

Computer Science 805

Spring 2002

Project 1 – Basic Ray Tracer

Due: Tuesday, 2/12/2002

Overview

For this project, you will write a basic ray tracer. 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

This project will give you the basic supporting code for more advanced features. Since your ray tracer need only render a single image, you can hardcode the scene description in the program.

Your program should save the rendered image in an output file in ppm format. The output filename can be hard-coded or given as a command line parameter.

You may produce several different images with your ray tracer, but you must produce at least one image that conforms to the specifications given in the Sample Output section below.

Submission Requirements

You should create a web page with the following:

- your name, the date, and a title/description of this project
- the image your code produces
- a link to a tar file containing your source code and makefile
- any accompanying comments describing your source code
- instructions on how to compile and run your code
- any interesting problems you encountered and how you resolved them

You will be graded on the source code you submit and the web page presenting your results.

Sample Output

Here's a sample scene description (in povray format):

```
// simple scene with one light and one red sphere

camera {
  location <0, 0, 0>
  look_at <0, 0, 1>
}

light_source {
  <-10, 10, 5>
  color <1, 1, 1>
}

sphere {
  <0, 0, 10>, 3
  pigment {color rgb <1, 0, 0>}
  finish {phong 1}
}
```

I will give you additional information on lighting to explain the ambient term and the specular highlight.

Here's the resulting image:

