CSCI 5607, Fall 2019 PRANEET C BALA

Assignment 1b: Implementing Light and Shadow **5393094**

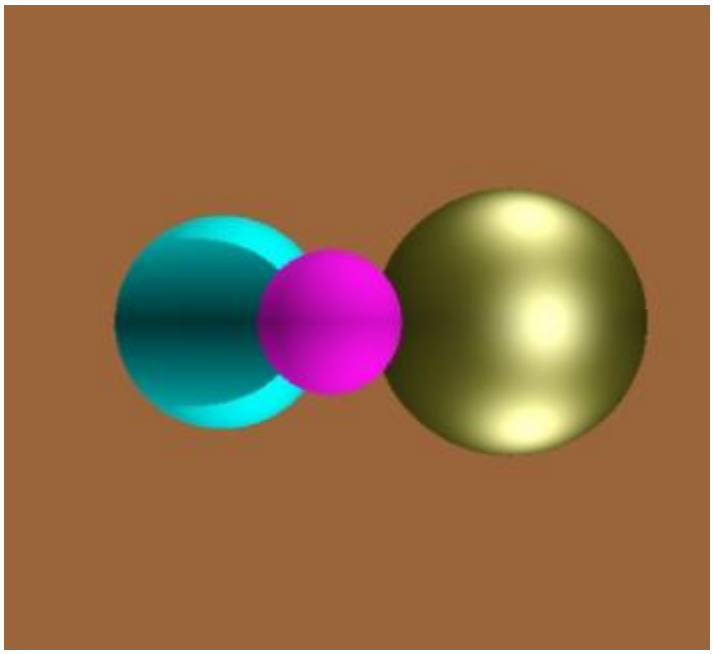
Due: Wednesday October 2nd

In this assignment, we demonstrate the use of lighting and shadow in Graphics.

We observe the effects of material parameters such as Odλ, Osλ, ka, kd, ks and n on the rendered image.
The code basically takes in eye position, viewing direction, up vector, FOV and other parameters required for scene generation.

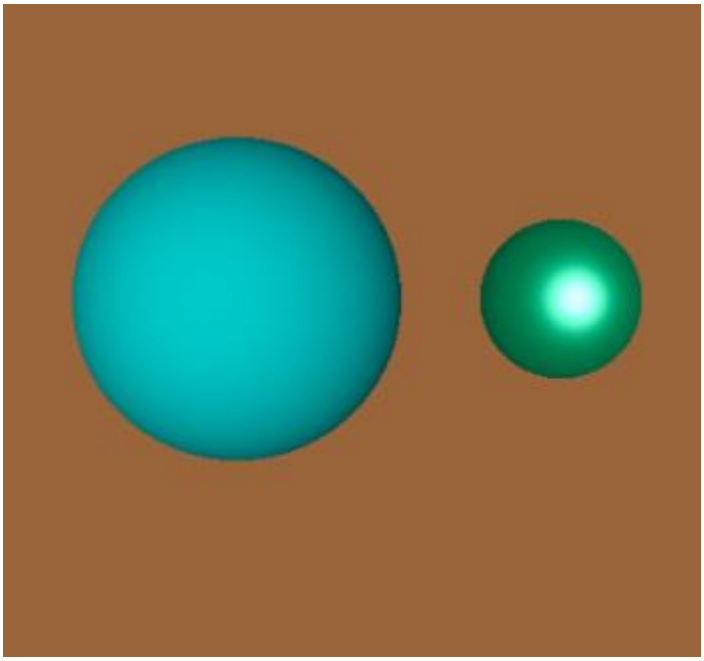
Effects of Odλ, Osλ, ka, kd, ks and n:

By changing the above parameters, we find the following image changes:



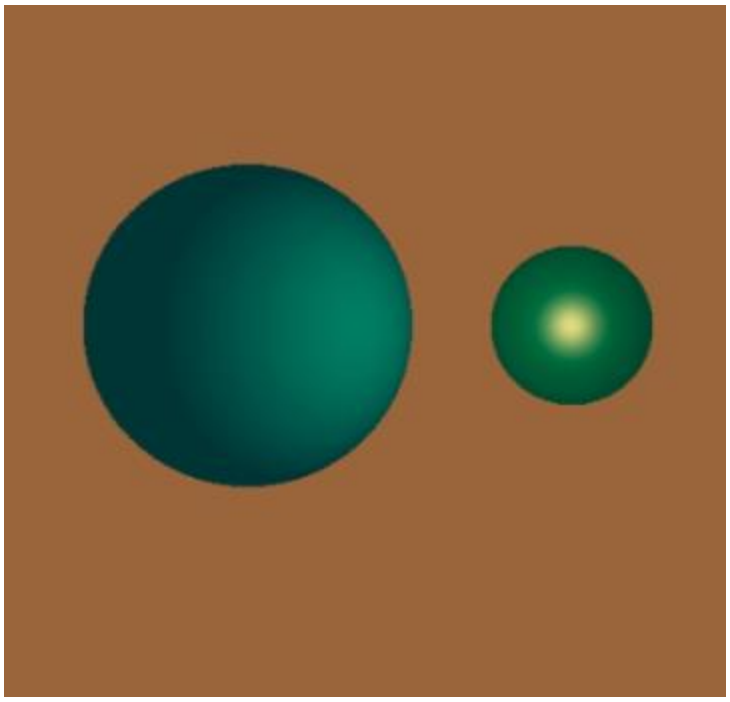
The above image shows the effect of varying material properties. The middle sphere has high ka magnitude, hence it has a matte finish. The right one has high specular portion, hence it looks shiny. The one on the left has more diffusion component.

Effects of Directional light source:



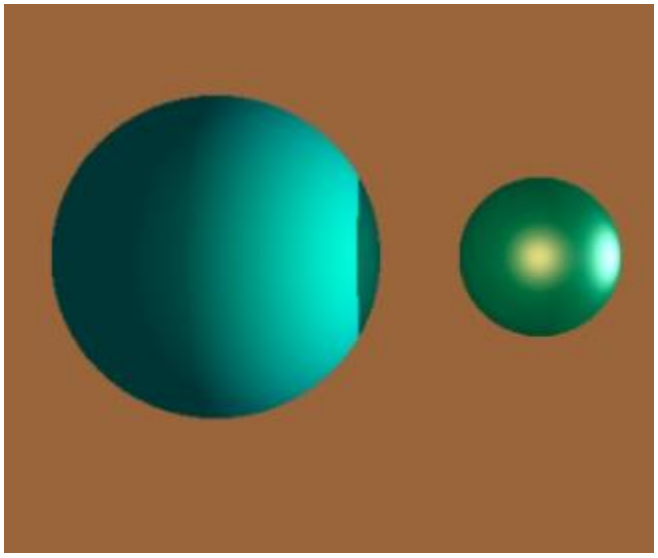
The above image shows the effect of directional light. Directional light is a special case of Point light, where the point light source is at infinity. The light direction in the above image is going into the image. Hence, the spheres are well illuminated.

Effects of Point light source:



The above image shows the effect of Point light source. The source is very close to the spheres. Hence, shadows are more prominent on the other side of the sphere. The source is between the 2 spheres.

Effects of Multiple light source:



By incorporating multiple light sources, we can see the effect of each of these lights. The directional light, which is to the right of the spheres, produces a sharp shadow. While, the point source, creates its effect on the right sphere (specular portion)