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Tumblin

EECS 351

Project B: Episode 2: Escape from the Imperial Outpost!!

Goals:

You are defecting from the Galactic Empire to join the Rebellion! Unfortunately, for now you are stranded in the middle of an Imperial Outpost right in the heart of a small city. It is your mission to find a vehicle you can pilot and escape!

In the meanwhile, the Rebellion has sent you a ZIP package with valuable information regarding your escape. It is stated on the box that this package features a simulation program that features the ability to move a camera around, and display things using multiple viewports.

But beware! The outpost you are at is home to huge rotating turbolaser turrets, as well as a roaming multi-armed Viper Probe Droid. There are also multiple towering skyscrapers with rotating roofs. Be on the lookout though, there may still be a few unattended Imperial shuttles laying around.

Mission Objectives (User's Guide):

1. Initiate your defection. (Opening the Program)

To make contact with the rebellion and start your escape, we have delivered to you a secret program in HTML, a file format that will be developed a long time later in a galaxy far far away (don't ask how we found this format, that's confidential Rebel intelligence). Simply **click** on the HTML file labeled "ZhaoLuoLei_projA.html". You will see two screens with a Perspective and Orthographic projection (Figure 1). This is a resizable window, but maintains its proportions when you drag and resize the window (Figure 2) making it perfect for portable ops

2. Escape the base (Moving and looking around the world)

All movement functionalities are made with the keyboard. To move around the base, simply use the **W,A,S** and **D** keys. The **W** and **S** keys will make you walk forwards and backwards, while the **S** and **D** keys will make you strafe. You need to keep quiet, so you will only be walking slowly in this mission. To survey your surroundings by looking around. You can use the **arrow keys**. In addition, we have sent you a jetpack that allows you to float with the **R** button and descend with the **F** button. Don't worry though. It's a very quiet and stealthy jetpack. It can even go underground with its stealthy giga-drill. All instructions are written underneath the Canvas screen, in case you forget.

3. Manipulate the Tetrahedral Power crystal! (Quaternion rotations)

Rumors state that the Empire is keeping a tetrahedral power crystal in the base. We believe this crystal is powering their Death Star super-laser and will require you to investigate it.

Surveillance state that the Crystal can be easily found behind an Imperial Probe Droid. Upon reaching the crystal, you can move it around using the mouse. Simply **Click and Drag** to move the crystal around (Figure 3). It is stated that this mystical rotation is powered through the power of quaternions. Also be sure to take note of its intricate lighting while you are at it (this information will prove vital to the rebellion).

4. Use your Airplane to fly to safety (Activating Airplane mode)

We have giving you a deployable airplane to make your stealthy escape even more covert!

To activate Airplane mode, simply press the **space** button. This will keep you moving forwards at a constant velocity. You can still adjust your direction to make you continue moving in that direction. In addition, you can speed up or slow down within a limited range using the **W and S** buttons. You can also slightly roll using the **A and D** buttons.

Results:

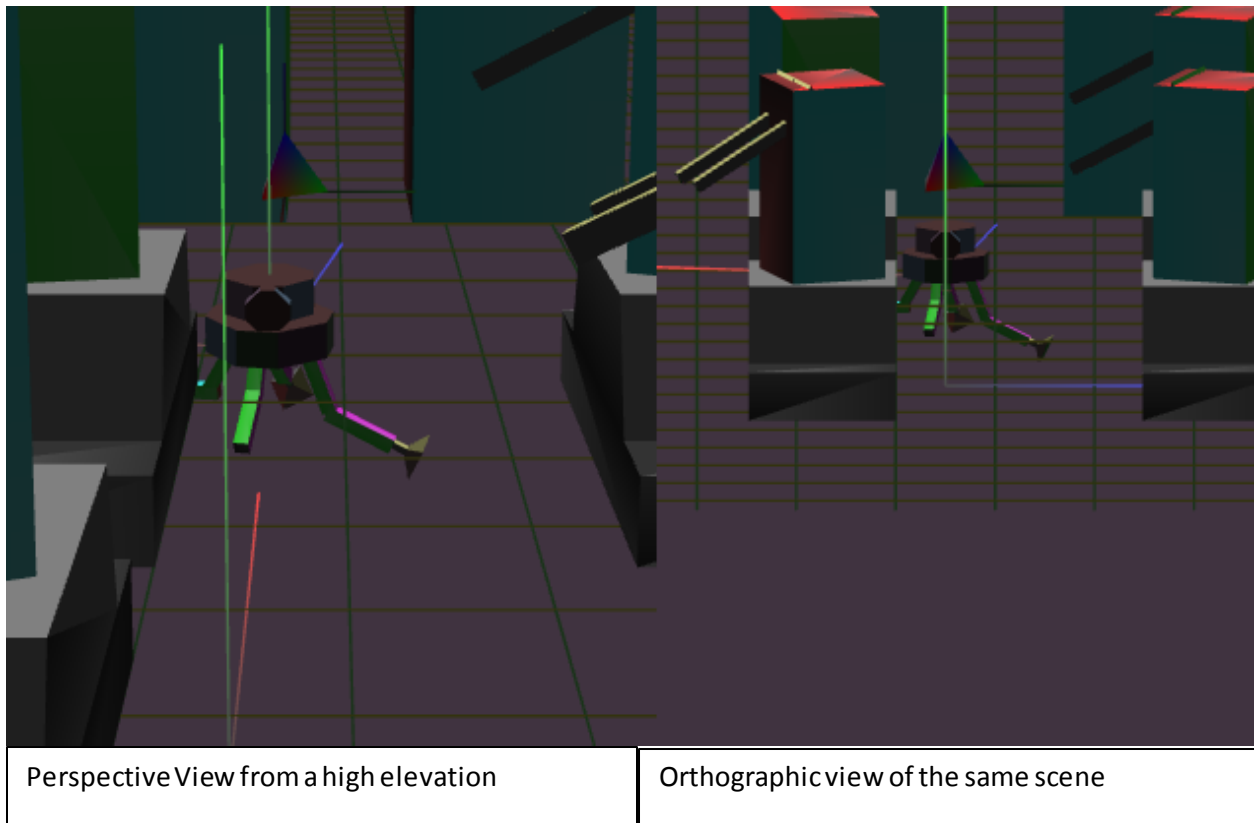


Figure 1: An overview of the two views of the world.

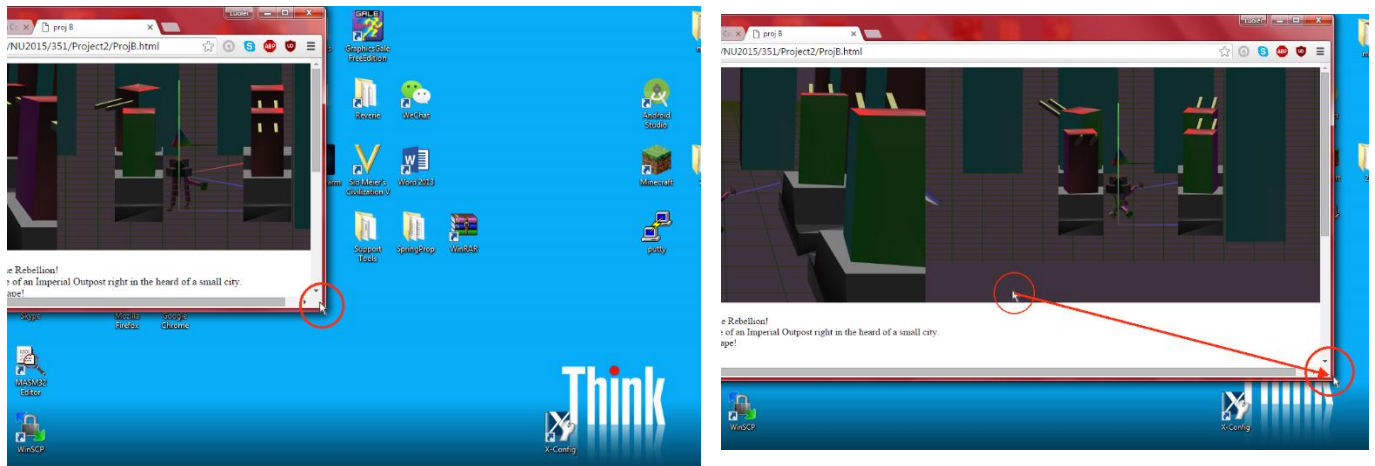


Figure 2: Example of using the screen resize functionality to enlarge and decrease the image by readjusting the browser window.

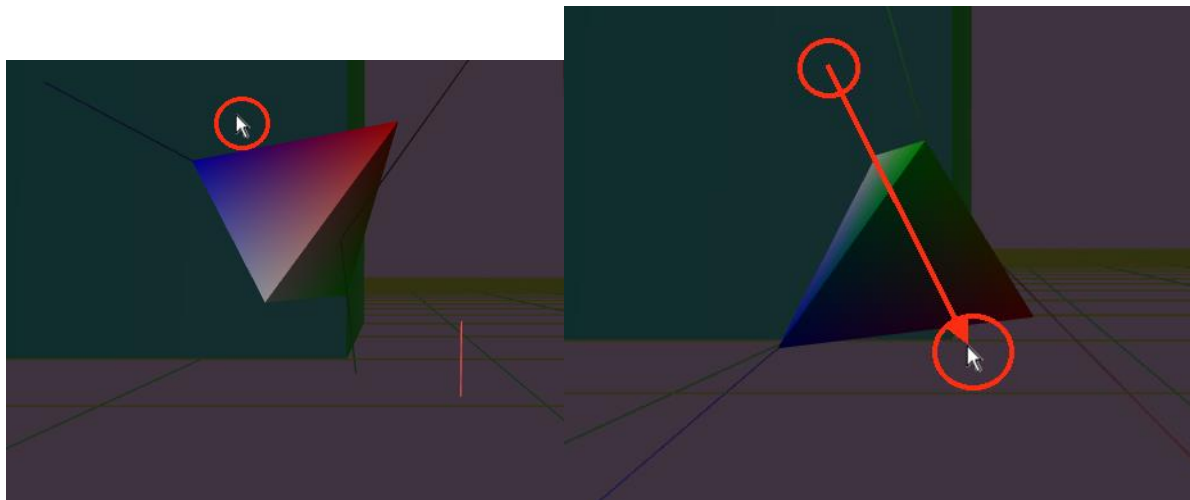


Figure 3: Example of using the drag functionality to move the rotate the Tetrahedron to a different orientation and get a different view of the object.

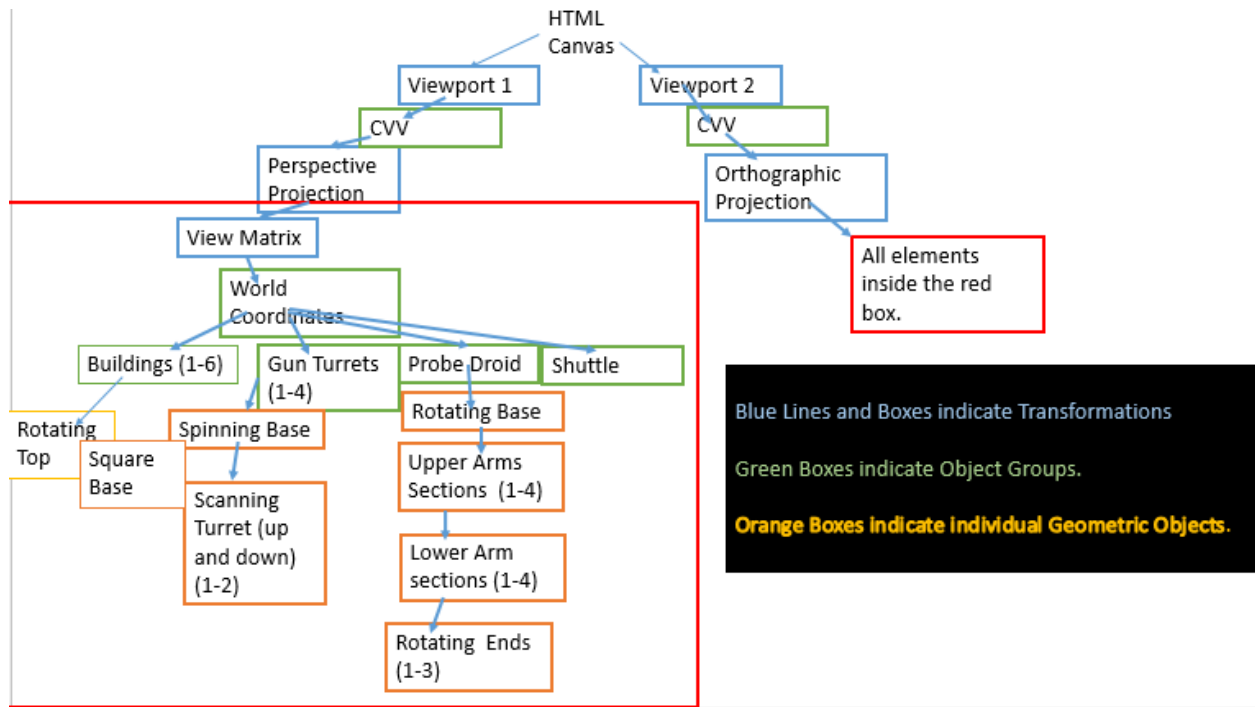


Figure 4: Scene graph of the project. Note, there are many duplicate objects that are virtually identical. Redundant objects are excluded, but the number of them is noted in the format (1-#).