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Fang 3/4 A

AP Physics C: Mechanics

16 May 2014

**Orbit Game**

Game Description

You are an astronaut with very limited fuel. You will begin on a planet, and your goal is to travel through the Milky Way by flying from one friendly planet to another. You must use all of your fuel to exit the starting planet with some initial velocity. Then, you must rely on the gravitational pull of the suns and planets around you to alter your flight path and guide you to your destination planet. Be careful, because flying into anything other than your destination will cause your demise – a fiery explosion!

Materials

* Computer
* Java Developing Kit
* Interactive Developer Environment
* Open Graphics Library

Procedure

We will write the game described above in the Java programming language. We will incorporate physics equations for orbital mechanics, rocket propulsion, and universal gravitation to create an accurate model of interactions in space. We will design a game menu and at least one game level.

Expected Outcome

We will create an accurate orbit simulator that models how spacecraft accelerate using rocket thrust, and how they behave under the influence of gravitational forces of bodies in space.

Timeline

5/16 – write the gravity algorithm for body-body interactions in the game in Processing.

5/20 – write the gravity algorithm for rocket-body interactions in the game

5/27 – set up rendering. Also, transfer existing code to Java.

5/29 –write the code for the rocket propulsion in Java.

6/2 – begin designing level(s).

6/4 – continue designing level(s).

6/6 – finish designing level(s) and begin designing the menu.

6/10 – finish designing the menu and begin the final report.

6/12 – finish the final report.