MAT594G - Realistic Image Synthesis (Fall 2011)
Course Website: http://mat.ucsb.edu/594G/
Author: RJ Duran
Email: rjduranjr@gmail.com (rjduran@mat.ucsb.edu)
Date: 10/20/11
Homework: #2

Writeup
In this homework I was able to complete:
- Phong Shading
- Shadow Rays
- Reflection

I was not able to complete:
- Refraction with glass sphere
- Refraction with Fresnel effects
- Non-Traditional Shading Model

I think the hardest part of this for me was building upon my previous code. I spent a lot of time restructuring it to make it more object oriented so I could add more objects to the scene. I also spent a lot of time trying to get the shadow rays working properly. I found it was because of how I structured my code. For the assignment I completely understand the theory, it's the implementation that takes time and reflects my weaknesses in programming. This is very helpful in becoming a better programmer.

Shadow rays working can be seen in image-shadowRaysworking.jpg.

I am still getting some artifacts with the shadow rays. I currently have two spheres showing with two lights. The order of the spheres is effecting the shadows. This can be seen in image-reflectionIssueProblem3.jpg.

The issue can still be seen when I added a third sphere for the first part of refraction in image image-beforeaddingglasssphere.jpg.

Once I added the fourth sphere (glass) I get what is shown in image-noGlass.jpg. The glass isn't added because this is how far I made it.

The image-final.jpg image shows where I was when I stopped working on it. You can see that everything else is working in the background, with the exception of the shadow issue and the reflection issue from problem 3.

Non Traditional Shading Model
I was not able to make it far enough to build up a different shading model. What I would like to have done was implement a fisheye type image plane with glass objects. Just ran out of time.

Notes
I spent at least 40 hrs, maybe more, on this assignment and still didn't finish. I plan on restructuring my code to make it much easier to read and add features to before the next homework.

To run my assignment just use make. Everything is in HW2.cpp.