CIS 441/541: Project #2A
Due November 7 (meaning 6am Nov 8th)
Worth 8% of your grade

Overview:
You will make a program that has one window with two sub-frames. The code to set
up the windows, sub-frames and event handling is done for you (via the skeleton
program project2A.cxx and usage of the VTK library). Your job is to write OpenGL
rendering code in two methods (one for each sub-frame).

In sub-frame #1:
You will render proj1e_geometry.vtk using the VTK infrastructure for windowing
and events and your own OpenGL code for rendering. The OpenGL code will go in
vtk441MapperPart1::RenderPiece. You will be rendering the geometry return from
GetTriangles(). The Triangle class now has a "fieldValue" data member, which
ranges between 0 and 1. You will map this to a color using the GetColorMap
function. You will also include normal for lighting. GetColorMap returns 256 colors.
A fieldValue value of 0 should be mapped to the first color, and a fieldValue value of
1 should be mapped to the 255th color. Each fieldValue should be mapped to the
closest color of the 256, but interpolation of colors is not required.

You will also add 12 white lines that form the outline of a cube that has coordinates
from O10 to +10 in X/Y/Z.

You must use glColor commands, i.e., not textures.

In sub-frame #2:
Exactly the same as window #1, but use textures. Implement your GL code in
vtk441MapperPart2::RenderPiece.

Again, you should add white lines for the cube outline (these lines do not need to be
textures).

Hint: I recommend you "walk before you run" & "take small bites". OpenGL can be
very punishing. Get a picture up and then improve on it. Make sure you know how
to retreat to your previously working version at every step.

Hint: OpenGL "state thrashing" is common and tricky to debug. Get one window
working perfectly. Then make the second one work perfectly. Then try to get them
to work together. Things often go wrong, when one program leaves the OpenGL
state in a way that doesn't suit another renderer.

Hand-in: your code and a screenshot of your program

Note: my guess is that VTK7 may have issues with this project. I recommend a VTK6
install if you have issues.