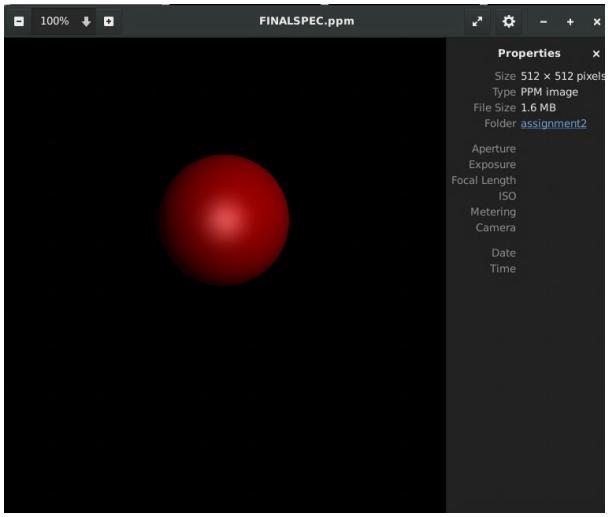
Matthew Altmann
CSCI 5607 - Spring Semester 2022

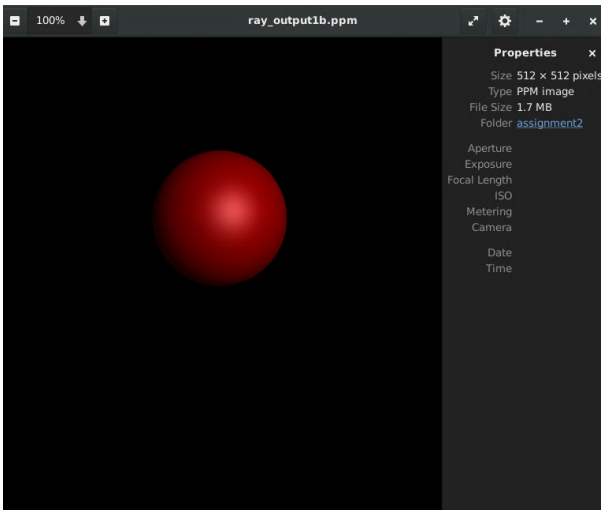
Assignment 1b

the effects of: ka, kd, ks, n and Osl in addition to Odl
the use of a directional light source vs a point light source
the use of multiple lights vs a single light

Once again, I have submitted this assignment five days late and have now used 12 of my 14 allotted by both the course and my DRC accommodation. However, I have fixed my mirrored-image issue and got the lighting exactly as it is in the example!



Mine

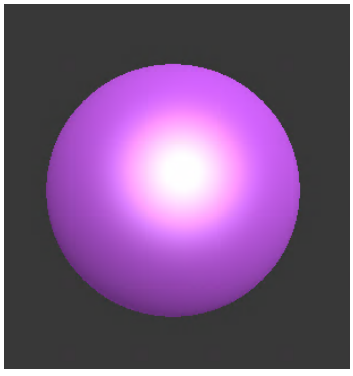


Ville's

Here is a simple purple sphere at the origin with a white point light positioned at 6,6,6.

$$K_a = 0.6$$
$$K_d = 0.6$$
$$K_s = 0.7$$
$$n = 10$$

Here is the same sphere again with directional light. As you can see, the specular is a lot less focused as it is coming from a direction instead of emanating from a single point in space.



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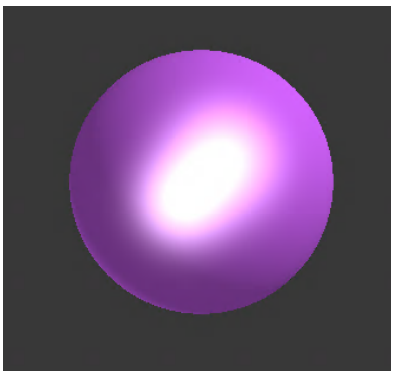
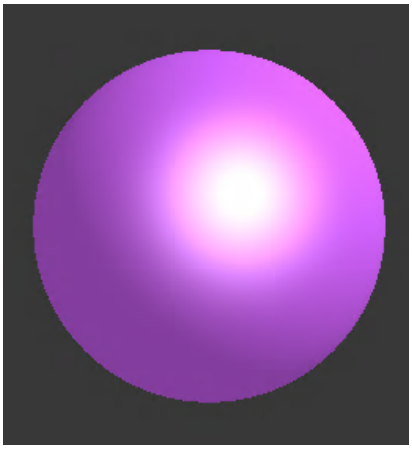


Here, I have added a second point light at -6,-6,-6. The addition of more light to the scene makes the whole object a bit brighter, and also makes a second specular from the second light. It just so happens that these two speculars are touching.

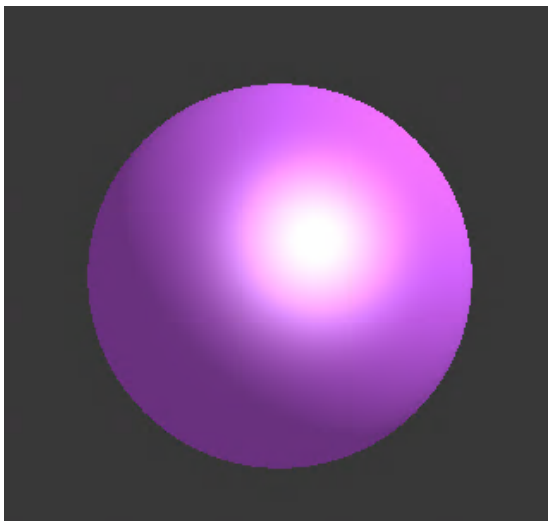
Now I have increased k_a to 0.75 from 0.6, and it is clear that the overall ambient brightness of the object has increased just slightly.



New

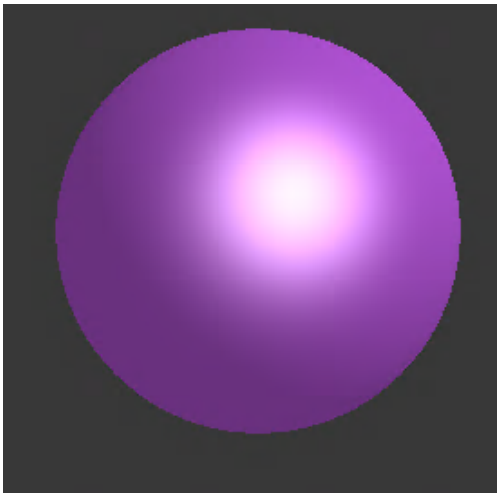
Old

The next change to make is to increase k_d to change how the diffuse is generated/applied to the sphere's surface. I reverted the ambient change and increased the diffuse coefficient to 0.8 from 0.4.



←- New (0.8)

-→ Old (0.4)



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A bit harder to see, but this increases the distance of light banding from the light source's contact point with the sphere (the specular.)

The penultimate change is to increase the specular coefficient drastically in order to increase the specular reflectivity. I predict this will make the specular much more reflective/circular.

New

Old

Finally, increasing n (the exponent by which the specular reflects,) from 10 to 25 will make the specular much smaller/concentrated.

New

Old

Unfortunately, I did not get the shadows implemented correctly, but I will work on that before I get started on the next part. Thank you.