KATALYST

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Simple Mars Rover

Difficulty: Beginner

Estimated Duration: 1 hour 20 minutes

Simple Mars Rover Kata

curated by [Lee Sanderson](#)

Instructions

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 onboard cameras can get a complete view of the surrounding terrain to send back to Earth.

Your task is to develop an API that moves the rovers around on the plateau.

In this API, the plateau is represented as a 10x10 grid, and a rover has state consisting of two parts:

- its position on the grid (represented by an X,Y coordinate pair)
- the compass direction it's facing (represented by a letter, one of `N`, `S`, `E`, `W`)
- the starting position of the rover is `0:0:N`

Input

The input to the program is a string of one-character move commands:

- `L` and `R` rotate the direction the rover is facing
- `M` moves the rover one grid square forward in the direction it is currently facing

If a rover reaches the end of the plateau, it wraps around the end of the grid.

Output

The program's output is the final position of the rover after all the move commands have been executed. The position is represented as a coordinate pair and a direction, joined by colons to form a string. For example: a rover whose position is `2:3:W` is at square (2,3), facing west.

Examples

- given an input `MMRMMLM` then the output should be `2:3:N`
- given an input `MMMMMMMMMM` gives output `0:0:N` (due to wrap-around)

Position: "0:0:N"   Commands: ""
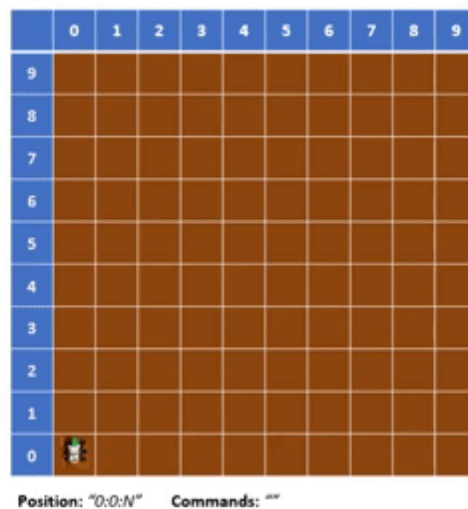
Interface

There are no restrictions on the design of the public interface.

A public interface to the API could look something like this:

```
public class MarsRover
{
    public string Execute(string command);
}
```

Rules:

- The rover receives a char array of commands e.g. `RMMLM` and returns the finishing point after the moves e.g. `2:1:N`
- The rover wraps around if it reaches the end of the grid.

Credit: Google Code Archive

Useful Links

Books

- [Head First Design Patterns](#) by Eric Freeman et al.
- [Understanding the Four Rules of Simple Design](#) by Corey Haines

Harder version

Once you have completed this kata why not try the full [Mars Rover](#) kata for a more difficult challenge?

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