1041. Robot Bounded In Circle

Medium 2590 569 Add to List Share

On an infinite plane, a robot initially stands at `(0, 0)` and faces north. The robot can receive one of three instructions:

- `"G"`: go straight 1 unit;
- `"L"`: turn 90 degrees to the left;
- `"R"`: turn 90 degrees to the right.

The robot performs the `instructions` given in order, and repeats them forever.

Return `true` if and only if there exists a circle in the plane such that the robot never leaves the circle.

Example 1:

```
Input: instructions = "GGLLGG"
Output: true
Explanation: The robot moves from (0,0) to (0,2), turns 180 degrees, and then returns to
(0,0).
When repeating these instructions, the robot remains in the circle of radius 2 centered at
the origin.
```

Example 2:

```
Input: instructions = "GG"
Output: false
Explanation: The robot moves north indefinitely.
```

Example 3:

```
Input: instructions = "GL"
Output: true
Explanation: The robot moves from (0, 0) -> (0, 1) -> (-1, 1) -> (-1, 0) -> (0, 0) -> ...
```

Constraints:

- `1 <= instructions.length <= 100`
- `instructions[i]` is `'G'`, `'L'` or, `'R'`.