

PLANETARY ORBIT SIMULATOR

TEAM MEMBERS:

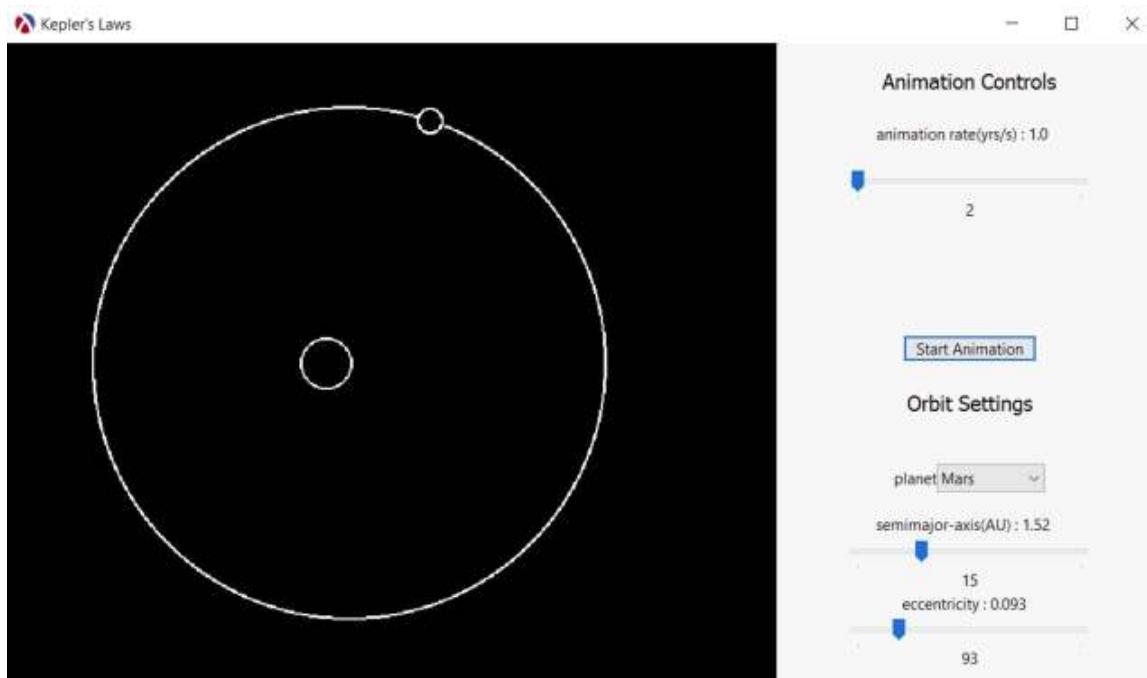
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DESCRIPTION OF THE PROBLEM:

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.