

PLANETARY ORBIT SIMULATOR

TEAM MEMBERS:

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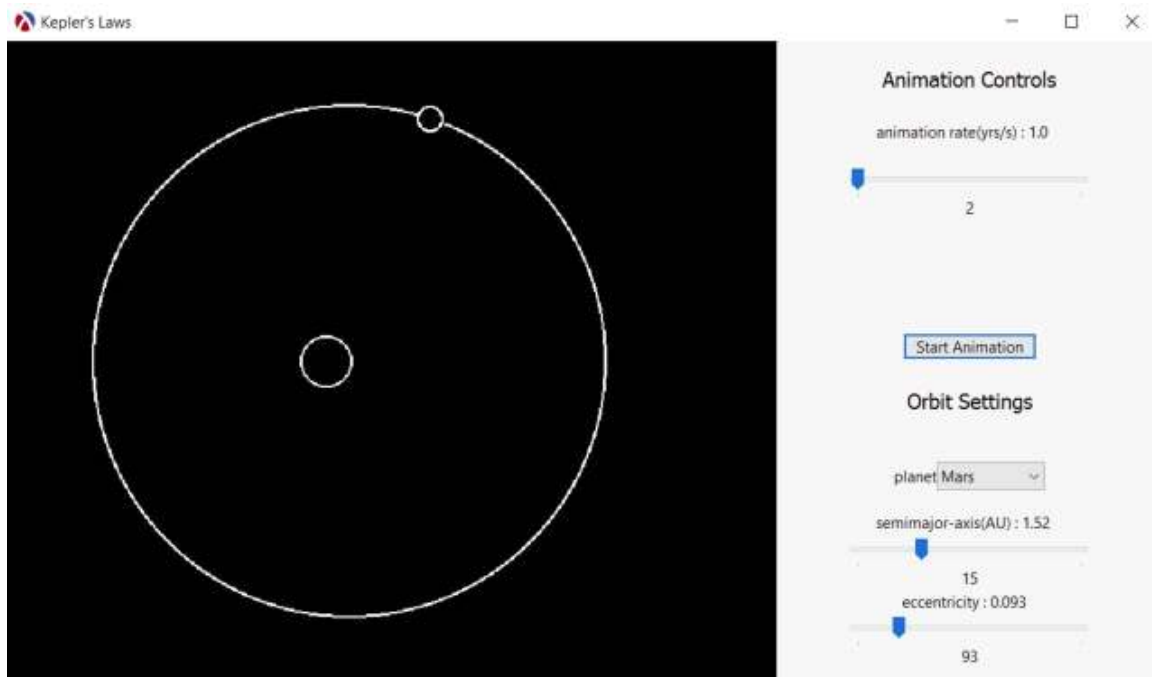
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DESCRIPTION OF THE PROBLEM:

The main aim of the project is to create a interface in which variables like eccentricity,semi-major axis,etc are used to customise a planet's orbit which is shown moving in the canvas.

Initially,we can select the attributes of planets like Mercury, Venus, Earth and Mars and then change the attributes.

Example of the interface:



PROGRAM DESIGN:

- 1.The GUI package was used to create classes like slider,button,etc which would be shown in the main frame (interface).
- 2.Planet is represented as a struct.
- 3.The essence of the drawing function used was taken from major-assignment-2.
- 4.Various functions were defined to calculate position-vectors and velocity-vectors of the planets.
- 5.The implementation was based on Kepler's Laws of Planetary Motion.

INPUT AND OUTPUT:

As soon as the "Ctrl+r" button is pressed, the interface opens and we should press the "Start Animation" button to start the simulation. Eccentricities,semi-major axis and animation rate can be changed using the sliders.

LIMITATIONS AND BUGS:

- 1.Planets such as Jupiter,Saturn,Uranus and Neptune have been excluded as the orbits of these planets are too large to simulate.
- 2.For certain planets, low animation rate makes the simulation too slow such that it looks like the planet doesn't move.

POINTS OF INTEREST:

- 1.The program is heavily relied on Kepler's Laws.

- 2.GUI package of Drracket was used.
- 3.Features not taught in class was the usage of GUI which is the main package of our program.
- 4.Force between two particles was not used anywhere as it would not be useful when using Kepler's Laws.