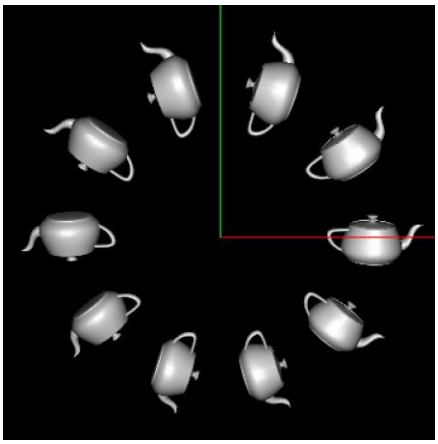
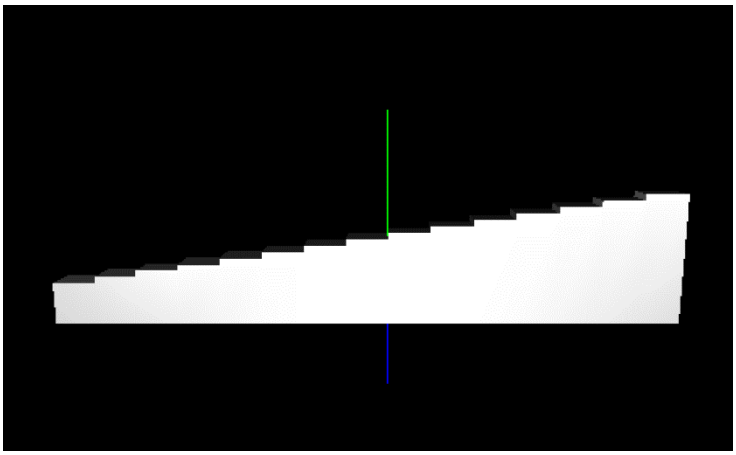
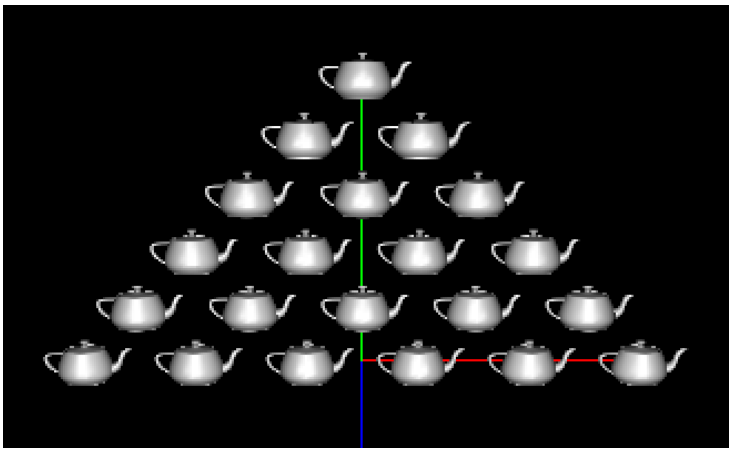
Homework assignment 2 required me to create four different scenes using OpenGL. Each requiring me to complete a unique task to achieve the expected output. For the first problem the task was to create a circle of solid teapots using glutSolidTeapot function. To do this I had to count the number of teapots needed which ended up being 10, and then figure out what degree was needed to fit all the teapots into a circle (360/10). I used glRotatef to angle each teapot an additional 36 degree from the previous teapot. For example, the first teapot would have a degree of zero then the second will have a degree of 36 and the third will have a degree of 72, etc. So, using a for loop counting the degrees to 360 degrees, and creating the teapot at each degree. My output ended up being:



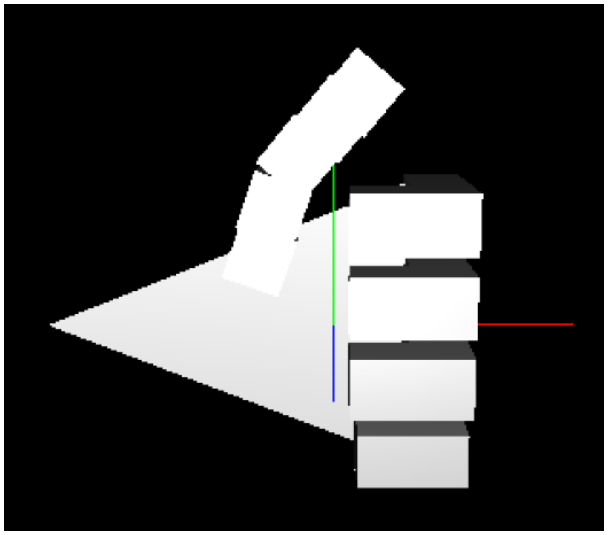
For the second problem I was required to make a stair case out of scaled solid square (glutSolidCube). To complete this problem I used another for loop counting the amount of steps which in this case was 15 steps. In the for loop I scaled the y of the cube which was set to 1 (which is default scale) for the first cube then the height was incremented at the end of each loop to adjust the scale of y. I also translated each cube a required amount so that the cubes arent stacked on one another and to make sure each cube was leveled at the bottom. The reason I had to level the bottom of the cubes was because the scale function scales each cube from the center of the cube (the cube stretches from the top and the bottom). Doing this I was able to achieve the output I was aiming for which was:



For the third problem we had to make a triangle of teapots. So for this one I had to use the same opengl function as the first problem to create a teapot. The pyramid has six rows with the bottom row having 6 teapots and the top having one. To position them to make the pyramid I had to use two for loops one being similar to the other problems. The first for loop counted down from six to one. Which built the pyramid from the bottom up. And the other for loop creating the proper amount of teapots per row. After the second for loop creates the row, the first for loop increments a height variable to so that each row will have the proper distance from the row beneath it. This created the intended output.



For the fourth problem I was given the freedom to create whatever my mind could come up with, and sadly I couldn't come up with any ideas that I was excited to attempt. So, I adjusted the suggested problem from a hand doing the "peace" sign into a hand giving a "thumbs up". To make the hand I had to start with the palm of the hand which in this case was a 2D triangle. To do this I had to plot the points for each vertex of the triangle. Once the triangle for the palm is made, I had to create the fingers; to create this I used solid squares. The thumb was challenging and definitely didn't turn out how I wanted, but to make it I moved each matrix and rotated it and then created the cube. The thumb is made by five cubes. After the thumb looked vaguely like a thumb, I went on to create the other four fingers. These fingers were a lot more perpendicular which made them easier to position. Then they were copied and adjusted to create the other fingers. The little finger scaled down for realism. Overall, it didn't turn out as great as I would have wanted but it at least it achieved the goal.



In conclusion I was happy with the outputs I was able to produce using OpenGL. All the problems were interesting and challenging to reproduce. The fourth project didn't come out as good as I wanted but, I'm happy enough with the output.