# CS334: Assignment #0 – Warm-up

**Out**: Aug 28, 2008
**Back/Due**: Sept 9, 2008

(was due Sept 4th but since Monday Sept 1st PSO falls on holiday, extended to Sept 9)

**Objective:**
This objective of this assignment is a simple warm-up program to help setup your programming and graphics environment. This assignment will require you to setup a shell OpenGL, GLUT, and GLUI program using Windows. It is to your benefit to write the program modularly and with a clean setup so as to facilitate subsequent assignments. You have one week but it should take you much less time.

**Summary:**
The assignment is to implement a program which draws a simple 2D screen saver like program. The "screen-saver" consists of a pair of points bouncing within the confines of the windows and a line being drawn between the points. To draw the line, simply draw the line using OpenGL line drawing primitives. The first point should start at a random position and with a random (but reasonable velocity vector). The points should reflect off the edge of the window and continue moving indefinitely.

**Specifics:**
(0) Setup your programming environment to compile OpenGL/GLUT/GLUI programs. You might have to install GLUT on your machine. GLUI is a simple library you link with and OpenGL is most likely already installed. Links to GLUI/GLUT are provided on the course webpage and brief instructions were given in class and more will be in the PSO.
(1) Upon starting the program, a window should 'pop-up' for drawing and a GLUI GUI should appear. The GUI should at least contain the buttons "start", "stop", and "reset". The buttons will perform their indicated functionality. Reset implies generating a new random position and initial velocity vector. The initial velocity vector and magnitude must be random but "reasonable" – e.g., each time the program runs, the points will move in a different initial direction and speed.

**Code Template:**
To help with this assignment, below is a template you must use to setup your program.

```
#include <GL/gl.h>
#include <GL/glut.h>
#include <GL/glui.h>
#include <stdio.h>

void display(void)
{
        glClearColor(0,0,0,1);
        glClear(GL_COLOR_BUFFER_BIT);
        glMatrixMode(GL_PROJECTION);
        glLoadIdentity();
        glOrtho(0, width, 0, height, 1, -1);
        glMatrixMode(GL_MODELVIEW);
        glLoadIdentity();
```

```
        float x0 = …;
        float y0 = …;
        float x1 = …;
        float y1 = …;

        glBegin(GL_LINES);
        glVertex2f(x0, y0);
        glVertex2f(x1, y1);
        glEnd();
        glutSwapBuffers();
}

void idle()
{
        glutPostRedisplay();
}

void MakeGUI
{
        // make my GUI using GLUI
}

int main(int argc, char* argv[])
{
        glutInit(&argc, argv);
        glutInitDisplayMode(GLUT_RGB | GLUT_DOUBLE);
        glutInitWindowSize(512, 512);
        WindowID = glutCreateWindow(argv[0]);
        MakeGUI();
        glutDisplayFunc(display);
        glutIdleFunc(idle);
        glutMainLoop();
        return 0;
}
```

To give in the assignment, please use Purdue's Blackboard Vista. The TA will provide details in PSO if you are not familiar with this system. Your complete project (project files, source code and precompiled executable) is due by 8:59am on the due date. It is your responsibility to make sure the assignment is delivered on time. **Hint: don't wait until the last moment to hand in the assignment**.

For grading, the program will be run with no command line parameters and the code will be looked as well for proper functionality. If the program does not compile, zero points will be given.

```
C:\ <your program name>
<window pops up, the lines are drawn, etc>
<ctrl-c to end>
```

If you have more questions, please see myself or the TA.