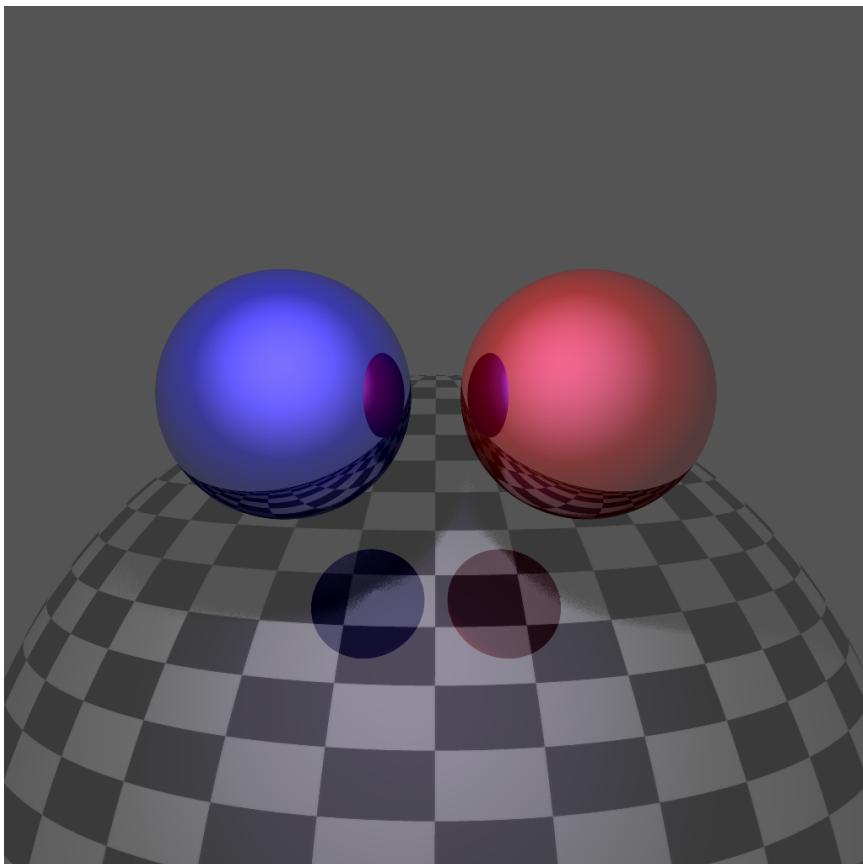


Raytracer Objectives

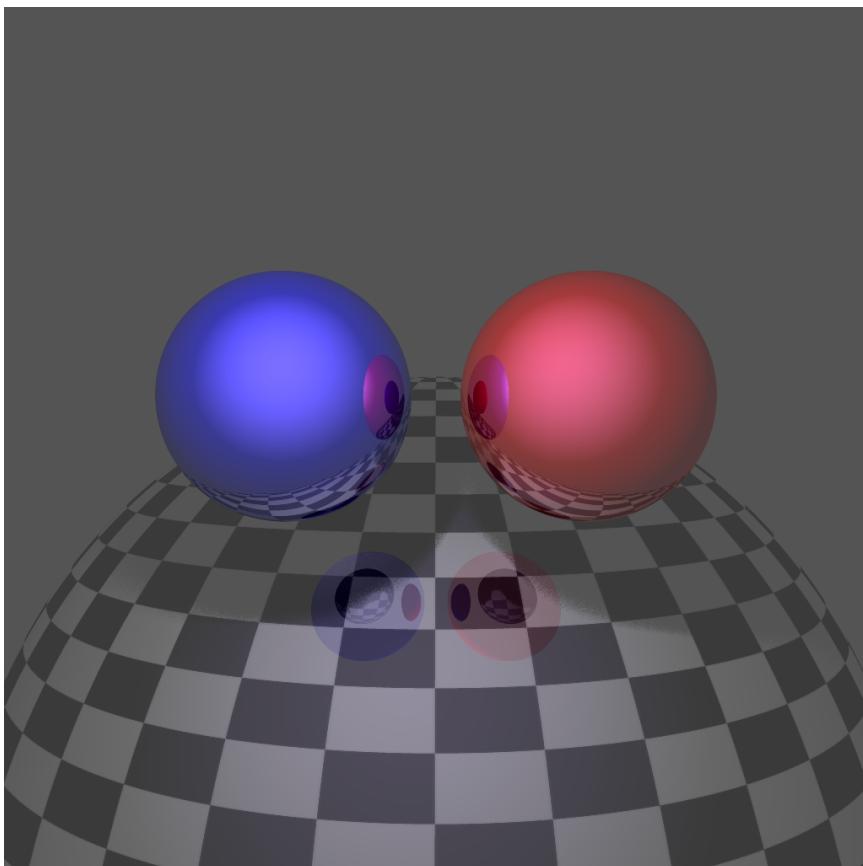
Objective 10 | UI PDF

Name: Bowen Luo

Objective 1 | Mirror Reflection

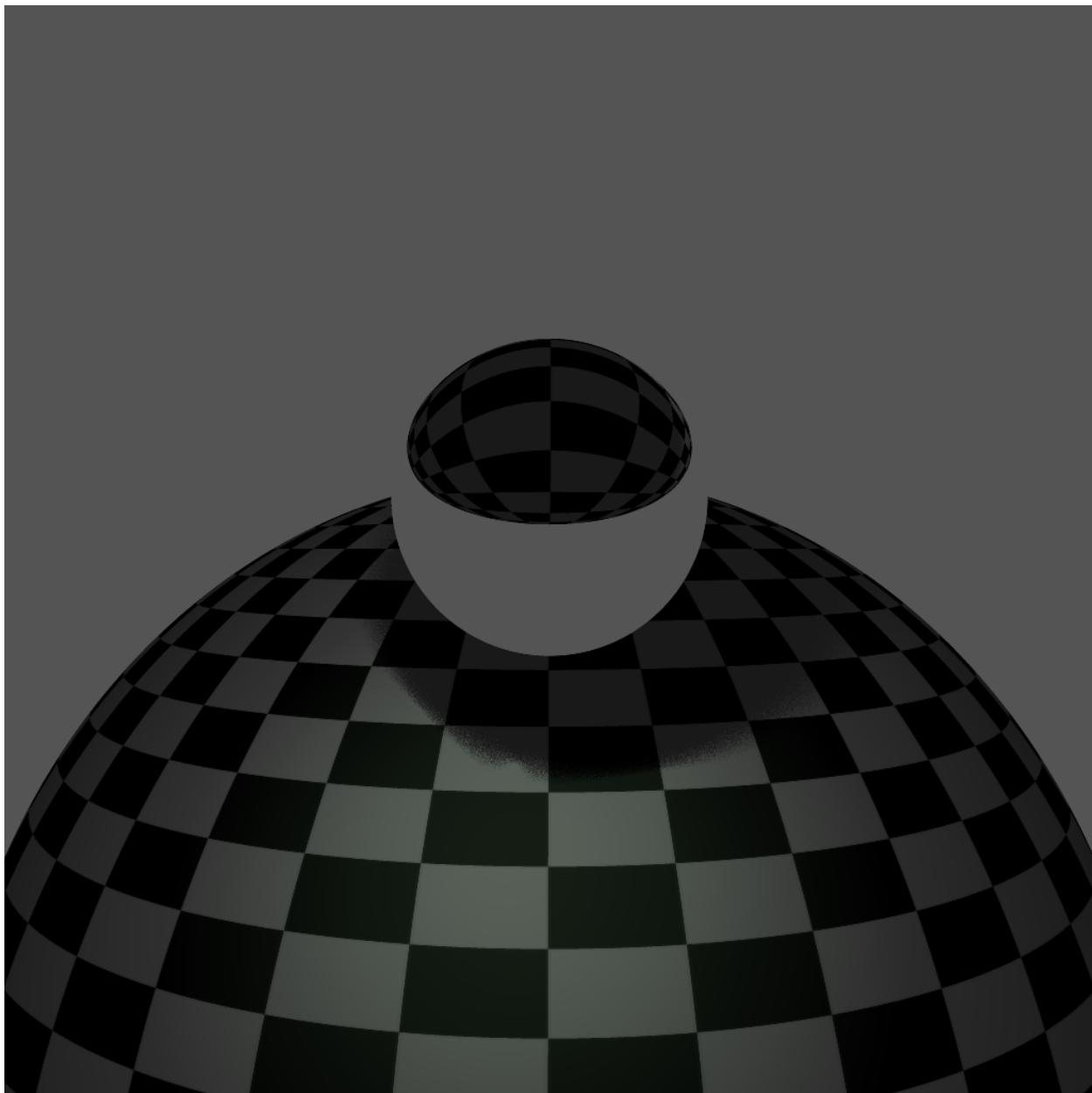


Mirror reflection with 1 bounce of the incident ray.



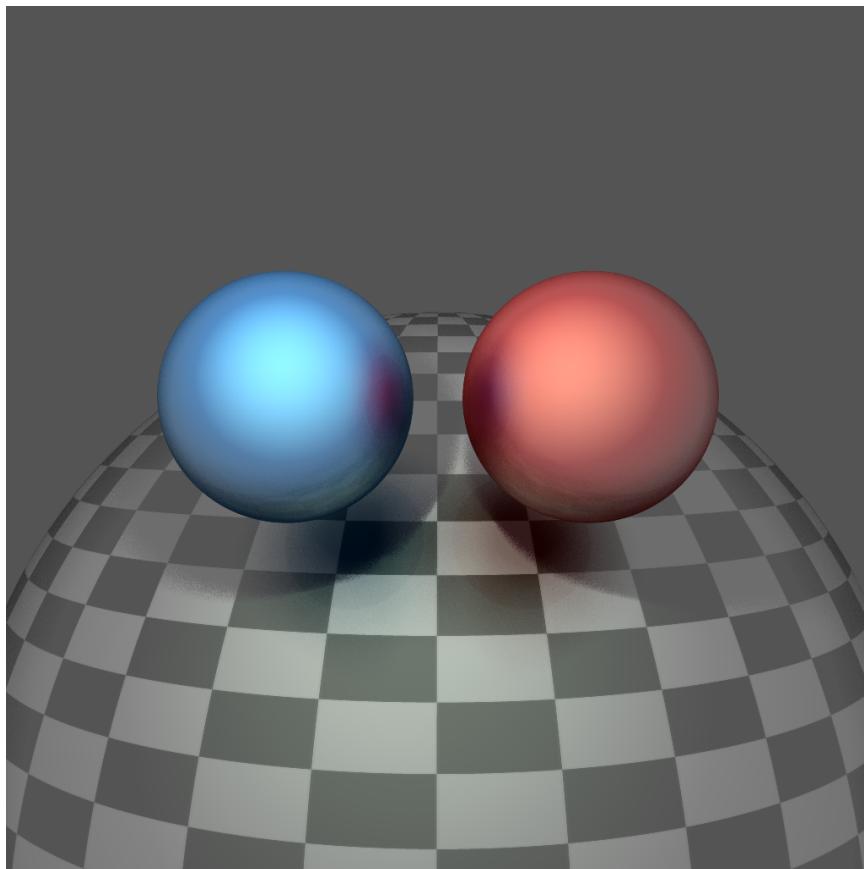
Mirror reflection with 2 bounces of the incident ray.

Objective 2 | Refraction

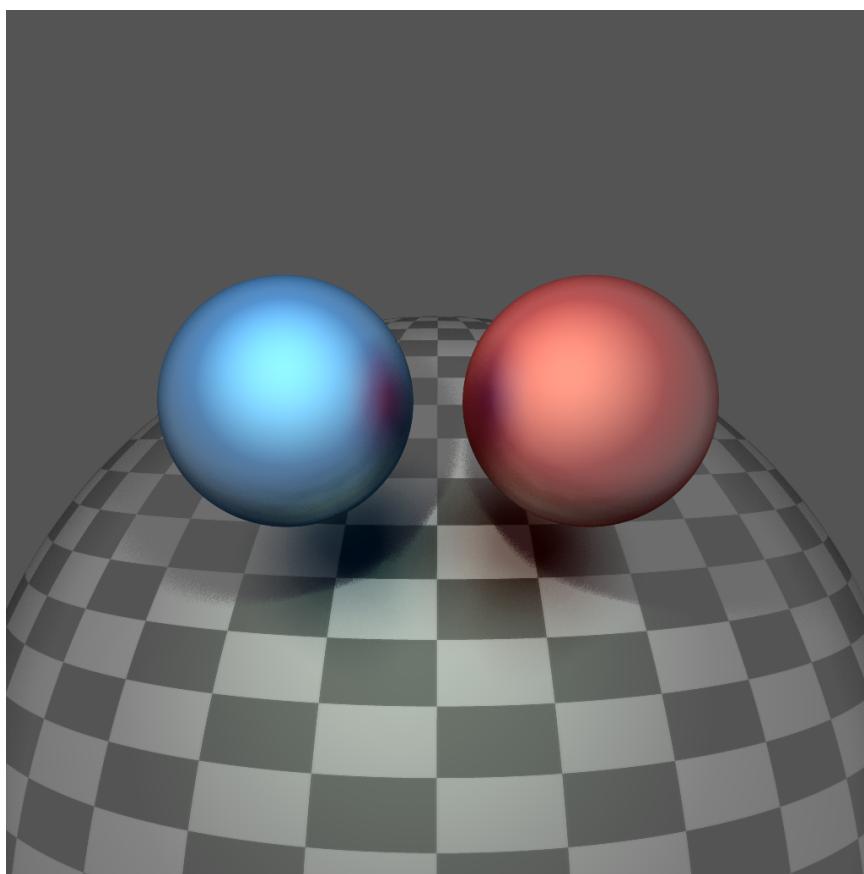


Perfect refraction. The object has an index of 1.55. Assuming air has a refractive index of 1.

Objective 3 | Glossy Reflection

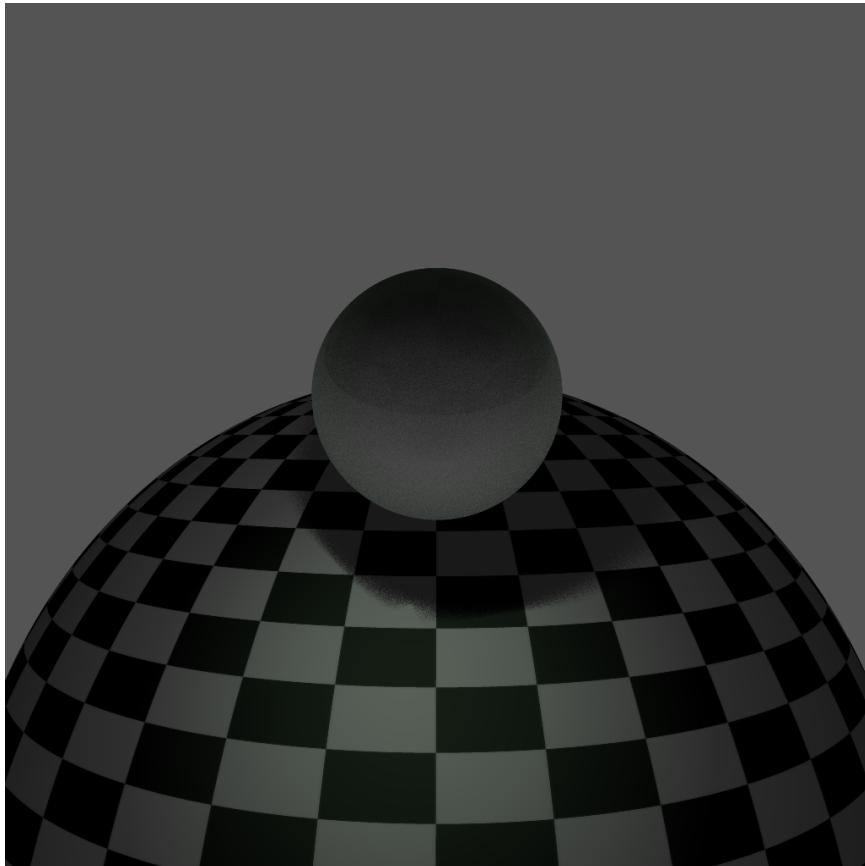


Glossy reflection with 1 bounce of the incident ray and averaged from 16 perturbed reflected ray samples.

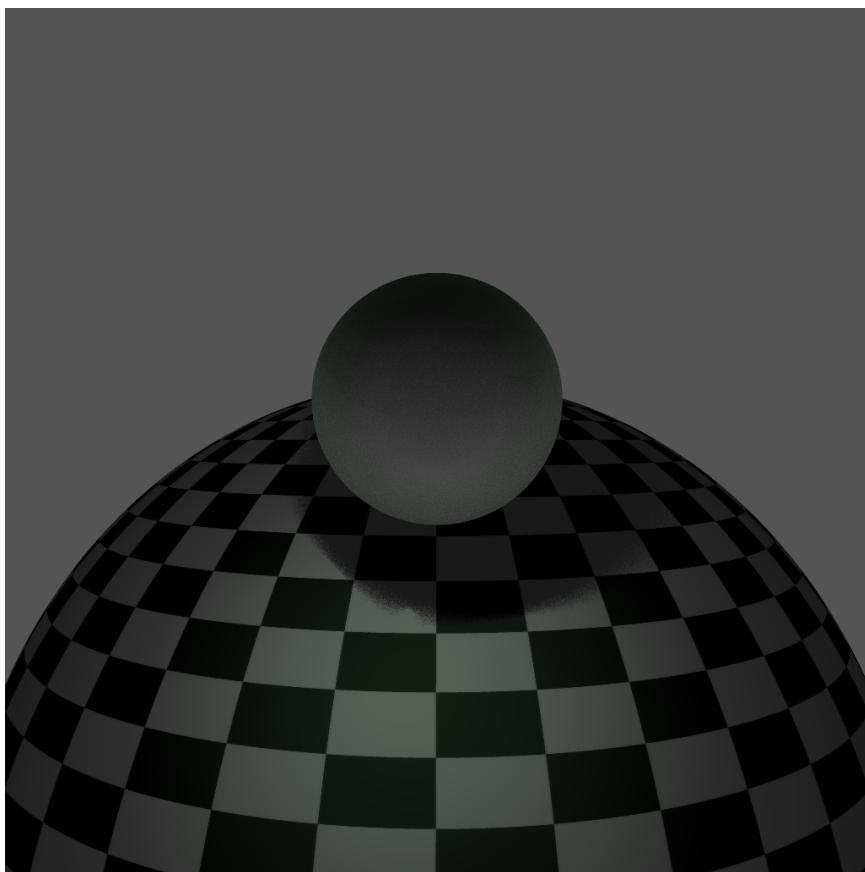


Glossy reflection with 1 bounce of the incident ray and averaged from 36 perturbed reflected ray samples.

Objective 4 | Glossy Transmission

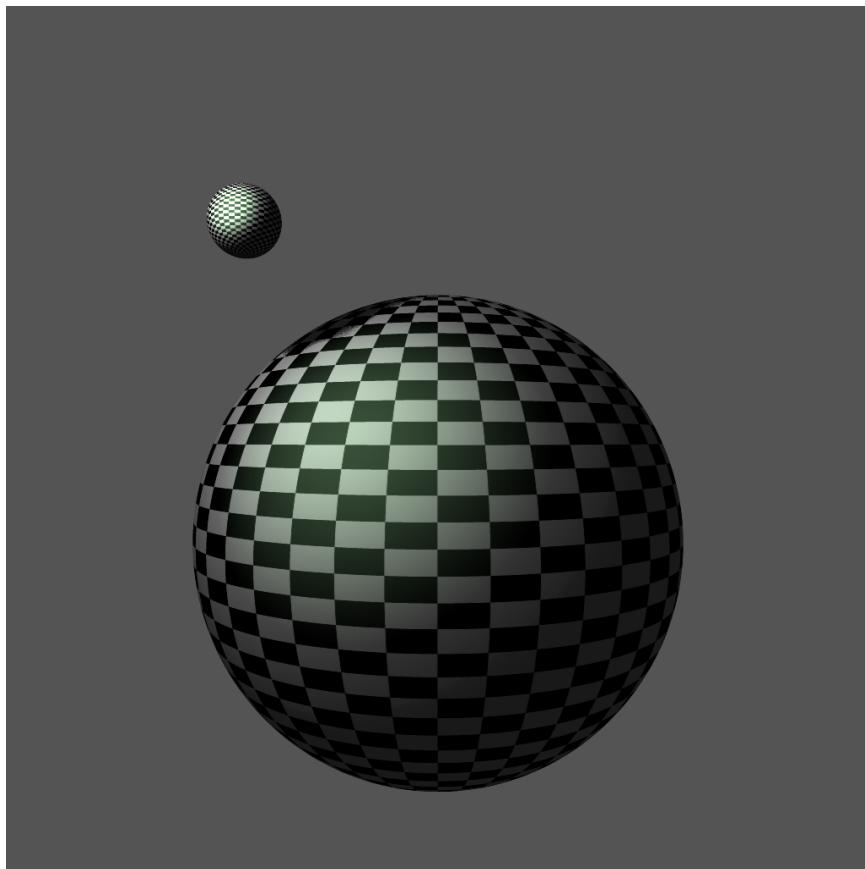


Glossy transmission averaged from 4 perturbed refracted ray samples at each surface threshold. The object has an index of 1.55. Assuming air has a refractive index of 1.

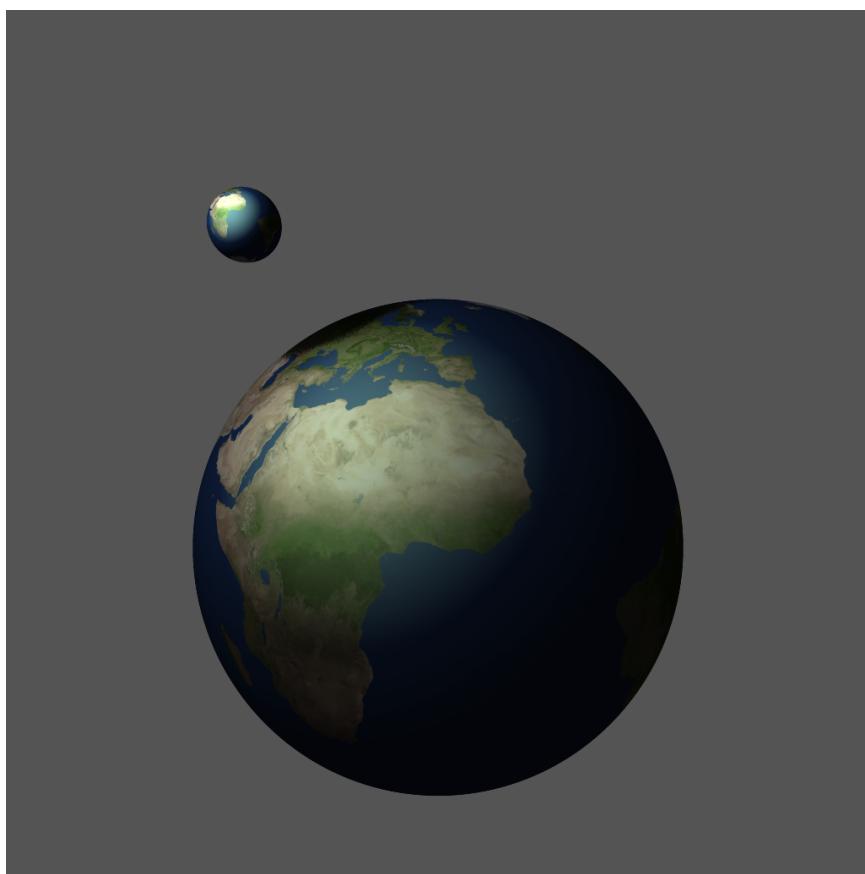


Glossy transmission averaged from 6 perturbed refracted ray samples at each surface threshold. The object has an index of 1.55. Assuming air has a refractive index of 1.

Objective 5 | Texture Mapping

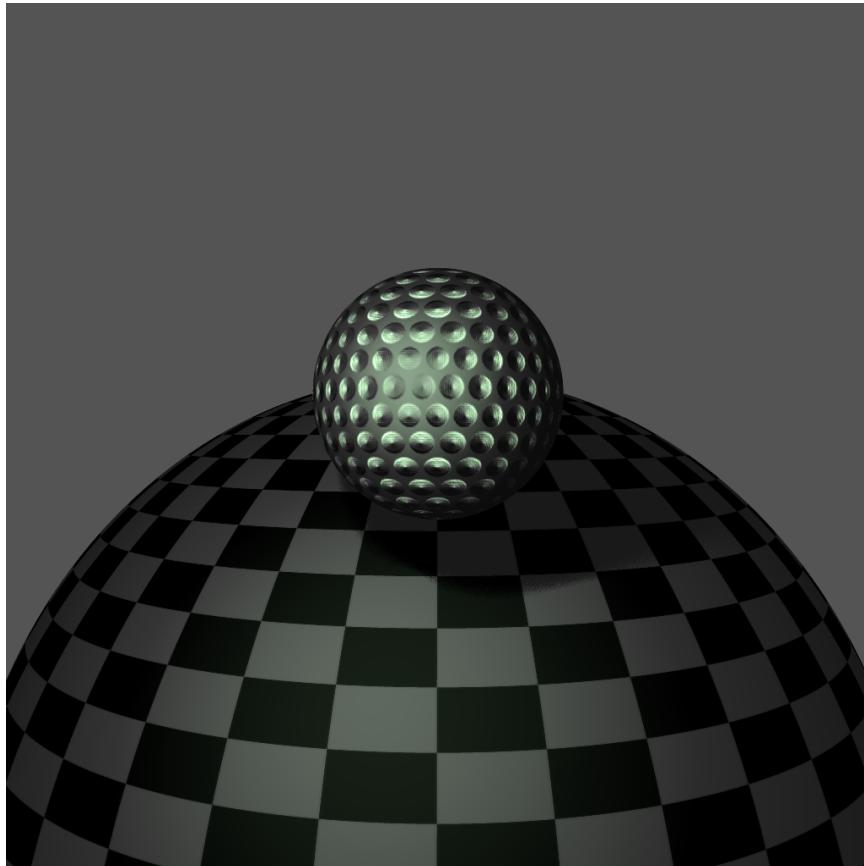


Texture map using a checkerboard texture.

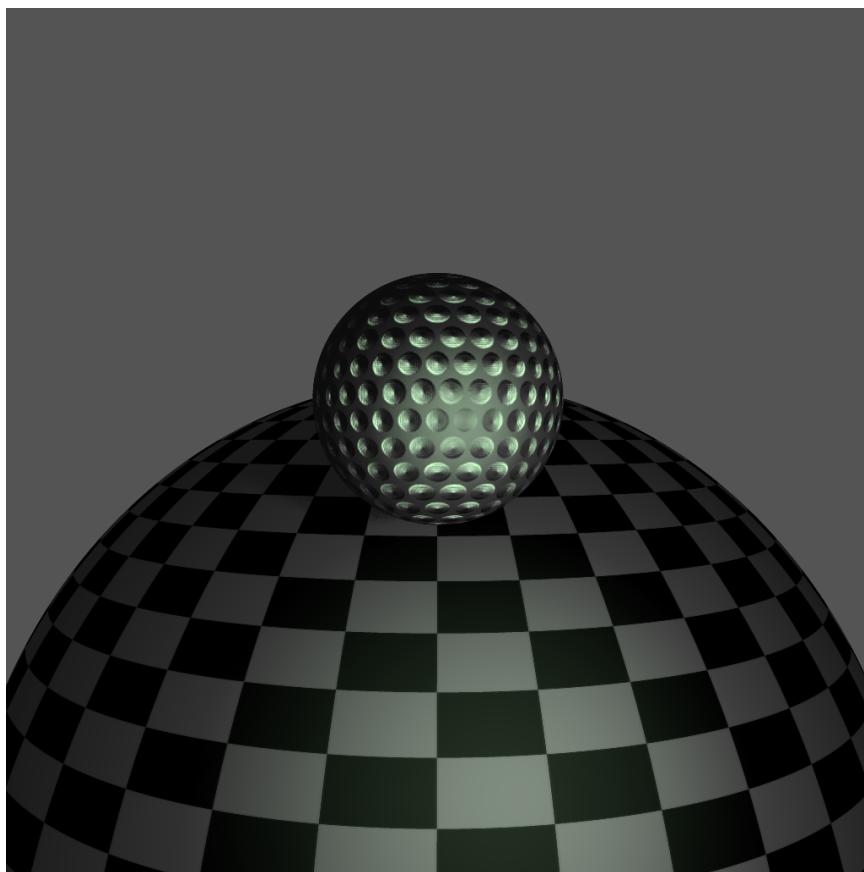


Texture map using a planet Earth texture.

Objective 6 | Bump Mapping

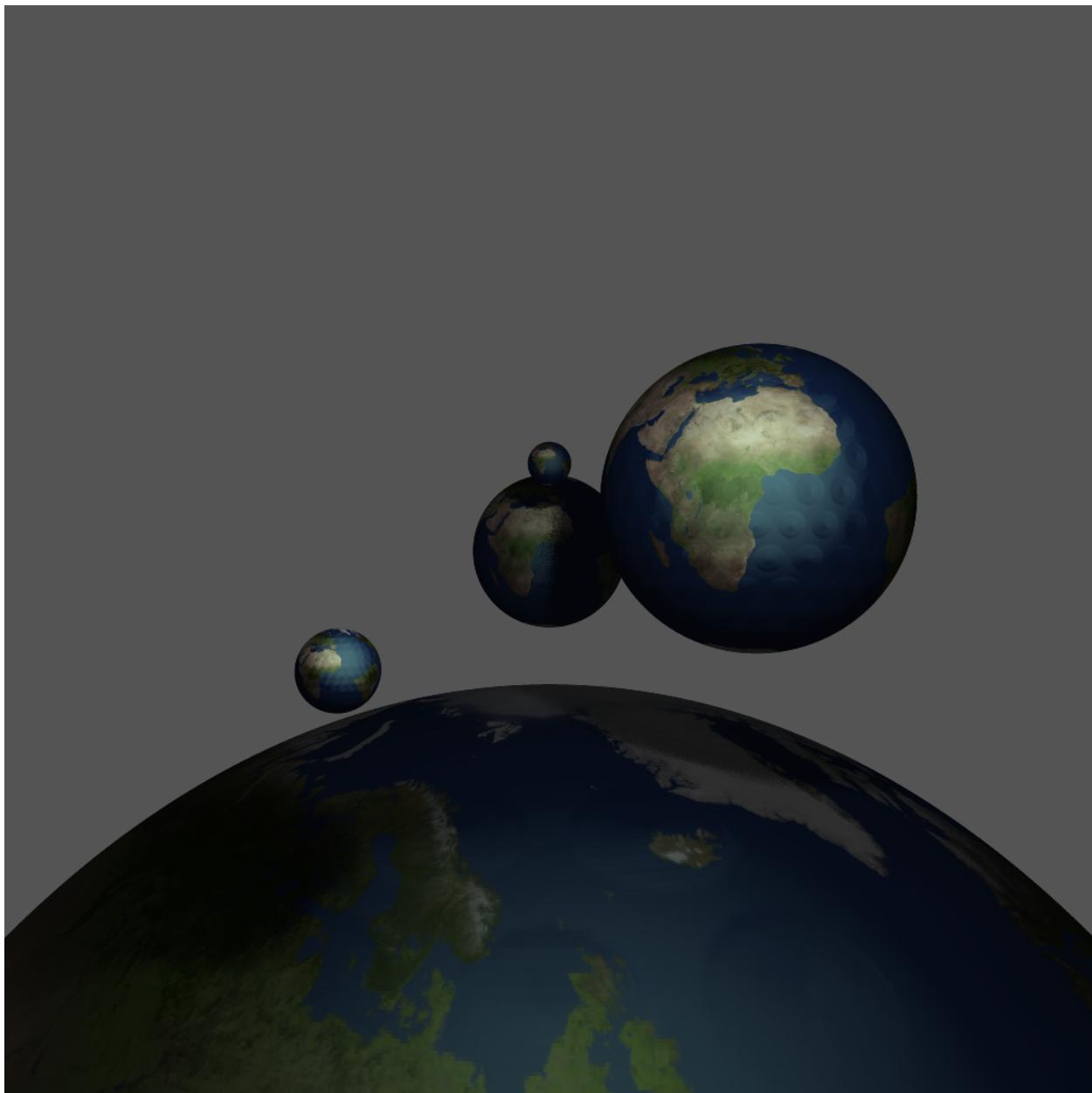


Bump map using a golf ball heightmap.
Light source positioned behind the camera
above and to the left of the objects.



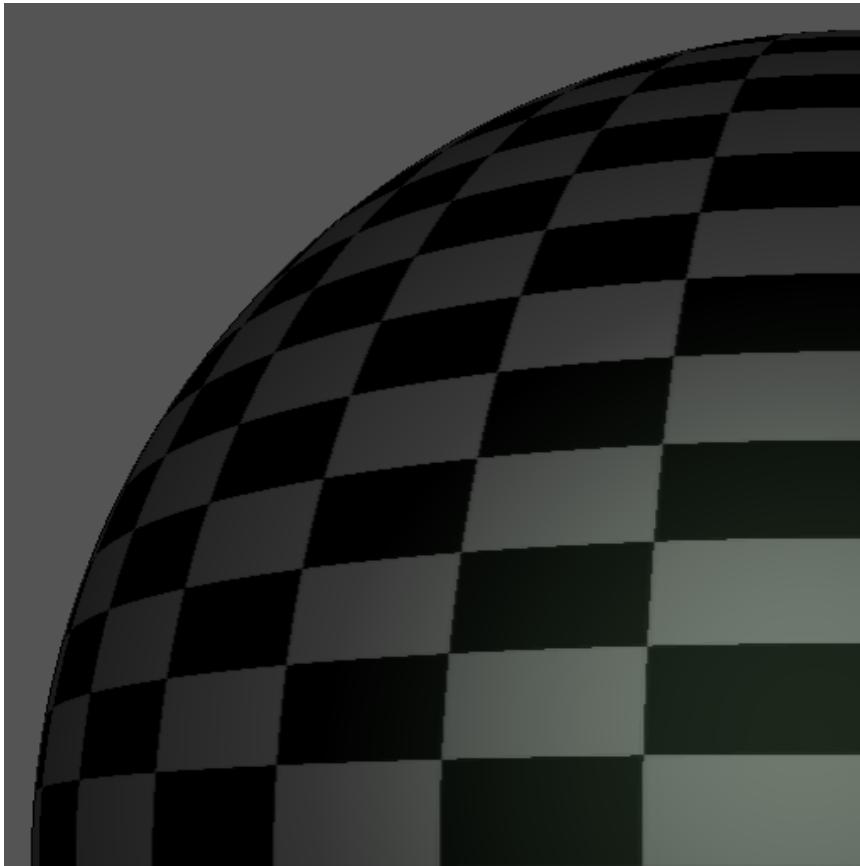
Bump map using a golf ball heightmap.
Light source positioned behind the camera
below and to the right of the objects.

Combined Objectives 5 & 6

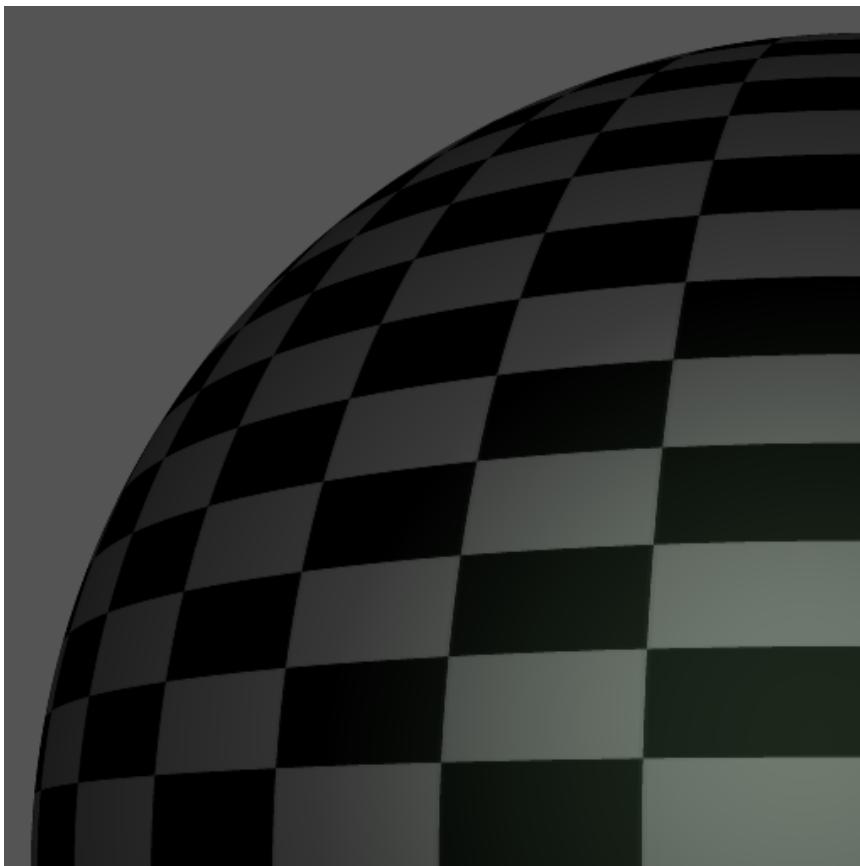


Collection of objects with both texture and bump mapping.

Objective 7 | Supersampling Anti-aliasing

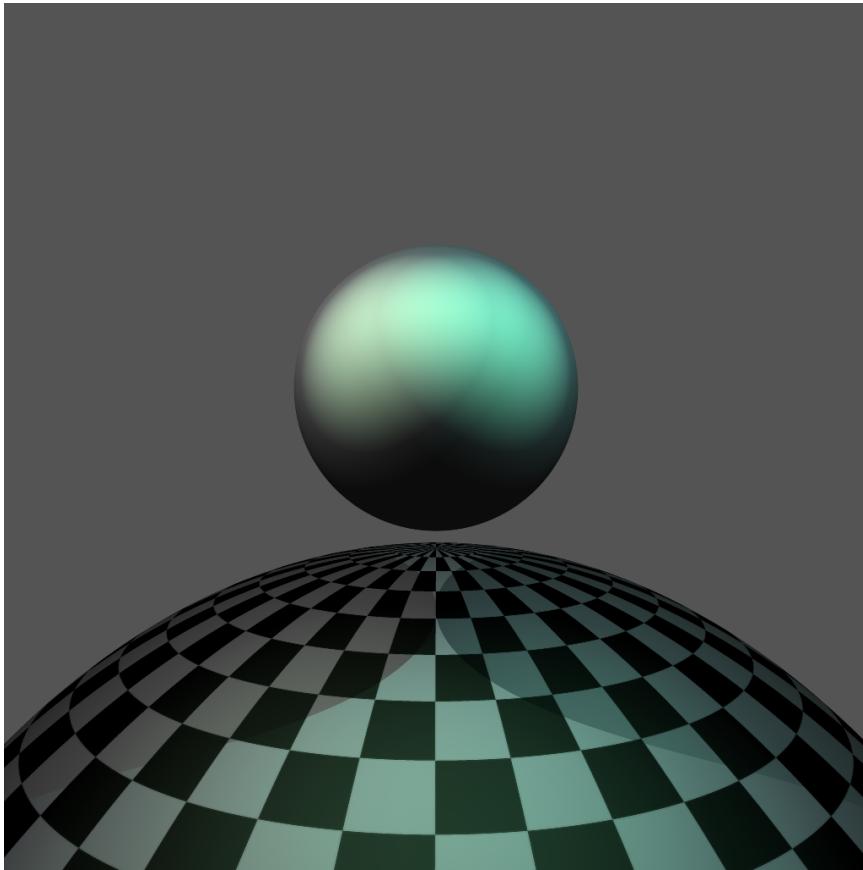


No anti-aliasing.

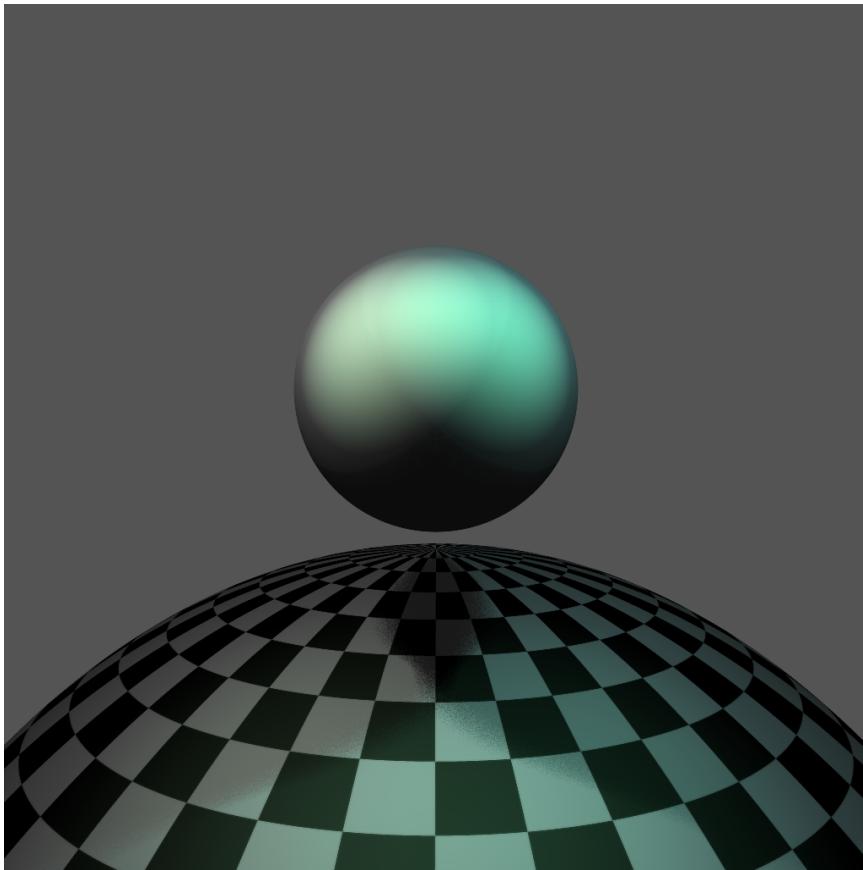


With supersampling anti-aliasing.
Averaging the colors of 9 rays shot through
a grid pattern of each pixel.

Objective 8 | Soft Shadows

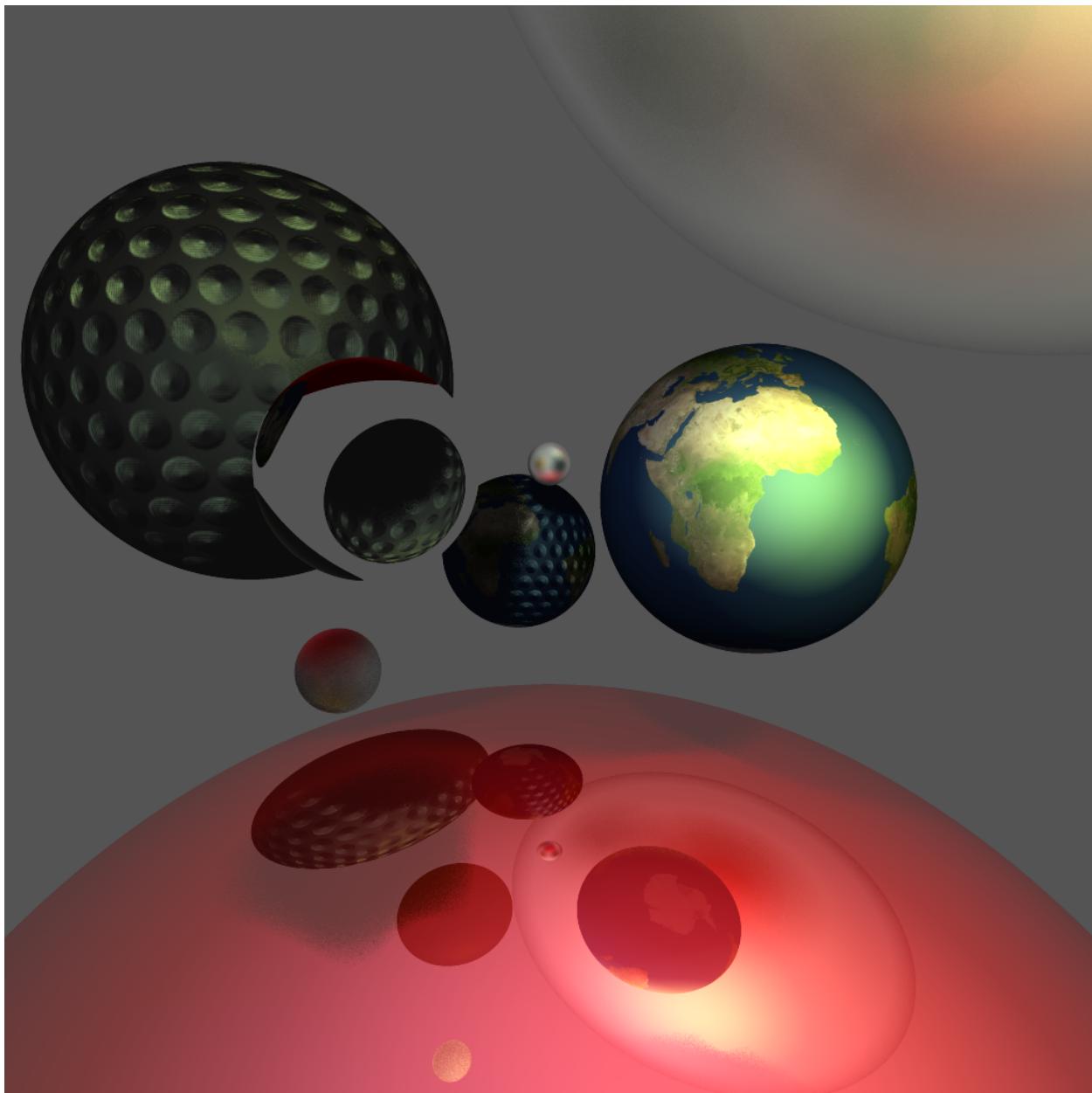


No soft shadows. With point light sources.



Soft shadows averaged from 20 shadow rays sampled from a 200 x 200 area light source.

Objective 9 | Final Scene



Final scene with 2 light sources demonstrating SSAA, soft shadows, mirror/glossy reflection/refraction, and texture/bump mapping.