COSC 4370 - Homework 2

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https://replit.com/join/auafqclyxj-gokyil-88

1 – Problem

In this project, the goal was to practice the fundamentals of OpenGL by creating visually interesting images using basic commands and built-in shapes from the OpenGL library. The focus was on learning the basics and creating expected images.

2 – Method

To complete the assignment, I followed a specific approach. While the details changed depending on the OpenGL commands and shapes, I used, the basic process of creating graphics stayed the same for each task. I used translate, rotate, push, pop, and scale functions in all of them, but how I put the models together varied based on the problem.

3 – Implementation

In the implementation phase, I applied the chosen approach to create the images. This involved paying close attention to OpenGL syntax, commands, and functions to bring the shapes to life on the screen. I used functions like glPushMatrix(), glTranslatef(), glPopMatrix(), glScalef(), and glutSolidTeapot() to generate the required shapes, adjusting their position and size as needed for the final composition. For Problem 4, I also used glBegin(GL_TRIANGLES) at least once to create the tip of the thumb, which was one of the required shapes.

For Problem 1, I created a circular arrangement of teapots by rotating and translating the coordinate system. The teapots were placed at equal intervals and rotated to fit the circle.

For Problem 2, I arranged the teapots in rows, increasing the number of teapots in each row as I moved down the grid. This was done by using loops to adjust the position and number of teapots in each row.

For In Problem 3, I built a pyramid-like structure using cubes. Each cube got smaller as it moved down the pyramid, and I adjusted the height and size to create the desired shape.

For Problem 4, I involved creating a hand-like structure using cubes and triangles to represent the palm and fingers. I applied various transformations like scaling, rotating, and translating to position each finger and bone correctly, using both predefined shapes and custom shapes like triangle for details.

4 – Results

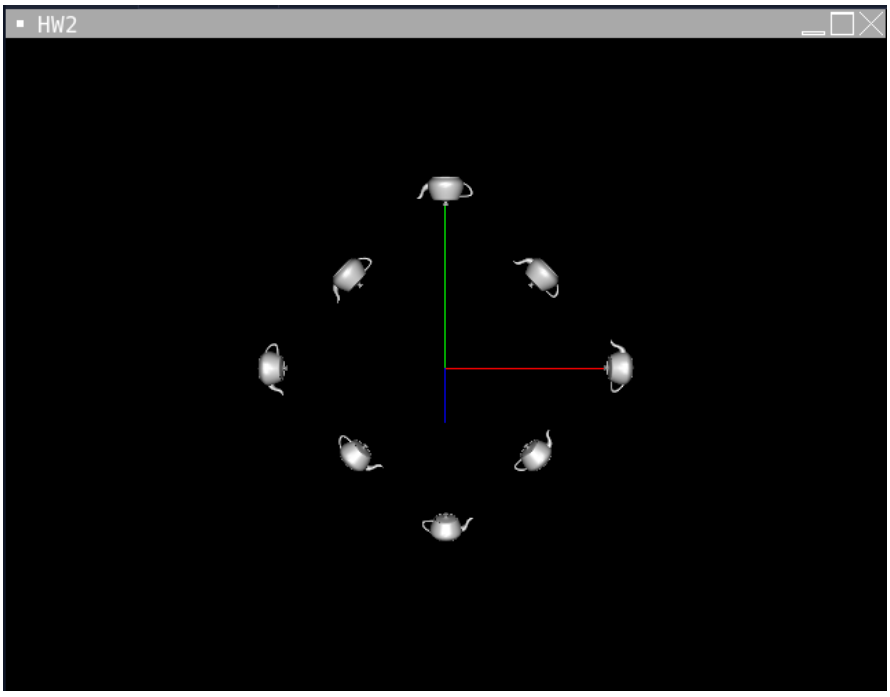
Overall, I was able to learn the basics of OpenGL, making a few mistakes along the way, but I feel confident moving forward without any big issues. I was able to match the output for all the problems as shown in the reading.pdf.

Source:

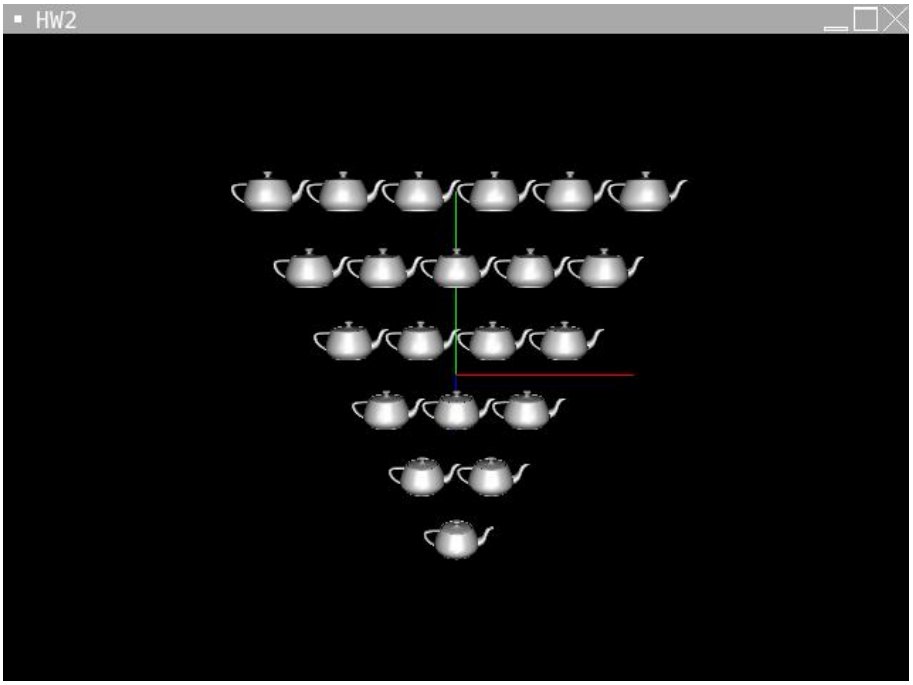
https://math.hws.edu/bridgeman/courses/324/s06/doc/opengl.html

https://www.geeksforgeeks.org/basic-transformations-opengl/

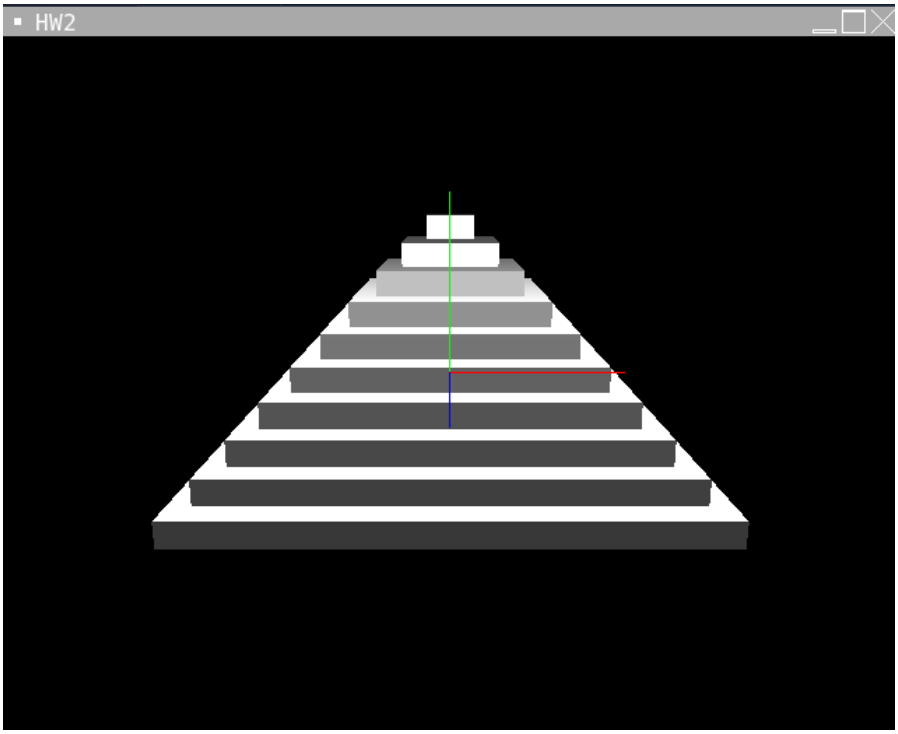
Problem1:



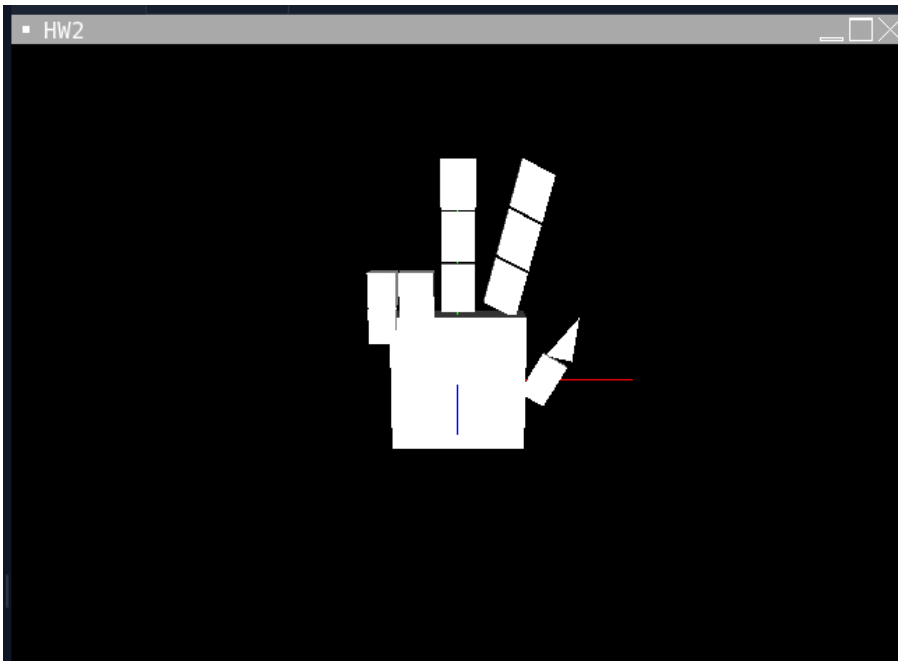
Problem2:



Problem3:



Problem4: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