COSC 4370 – HOMEWORK 2

NAME: AI NGUYEN

PSID: 1392857

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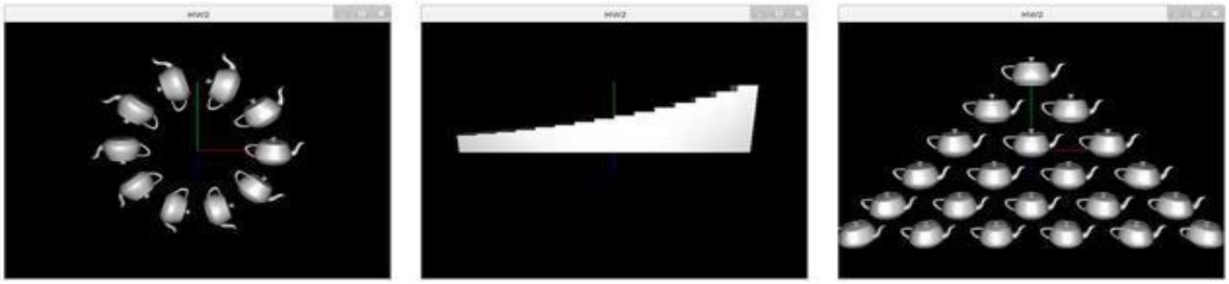
1. PROBLEM

The assignment includes two parts. The first part of the assignment is to write code to reproduce each of the following three images.



The second part of the assignment is to create, using similar techniques, a scene of own imagination.

2. METHOD

Using OpenGL skills from class, as well as artistic creativity, to create several 3D scenes with OpenGL. Try to use transformation mechanisms like glPushMatrix, glPopMatrix, glTranslatef,…

3. IMPLEMENTATION

a) <u>Problem 1:</u>

- Based on above image, there will be 10 Tea Pots at evenly spaced intervals.
- Divide the upper half of the circle, $y > 0$, into 5 equal parts.
- Determine the coordinates of each position that divides the upper half of the circle equally into 5 equal parts.
- At each coordinates will draw a Tea Pot

- Divide 180 degrees into 5 parts, which is 36 degrees. Each Tea Pot will rotate by increasing 36 degrees counter-clockwise.
- Do the same with the bottom circle, $y < 0$.

b) Problem 2

- Based on the image above, there will be 15 Cubes that increase in size from left to right.
- Run 2 nested loops, the inner loop will run one less loop than the outer loop.
- The effect of the inner loop helps to increase the thickness of the Cube instead of using the Scale function.
- Each inner loop will increase the coordinate and y coordinate by a certain number to match the example.

c) Problem 3:

- Based on the image above, there will be a triangle of many Tea Pots, with the bottom being 6 Tea Pots and decreasing in number as they go up.
- Run 2 nested loops, with the inner loop to draw the Tea Pot horizontally and the outer loop to draw the Tea Pot vertically.
- For every step up, the number of Tea Pots will decrease by one.

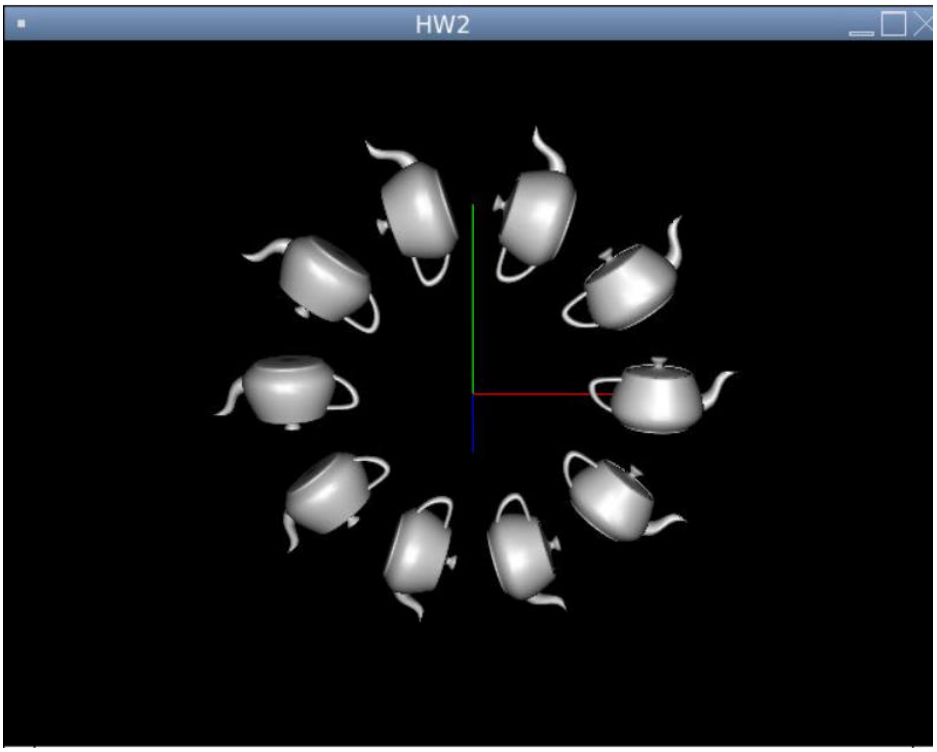
d) Problem 4:

- Draw 2 triangles in the back, with the y-axis being the median.
- Draw 2 pairs of opposite Tea Pots through point O (0, 0) by rotating first and then choosing a location.

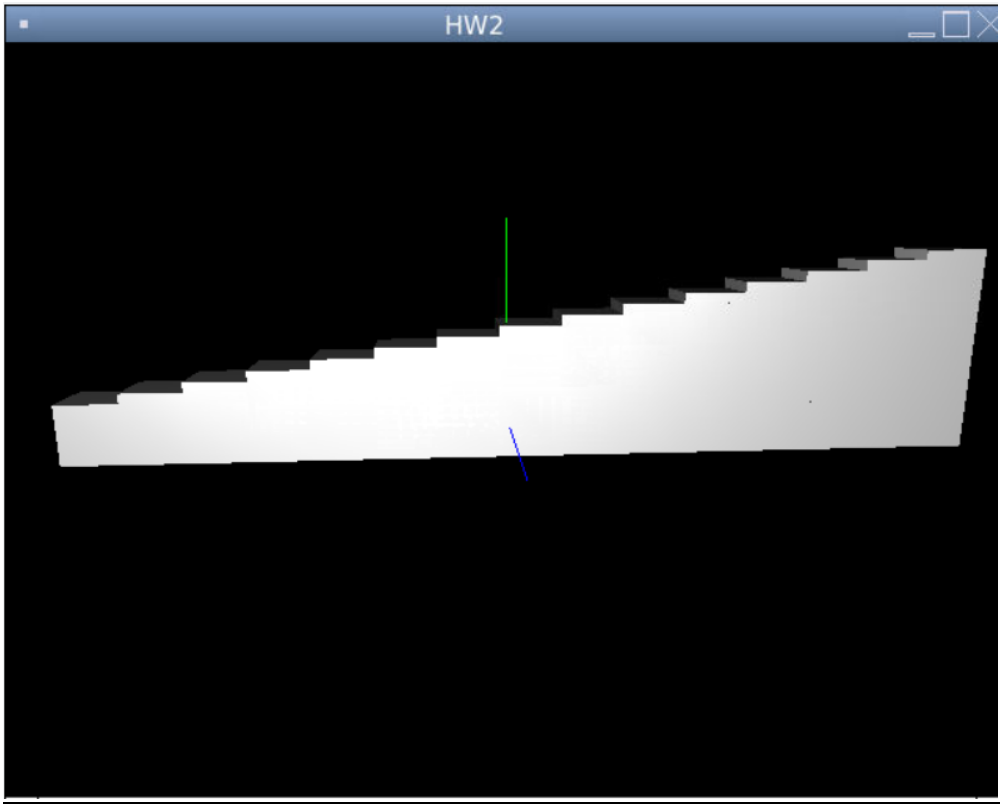
4. RESULTS

The output consists of 4 images for each problem above. I tried to use my imagination to do Problem 4, but my OpenGL capabilities were limited so I couldn't come up with anything interesting. In the remaining those 3 Problems, the results are quite satisfactory because they are almost the same as the example.

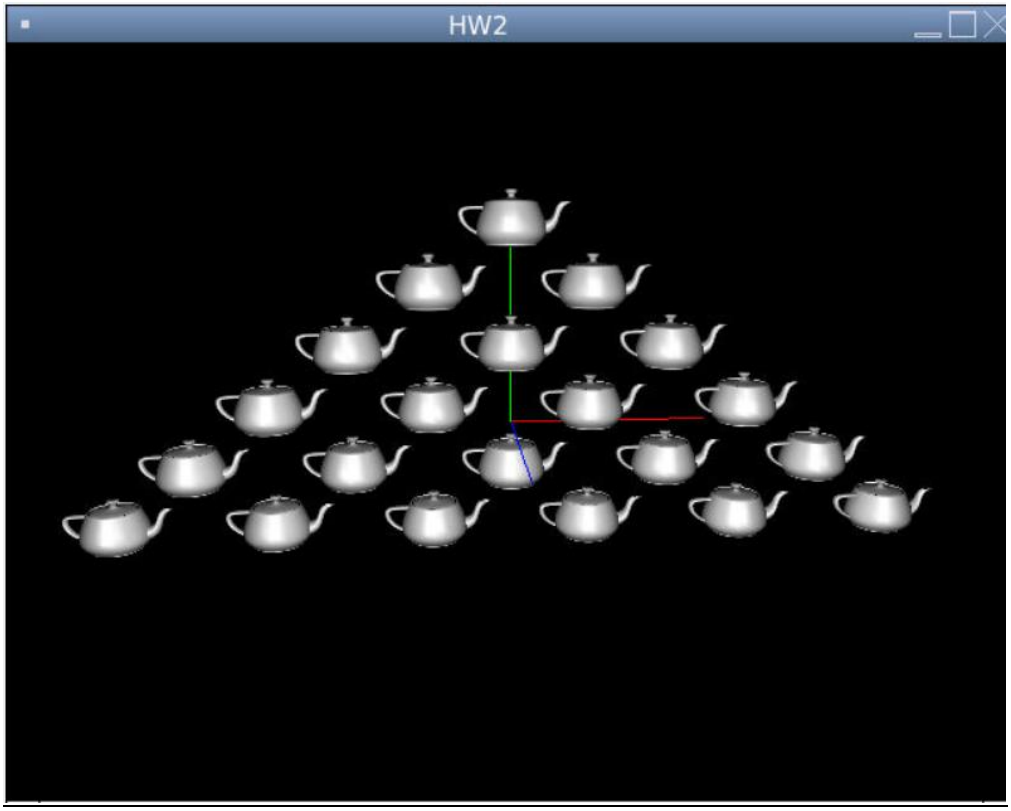
a) Problem 1:



b) Problem 2



c) Problem 3



d) Problem 4