Assignment 0318
Time to start building your very own personal 3D graphics library!

Outcomes
This assignment will affect your proficiency measures for outcomes 1b, 1c, 3d, 3e, and 4a–4f.
For outcome 3d, this assignment only covers a subset of the full graphics library that is expected to come out of this class, so it will have a maximum proficiency of | for now.
Similarly, this assignment applies only to the vertex shader aspect of 3e, so that outcome will have a maximum proficiency of | until a future assignment expands that to include the fragment shader as well.

Not for Submission
If you have access to the Angel textbook, the following readings will add depth and detail:
• (already mentioned) 3D graphics overview and pipeline: Sections 1.1–1.9 (pages 1–40). Restated here in case you now “get” why this is worthwhile.
• Introductory graphics programming: Sections 2.1–2.4 (pages 43–67).

For Submission
For the following tasks, start by copying one of the hello-webgl bazaar samples into homework/pipeline on your git repository.

Envision a Scene
It’s a good idea to have some notion of what you want to render by the end of the semester. Create a stub web page that will eventually hold the final version; for now, you can use it to demonstrate and test the work listed below.

Expand Your Shape Library
Add at least two (2) mesh generation routines to the shapes library, based on what your envisioned scene will need.

Implement Shape Groups
Modify the drawObject function in the sample code so that it can handle composite or group objects: that is, objects that have children, each of which can also be rendered by drawObject. Your implementation should allow for arbitrary depth. Yes, your scene data structure is a tree.

Approximate a Sphere
Implement a sphere mesh function within the Shapes module (in addition to the other 2 or more shapes from earlier in the assignment). Some starter code can be found in the Angel text (“Approximating a Sphere,” Section 2.4.3, pages 60–62), if needed. Hint: Having shape groups already implemented will help you here.