

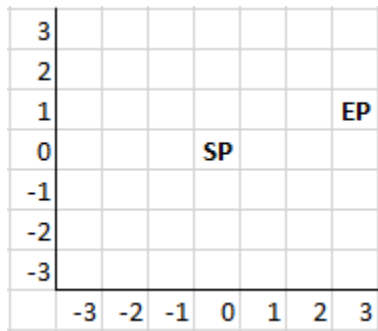
## Arrive Logistics .NET developer programming prompt: Mars Rover tracking

The following solution is to track the relative positioning of a fictional Rover as it travels on the surface of Mars. The positioning is all relative and the two web service endpoints provide methods to “move” an instance of a rover (defined by RoverId) and then retrieve the current position of that Rover.

All rovers begin at the coordinates 0, 0 facing north. Rotations and movements will move the Rover from that position and return the relative position thereafter. Movement instructions are:

- **R:** for rotating 90 degrees to the right,
- **L:** for rotating 90 degrees to the left
- **M:** for moving forward 1 unit

For example, the following instructions for a new rover would have the following starting position (SP) and ending position (EP). Ending position is (3,1). MovementInstruction: “**RMMMLM**”



The solution will need to be written in C#.NET using Web API. The web services should accept JSON for requests and return JSON as well.

Create two web API service endpoints:

### 1. Update movement of the Rover. POST method. JSON body, JSON response.

- Inputs:
  - RoverId. String. Alphanumeric, 10 characters or fewer.
  - MovementInstruction. String. Specific letters only (R, L, or M). 100 characters or fewer.
- Output:
  - Message. String. Informs caller of what happened.
  - CurrentPosition. String. The x, y position for the given RoverId.
    - Ex. CurrentPosition: “(3,1)”

### 2. Retrieve position of the Rover by RoverId. GET method. JSON response.

- Input:
  - RoverId. String. Alphanumeric, 10 characters or fewer.
- Output:
  - Message. String. Informs caller of what happened
  - CurrentPosition. String. The x, y position for the given RoverId.
    - Ex. CurrentPosition: “(3,1)”

Assumptions:

- All rovers begin at coordinates 0, 0 with the rover facing North (up on the Y axis).
- Rovers do not need to be persisted indefinitely, so a database is *not required*; but the service will need to store data somewhere.