Assignment 1

CMSC 740, Spring 2006
Due: 2:00pm Tuesday, February 14, 2006

This assignment involves familiarization with OpenGL and 3D transformations. The assignment web-page is at www.cs.umd.edu/class/spring2006/cmsc740/assg1/. The skeletal program there has code that sets up the basic viewing parameters and draws a green rectangle. It also contains a class for reading BMP files which you may use. You should extend this program to perform the following functions:

- Read-in the file `terrain.bmp`. Assume this image represents a height-map of a terrain, with the color of each pixel giving the height of the terrain at the corresponding location. The height value can be taken from any color channel (R, G, or B). Display the terrain.
  (7 points)

- Display a teapot floating over the center of the terrain using the `glutSolidTeapot` function.
  (3 points)

- Allow the user to translate and rotate the teapot using the mouse. Dragging the mouse with the left button down should cause the teapot to move parallel to the terrain plane- the motion of the teapot should correspond to the motion of the mouse. Dragging the mouse with the right button down should cause the teapot to rotate- forward/backward mouse motion should cause rotation about one axis, and left/right mouse motion should cause rotation about another axis.
  (5 points)

(Total: 15 points)