Programming Assignment IV

Introduction:
In this assignment, you will upgrade your program from the last assignment with the following features: center and resize your object, allow bicubic Bézier patches, allow perspective projections, allow rotations around fixed axes.

General description:
You need to modify your program from assignment III to incorporate the following.

1. Allow the user to choose between perspective and orthographic projections, through some menu options.

2. Before displaying the 3D object read from file, translate it so that the center of the object is at the center of the viewport, and scale the object so that the object is totally visible in the viewport no matter how the object is rotated. The center of the object is calculated from the max and min in each of x, y and z directions.

3. In addition to all other primitives you implemented, your program should also be able to display bicubic Bézier patches. The keyword announcing a Bézier patch is GL_PATCH. Then, the 16 vertices follow, each on a separate line with a GL_VERTEX. Also modify your object so it contains at least 2 patches

4. Allow the user to choose between rotations around the a fixed coordinate system and rotations around the object’s local coordinate system.

Due Date: Friday, April 15, 2005, 11pm.
Hand in: Send your program and input file as attachments to our TA (yalbayyar@utep.edu) and to me (longpre@cs.utep.edu). Please delete the
Debug folder before sending the folder as attachment. This folder can be regenerated and it clogs our e-mail boxes.

**Grading:**

These grading guidelines will be used for all programming assignments. Your project will be graded primarily on correctness (70%). The rest of your grade will be determined by the style, ease of use, and interface of your program and quality of input file (if required) (30%).

The penalty for a late homework is $n^2\%$ for $n$ days late up to one week late, counting weekend days as well. Homework will not be accepted after one week late, unless special arrangements have been made with the professor before the one week is over.