Problem # 1041 : Robot Bounded in Circle

<https://leetcode.com/problems/robot-bounded-in-circle/>

Solution:

1. Initial position of (x, y )= (0,0) and initial direction = North.

2. Given the initial direction, left dictionary gives the direction in which we will be if we turn left

3. Given the initial direction, right dictionary gives the direction in which we will be if we turn right.

4.If we are at (0, 0), move gives us where will land if we moved in the directions given

5. If instruction is “L” we turn left. So only direction changes.

If instruction is “R” we turn right. So only direction changes.

If instruction is “G”, direction does not change. But we move x and y as per move dictionary depending on the direction the robot is already in.

5. After all instructions, we need to check if robot is at the starting point (0, 0) and is not pointing North.

class Solution:

def isRobotBounded(self, instructions: str) -> bool:

x, y = 0, 0

direction = "N"

left = { "N": "W", "S":"E", "W":"S", "E":"N"}

right = {"N":"E", "S": "W", "W":"N", "E":"S"}

move = {"N": (0,1), "S": (0, -1), "W": (-1, 0), "E": (1, 0)}

for i in instructions:

if i == "L":

direction = left[direction]

elif i == "R":

direction = right[direction]

else: # i == "G": -- direction does not change

x += move[direction][0]

y += move[direction][1]

return((x, y) == (0, 0) or direction != "N")