

CMSI 371-01

COMPUTER GRAPHICS

Spring 2012

Assignment 0315

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

Outcomes

This assignment will affect your proficiency measures for outcomes *2b*, *2c*, *2d*, *3c–3e*, and *4a–4f*.

Not for Submission

By March 6

Read the following sections in Angel: 1.1–1.9 (pages 1–40). Yes, this was in the previous assignment, and is intentionally restated here.

By March 13

Read the following sections in Angel: 2.1–2.4 (pages 43–67).

By March 15

Read the following sections in Angel: 3.1–3.12 (pages 116–180).

For Submission

For the following tasks, start by copying the *hello-webgl* sample code into *homework/pipeline* on your git repository.

Approximating a Sphere

Adapt Angel’s “Approximating a Sphere” code (Section 2.4.3, pages 60–62) so that it works as a `sphere` function within the `Shapes` module. Show off your sphere by implementing a demonstration web page that displays it.

Commit and push your work to your git repository under *homework/pipeline*.

Enter the Matrix

Implement the beginnings of a computer graphics math library, *matrix4x4.js*. Start with:

- A basic `Matrix4x4` object
- A `multiply` function which multiplies two `Matrix4x4` objects and returns the result (as a `Matrix4x4` object, of course)
- A `translate` function which takes three parameters `dx`, `dy`, and `dz`, returning a `Matrix4x4` object that accurately represents this transformation
- A `scale` function which takes three parameters `sx`, `sy`, and `sz`, returning a `Matrix4x4` object that accurately represents this transformation

Show off your library by using it in a demonstration web page. Commit and push your work to your git repository under *homework/pipeline*.