Mars Rover Assestment

Requirements and Specifications

NASA will deploy a squad of robotic rovers on a rectangular plateau on Mars and needs to control its movement. NASA needs to feed the rovers with information using a text file.

A rover's position and location is represented by a combination of x and y coordinates and a letter representing one of the four cardinal compass points. The plateau is divided up into a grid to simplify navigation. An example position might be 0, 0, N, which means the rover is in the bottom left corner and facing North.

In order to control a rover, NASA sends a simple string of letters. The possible letters are ' L', ' R' and ' M'. ' L' and ' R' makes the rover spin 90 degrees l eft or right respectively, without moving from its current spot. ' M' means move forward one grid point and maintain the same heading.

The first line of input is the upper-right coordinates of the plateau, the lower-left coordinates are assumed to be 0,0.

The rest of the input is information pertaining to the rovers that have been deployed. Each rover has two lines of input. The first line gives the rover's position, and the second line is a series of instructions telling the rover how to explore the plateau.

The position is made up of two integers and a letter separated by spaces, corresponding to the x and y coordinates and the rover's orientation.

The output for each rover should be its final coordinates and heading.

Sample input and output:

Test Input:

5 5

1 2 N

LMLMLMLMM

3 3 E

MMRMMRMRRM

Expected Output:

1 3 N

5 1 E

Assumptions and Considerations

The requirements do not clarify if input validation is expected nor alerts from possible outbounds exploring. Considering that NASA Engineers will put in risk a multi-million-dollar project on risk because of inputs outside its specifications that could mean losing one or many of the rovers. So, considering this input validation will not be providing although values not specified will be ignored.

The specification does not detail what will be done with the upper-right coordinates of the plateau. It is my recommendation to include alerts and ignore commands that will drive the rover outside of the plateau, but it is not included in the first version of the solution.

On the test input I included a set of instructions that will drive the rover outside of boundaries. Please advise if this should be included on the next version.

Also, it does not refer to the possible number of instructions to deliver. A large input file might impact performance. Because of this, it might be necessary to deliver a more robust solution. It finally depends on the number of instructions intended to supply.

As desired, the solution is constructed using JavaScript due to its easy deployment an compatibility with any updated browser supporting the latest specification.

Instructions to deploy

1. Save Index.html and MarsRoverInput.txt on your favorite directory.
2. Modify the input file as needed.
3. Open Index.html on your browser and choose, by pressing the “Choose File” button, the input file delivered or any other you might have.

