CEG477/CEG677
Computer Graphics II

Assignment 1:

Please implement a computer program that is capable of rendering a scene that – for now – consists entirely of polygons using OpenGL. Your software should be able to generate an image of the scene based on a PLY file that was given to your software program as a command line option.

A description of the PLY file format can be found, for example, at the following web page:

http://astronomy.swin.edu.au/~pbourke/dataformats/ply/

Implement a routine that reads polygons from a PLY file and converts it into your own data structure. Keep your data structure flexible, since it may be extended later on. Render the scene using the following OpenGL methods:
- Rendering using display lists
- Rendering using vertex arrays
- Rendering using vertex buffer objects

Implement a mechanism that allows your software to measure the time how long it takes to render an image, i.e. determine the time between two consecutive calls of your drawing routine. Compare the two different results on several sample scenes. You can find data sets for testing on the course's web page.

Your software should allow a user to rotate, zoom, and pan within the scene. You can either use your own viewing manipulation code or use the sample code from this web page:

http://www.nigels.com/glt/gltzpr/

Keep in mind that this assignment will be the basis for the next ones, so your code should be somewhat readable and extendable.