Render Magic

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For our project we decided to design our own 3D modeler called Render Magic. At its beginning, we were planning on making a 3D viewing window with an overlay full of buttons for editing the geometry on the scene and mouse controls to move the camera through the scene. The scene would also be set with a grid in the XZ plane to give the user a point of reference. The overlay would contain buttons to add and manipulate different types of geometry, including cubes, spheres, and cylinders. We wanted the user to be able to click an object in the scene to select if for manipulation. The overlay would also have controls to toggle all the lights in the scene and select specific ones to translate them. We also wanted to be able to adjust the color and opacity of each object in the scene through sliders on the menu.

We were successful in implementing almost all of the features that we wanted to include. Adding and transforming the different types of geometry was simple enough. To add a piece of geometry, the user would hit the number key that represented its shape. We used an arcball cam to allow the user to guide the camera through the scene. Holding the right mouse button and dragging the mouse will move the camera around the origin and scrolling the mouse wheel will move the camera closer or farther away. The overlay was the greatest challenge in this project which we were able to find a work-around for. We did not find a good way to implement it, so we, instead, decided to create a second, pop-up window with is the buttons that we would have put on the overlay. This worked in the same way the overlay would in all ways except that the user would have to click between the windows to press the buttons and then to see the effects of the button.

The pop-up menu had three sliders, one for changing the color, one for changing the color saturation/gray scale, and one to change the opacity of the objects in the scene. It also had a column of 5 buttons that represented each of the five lights in the scene. It showed that a light is selected by highlighting the button in red. The menu had series of three buttons to select which type of transform to perform on the selected piece of geometry or light. It also had two buttons for selecting either a light or a piece of geometry to apply the transform to. Under those buttons, were two buttons to toggle the grid and selected light.

The only two features that we could not implement like we wanted were: changing the opacity of objects and selecting objects with the mouse. To select any of the first ten objects added to the scene, the user would switch to select mode and press the number key, starting with zero, that represents the object. Turning on selection mode was left as a button press instead of adding it to the menu because of the plan to use mouse selection, since selection mode would technically always be active and would just be a right click. Objects are numbered by the order in which they entered the scene. And we were unable to get the objects to change opacity, so that slider does not currently have any functionality.