

**Fall 2004**  
**22C:151 Introduction to Computer Graphics**  
**Assignment 1**

<p><b>Goal:</b> Make sure you can write, compile, and run simple programs using OpenGL and GLUT. Provide some infrastructure so you can output images, and demonstrate you can post them online.</p>
--

**Problem 1:** (5 points) Tell me why you decided to take this class, what you hope to learn, and if there are any graphics topics, in particular, that you would like to learn more about.

**Problem 2:** (5 points) Write a function which outputs ASCII PPM files. Demonstrate it works by writing a program which outputs a  $512 \times 512$  image containing random noise (call *drand48()* or some similar function). To make sure the orientation of your PPM images is correct, make the top-most row of pixels red and the left-most column blue instead of random.

- Future assignments will require you to read PPM files as well. Now would be a good time to write a function to read PPMs, should you have time.
- ASCII PPM files take significantly more space than RAW files. You may wish to make modifications so your code can write/read RAW PPM files. For Windows-based programs, make sure you open the file in binary mode (e.g., use “wb” in *fopen()*).

**Problem 3:** (5 points) Write a very basic OpenGL/GLUT program. This should open a  $512 \times 512$  window (the window title should include your name). Include a GLUT mouse callback which prints a message to standard output everytime a mouse event occurs. Take a screen capture to show your program in action (try using the “PrntScr” button in Windows or *xv* under Linux). For this problem, you may use the code on p. 18-19 of the OpenGL Programming Guide. Note you *will* need to modify it slightly to satisfy the problem requirements.

**Problem 4:** (5 points) Set up a web page containing your images from Problems 2 and 3. Send me an e-mail with your name and a link to your webpage. Images from future assignments should be posted on the same page (or a linked page). If you *do not* want a link from the class webpage to your results page, please let me know. For information about how to setup a webpage, see: <http://www.divms.uiowa.edu/local/create-personal-pages.html>. Note: PPM images are not readable by most web browsers. Please convert your images to a viewable format, such as .GIF, .BMP, or .PNG. GIF images are preferred. You can use programs such as GIMP, *xv*, or Paintshop Pro to convert images. Photoshop does not usually read PPM files, unfortunately.