Project 1 Interactive Viewing of Two Teapots

Due: 23:59:59, Friday, October 14

In this project, you need to realize interactive viewing of two teapots: Teapot1 and Teapot2 using shader-based OpenGL.

Tasks:
1. For each teapot, you need to register a callback function for the mouse so that the user can rotate the teapot along one of the axes by pressing a mouse button. Specifically, press
   a. the left button to rotate along the x-axis,
   b. the right button to rotate along the y-axis, and
   c. the middle button to rotate along the z-axis.
2. For each teapot, once the axis for rotation is decided, the direction and the amount of rotation should be determined by the direction and the amount of mouse movement when the user drags the mouse. The amount of the rotation is (in degree) computed by 
   \[\frac{360 \times \text{mouse movement in pixel}}{\sqrt{\text{height}^2 + \text{width}^2}}\], where height and width are the corresponding parameter of current window. To track the mouse motion, you need to use glutMotionFunc().
   Note: you need to keep the previous rotation operations.
3. For each teapot, you also need to register a callback function for the keyboard. Specifically, press
   a. “Q/q” to exit,
   b. “H/h” to return to initial setting,
   c. “S/s” to scale up or scale down the teapot by 10%,
   d. “l/r” to shift the teapot along the x-axis by ±0.1,
   e. “u/d” to shift the teapot along the y-axis by ±0.1.

Bonus credits (10 pts):
For the keyboard callback function, press
   a. “f” to return to the initial setting and flip the teapot upside down.
   b. “t” to return to the initial setting and turn the teapot spout from right to left.

You are provided a simple C++ package to create and show a teapot.

Requirements:
In turning in your homework, you need to submit a zipped file through dropbox including your code. Please make sure your codes can be compiled, linked, and run successfully on the department linux machine.