Project C: Blue Ocean

This report outlines the goals, usage and outcomes of my project and includes images and scene graphs of the created objects.

Section 1: Goal and User's Guide

The goal of this project was to create a world where the user can explore with different lighting/shading methods illuminating the shapes. The objects of the world would rest on a ground plane surface and each have individual normal that reflected the light from both a user-adjustable light source and a headlight attached to the camera. The world itself is similar to a large blue ocean and there exists three creature-like objects on it. The motivation for such idea is due to personal affection upon Ocean. The next section will explain how to manipulate these objects and use the program.

Upon opening the HTML file in the Google browser, there will be a big canvas at the very begin and a set of basic instructions and interaction lines in the following parts about how to alter objects on the screen and move the camera around the world space. The user has complete freedom of movement around the world space and can alter the light sources through keyboard interaction and input boxes. Before discussing the results of the project, I will introduce the interactions available to the user. Below is a starting image of the project for reference.

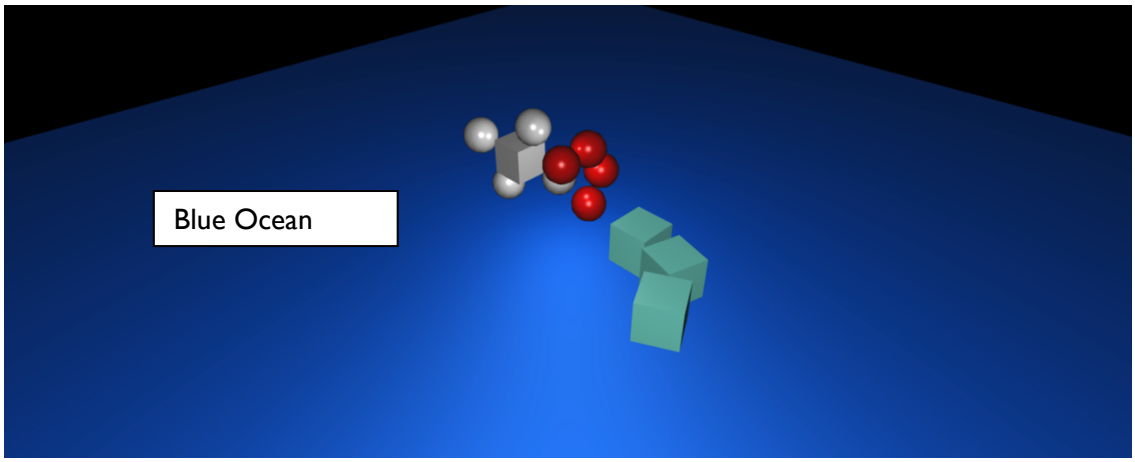

FIGURE 1 START STATE

Here are the features of this project. Press H/F1 on the keyboard or click the Help button blow the canvas will go to the help message. By using the arrow keys "a,w,s,d", the user can move the camera's position. And by using up, down arrows to tilt up or down and left, right arrows to pan left or right. In addition, pressing "i" key will move forward the camera and pressing "o" key will move the camera backwards. What's more, User could use the control pane in the lower part to

switch on/off the headlight, adjust the parameter for user-adjusted light source and change the lighting and shading method.

Section 2: Results

The below pictures illustrate the program results. Figure 2 is a screenshot of the Instructions available when opening the html file. Fiugure 3 – 8 exhibit different states of the program. The first two is 3D view control, where we could use Arrow buttons and "a,w,s,d,I,o" buttons to easily move the view to any place in 3d space. The third is the four modes when both two lights are on. The fourth one is the situation when only head light on and the fifth one is the situation when only user light on. The last one is the mode where the user light is reset. And Figure 9 is the Scene Graph Diagram of this project.

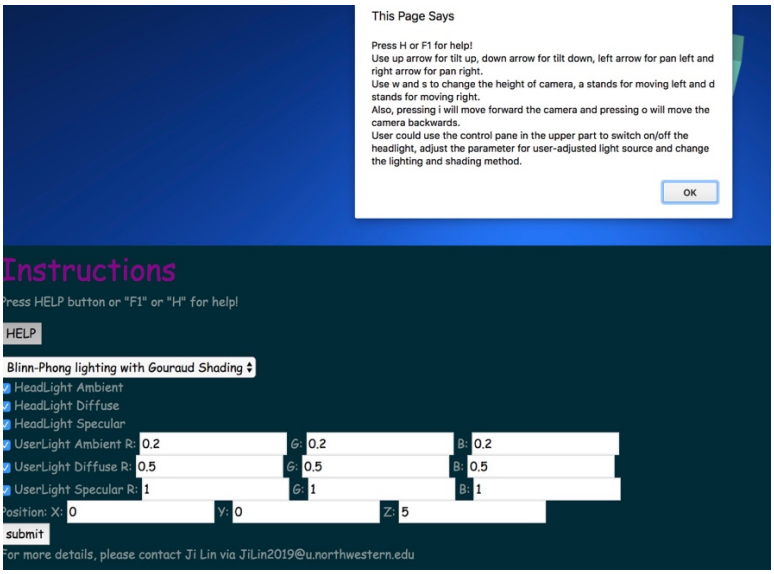

FIGURE 2 INSTRUCTIONS

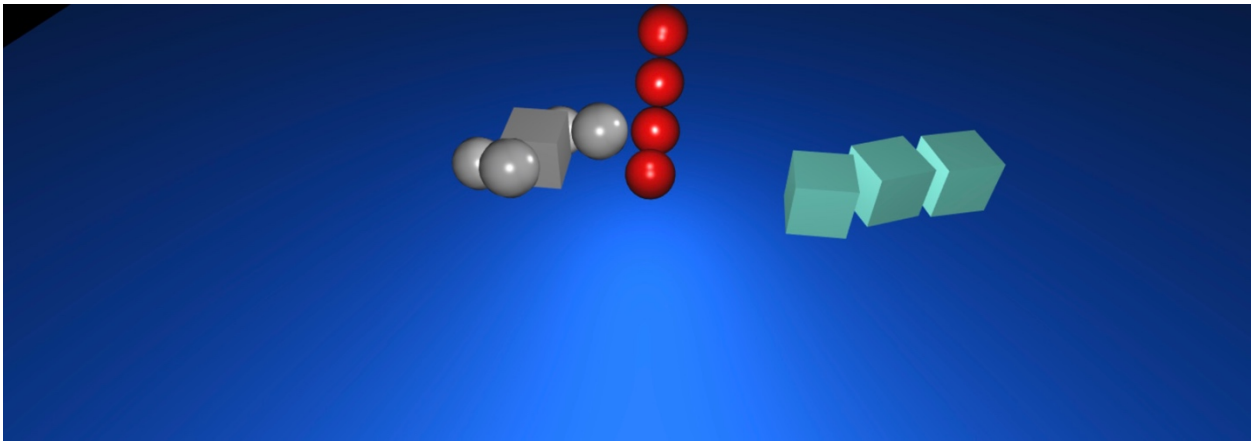

FIGURE 3 3D VIEW CONTROL I

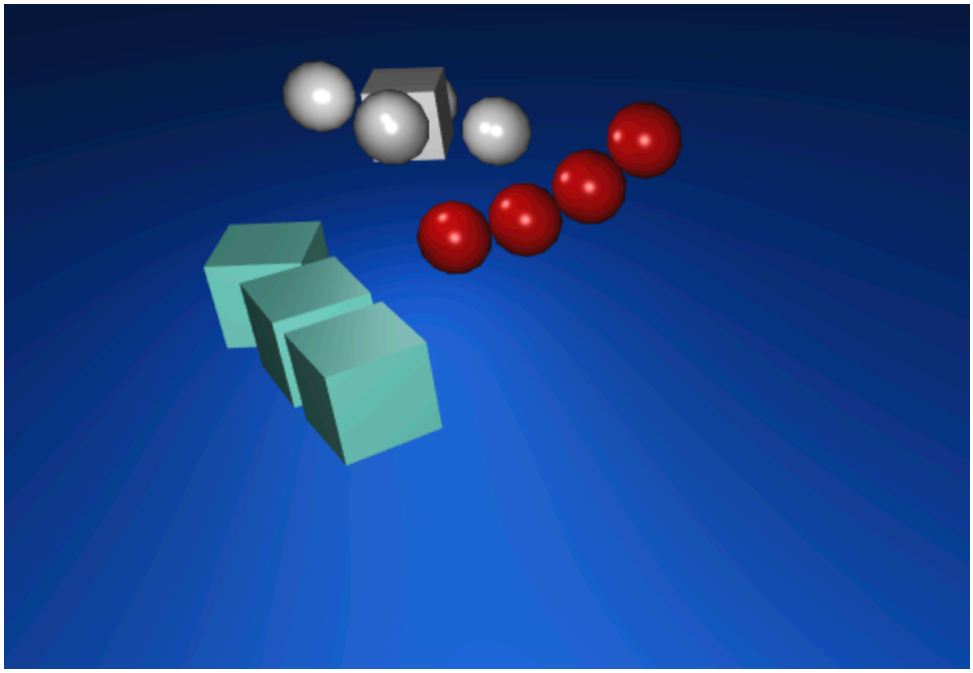

FIGURE 4 FREEDOM OF MOVEMENT

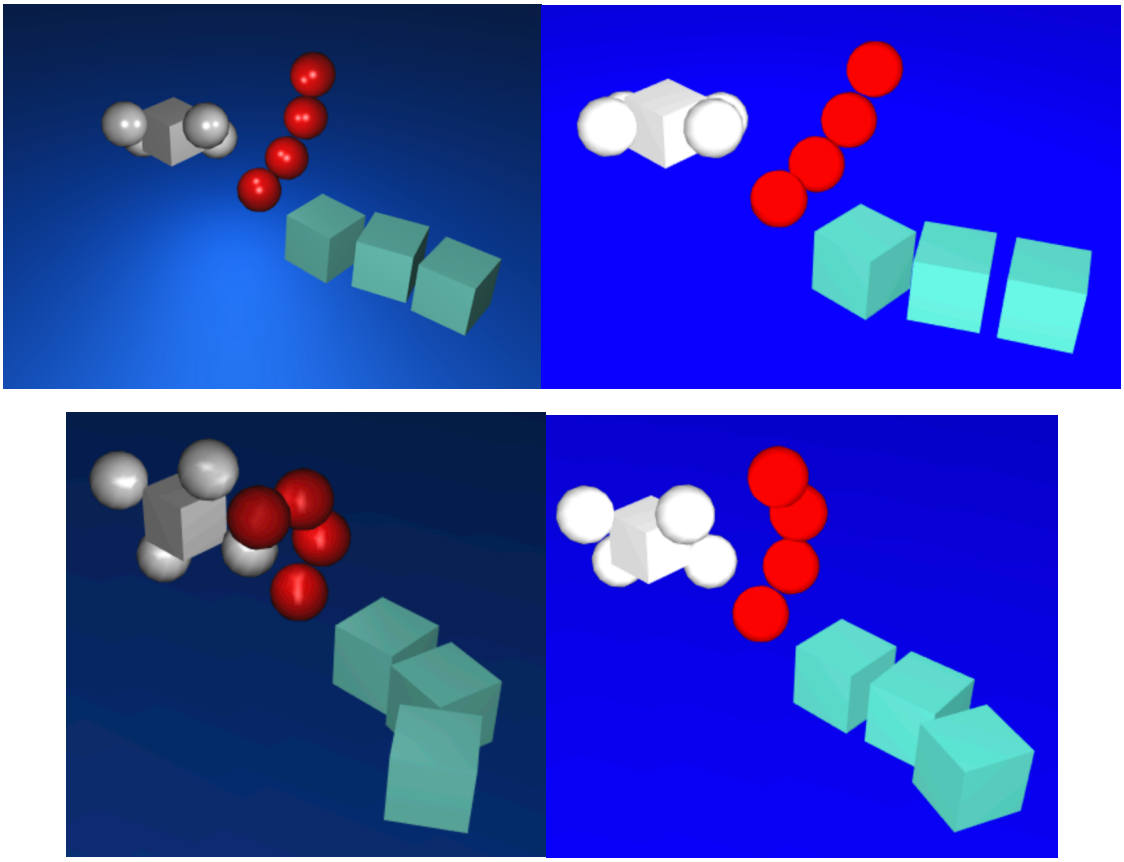

FIGURE 5 4 LIGHT MODES WHEN BOTH LIGHTS ON

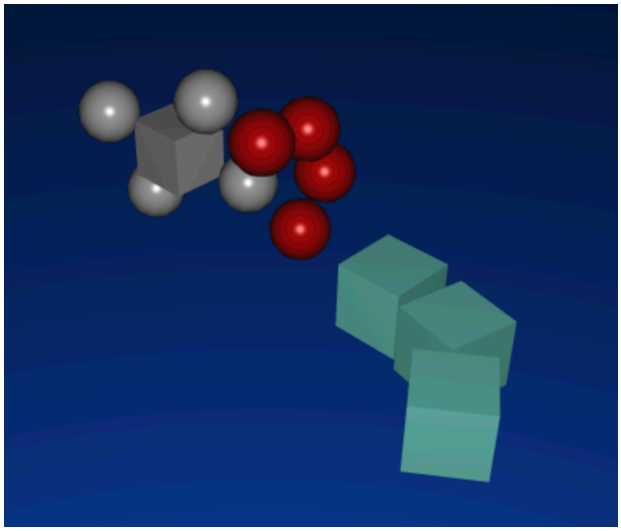

FIGURE 6 ONLY HEAD LIGHT ON

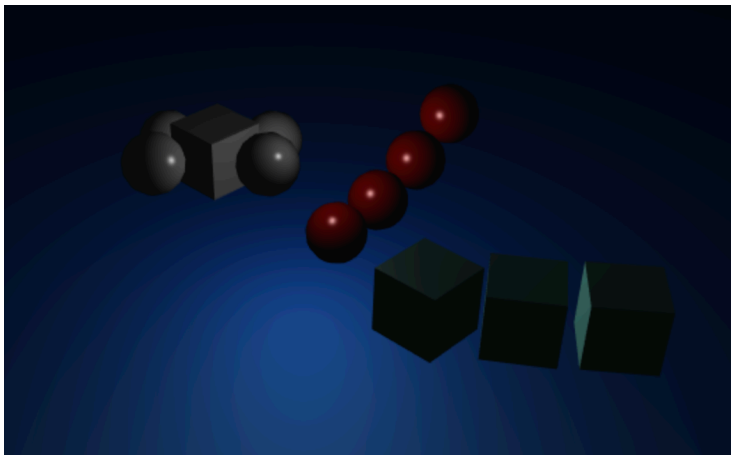

FIGURE 7 ONLY USER LIGHT ON

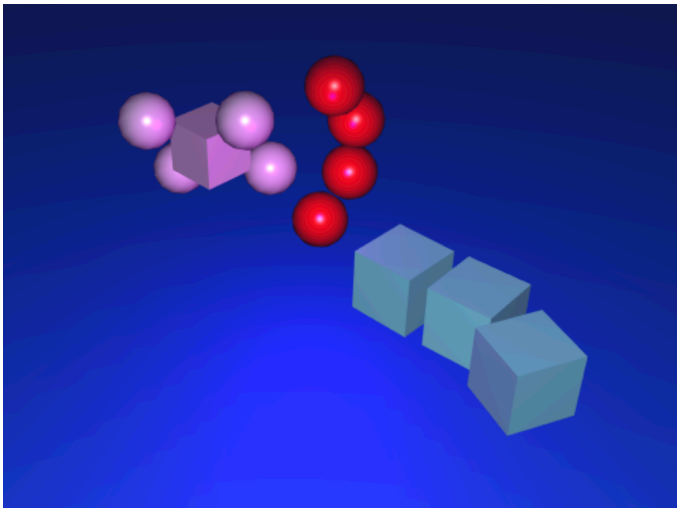

FIGURE 8 USER LIGHT RESET MODE

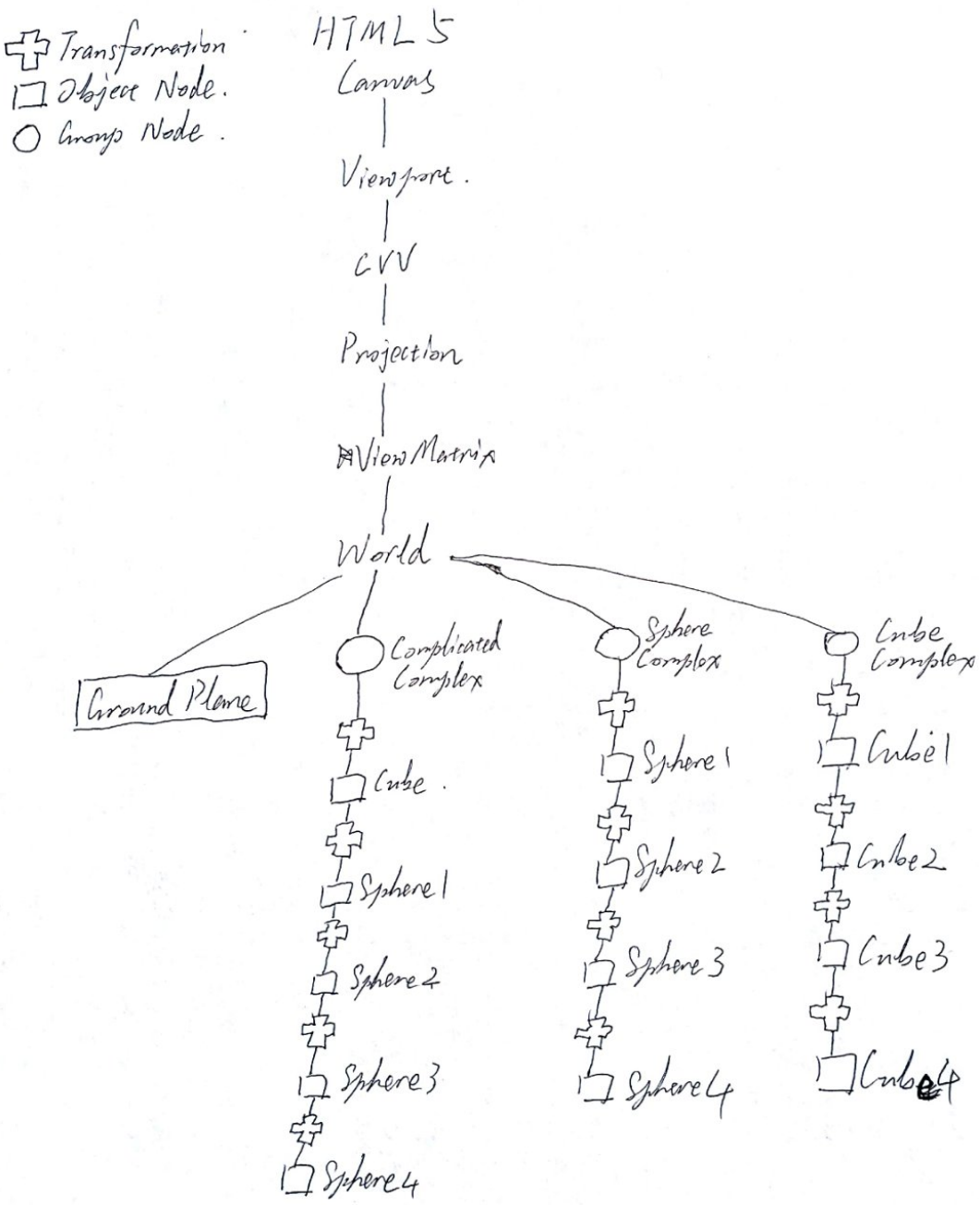

FIGURE 9 SCENE GRAPH