CST325: Final Project

This project is to be done individually. Create a WebGL depiction of part of our solar system that satisfies the following:

Scene setup

1. Contains appropriately textured spheres representing the sun, earth, and moon. These do not need to be to scale but rather just be easily identifiable.
2. Contains a space-starfield background implemented as the inside of a sphere or box.
3. The camera should be able to orbit around the sun using the mouse and zoom in or out using the scroll wheel.

Some default images for your textures can be found here. WebGL libraries such as Three.js should not be used.

Shading

1. The sun should only have emissive lighting (set its final color to the texture color).
2. The earth and moon should both be lit from a point light located at the sun position and use only the diffuse contribution (no ambient or specular).

Animation

1. The sun should rotate around its local up or y-axis.
2. The earth should rotate around its local up axis and around the sun.
3. The moon should rotate around its local up axis and around the earth.

Grading is based on a total of **8** todos as listed above.

Extra credit

1. Make the stars in the background twinkle – fade in and out quickly. +10
2. Use a shader to make the sun color vary non-uniformly over the surface and change over time. +5
3. Draw a line that shows the orbital path the earth takes around the sun. +10
4. Add the remaining planets. +5
5. Make the earth texture blend from day and night textures based on the normal direction to the sun. +10
6. Create the illusion of an atmosphere around the earth by using a slightly larger semi transparent sphere around it. +5
7. Use raycasts inside the earth and moon shader to determine if it is in shadow. +30
8. Make the camera follow the earth and aim at it from a fixed offset as it orbits +5

Include a readme.txt file with your project containing your name along with answers to the following:

1. What was your favorite topic or project in the course and why? (1pt)
2. If you could improve any aspect of this course, what would it be and why? (1pt)