

IRISNDT Technical Evaluation

Mars Rover problem:

A squad of robotic rovers are to be landed by NASA on a plateau on Mars. This plateau, which is curiously rectangular, must be navigated by the rovers so that their on-board cameras can get a complete view of the surrounding terrain to send back to Earth. A rover's position and location is represented by a combination of x and y co-ordinates 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 left or right respectively, without moving from its current spot. 'M' means move forward one grid point and maintain the same heading.

Assume that the square directly North from (x, y) is (x, y+1).

INPUT:

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.

Each rover will be finished sequentially, which means that the second rover won't start to move until the first one has finished moving.

Test Input:

```
5 5
1 2 N
LMLMLMLMM
3 3 E
MMRMMRMRRM
```

OUTPUT:

The output for each rover should be its final co-ordinates and heading.

Expected Output:

```
1 3 N 5 1 E
```

Requirements

It's up to you to decide how much work to put into this assignment, but this is the minimum requirements that we would like to see:

1. A Web Service

2. A Xamarin Forms app that works on at least 2 platforms (UWP, iOS or Android)

Web Service

- Accept inputs via a RESTFUL service and return the expected output
- Keep history of all inputs and outputs

Xamarin Forms

- Provide an easy to use UI to the client for making selections. The easier it is to use, the better.
- Make calls to the Web service for the expected output
- Draw the plateau with the following highlighted:
 - o starting position of the rover,
 - o route taken,
 - o and final destination of the rover
- Send the screen shot of the output of the plateau to the web service for saving it in history
- A history page where all inputs and outputs are shown