

Fall 2009
22C:151 Introduction to Computer Graphics
Assignment 1

Due: Wednesday September 2nd, 2009 by 11:59pm

Submit via ICON at <http://icon.uiowa.edu>

Goal: 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.

Problem 1: (5 points) Tell me why you decided to take this class, what you hope to learn, and if there are any particular graphics topics that you would like to learn more about. Put this answer in the README you submit with your code for the following problems.

Problem 2: (5 points) Write a function that outputs ASCII PPM files. Demonstrate it works by writing a program to output a 512×512 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 also require you to input (i.e., read) PPM files. Now would be a good time to write a function to read PPMs, as it will save you time in the future.
- ASCII PPM files take significantly more space than binary “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 512×512 window (the window title should include your name). Include a GLUT mouse callback which prints a message to standard output everytime a mouse button click or release occurs. Take a screen capture to show your program in action (try using the “PrntScr” button in Windows and *gimp* 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 the book’s code 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 DIVMS (Computer Science) webpage, see:

<http://www.cs.uiowa.edu/~cwyman/classes/common/howto/createWWW.html>

though you may put your webpage on any publically accessible server (including using the functionality on ICON).

- *Note: PPM images are not readable by most web browsers. Please convert your images to a viewable format, such as .GIF, .BMP, or .PNG. PNG images are preferred. You can use programs such as GIMP to convert images. Most Linux machines (including those in MLH 301) also have the command line programs ppmtogif, ppmtobmp, and ppmtopng.*