

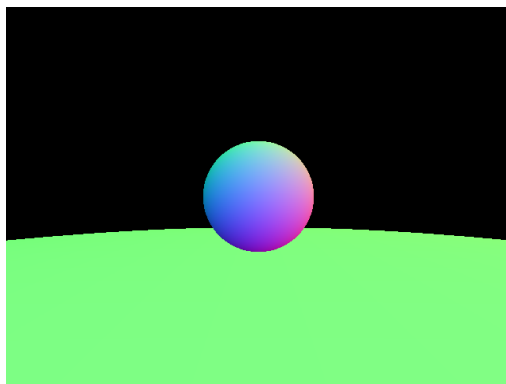
Assignment-3 Submission

Indian Institute of Technology Delhi

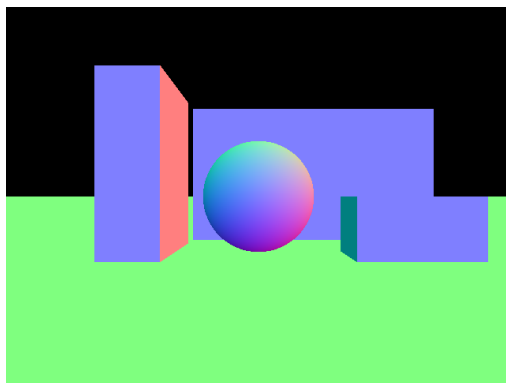
Path Tracing

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1 Two Spheres (Normal Mode)



2 Sphere, Plane and Boxes (Normal Mode)



3 Diffuse Lighting

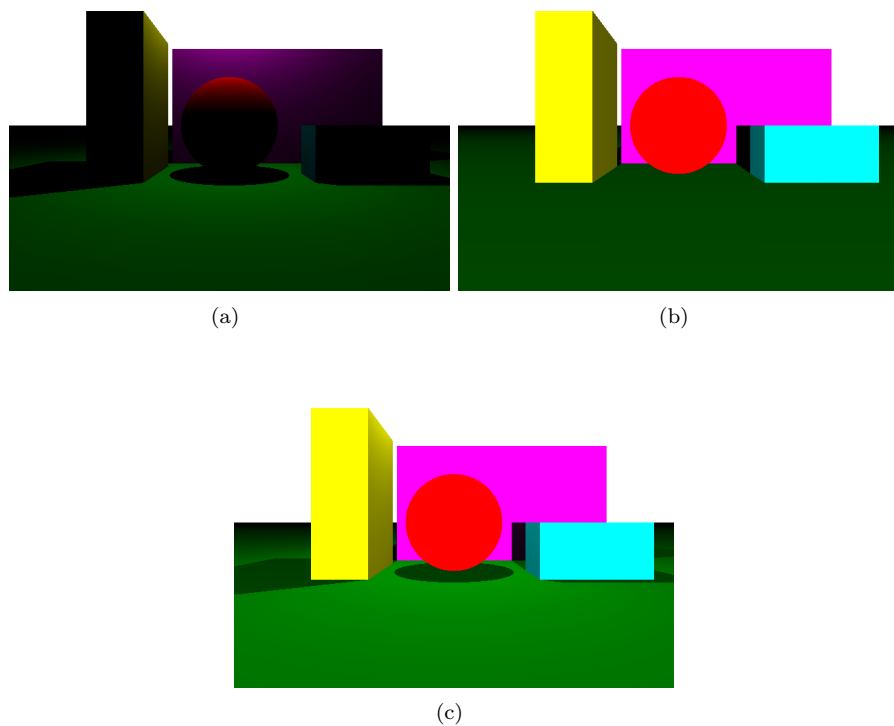


Figure 1: (a) Lighting from *nearby* point source; (b) Lighting from *far-away* point source; (c) Total diffuse lighting (without gamma correction)

4 Affine Transformations

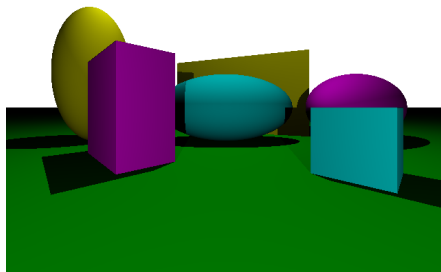


Figure 2: Rotated boxes and stretched spheres (without gamma correction)

5 Gamma Correction

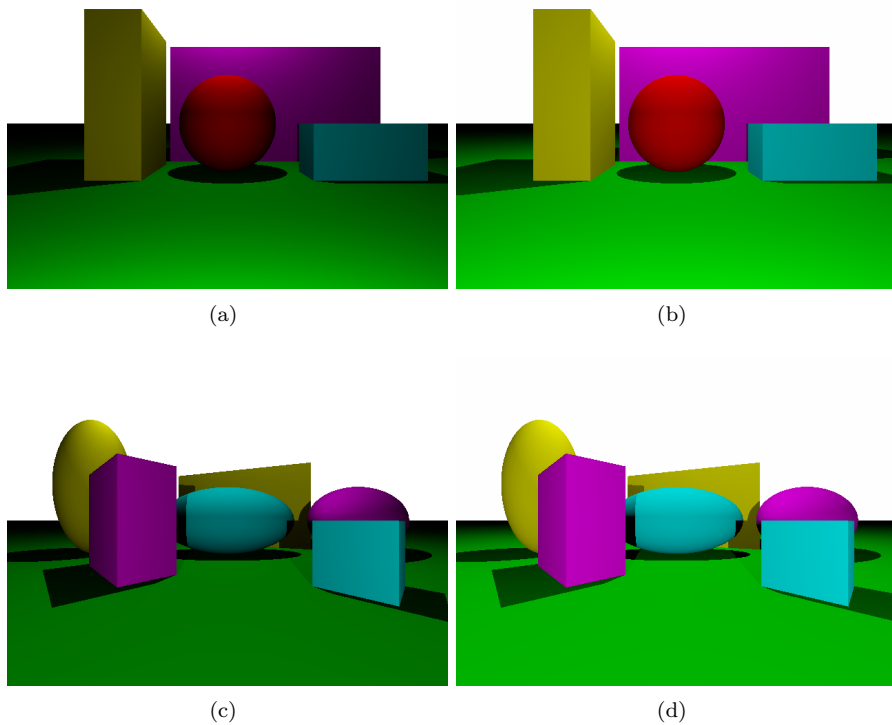


Figure 3: (a & c) Without gamma correction; (b & d) With gamma correction

6 Specular Reflection and Refraction

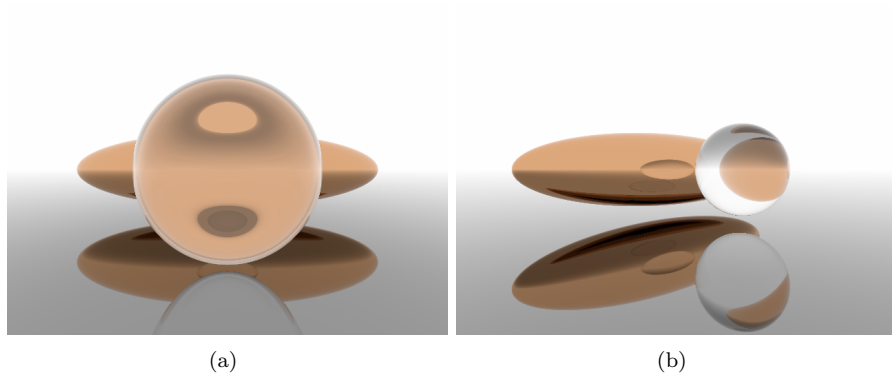


Figure 4: (a) Camera centre at $(0, 0, 2)$; (b) Camera centre at $(-5, 0, 4)$

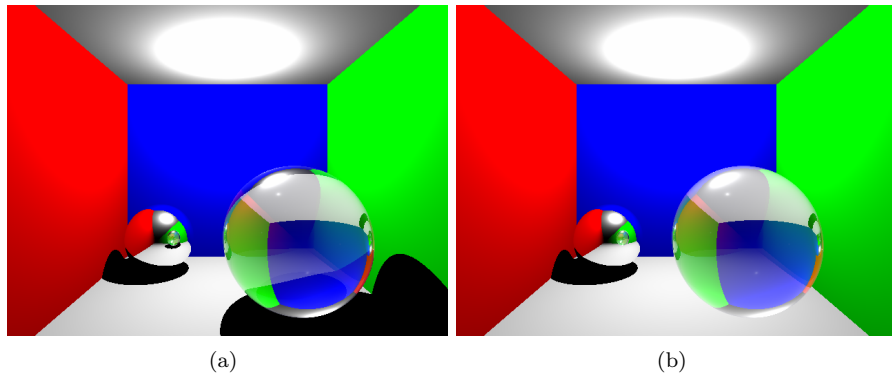


Figure 5: (a) Without shadow transparency; (b) With shadow transparency

7 Diffuse Interreflection

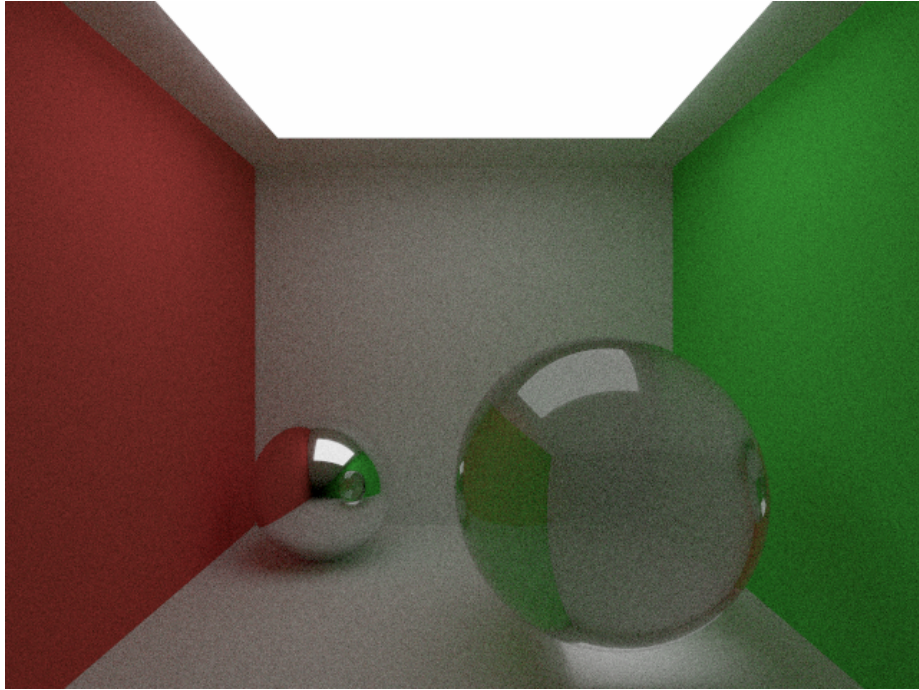


Figure 6: Diffuse interreflections from left wall (red) and right wall (green)

8 Light Transport Effects

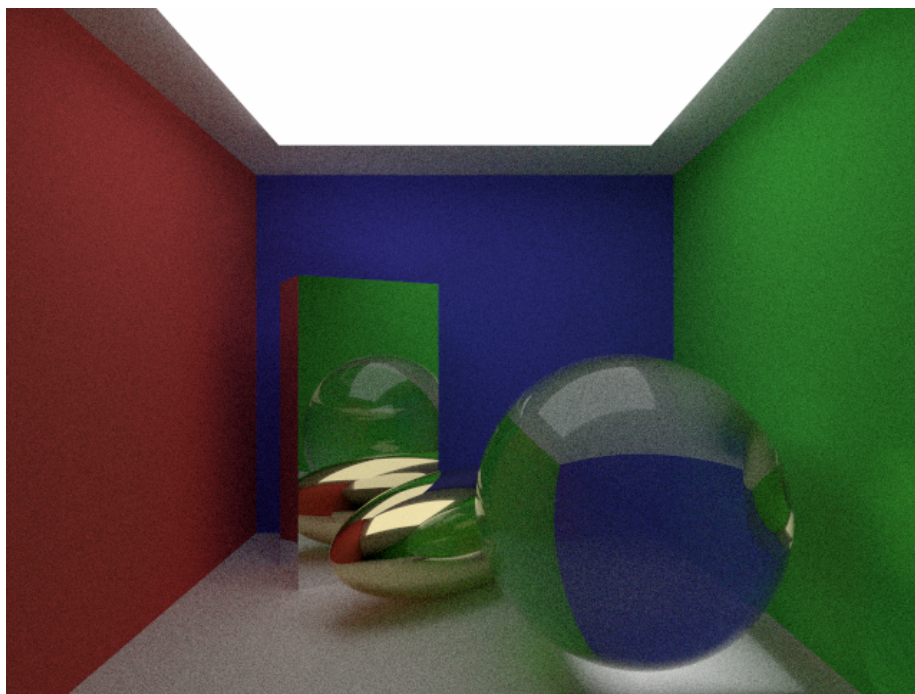


Figure 7: All three shapes (sphere, plane, box), affine transformations (rotation, scaling, translation), soft shadows (on walls and floors), reflection and refraction (metallic box, metallic sphere and transparent sphere), indirect illumination (diffuse interreflection on floor) and caustics (floor near transparent sphere)

Note: We did not implement direct/indirect splitting of illumination for diffuse objects in path-tracer due to paucity of time, and the fact that it was an optional component of the assignment.