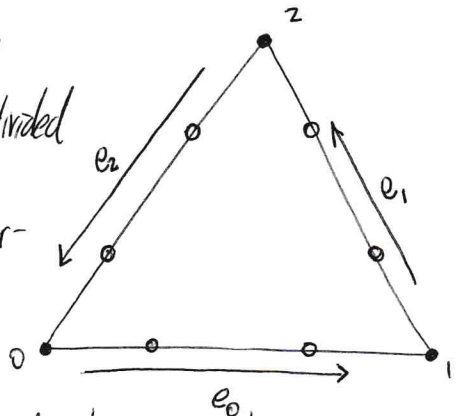
22, Sept. 2020

= Geodesic Sphere refinement =

- explaining the algorithm used in the make_ellipsoid.py code

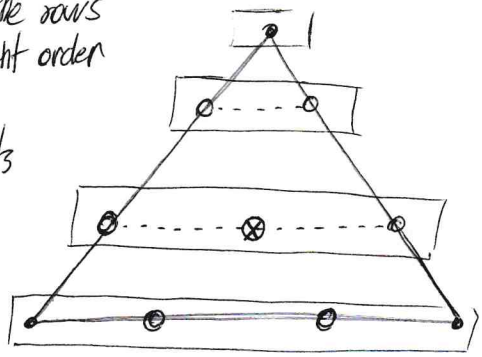
1) make edge divisions

- divided edges are cached so they are not doubly divided
- new vertex indicies are stored in e in the counter-clockwise orientation

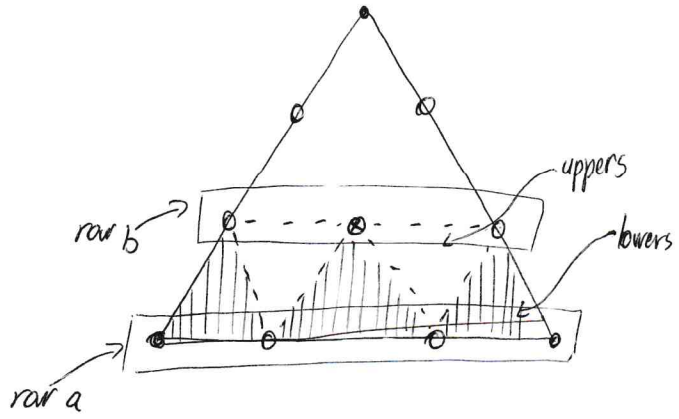


2) create dividing rows and interior points

- boxed edges are the rows
  - stored in left to right order
- # added interior points subtracts by 1 with each upward row



3) iterate over pairs of rows to tesselate the faces



new triangles:

~~lowers~~ ~~uppers~~

$$\sum_{i=0}^{g-1} [a_i, a_{i+1}, b_i]$$

uppers ~~lowers~~

$$\sum_{i=0}^{g-2} [b_i, a_{i+1}, b_{i+1}]$$

g = # segments row a is divided into

→ $g = n$ on bottom row and subtract by 1 with each higher row