CSC 476 – Lab 2 due April 18, 2007
A prettier simple game - texturing

Please note that this lab should be completed **individually**! You may talk to one another about the lab, but you may not look at someone's working code!

This assignment is a continuation of Lab 1. Please complete the original movement tasks specified in Lab 1 – i.e. time based movement for the character and camera. You also need to keep track of time and display all requested statistics from Lab 1. Please refer to the original Lab 1 description and make sure everything is complete with the following additions to create a prettier game.

The biggest addition for this assignment is that you need to add several texture mapped objects. This includes:

- a texture mapped ground plane,
- a sky box and
- several texture mapped obstacles to the scene.

The texture mapped obstacles must include multi-texturing to create a nice appearance. You have some creativity/freedom to decide on exactly how to incorporate muti-texturing. I recommend considering using lightmaps, detail maps, or gloss maps to increase the complexity of your objects appearance. In general, your goal should be to create a more aesthetically pleasing world. This means you should pay attention to your shading, lighting, texturing to make sure they look good. In addition, you need to attend to general texturing, i.e. use mipmaps and use appropriate sized textures for your goal. At this point, multi-texturing should be implemented using openGL extensions and not a shader.

More information/suggestions will follow. Please start with simple texturing for this week.

- **Learning Objectives**
  - Learn to about **texture mapping**
  - Learn about **multi-texturing**

- **Grading and Due Date**

You must **demo your program in lab on April 18th.**

- **Programming Design and Implementation Requirements**

1. You may download and use existing code for loading an image into openGL for use as a texture (see for example Lab 11 from CSC 471: http://www.csc.calpoly.edu/~zwood/teaching/csc471/material/tex_release.tar

2. You may download example textures, light maps, etc. from tutorial sites about multi-texturing.
3. You do not need to texture your main game character (this is due to the complexity of generating a good parameterization).
4. All texturing should blend with the lighting for a nice appearance – unless you have a compelling reason not to.
5. Create at least five different "obstacles" in your world. These obstacles can be made up of simple glu/glut primitives (boxes/cylinders/spheres). You may use the texture coordinates generated by glu.
    a. Include collision detection with these objects (i.e. do not let your models move through these obstacles – they may simply reflect off of them). You may use bounding boxes or bounding spheres
    b. Use multi-texture techniques on these obstacles to make them more visually interesting.
6. You may use tutorials about multi-texturing but make sure you understand what you are doing so you can create <u>different</u> effects then those demonstrated in the tutorial.
7. Include a toggle to turn on and off texturing to demonstrate the change in frame rate when rendering with textures.