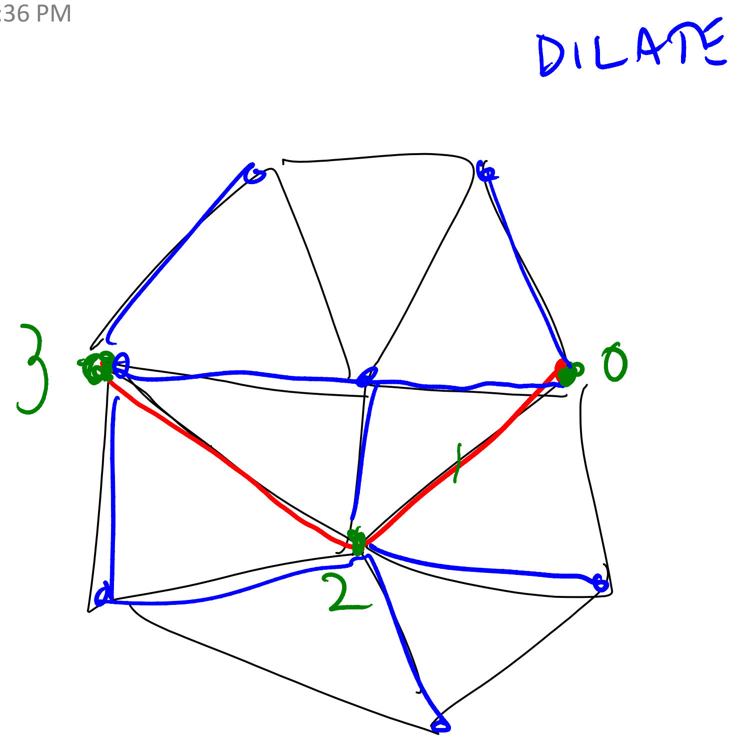
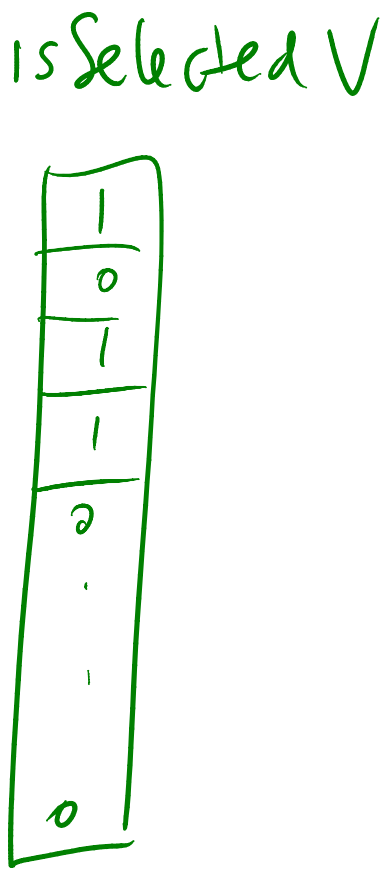
DilateEdges

Monday, February 04, 2008
2:36 PM



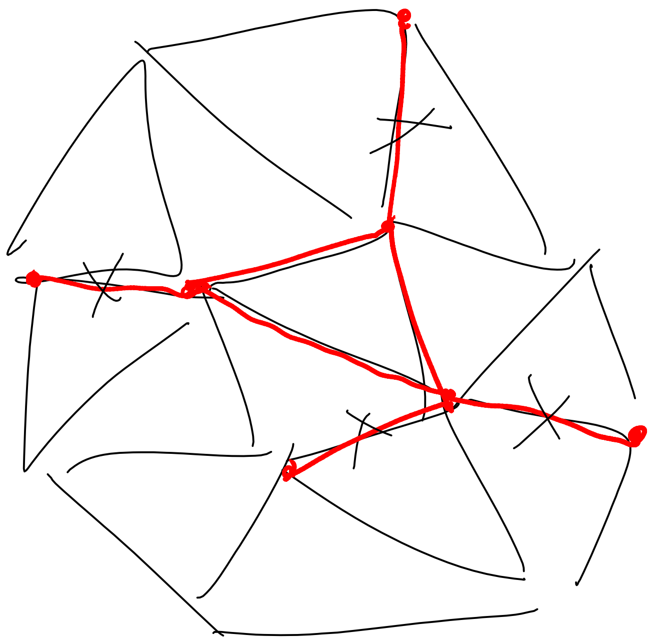


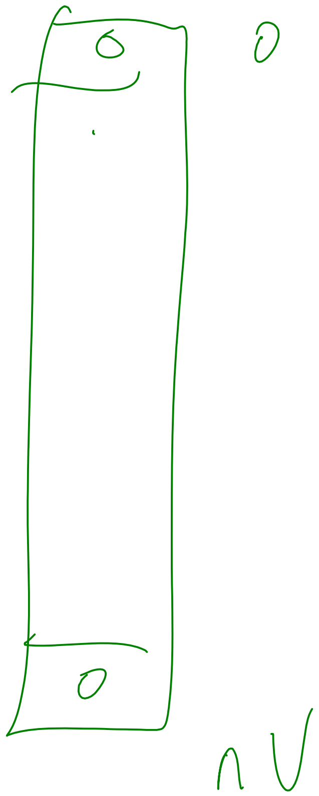
On a first pass through the edges, mark all the vertices which are ends of selected edges

On a second pass through the edges, select all edges incident to marked vertices

ErodeEdges

Monday, February 04, 2008
2:40 PM



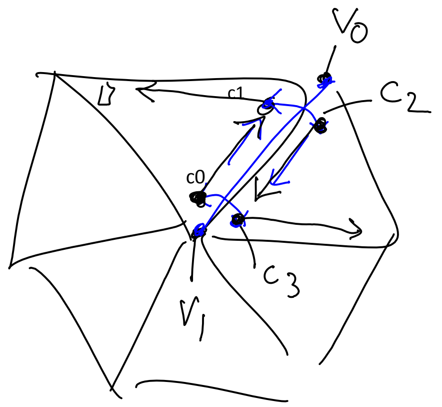


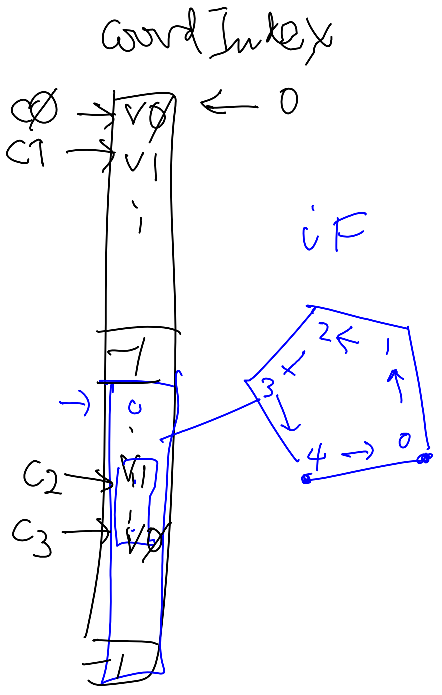
On a first pass through the edges count the number of selected edges incident to each vertex
Use an accumulator array to store these values

On a second pass through the edges clear each selected edge incident to a vertex with only one incident selected edge

Classifying Vertices

Monday, February 04, 2008
2:43 PM





Number of corners
nC = coordIndex.size()

We need the MeshGraph class to classify the edges
We need the Partition class to create a partition of the corners

You can add more conditions here, such as:
Is edge selected?

```
p = new Particion(nC)
For each face f1
    For each corner c0 of f1
        Let c1 be the corner of f1 next to c0
        Let v0 and v1 the vertices corresponding to the corners c0 and c1
        Let e be the edge joining v0 and v1
        If(e is a regular edge)
            Let c2 the corner twin of c0
            Let f2 be the face containing c2
            Let c3 the corner of f2 next to c2
            p.join(c0,c3)
            p.join(c1,c2)
Let nP the number of parts
```

Each part is a subset of corners supported by a common vertex.

To classify the vertices we need to count the number of parts supported by the same vertex:
Use an accumulator array with one entry per vertex initialized to zero
For each part
    Find the supporting vertex
    Increment the array entry corresponding to the vertex
The vertex classification is stored in the accumulator array

To convert a mesh to manifold, we need to generate an output mesh: first the vertices, then the faces

For each part (all corners point to the same input vertex)
    Get the vertex coordinates from the input mesh and push them onto the back of the output coord array
    Store the mapping from corner to part number (output vertex index) in a look-up-table

For each face
    Replace each corner value with the value stored in the look-up table for that corner