MARS ROVER – PAIRING

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 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 output for each rover should be its final co-ordinates 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

Part 2: THIS PART OF THE PROBLEM IS NOT SENT TO CANDIDATES AND IS USED IN THE OFFICE PAIRING INTERVIEW

Since the plateau is rectangular and driving over the edge results in the rover plummeting to fiery destruction, a rover that moves off an edge of the plateau is lost forever. However, lost rovers leave a beacon in the dirt that prohibits future rovers from dropping off the edge at the same grid point.

The beacon is left at the last set of co-ordinates that the rover occupied before disappearing over the edge. An instruction to commit robotic suicide and move off the plateau from a grid point from which a rover has been previously lost is simply ignored by the current rover.

If a rover falls off the edge of the grid the acronym "RIP" should be printed after its last position and orientation.

Input and Output

Test Input:
5 5
1 2 N
LMLMLMLMM
3 3 E
MMRMMLMRRM
4 1 S
MLMLMRMRM

Expected Output:
1 3 N
5 1 E RIP
5 0 S