A385/CS381
Project 4

Major topics covered in the homework:

- Building and viewing a shaded 3D scene
- 3D viewing, rotations, and 3D interaction interfaces
- Using programmable shaders.

What to submit

- Code: `.h` files and implementations. Your programs must compile and run on a generic PC with W98/2K/NT/XP/7 with VC++, freeglut, and GLEW installed or Mac OSX with `Xcode 3.2`. The code must be your original work!
- A report stating: what you did; how you did it; you must describe clearly the data structure you used to represent your scene; what is the expected behavior of your resize routine; describe the user interaction commands; any particular features you want to draw attention to; or any problems with the program you know about.

Problem Write a program implementing using shaders implementing three lighting scenarios in a 3D scene (See Figure 1.)

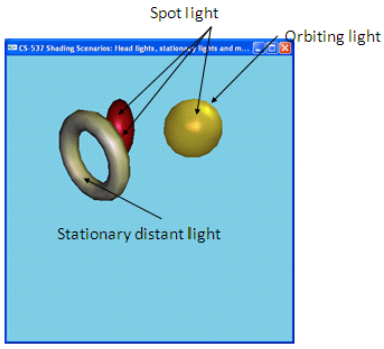

Figure 1: The required Scene: three objects and three lights.

- The scene:
  1. A golden sphere: you can use the mesh from `shadedSphereOGL*.zip`)
  2. A ruby ellipsoid: you must use a properly scaled version the sphere mesh you used for the gold sphere
  3. A silver torus or cylinder.
- The lighting scenarios:
  1. A fixed distant light illuminating the whole scene

2. An orbiting light illuminating only the golden sphere
3. A moving spot light attached to the camera and illuminating the whole scene.

- You must implement a flying camera (the same as in Project 3, now is the time to fix the pilot interface if you did not get it right there) to allow the user to explore the scene.
- You must implement a full Phong shader.

Note in this project you are not allowed to use deprecated code to specify: transformations, lighting and material properties.