

CS3242 3D Modelling & Animation

Assignment 1 Submission Report

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Task Completion

S/N	Task Details	Nature	Implementation
1	Computing Normal Vectors	Main	<code>operationLib.cpp -> generateFaceNormals()</code>
2	Computing Angle Statistics	Main	<code>operationLib.cpp -> generateStatistics()</code>
3	Write an OBJ File	Main	<code>main.cpp -> writeFile()</code>
4	Read some other type of file other than OBJ	Optional	<code>main.cpp -> readOffFile()</code>
5	Implement <code>enext()</code> , <code>sym()</code>	Main	<code>mesh.cpp -> enext() & sym()</code>
6	Implement <code>org()</code> , <code>dest()</code>	Main	<code>mesh.cpp -> org() & dest()</code>
7	Implement <code>fnext()</code>	Main	<code>mesh.cpp -> setupAdjList()</code>
8	Compute the Number of Components	Optional	<code>mesh.cpp -> processNumOfComponents()</code>
9	Implement <code>orientTriangles()</code>	Optional	<code>mesh.cpp -> orientTriangles()</code>
10	Compute Vertex Normal Vectors for Smooth Shading	Optional	<code>mesh.cpp -> generateVertexNormals()</code>
11	Visualize boundary edges	Optional	<code>mesh.cpp -> drawEdge()</code>

Boss Conquest

Theme: **Subdivision**

S/N	Task Details	Status	Implementation
1	Barycentric Subdivision	Completed	<code>subdivisionLoop.cpp & mesh.cpp -> barycentricSubdivide()</code>
2	Loop Subdivision	Failed	<code>subdivisionLoop.cpp & mesh.cpp -> loopSubdivide()</code>

Boss Update:

- Couldn't finish loop subdivision as I could not trace the error that causes the new vertex created during the subdivision to be outside the mesh.

- Hence any new object created after the loop subdivision will appear like a **forzen** creature. 😊

Reference

- Barycentric Subdivision Reference: <https://ncatlab.org/nlab/show/subdivision>
- Loop Subdivision Reference: http://www.cs.cmu.edu/afs/cs/academic/class/15462-s14/www/lec_slides/Subdivision.pdf
- Off File Format: [https://en.wikipedia.org/wiki/OFF_\(file_format\)](https://en.wikipedia.org/wiki/OFF_(file_format))

Reflection

- I feel that this assignment is probably the most challenging one I have ever done. There was a lot of difficulty in the implementation of the **fnext** list as there are many steps leading up to the creation of the list, especially when we need to make sense of the raw vertices and faces, then to place them in the correct order.
- Though the assignment is difficult to implement, I feel that the most interesting part is to see our work in action visually.