

**Computer Science 102**  
**Summer I 2009**  
**Project 1 – Basic Ray Tracer**

**Due: midnight, Sunday, 5/24/2009**

**Overview**

For this project, you will write a basic ray tracer (called ray.c). Your ray tracer need only produce a single image of a red sphere illuminated by a single point light and additional ambient light. Future assignments will build upon the code you write for this project.

**Description**

Your ray tracer should fulfill the following requirements:

- scene geometry must include
  - a sphere centered at (0, 0, 10) with radius 3
  - a point light source at (-10, 10, 5)
  
- lighting in the scene should include ambient, diffuse, and specular effects on the sphere's surface
  
- the images should be 500x500 pixels (output in ppm format to a file named img.ppm)

Your code must be modular and use functions, structures, typedefs, and arrays. We will discuss program structure and useful data constructs in class. Additionally, your vector functions should appear in a separate source file.

**Output Image**

Your final image should appear as follows:

