CPSC 360
Assignment 5
3d Cube Fun
Due: 1-18 at 11:59 p.m.

Overview: Now that you have a taste of 3D, we'll start working with the really fun stuff…transformations, scaling, and rotations. Your task for this assignment is to write a program that displays a 3D cube. The cube can be solid or wire frame…the choice is up to you. Your program should provide a menu that allows the user to scale the cube by 2, or by .5. Options should be available to translate the cube 1 unit up, down, left, or right. Finally, you should provide options to rotate the cube around the x, y, or z axis.

When your program starts your cube should automatically rotate around an axis of your choice. This is accomplished by using the idle function to increment a rotation angle. The function should then call the display method, which will use the new angle to rotate the cube.

Note that this assignment is due later than usual. Because Monday is a holiday, I wanted to allow for time for you to ask questions or fix any last minute bugs in class before submitting the project.

Hints: On the course site I have provided my .exe file of the program. I chose not to use the glut built in function for drawing a cube, which means I had to establish normal vectors (glNormal*) for each face, as well as map faces to the cube vertices. I've also played around with color interpolation. You do not need to do this for the assignment, but feel free to explore if you like.

For this assignment, you will need to use both GL_PROJECTION and GL_MODELVIEW for the matrix modes. You may also find it useful to init the display as follows:

glutInitDisplayMode(GLUT_DOUBLE | GLUT_RGB | GLUT_DEPTH)
glEnable(GL_DEPTH_TEST)

This enables double buffering and the z buffer, as well as enables hidden surface removal.

In the display function, you should use:

glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT)

This will clear both buffers. Finally, you should use glutSwapBuffers() at the end of the display function to swap the buffers (due to double buffering.)

Grading: As usual, grading will be based on correctness, elegance, and style. Because this program is more complicated than the others, make sure to include appropriate comments.