

CS4052: Computer Graphics – Assignment 2

Matt Donnelly – 11350561

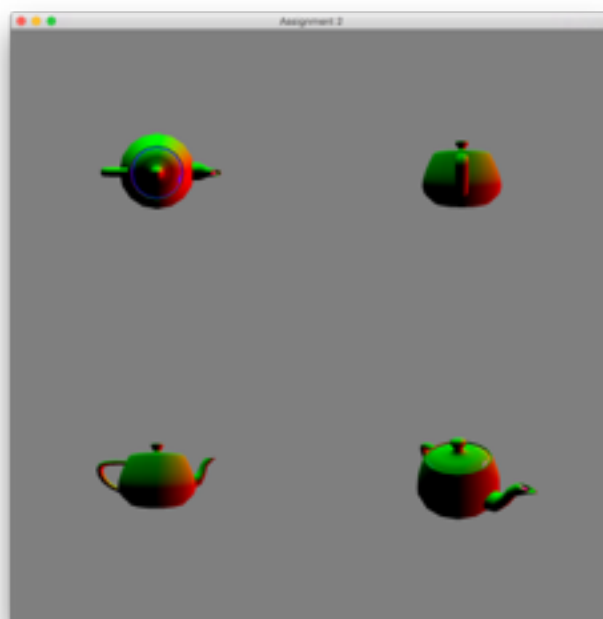
Abstract

For this assignment we were asked to draw four teapots in four different viewports. A teapot is moving in at least one viewport, and another should be static in at least one viewport. At least one viewport should depict an orthographic projection, using an orthographic projection matrix and at least two viewports should depict a perspective projection, each with different properties. Finally, at least one viewport should use a `lookAt()` type function for creating a view matrix

Solution

To start this assignment, I began by creating four viewports using `glViewport()` to divide the window into quarters and then draw the teapot in each view. On Apple Retina screens, the size of each viewport needs to be doubled as the OS renders windows at twice their size, so to I added some defines to handle this at the top of my code.

Next, I began adding transformations (using GLM) to each of the teapots, starting with the top left. For this one I apply a scaling transformation in my model matrix, use the `lookAt()` function to place the camera above the teapot in my view matrix, and lastly apply an orthogonal perspective projection. For the top right teapot, I apply the same model matrix transformation but adjust the view matrix so we can see the back of teapot and apply a perspective transformation. For the bottom right teapot, I apply the same model and perspective matrices but am rotating the teapot by moving the eye in the `lookAt()` around the origin. Finally for the bottom right teapot I'm applying the same model matrix once again, but am positioning the eye in `lookAt()` further away from the teapot but using a smaller field of view value so it appears the same size as the rest of the teapots.



The 4 different teapot transformations