Comp480 – Spring 2008

Programming Assignment #3
Due 5/21/08 (before 11:59:59pm)

Objective: In this project you will extend the simple ray-tracing program given in the skeleton codes.

Requirements:
1. Extend the surface shader to handle refraction.
    a. You will need to modify the supplied Sphere "Renderable" to properly handle refraction (Reminder: the given intersect() method assumes that the ray originates outside of the sphere. This is not always the case for refraction).
2. Implement a "Triangle" Object.
    a. You can use either of the methods discussed in the class or your own variant. Assume that the outward facing side of the triangle is the one where its vertices appear in a counterclockwise order. The given index-of-refraction value represents the ratio of the speed of light of the inside material relative to the outside material.
    b. Add texture mapping; the most straight forward way to accomplish this is to add texture coordinates to each vertex, and interpolate them over the triangle's interior
3. Add a randomized sampling method for enhanced rendering.
    a. Antialiasing
    b. Soft-shadows (jitter the shadow rays towards an area light source)

Example results of this assignment:

4*4 jittered sampling for antialiasing and soft-shadows.
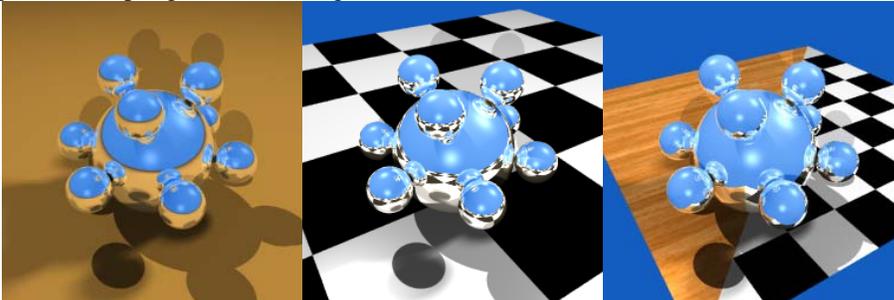
Policies: Everyone must turn in their own assignment. You can collaborate with others, but any work that you turn in should be your own. Turn in your work by emailing an archived and compressed version of it (source and executable) to TA (Mr. NaeJin Kong).