

# Project Documentation

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## Description of Project

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For our CS 4302 Graphics project, we wanted to implement a Space environment where the user can walk-through observing different planets. However, due to time and distance, we could not implement the full features of the project. As a result, there are two html files, index.html and skybox.html.

We have designed the project to resemble the planet 'Earth' in space rotating at a fixed position. We have also included a 'Sun' feature which is a light source on the planet. Through the light source we can show the effect of day and night on the planet. We have defined a few navigation functions to be able to change the sun position. We have also included a skybox representing the space environment with stars and moon. This will give a background effect which allows us to pan around.

The both the skybox and earth textures or images were sourced from a link which we have included in the project sources.

## User Manual and Instructions

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To run the earth simulation program, open the `index.html` file with a browser. After opening the file it should display the canvas with the earth in the middle. Below are the defined instructions to run the program:

- Keyboard key `L` - pressing this key allows the program to change the position of the Sun to the right side.
- Keyboard key `T` - pressing this key allows the program to change the position of the sun to the center or eye view.

To run the skybox program, open the 'skybox.html' file with a browser. After opening the file it should display the skybox. To move around and see, use the mouse to rotate inside the environment.

## Disclaimer on Sources

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The project is split into two parts, the first part is to apply texture to the sphere to resemble the earth. The second part is to apply texture to the skybox. For the first part we referenced the course code base provided in our class notes and for the second part on how to work with skybox we referenced class notes and from a repository. We used the skybox sample code and added our own image which we found on an open-source game image website.

links: - <http://interactivecomputergraphics.com/8E/Code/07> -  
<http://math.hws.edu/eck/cs424/notes2013/webgl/skybox-and-reflection/> -  
<https://opengameart.org/node/21362>

## Ways of Interaction

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To move around in the skybox, simply rotating the mouse will change the direction the camera is facing. To implement light over the Earth Use 'L' to switch the sun to the Right and 'T' to switch the sun to the center.

## Sample Images

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