

# Major Program 1: Ray Tracer version 1

Due: October 12 11:59 p.m.

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## Overview

In this assignment you will assemble the components you have been building in the short programs and in the lab to add a couple of additional functions to create a program that will create a color .ppm file from a scene specification of the type described in the class notes.

## Requirements

Your program *must* read the model description from the **standard input**, write the **ppm** image to the **standard output** and write **model dump** and **debugging data** to the **standard error**.

You must provide a makefile that will build an executable named *a.out*

You must include at least as much conditionally compiled debugging code as is described in the notes. You should disable the debugging code in the makefile you submit by commenting out the macro in which it is defined. (Insert a # at the start of the line.)

Your program must support *infinite plane* and *sphere objects* but may support others.

You must submit a scene model of your own design. That file must be named *model.txt*

Your program must compile without warnings, contain a reasonable level of commenting, consist of independently compiled modules as described in the notes and not contain lines of source code > 72 characters in length.

## Implementation details

There are four functions beyond those written in lab and the *sp*'s that remain to be written.

A module named *image.c* should contain *make\_image()* and *make\_pixel()*. These functions are described in pp. 75-76 of the notes. Some of the code needed for both of these functions may be borrowed from the *projection\_test()* function.

A module named *raytrace.c* should contain the functions *ray\_trace()* and *find\_closest\_object()*. An overview of the *ray\_trace()* function is found on p. 77 and the *find\_closest\_object()* function is described on page 104.