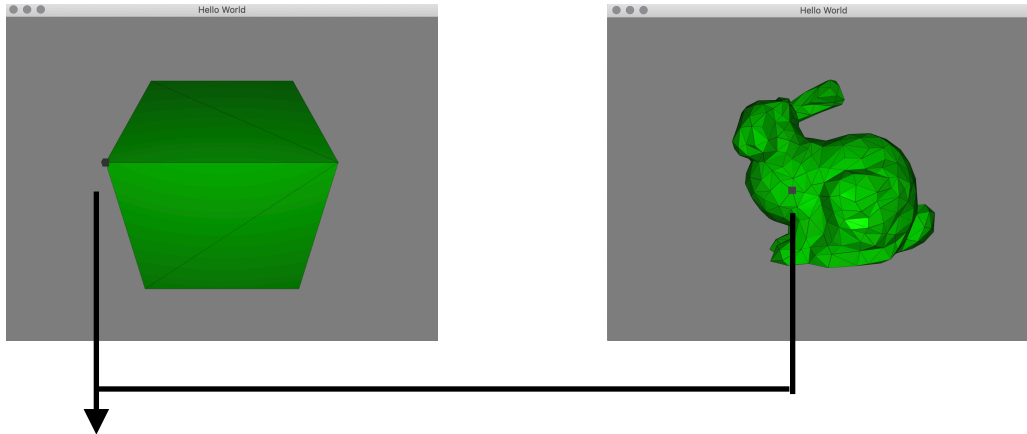Mesh Editor:
The mesh editor is written in C++ and Eigen.
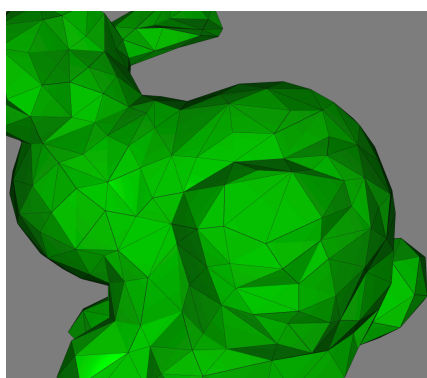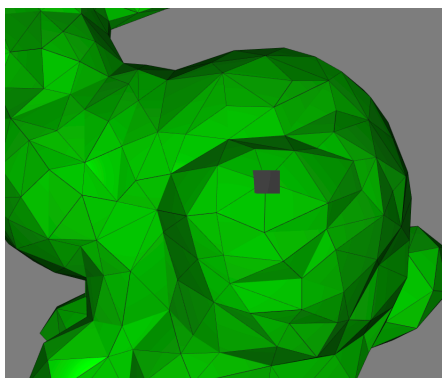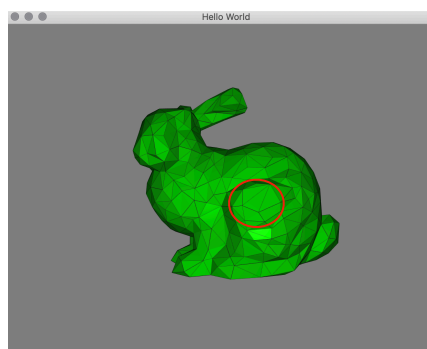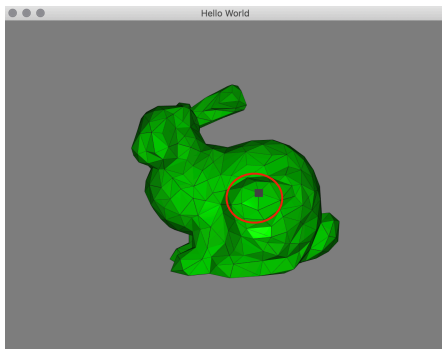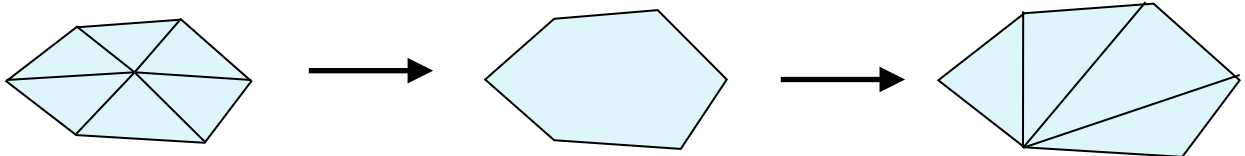
Following Action is supported:
1. Select vertex of existing mesh, the selected vertex will be represented by a tiny cube
2. Camera movement and lighting on part selected
3. Delete existing vertex
4. Translating the vertex
5. Merge two existing vertex
6. Save the existing mesh as .OFF mesh file


Vertex Picking using mouse represented by a cube.   Vertex Deletion

As for a selected vertex Vs, a random neighbour of Vs, Vn is selected and I replace the original selected vertex Vs with Vn in all nearby triangles of Vs. An extra check is considered to avoid non-manifold (more specifically, an edge with one/three/more neighbouring triangles) from generated. However, in our bunny, it is not likely to happen for the first dozen operations.
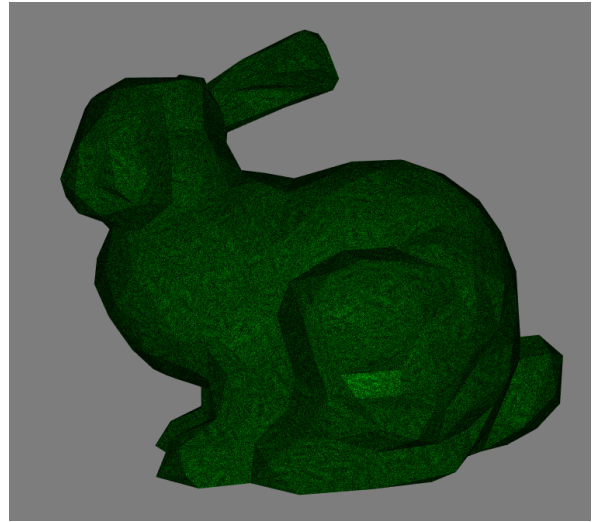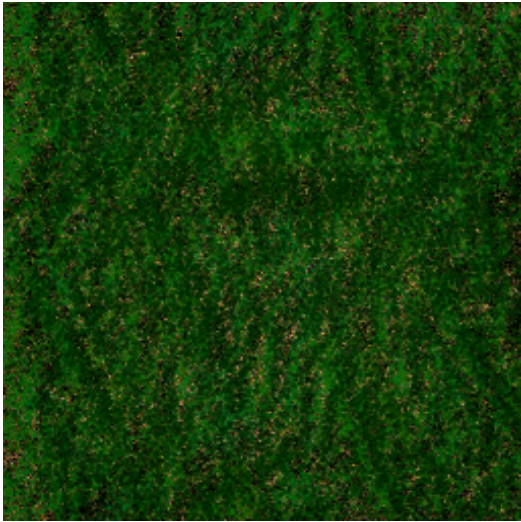
Edge translation
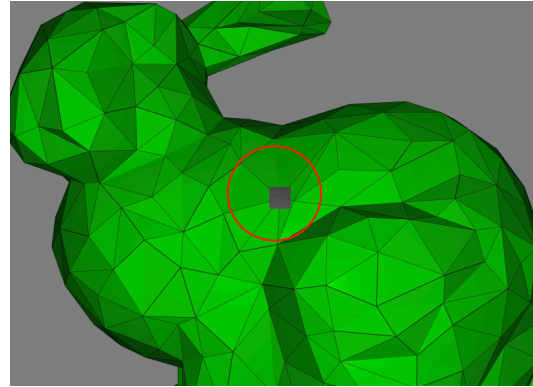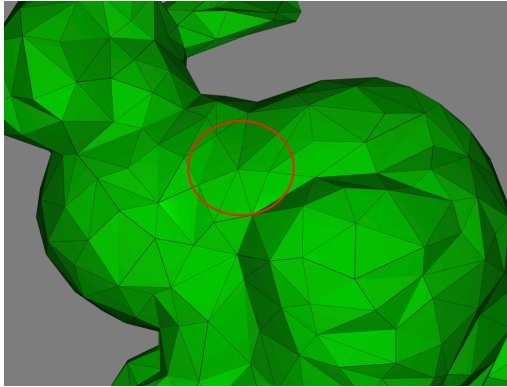
Edge Collapsing
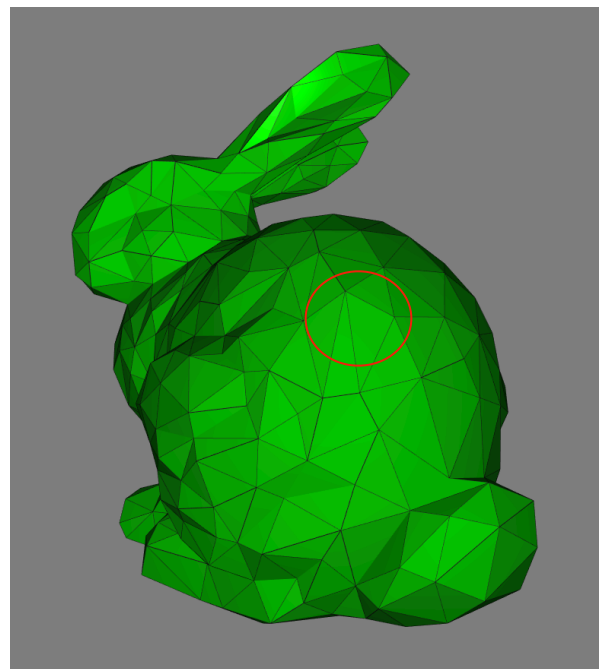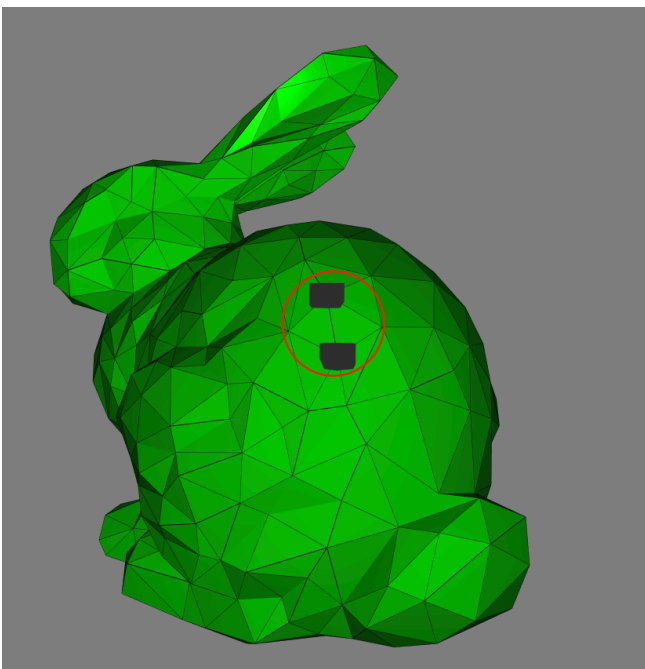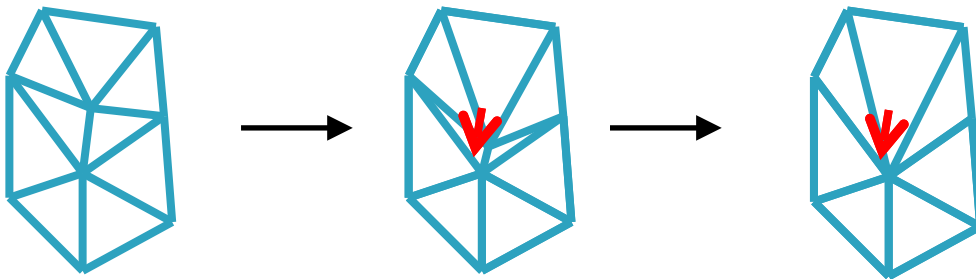
The vertices Vi,Vj are combined, winged triangles removed. I choose a random generated mid-point as the replacement of Vi and Vj.

Texture Mapping is also supported

How to Use:

Go to Assignment_final/src/build
in terminal:-> cmake .. && make -j && ./final_bin

—object basic control:
'2' add a bunny
'3' add a bumpy cube

—press 8 when select a object: enter/exit mesh editing mode
        -vertex mouse picking is similar to object picking.
        -'r' cancel vertex selection
        -'f' delete vertex (only available when one vertex is selected)
        -'j' merge vertices(only available when two connected vertices are selected)
        -'g'/'h' translation on z axis
        -'left'/'right' translation on y axis
        -'up'/'down' translation on x axis
        -'l' enlarge object
        -'k' shrink object

—camera control:
        -'z' move far to object, r in spherical coordinate
        -'x' move close to object, r in spherical coordinate
        -'c' rotate up vertically, theta in spherical coordinate
        -'v' rotate down vertically, theta in spherical coordinate
        -'b' rotate left horizontally, phi in in spherical coordinate
        -'n' rotate right horizontally, phi in spherical coordinate

—perspective/orthogonal:
'0' for switching between two systems. '9' activate track ball camera control. Track ball is automatically enabled when mesh editing.