**ROVERS C++ TASK**

**Introduction:**

We have prepared a small task for you to solve which should prove your basic OOP and C++ knowledge.

I think it should not be difficult and you will be able to easily implement within 8 hours of work.

*In case you need more time (and especially because you are a Fresher or Junior) please do not hesitate to contact us and ask for more time.*

**Task Requirements:**

Mechanism for feeding input and getting output from your solution should be human readable TXT; format/schema for which can be designed by you based on the Input section detailed below.

You should provide sufficient evidence that your solution is complete by, as a minimum, indicating that it works correctly against the supplied test data. Please ensure a running cmake file (preferable on Linux) or sln file (if using Visual Studio).

We expect Unit Tests and would recommend using a testing framework such as Google Test to write a simple unit test. Even if you have not used it before, it is simple to learn and incredibly useful.

Please note that the code you write should be of production quality that actually goes into space, and most importantly, it should be code you are proud to own.

**Rovers**

A squad of robotic rovers are to be landed by NASA on a different planets like Mars, Pluto etc.

You are responsible to land and operate the rovers sent for Mars plateau. This plateau, which is curiously flat and 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 is represented by a combination of an x and y co-ordinates and a letter representing one of the four cardinal compass points. The plateau is divided up into a grid of cells 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 cell, and maintain the same heading.

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

Also assume that each cell size is 1 sq-cm and individual rover occupies the entire cell.

**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 co-ordinates 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.

**Output:**

The trail of rover has to be recorded in an output TXT file including each Rovers final coordinates and heading.

**Part example of Test Input for Rover in TXT i/p file:**

5 5

1 2 N

LMLMLMLMM

3 3 E

MMRMMRMRRM

**Part example of Expected Output for addressed Rover in TXT o/p file:**

1 3 N

5 1 E

**Bonus part of Rovers C++ Task**

At-least 4 rovers are on plateau at any time.