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CS330 Computer Graphic and Visualization

Final Project Reflection

## Justify development choices for your 3D scene. As you write, think about why you chose your selected objects. Also consider how you were able to program for the required functionality.

When creating my scene in Module 2, I wanted to find 3D objects I could easily translate into basic shapes. I also used 3D objects that would allow me to create a range of shapes in my 3D scene. I'm pleased I could make all the objects and not leave any out of my final scene.

I also decided to texture all the items to create a better-looking 3D scene. I used an inline program to find the color of each item, then used that color to create an image with that color to apply to the object. The fluorite mineral, tabletop, and notebook are all textured with other images found online to add more dimension to the scene.

## Explain how a user can navigate your 3D scene. As you compose your thoughts, discuss how you set up to control the virtual camera for your 3D scene using different input devices.

One can navigate the scene using both the keyboard and the mouse. The keyboard's WASD keys can navigate forward, left, back, and right. The Q and E keys can move the camera up and down.

I also included functionality to change the camera modes between orthographic and perspective projections by using the Y and U keys since they are close together on the keyboard. The L and K keys start and stop the lamp orbiting as well.

As for the mouse functions, the program recognizes the mouse's location on the screen and uses any mouse movement to change the camera view in the same direction. The scroll on the mouse can be used to zoom in and out of the scene.

## Explain the custom functions in your program that you are using to make your code more modular and organized. Ask yourself, what does the function you developed do and how is it reusable?

I created individual mesh functions for each basic shape (Cube, plane, cylinder, etc.) to be reused throughout my code to make each object. The tabletop, the base for my scene, is a plane. The book, notebook, and coaster are all cubes scaled differently. The lacrosse ball and the top of the light are spheres. The green scent tube, it's cap, and the base of the light are all cylinders. Finally, the fluorite mineral is two pyramids put together.

I also used the same functions for all the shapes: UdestroyMesh, UcreateTexture, UdestroyTexture, UcreateShaderProgram, and UdestroyShaderProgram. It made more sense to reuse these programs for all objects instead of creating individual ones and a longer code file.

I also created detailed comments to help the user and/or another developer understand what is happening at every step of the program. If I had had more time, I would have created a class for all of the shapes and more classes for the functions to break up the code with like functions to adhere better to the principles of object-oriented programming. Modular code is easier to read and can be reused easily by creating inheritance within the classes.