Problem 256: AI Robot

Difficulty: Easy

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Problem Background

Lockheed Martin is working on developing a reconnaissance robot that will eventually receive orders from an AI system. The AI system is still under development, but the robot is nearly ready to go; the team just needs to test that it's able to receive and process navigational commands correctly. They'd like you to write a program to simulate the orders that will be sent from the AI, then indicate the robot's expected position after it's followed those orders.

Problem Description

For the testing process, the robot will be placed on an X,Y coordinate grid, which can be considered to be infinite in all directions. To start with, you will be given the robot's current position and the direction it's facing:

- North (in the +Y direction)
- East (in the +X direction)
- South (in the -Y direction)
- West (in the -X direction)

The robot can receive three possible navigational commands:

- R – Turn right 90 degrees (e.g. North to East)
- L – Turn left 90 degrees (e.g. North to West)
- A – Advance one position on the grid in the direction the robot is facing

Commands are issued as a string of those characters and executed in sequence; the string "RAAL" tells the robot to turn right, move forward twice, then turn left. Given the starting position and facing and a series of instructions, you'll need to determine where the robot should end up, and in which direction it is facing.

Sample Input

The first line of your program's input, **received from the standard input channel**, will contain a positive integer representing the number of test cases. Each test case will include a single line with the following information, separated by spaces:

- An integer representing the robot's starting X coordinate
- An integer representing the robot's starting Y coordinate

- An uppercase letter N, E, S, or W, representing the direction in which the robot is initially facing (North, East, South, or West, respectively)
- A string of one or more uppercase letters R, A, and/or L, representing a series of commands for the robot to follow.

```
2
0 0 N RAAL
7 3 N RAALAL
```

Sample Output

For each test case, your program must print a single line containing the following information, separated by spaces:

- An integer representing the robot's final X coordinate
- An integer representing the robot's final Y coordinate
- An uppercase letter N, E, S, or W, representing the direction in which the robot is facing after executing all instructions (North, East, South, or West, respectively)

```
2 0 N
9 4 W
```