COSC 4370 – Homework 1

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1 Problem

This assignment requires us to implement the projection matrix in main.cpp, the view matrix function in camera.h, the fragment phong shader in phong.frag, and the vertices phong shader in phong.vs to create a 3d cube that is phong shaded

2 Method

The method I used for the projection matrix in main.cpp is that I just set the projection matrix to a perspective of any 6 values as you can move the camera anyways. For the view matrix function in camera.h, I just returned the view matrix using the lookat() function with the updated position, front, and up values calculated by the eular angles. For the fragment phong shader in phong.frag, I set an ambient and specular strength and calculated the ambient, diffuse, and specular then added them up and multiplied by the objectcolor. For the vertices phong shader in phong.vs, I calculated the gl_position following the model view projection by multiplying them together with the position and then get the fragment positions by multiplying the model with the position then turning it into an appropriate matrix and also assigning the input normal to the output normal.

3 Implementation

I implemented the projection matrix by setting the projection matrix to a perspective matrix of 6 random values. For the view matrix function in camera.h, I just returned the view matrix using the lookat() function with the updated position, front, and up values calculated by the eular angles. For the fragment phong shader in phong.frag, I set an ambient and specular strength and calculated the ambient, normal, diffuse from the light direction from the input light position and frag position, and specular from view direction and reflect direction then added them up and multiplied by the object color. For the vertices phong shader in phong.vs, I calculated the gl_position following the model view projection by multiplying them together with the position and then get the fragment positions by multiplying the model with the position then turning it into an appropriate matrix and also assigning the input normal to the output normal.

4 Results

The output of the program was a 3d cube that is phong shaded