Project:- Solar System

Project Objectives

- Understand the real-time rendering pipeline.
- Use affine transformations (translation, rotation and scaling).
- Implement real-time lighting.
- Implement texture-mapping
- Create an interactive scene using OpenGL.

Project Description

Using OpenGL create a simulation of our solar system. You may assume that orbits are circular and 1 day is 0.5 seconds. The suggested order of creation of the project is as follows:

- Model creation. (12.5%)
    - You can initially use a cube to represent the sun and each planet .
- Allow the user to navigate the scene. (12.5%)
- Transformation. (12.5%)
    - Transform the planets around the sun
    - Transform each planet around it's axis
- Light the scene using Gouraud Shading. (12.5%)
- Texture-map each of the planets. (12.5%)
- Generate spheres to represent the planets. (12.5%)
- Light the scene using Blinn-Phong per pixel lighting . (12.5%)
- Simulate the moons of each planet. (12.5%)

Project Resource

- Planetary Texture Maps
    - http://planetpixelemporium.com/index.php
- Sphere generation
    - http://paulbourke.net/geometry/circlesphere/ - Scroll down to sphere generation
- OpenGL step-by-step
    - http://ogldev.atspace.co.uk/