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Module 7: Final Project

CS 330 Comp Graphic and Visualization

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Reflection: Design Decision

My scene is mimicking the Liberty Shrine in Mactan, Cebu. I implemented the core objects which was the monument itself, the bushes around the monument, the sky and the ground. For the monument, I used four boxes varying is dimensions stacking on top of each other to make the monument. I added a prism at the top, although, it is bigger than I intended to finish off the monument. A torus was used to make the bushes around the monument and two planes, one for the sky and the other for the ground. I was able to find suitable textures to mimic the scene. For the monument, I found a stone-like texture with a smooth brown-ish color. For the bushes, I found a leaf texture. However, it became more stretched out than intended making it look unnatural but still recognizable as a bush. Then for the sky, I used a photo of a nice blue sky with clouds indicating that it is a nice day outside. For the ground, I found a light brown ground texture. In order to load these textures, the function LoadSceneTextures() was created. Then, this was called in the RenderScene() method with its corresponding objects. To mimic the midday sun lighting, I used a combination of ambient, diffuse, and specular lighting incorporating different angles and tones. The functions DefineObjectMaterials() was used to define the different parameters in terms of lighting while the SetUpSceneLights() function was used to define the different light sources for the whole scene. The main lighting was the sunlight so this was configured to be angled at 30-45 degrees above the horizon with a yellowish sunlight tone. Three other light source was used to make the lighting more realistic.

To navigate the scene, the user can use WASD keys to move around. W to move forward, A to move left, S to move backwards, and D to move right. The Q and E keys can be used to change the viewport display between 2D and 3D. The user can also use the mouse cursor to change the orientation of the camera to look up and down as well as right and left. Lastly, the user can use the mouse scroll to adjust the speed of which the camera travels. To add these functionalities, code was added to the ProcessKeyboardEvents() function in ViewManager.cpp. It defines the movement and the keys used to activate these events. For the mouse functionalities, code was added to Mouse\_Position\_Callback() and Mouse\_Scroll\_Callback() to adjust the movements of the camera and its speed.

The development of the key navigation functionalities is easily reusable. It was developed in a modular way through functions so that it is easily called and used. It is easy to add more keys and different functionalities to navigate through the scene. Another is developing the lighting. Once the first couple of object was made, it can easily be modified by changing the values and it can be reused for other objects. To make it easier in future projects and if there are multiple objects with the same settings, then a function can be made to make it modular and reusable. For instance, if incorporated multiple trees then a tree function can be made so that it is reusable and it makes it easy to code and add multiple trees in the scene. The only change to be made would be the position in the plane.