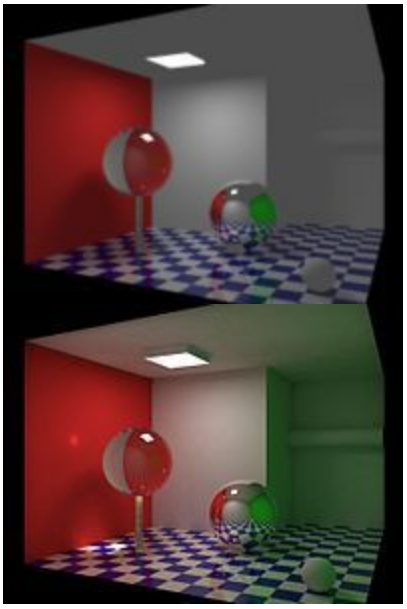
Part 1:
Indirect Illumination:
I think this technique works by trying to recreate the light rays that bounce off of objects. The more rays the technique can recreate, the closer to reality it will look. There can be many different ways these light rays. Rays can be reflected off a surface even if the surface isn't reflective. There are also many algorithms that when combined can make the scene very realistic. Some examples of these algorithms are Radiosity, ray tracing, beam tracing, cone tracing, path tracing, Metropolis light transport, ambient occlusion, photon mapping, and image based lighting.

I think this can be recreated in GLSL by having many different shaders each implementing one algorithm or technique. Then you can combine all these shaders to create the scene. This is similar to what we did in our previous assignments.



This scene was rendered without indirect illumination.

This scene was rendered with indirect illumination.

As you can see, indirect illumination reflects the colored light from the walls.There are also caustics showing originating from the glass sphere.

Part 2:
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