CAP 4730 – Assignment 3
Due April 8, 2024

OpenGL Viewer

In this assignment you will complete the viewer we started in the last homework.

- `Modelview Transformation`: Add a perspective projection matrix to your previous transformation. Show the effects of changing each parameter in the perspective matrix. `20pts`
- Implement functionality to show the contents of z-buffer in order to see the depth of points in the scene. Verify the depth values are consistent by rotating/scaling the scene. Examine the differences between z and z' coords. `20pts`
- Add lighting effects by implementing Gouraud and Phong shading. Show and describe the effects of each shading in your experiments. `40pts`
- Bonus: Provide a mechanism for flat shading and compare the results with Gouraud and Phong. `+10pts`
- Along with the source code and makefile (or a VS Code project file along with a README file for compiling instructions), submit a report (a PDF file) that describes and documents *each functionality* you implement. The report is graded on its comprehensiveness in documenting both the parts implemented and the parts that are partially (or not) implemented. `20pts`

This assignment can be done in groups of two students. You are welcome to discuss ideas/problems with other classmates but the source code and the report you submit MUST be your work. You need to clearly acknowledge sources (ideas, solutions, websites) that you use.

Submission Guidelines
Submit to E-learning site a **single file** as a .zip or a .tar.gz bundle that contains all the files to be submitted. Include the source codes for your programs in the submission bundle. Please include a 'README' file that clearly explains how to run and test the program. Also include a 'Makefile' (or a VS Code project file) that compiles and links the program from the source files.
Late submissions are penalized by 20% of the grade for each day (up to 3) past the due date.