Brief description of the project

This project represents the Solar System. The proportions of the sizes are not as in nature because there would be too much empty space and the objects would be too small to see. Each of the objects has its own transformations because each of the movements has its own parameters. Because of that, *scene graph* is not used. Each object has its own texture. The texture is loaded and saved as an attribute of a class, so it is only loaded once at the beginning of the program.

CgvScene

Here the whole scene is rendered based on the mode (if the scene is supposed to be in *select* or *visualize* mode). The mode is set and obtained from the *cgvInterface*.

The *cgvScene* has the objects of planets and the sun.

The function *render()* renders the whole scene: first the light, then axis, planets, sun, background and the comets.

The function *draw_axis()* is called if the variable *boolaxes* is set. This function draws the x,y and z axis and calls each of the planet to draw its orbit: Mercury->drawOrbit();

cgvInterface

The interaction between the user and the system is handled here. This class renders 3 different views in 4 screens. Also, here is defined what happens when the user interacts with the program (by clicking or pressing a button).

Planet

The planets are drawn as spheres, their irregular shape is ignored. A planet can have an array of moons, *struct Moon* and one ring. The object has variables important for rendering and moving, like the current angles and speeds of rotation and revolution.

The most important function of the planet is *draw()*. Here a sphere is drawn, and texture is applied. Also, all the necessary transformations regarding the size, orientation and position are placed here. The part of the code handles the mode mentioned above. Then, moons and ring are drawn. Functions for drawing the moons and the ring, are functions of a planet.

Movement is applied through function *move()* which changes the angles of the position of the planet in the orbit.

Sun

The Sun, like the planets, has variables and functions important for calculating its position. Because the movement of the planets is different than the Sun, these two classes don't have anything in common.

Comets

Again, here are the variables and functions for rendering the comets. And again, because the movement of the planets, the Sun and the comets are different, these classes don't have anything in common.

Other files

Other files (bmp, cgvPoint, cgvColor, cgvMaterial, cgvTexture, cgvLight, cgvCamera) represent basic classes and can be used for building any graphic project in OpenGL.