Autonomous Robot

You are supposed to design a robot that can move on an N * N grid based on the commands you give to it.

A robot'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. An example position might be 0, 0, N, which means the robot is in the bottom left corner and facing North.

In order to control the robot, we have 3 simple commands. The possible letters are 'L', 'R' and 'M'. 'L' and 'R' makes the robot 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 grid, the lower-left coordinates are assumed to be 0,0.

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

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

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

OUTPUT

The output for each robot 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