Java Exercise for Candidates

Thank you again for your interest in Equo. For the solution, we request that you use Java. You may not use any external libraries to solve this problem; however, you may use external libraries or tools for building or testing purposes. Specifically, you may want to use JUnit or Gradle/Maven to assist your development. You may also include a brief explanation of your design and assumptions along with your code. Your submission will be used as an interview tool.

INTRODUCTION TO THE PROBLEM

The problem below requires some kind of input. You are free to implement any mechanism for feeding input into your solution (for example, using hard-coded data within a Junit test). You should provide sufficient evidence that your solution is complete by, as a minimum, indicating that it works correctly against the supplied test data.

PROBLEM: Desert oil exploration drones

A squad of drones are to be sent by Shell Inc. to a desert plateau. This plateau, which is curiously rectangular, must be navigated by the drone's so that their on-board super thermal camera can get if on that terrain there is oil presence.
A drone's position and location are 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 drone is in the bottom left corner and facing North.
In order to control a drone, Shell Inc. sends a simple string of letters. The possible letters are 'L', 'R' and 'M'. 'L' and 'R' make the drone 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 about the drone that has been deployed. Each drone has two lines of input. The first line gives the drone's position, and the second line is a series of instructions telling the drone 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 drone's orientation. Each drone will be finished sequentially, which means that the second drone won't start to move until the first one has finished moving.

OUTPUT: The output for each drone should be its final coordinates and heading.

INPUT AND OUTPUT

Test Input:
5 5
1 2 N
LMLMLMLMM
3 3 E
MMRMMRMRRM

Expected Output: 1 3 N 5 1 E

Please email us your solution within four days. If you need more time or have questions, let us know. Equo would like the opportunity to offer you a challenging career with our dynamic team. We wish you luck and look forward to receiving your response.

OPTIONAL EXTENSION EXERCISE

Using the implementation of your solution to the "Desert oil exploration drones" problem as a base, implement a mechanism whereby your solution can be used remotely. How this is implemented is up to you, as long as you stick to the requirement to use only JDK libraries. You may wish to choose to implement your own client or to use an existing widely available client such as telnet, curl, or a web browser for interacting with your solution. Please include a brief description detailing the usage of this remote interface.