CSCI 4250/5250
Project 4: 3D Scene Project, Parts I, II, and III
Worth 300 pts

For the three parts of this project, you may work in teams of 2 team members. Teams will be given a team project grade and a team member grade obtained from a **team member evaluation** which I will post on the web site soon. These team member evaluations will be done by each member of the team. If you decide to work in teams, you must agree to evaluate each other using the 4250/5250 team evaluation sheet.

The entire class will evaluate each part of the project.

Part I – due November 14th – 100 points
Write a program that

1. uses glut's 3D primitives (sphere, cone, torus, box, teapot, etc.) and/or glu's 3D primitives (cylinder, sphere, disk, partial disk) to build a 3D figure.
2. Material and lighting properties should be selected for the 3D figure.
3. You may use a simple orthographic projection.
4. Animate the figure in some way. This animation should be done using the timer function and should be started and stopped by clicking 'a'.
5. The complexity and attractiveness of the scene will determine your grade on this part of the project.
6. Pressing the ESC key should exit the program.

Part II – due November 28th – 100 points
Write a program that add to or change part I:

1. Using glu and glut's 3D primitives, build a 3D scene with your animated figure from part I added to the scene. You should also create at least one shape using polygonal mesh.
2. Material and lighting properties should be selected for various objects in the scene.
3. You should use a perspective projection.
4. Animate your scene by allowing more than one object in the scene to be animated. This animation should be done using the timer function and should be started and stopped by clicking 'a'.
5. The complexity and attractiveness of the scene will determine your grade on this part of the project.
6. Pressing the ESC key should exit the program.

Part II – due Last Class day (Dec 5th) and to be demonstrated to the class that day – 100 pts

Add to your program from Part II:

1. Add additional shapes to the scene. Add at least two of the following: extruded shape, surface of revolution, polygonal mesh, or Bezier surface.
2. Add texture to the scene – at least three objects should contain texture.
3. Add sound that is tied to the animation from part I.
4. Add animation so the viewer can "move" a camera about the scene. You must thoroughly document how to achieve this movement.

5. Allow the user to move back to the original scene by pressing the 'b' key.

NOTE: In the past, some people have asked if they could use 3D Studio or some other graphics package to create some shapes. The majority of the shapes should be created using OpenGL – otherwise this gives unfair advantage to some of you over others. If you use any other package to create shapes, you should document exactly what was created by each package in your beginning documentation and you should indicate what shapes were not specifically created entirely with OpenGL in your presentation (see below).

Notes:

1. You will present your projects in class on November 14th , November 28th, and during the last class meeting. (The presentations will count 15 points (of the 100 points) each time).
2. During the first demonstration, you will be required to describe your object (what OpenGL shapes were used, where lighting appears, etc;) and demonstrate the animation. If there are any features you were unable to add, you should mention this during your presentation.
3. During the second demo, you should describe the scene and what OpenGL objects were used for various parts of the scene. Demonstrate the animation and indicate lighting and material properties. Again, if there are features that you couldn't add, indicate these.
4. During the third demonstration, you will be required to point out new shapes used, demonstrate movement, (rotation), point out textures used, demonstrate that the 'b' key works, etc. Again, if there are any features you were unable to add, you should mention this during your presentation.
5. Everyone in class will evaluate every one else's project on each of these days. The evaluation instrument will be posted on the site soon.