Project 1: Ray Tracer

Name _____ SID_____

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Basic requirement (30%，Everything must be done for get credits)

- Parse in the scene, material, light and other information _____
- Fast local rendering with OpenGL _____
- Generate the tracing rays from the camera _____
- Use the intersection mechanism in Engine for ray-object intersection computation _____
- Implement the Whitted illumination model _____
- Phong interpolation of normals on triangle meshes _____

Extra credits (185%)

- Anti-aliasing (5%) _____
- Acceleration structure (10%) _____
- Adaptive termination criterion for tracing rays (10%) _____
- Stochastic (jittered) super-sampling (10%) _____
- Modify shadow attenuation to use Beer's law (10%) _____
- Fresnel reflection model (10%) _____
- Support other types of geometry (curve, hyperboloid, paraboloid, nurbs, fractal …) (10%) _____
- Implement other types of light sources (area, environment, goniophotometric diagram light …) (10%) _____
- Implement distributed ray tracing (10%) _____
- Texture related techniques
  - Texture mapping (5%) _____
  - Procedural texture mapping (5%) _____
  - Bump mapping (5%) _____
- Implement caustics effect (25%) _____
- Sub-surface scattering (25%) _____
- Metropolis light transport (25%) _____
- Photon mapping (25%) _____