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CS 330

20 April 2025

Project Design Decision

For this project I took a picture with various objects such as humidifier, little statue of liberty, perfume bottle, and skin care bottles. Two skin care bottles look alike, but they are placed in different position to show how objects can be placed in their coordinates. Statue of liberty and perfume bottle are added to show how different basic shapes can be combined together to represent a single object. Humidifier has a shiny surface which can reflect light. This object is added to show how lights behave in the scene. Each object also has different textures, so different textures are added in different objects to show how textures can be applied to each object. Some of the objects have different height. Adjusting the y scale value for each object show how object’s height can be adjusted.

To create complex object such as perfume bottle, both scales and placement were adjusted. Each basic 3D shape was assigned with different scales and placement. For example, even the lid for the perfume bottle was created with two different shapes: torus and sphere. Sphere was scaled in a way to resemble not a perfect round sphere.

Users can navigate this 3D scene by keyboard and mouse inputs. W key enables users to control the forward motion. S key enables users to control the backward motion. A key moves the camera view to the left, and D key moves the camera view to the right. Q and E key are added to control upward and downward movement. Q key will move view upward, and E key will move view downward. In addition to move camera view, user can also use mouse cursor to change the orientation of the camera. Moving the mouse cursors rotates camera orientation so it can look up and down by moving mouse up and down and left and right by moving mouse left and right.

Both 2D and 3D perspective is supported in this scene. By pressing O key in the keyboard, user can switch to orthographic (2D) view. Similarly, user can switch to perspective (3D) view by pressing P key.

No custom function was declared in this code, but there is a suggestion to make. Currently, SetShaderTexture and SetTextureUVScale functions are declared separately. This can be merged into one function SetTextureDeteails(string texture, float x, float y). SetTextureDetails will declare SetShaderTexture and SetTextureUVScale in its own function call. This function can be reused whenever a texture and its scale are applied to a shape. Creating this function will reduce the repeated function call of SetShaderTexture and SetTextureUVScale, which will help to modularize the code.