Providing a Simulator for the N Body Problem Using Programming and Euler's Method, After Basing It on Our Solar System

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Large masses such as planets exert a force of attraction, also known as gravity, on other large bodies pulling the other bodies towards them. This gravitational force of attraction is exerted by all large bodies and planets on bodies around them, the gravitational force exerted on the bodies causes them to move in a certain manner. The motion and effect 2 bodies of large mass have when placed in a system together is a known physics problem known as the 2 body problem which is a mathematical problem that describes the motion of 2 point masses using Newton’s gravitational laws, with each mass moving in a trajectory determined by the other. Increasing the number of bodies in the problem to 3 or more would turn the 2 body problem into the n-body problem which cannot be solved mathematically. First, we created a code that calculated the forces acting on every major body in the solar system using Newton’s Law of Universal Gravitation and Euler's method, then using computer approximation known as Euler's method which is to use the force and acceleration of an object which are presumed to stay constant over small periods of time which is equivalent to integrating but without taking the limit as the period goes to 0 rather just assuming it is really small. After successfully being able to accurately describe the motion of planets in our solar system we adapted the code to be able to solve any n body problem.

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