Homework 2

This homework is about OpenGL programming, surface mapping, and texture mapping.

1. Get familiar with the OpenGL covered in the class, write a piece of codes on the MeshLib program so that a mesh can be rendered correctly
2. Compute Discrete Harmonic Mapping
    a. Boundary mapping: mapping boundary loop to a square [0,1]*[0,1]
    b. Solving the flattened positions of interior vertices: you can either do iterative update, or solve a linear system directly.
3. Output your mapping result into a new .m file. Please generate the following two files
    a. Original mesh, with a "uv=…" trait on each vertex (see Bimba_head_uv.m as an example)
    b. A flattened shape, in which you change all vertex's position to its uv coordinate (and set z=0) (see Bimba_head_uvpos.m as an example)

    Then in command line (in the same directory of G3dogl.exe, tmap.bat, and check.bmp in the homework2 package), you can run "tmap Bimba_head_uv check.bmp" to see the texture mapping. After you run it and see the openGL window, press "D" (note that D is in capital letter, you can use shift+d) then "t" to see the mapped texture.

Parts 1-3 are required and have totally 14pts; the following Part 4 is optional.

4. (additional 6 pts) Do texture mapping using the (u,v) coordinates you computed in 2 and render it in your own openGL window (you need to google how to parse a bmp image and then do texture mapping).

Homework 2 Due: Oct 25, 11:59pm.