

**MAREA (Mars Lander Amateur Radio Robotics Exploration Activity** **) Programming Project**

**This project is ¼ of your final grade in class and is due the last week of class.**

***Synopsis:***

***You are an applications developer for the Jet Propulsion Laboratory (JPL) a section of NASA.***

***Your supervisor has come to you with an urgent programming problem to solve.***

***The MAREA rover currently exploring the surface of Mars has experienced a catastrophic systems failure, due to data corruption from an unexpected solar flare.***

***Mission control has worked around the clock to reestablish communications with the rover, with limited success.***

***Although the systems have been reset, and communications have been restored, the software that receives commands from Mission Control to drive the rover has been corrupted, and the rover is unable to move.***

***The lead applications developer for the MAREA project is out on a remote mountain climbing expedition, in the Andes and cannot be reached.***

***You are now the lead applications developer and need to rewrite the software get MAREA back to its primary mission.***

Using the programming skills you have learned during the semester in PBasic and using the Beo-Bot, you need to write an application to do the following:

1. Listen for the commands issued from Mission Control, relayed from the Mars Orbiter.
2. Interpret those commands for actions of the rover. (forward, right, left, backward, grasp, release)
3. Use slow ramp up and ramp down of movements to conserve power and avoid jerkiness of starts and stops to conserve usefulness of the hardware.
4. Navigate the predetermined route.
5. Report the completion of the actions from sent commands back to Mission Control.

Mission Control = PC capable of sending APRS

Deep Space Network = Local APRS network

Mars Orbiter = Local PC with XBee Transceiver

Mars Rover = Boe-Bot with XBee Transceiver