CSC350 - Computer Graphics
Homework 3
Due 1 October 2013 (Tuesday)

Objectives:

Familiarity with transformations and animation

Assignment:

Write a c++/OpenGL program that simulates the movement of a sun, two planets, and three moons. Your program must include the following:

- The sun is at the center of the system.
- The two planets rotate around the sun at different distances from the sun. Each planet rotates around the sun in a counter clockwise direction when viewed from "above." Each planet rotates at a different speed (i.e., each planet has a unique "year".)
- Each planet rotates around its axis in a counter clockwise direction, and each planet has a unique rotation (i.e., each planet has its own "day.")
- One planet has one moon, and the other planet has two moons. Each moon rotates around its planet in a counter clockwise direction and at a unique speed (i.e., each moon has its own "month.").
- The centers of all bodies (i.e., sun, planets, and moons) are in the same plane.
- Pressing the "A" key will start/stop animation of the system.
- Pressing the "+" and "-" keys will speed up and slow down the animation speed.

I have placed a folder named hw3 in /home/libs/graphics, and you should copy this folder to your linux account and use it as the starting point for your program. This program contains code to set the camera in the world and change the camera position (move up/down, move left/right/ and move forward/backward) using keys on the numeric keypad. It also contains the definition of function drawSphere that draws a radius 1 wire sphere centered at the origin with longitudinal lines (i.e., north and south poles) meeting on the y-axis. You should invoke this function to draw all of your heavenly bodies.

Extra Credit:
The axis of the planet closest to the sun should be tilted 23 degrees. The direction of the tilt must be the same throughout the planet's rotation about the sun. What this means is that at one point during the year the north pole will be pointing toward the sun, and one half year later it will be pointing away from the sun.