For this scene, I have established a mapping of 1.0 OpenGL unit = 1 metre. This scale allows for intuitive placement and size of objects in the scene. Using a metric unit simplifies calculations and as someone who uses the metric system in everyday life, it is easier to use. Additionally, for animation and movement, velocity can be thought of as x metres per second.

**17/09/2024, 4 - 6pm**

**To Do**: Set up project

**Work Done**: Set up the ground with colouring applied. Ensure it can switch between filled and wireframe. I did have trouble getting the project working but was able to consult my previous project to add the missing lines that I forgot were needed.

A screen shot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

**24/09/2024, 4 - 6pm**

**To Do**: Create Helicopter

**Work Done**: Created helicopter model with rotors spinning on up button press. I used cubes and spheres to create the basic shapes and scaled them to better look like the part of the helicopter they represent. The tail cap will need to be added next time. Additionally, while the rotors do speed up, this logic will likely need to be replaced as I implement the helicopter control and tracking camera.

A red helicopter with yellow blades

Description automatically generated

**03/10/2024, 2 - 3:30pm**

**To Do**: Helicopter control

**Work Done**: Added the missing tail cap. Set up helicopter movement by creating a variable to keep track of the location. I had a little trouble ensuring that the movement always occurred in the direction expected once the helicopter had been rotated but applied trig to solve this. I also set up camera tracking so it follows the helicopter from behind. I also had a little trouble this as I needed to ensure that the camera and helicopter rotated as one. I solved this by reordering a few lines. I also had the rotors stop spinning when the play touches the ground. The helicopter must also stay above ground. The user can also not take off until the rotors reach max rpm.

A red helicopter with yellow and black wings

Description automatically generated with medium confidence

**15/10/2024, 4 - 5pm**

**To Do**: Lighting

**Work Done**: Increased the size of the ground plane. Added a spotlight to the helicopter and animate it so it moves when the helicopter moves. Also replaced the global lighting (directional lighting). This might need further work as I’m unsure how much this new lighting system affects the world.

A screenshot of a video game

Description automatically generated

**18/10/2024, 10am – 4pm**

**To Do**: Textures

**Work Done**: I did some research to ensure that my helicopter followed the scale I set of 1.0 GL Unit = 1 metre. This included changing the rotor RPM to what most helicopters operate at with the main and tail rotors having a different speed and how fast the helicopter moves. Also because the template needs the variable in a ‘per second’, I needed to adjust the RPM value to be revolutions per second.

A satellite flying in the sky

Description automatically generated with medium confidenceNext I found a texture for the ground but it was in .png format so I opened up a sandbox and after playing around with the settings, managed to export a .ppm file that would work. I did have some trouble applying it so I used the createTexture function to put a random noise texture on the ground. From here, I was able to modify the function to have it read from the file and convert the data into a texture.

