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RE: Homework Question #2

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Problem Subject: Launch and Orbits

Motivation: The final orbit of a satellite is a key component of mission planning. How the satellite gets there is affected by where it's launched from and by what vehicle, and it's transfer can be optimized for time or velocity needed.

Due to the previous work conducted by the members of this group in Hw #1, there is a unique opportunity to combine the two assignments into a more robust mission design program, all while adding more functionality. The purpose to this merger will be to design a more robust design mission program that would be used in 16.89.

The previous two assignments consisted of:

- A MATLAB program that would select the preferred launch site for a direct launch into a target orbit, given a design payload.
- A MATLAB program that would report time and velocity needed for various methods of changing altitude and inclination of an orbit, and that interfaces with STK to display the maneuver and confirm the final orbit was obtained.

Problem Statement: Given a payload mass and final orbit, what is the preferred launch vehicle and launch site?

Approach: Develop a MATLAB code with an STK interface that will allow the user to specify a payload mass and final orbit. The code will answer the questions above and provide a display in STK showing the satellite launching and maneuvering to the final orbit. The code will take into consideration all existing launch sites with their appropriate launch restrictions and capable launch vehicles, and it will analyze different methods of transferring to the final orbit and optimize for velocity.