the target bitrate of the video showed minor difference in quality although doubled the video size.

 I have again further developed my skills with 3D modelling and compiling through my experimentation with batch rendering. This process has allowed me to save time whilst completing other aspects of the project and other schoolwork. Through exporting the final video with various file formats, I have been able to make a more informed decision regarding the overall quality of each format, balancing video quality with file size and playability. Since the video is compiled using lossless 4k PNG image sequences, I have decided to render the video as an H.264 file to decrease file sizes whilst retaining most of the image quality. This way, the video will be accessible by the target audience, although despite the compression, the video still contains a relatively large file size of 300MB.

Term 3, Week 4	Min.
<p data-bbox="129 174 236 302">  </p> <p data-bbox="236 174 1369 660"> In order to create an industry standard project, the animation required foley to create a sense of realism. In order to record this, I used the school's Zoom H5 Handy Recorder and went out in public to record the environments that are shown in the project. After adjusting the input gain of the microphones, setting up the windscreen on the microphones, and finding a suitable spot for recording the foley, I recorded the audio onto the SD card in the microphone. Doing this increased mobility when recording, as I did not need to carry around my computer to save the audio onto a local folder. My laptop luckily has an SC card slot which was used to transfer the audio files from the Zoom microphone to the project folder. Audio of the beach, traffic, birds in nature, cutlery, doors being shut, and breaths, were all recorded with the Zoom microphone and used as foley in the project. </p>  <p data-bbox="129 696 1369 801"> To create extra foley in the restaurant scene, I created distant music in the background by taking an audio file that I had created for the school's promotional video, putting a low-pass filter on the high-end and mids, and keyframing the level of the audio in Adobe Premiere Pro to match the animation. </p>	<p data-bbox="1374 174 1465 203">210</p>
<p data-bbox="129 808 236 949">  </p> <p data-bbox="236 808 1465 949"> Recording this foley has added an incredible sense of realism to the project, and the animation is starting to reach an industry standard level. Once I complete the missing aspects of the visual animation, the project will be complete, and I will be able to add things to the project that are not necessary for the animation to be complete (i.e., Easter eggs). </p>	

Term 3, Week 4	Min.
<p data-bbox="129 1037 236 1142">  </p> <p data-bbox="236 1037 1369 1599"> To add extra detail to the project, I decided to create a Boid simulation of birds flying through the forest. This will match the recorded foley of the nature sounds used in this shot, as the audio features the noises of birds chirping. To begin creating the simulation, I had to first model, texture, rig, and animate a single bird. An icosphere was used to model the head as this mesh appears more organic than a regular sphere mesh. The sculpting workspace was used to add minute details to the head, such as the eyes and the beak. Another icosphere was then used to model the body, with the sculpting workspace being used to model the wings. An armature was then added and joined to the bird's mesh. Within edit mode, I extruded each of the bones of the bird through the bird's body, head, and wings, allowing me to animate its natural movements. The bones were then keyframed in the animation workspace, changing the rotation of the bones in the wings to create a looped animation of the bird flapping its wings. I selected all of the keyframes and changed the interpolation mode to quadratic to make the movements appear more natural. </p>  <p data-bbox="129 1635 1369 1912"> An emitter particle system was then added to a cube mesh, with the render object set to the bird and physics type set to Boids. Adjusting the render scale and enabling object rotation allowed me to control the scale and rotation of the birds. Within the Boid Brain, I added the rules (in this order) Avoid, Goal, Separate, and Flock. This caused the birds in the simulation to prioritise these rules in the given order. The Avoid object was set to the large tree to prevent the birds from flying towards the mesh. The Goal object was set to the sky in the background to cause the birds to fly towards the sunset. The Separate and Flock rules were used to keep the birds in a group, as this is how they would behave in nature. </p>	<p data-bbox="1374 1037 1465 1066">300</p>
<p data-bbox="129 1921 1465 2096"> After utilising Boid simulations in the project, I have finally utilised every single technique that I set out to use. Although my project is now ready to submit, I am going to continue working on this project until the due date to increase its potential as much as possible. I will make many backups of the entire major work on an external hard drive, on Google Drive, on OneDrive, and on my local SSD to ensure that the project is not lost, no matter what goes wrong. </p>	