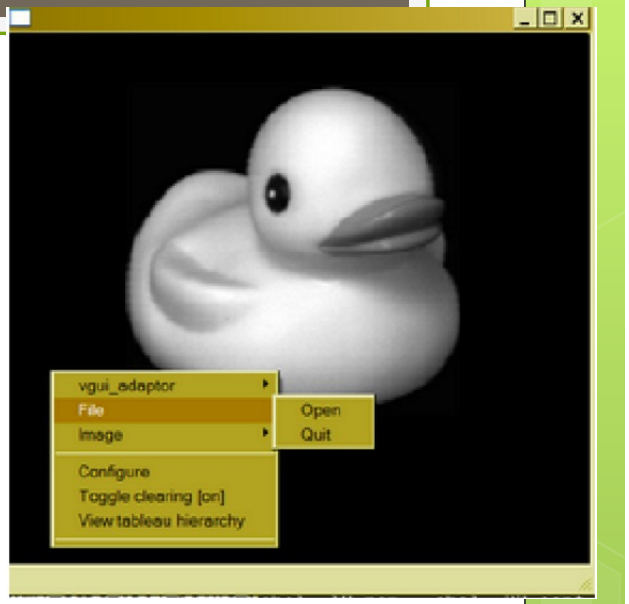
OBJ Loader and a fancy world

Computer Graphics

Final Project

Final Project (part1)



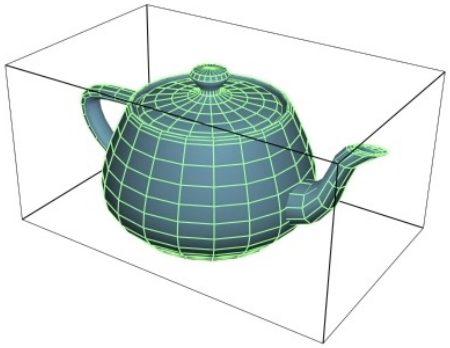
1. Use the popup menu to select different mode

Popup Menu (Right click on window) 5%

- File → groud/lamp/teapot/…
- Render Mode → Point/Line/Face
- Color Mode → Single Color, Random colors
- Bounding Box → On/Off

- Example:
  - http://openglut.sourceforge.net/group__menus.html
  - http://www.it.uu.se/edu/course/homepage/grafik1/ht07/examples/menuDemo.cpp

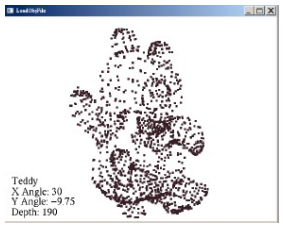
2. Read Obj file and render (20%)
   - Obj input file is selectable
   - Command line input for other files
     - Popup menu to select among the given 4 files



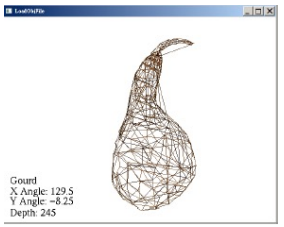
3. Adjust the object to fit into the screen (20%)
   - Find the bounding box / Draw the bounding box 5%
   - Scale your object so that it can be fit into your scene
     --- 10% (if works for all 4 given obj files)
     --- 10% (if works for other testing obj files)

OBJ Parser

(due on 6/27 midnight)



Point



Line

Face

4. Render Mode: Point、Line、Face (5%)
   - Use Popup menu to select
5. Color mode: Fixed color, random color (5%)
6. Support Animation (Rotation) (10%)

DON NOT USE OTHER LIBRARIES FOR THIS PROJECT!

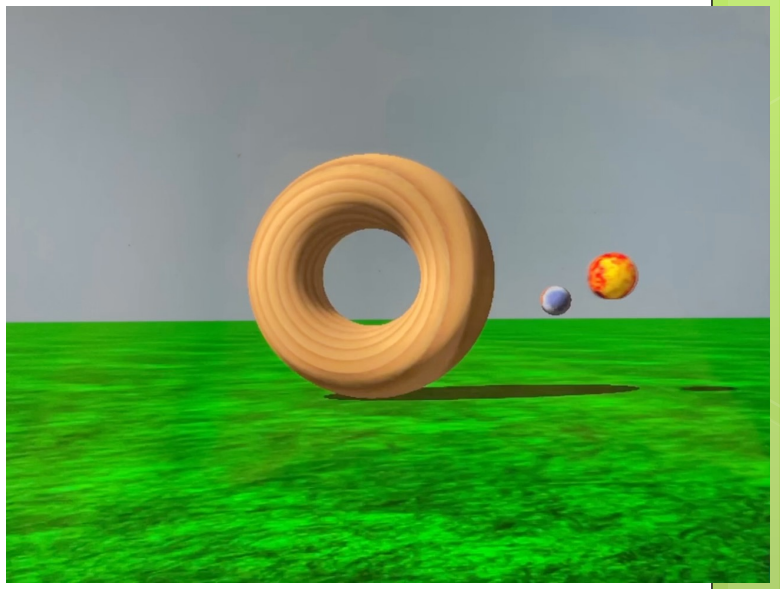
(Only OpenGL/GLUT & C++ standard allowed)

-SUBMIT YOUR SOURCE CODES and documentation PDF file

-Includes how to use your program, screen shots of your program for each required function

Final Project (part2)

- Design your scene:
  - Scene Creativity (10%)
    - Refer to sphere world, but design your own scene
    - Create at least three different objects
      - One of them can be the robot
    - Do not look like the same as sphere world
    - Load the OBJ object (from part1) and place it to the center of the scene
- Animation (15%)
  - Technical difficulty 10%
  - Creativity 5%
  - At least three different animation
- Texture (10%)
  - At least three textures (not the same as sphere world)



Super bible v4. example code : shadow

Submission

- Turn in your code, images, PDF and demo videos -- (-10% is missing one of them)
  - In your PDF file:
    - you must explain how to setup your project.
    - How to use your program (e.g., key control, popup menu etc.)
    - Screen shots of your program
    - Technical difficulty you encounter and what is your solution
- Note: Do not use other libraries to implement your project, except the given shared folder and the image processing library (such as OpenCV).

Obj file format

```
v -1 -1 -1
v 1 -1 -1
v -1 1 -1
v 1 1 -1
v -1 -1 1
v 1 -1 1
v -1 1 1
v 1 1 1
```

```
f 1 3 4
f 1 4 2
f 5 6 8
f 5 8 7
f 1 2 6
f 1 6 5
f 3 7 8
f 3 8 4
f 1 5 7
f 1 7 3
f 2 4 8
f 2 8 6
```

Note: ignore lines start with
Other characters

Triangle

```
// Draw a triangle:
glBegin(GL_TRIANGLES);
glVertex3f(-1.0f, -0.5f, -4.0f);
glVertex3f( 1.0f, -0.5f, -4.0f);
glVertex3f( 0.0f, 0.5f, -4.0f);
glEnd();
```

glPolygonMode (GLenum *face*, GLenum *mode*)

控制多邊形的繪製的方式。

參數 *face* 設定繪製多邊形的正面或反面，其值可為：

GL_FRONT_AND_BACK	正反面都畫（此為預設值）
GL_FRONT	只畫正面
GL_BACK	只畫反面

參數 *mode* 設定繪製的模式，其值可為：

GL_FILL	填滿多邊形內部（此為預設的模式）
GL_LINE	只畫多邊形的框線
GL_POINT	只畫多邊形的端點