



Solar System Simulation

Abdullatif Khalid Mohamed
ID: 19015943

Problem Statement :

Implement an application that simulates the solar system. Also, enable user from controlling space-craft to explore the solar system. Using two view ports: One for space-craft and the other for the whole solar system.

Code Flow:

The code starts with the definition of various functions: drawSphere, draw_rings_for_plants, drawSolarSystem, spinDisplay, drawSpaceCraft, display, reshape, and init.

In the init function, the spacecraft display list is created, enabling depth testing and setting the clear color. Lighting is enabled, and material properties are set.

The drawSphere function is defined. It sets the transformation matrices to rotate and translate the planet, sets the material properties, disables emission, and draws a solid sphere using glutSolidSphere.

The draw_rings_for_plants function is defined. It sets the transformation matrices to align the orbits, sets the material properties for the rings, and draws a wireframe circle representing the orbit using glBegin and glEnd.

The drawSolarSystem function is defined. It sets up the lighting parameters and draws the sun, planets, and rings. It also draws the moon around the earth and the ring for Saturn.

The spinDisplay function is defined. It updates the time variable based on the elapsed time since the previous frame and requests a redraw using glutPostRedisplay.

The drawSpaceCraft function is defined. It draws a wireframe cone representing the spacecraft.

The display function is defined. It clears the color and depth buffers, sets the viewport and camera position, and calls drawSolarSystem to draw the solar system. It also draws the spacecraft using the display list.

The reshape function is defined. It sets the viewport and projection matrix based on the window dimensions.

Snippets:



