COL781 Computer Graphics

Assignment 1: Ray Tracing

Due Date : 31.1.2019

This assignment involves implementation of recursive ray tracing as discussed in the class with the following features

a. A scene with objects of the type: polygon (plane), and sphere, quadric and a box. While specifying the object one needs to give the geometry and material properties.
b. Local illumination model (Phong) with diffuse, specular and ambient components.
c. Multiple light sources.
d. Global illumination with reflection, refraction and shadows.
e. Implement anti-aliasing using supersampling.
f. Input using a file (your own format or a general format e.g. povray compliant)
g. Specify eye/camera in viewing coordinate system (VCS) as done in the viewing pipe line.
h. Perform intersection computation in world coordinate system (WCS). This would require appropriate transformation from VCS to WCS and vice versa.
i. The final image can be rendered using OpenGL (3.0 or above) or any suitable image preview/display tool.

Note:

- The assignment can be done in any programming language, however it is recommended that C/C++ be used as it will be simpler to embed OpenGL in the subsequent assignments.
- The submission will happen through moodle and exact instruction will be given soon for how to submit.
- The assignment can be done in a group of size 2 max. It is assumed that both partners will participate in the assignment and accordingly evaluation will be done. Once the partners are formed they can not change for susequent assignments.