Homework 4: Morphing Based on Parameterization

0. Download and work on the homework 3 solution:
   http://www.ece.lsu.edu/xinli/teaching/HW/HW3_Solution.zip

1. Download the two face meshes:
   http://www.ece.lsu.edu/xinli/Models/Susan.m
   http://www.ece.lsu.edu/xinli/Models/Alex.m

2. Map the face "Face1.m", denoted as S1, to a planar square D

3. Compute linear interpolation from S1 to D
   a. Compute the interpolation:
      given a parameter t, the interpolated position between a vertex V(x,y,z) on S1 and its parametric coordinates U(u,v,0) is:
      $v(t) = (1-t)V + tU$
   b. Implement the keyboard response to the change of t

4. Compute linear interpolation from the first face S1 to the second face S2 ("Face2.m")
   a. Map the face "Face2.m" (S2) to D
   b. Develop point location over D:
      ```
      bool uvLocation(double u, double v, Mesh * trgMesh,
                      hash_map<Vertex *, double> trgTexU,
                      hash_map<Vertex *, double> trgTexV,
                      int &  faceID, double bary[3]);
      ```
      where given a coordinate (u,v), return the ID of the face it is in, and the corresponding barycentric coordinates
   c. For every vertex V on S1, use its (u,v) to find its corresponding face (F=[v1, v2, v3]) on S2 and barycentric coordinates (b1,b2,b3); then its target position V' on S2 is
      $V'=b1v1+b2v2+b3v3$
   d. Compute the linear interpolation.

DUE: 11:59pm 11/21