1. (5 pts) When quadrangulating a face during Catmull-Clark subdivision, what information must you temporarily store in order to properly link your half-edge pointers without creating inaccessible edges?

Answer: We need to store the “NEXT” attribute information of all half-edges, which means how these half-edges are originally connected. Since during quadrangualting, we’ll alter the “NEXT” attribute pointing to the half-edge within that small face, it’s essential to preserve this original information beforehand.

2. (5 pts) When extruding a face, what operation must be performed after all edges have been turned into quadrangles? What is an edge case in the scope of this operation?

Answer: After all edges have been turned into quadrangles, we also need to push_back only additional vertex(leave out vertices that already exist), as well as newly created half-edges and faces. After that, it’s important that we set the SYM attribute information for all half-edges.

Edge case would be when we’re dealing with single edge extrusion, in this case we’ll need to set the SYM attribute of that edge to a NULL face.

Documentation of this project:
Currently the geometry can only be smoothed once, I guess there’s something wrong with my normal that when it enters second round smoothing it just crashes. I’ll fix it in the howework assignment 7 if applicable. Other functions work fine.
Thanks!