Coding Challenge

Toy Robot Simulator

Description

- The application is a simulation of a toy robot moving on a square tabletop, of dimensions 5 units x 5 units.
- There are no other obstructions on the table surface.
- The robot is free to roam around the surface of the table, but must be prevented from falling to destruction. Any movement that would result in the robot falling from the table must be prevented, however further valid movement commands must still be allowed.
- Create an application that can read in commands of the following form:
    - PLACE X,Y,F
    - MOVE
    - LEFT
    - RIGHT
    - REPORT
- PLACE will put the toy robot on the table in position X,Y and facing NORTH, SOUTH, EAST or WEST.
- The origin (0,0) can be considered to be the SOUTH WEST most corner.
- The first valid command to the robot is a PLACE command, after that, any sequence of commands may be issued, in any order, including another PLACE command. The application should discard all commands in the sequence until a valid PLACE command has been executed.
- MOVE will move the toy robot one unit forward in the direction it is currently facing.
- LEFT and RIGHT will rotate the robot 90 degrees in the specified direction without changing the position of the robot.
- REPORT will announce the X,Y and F of the robot. This can be in any form, but standard output is sufficient.
- A robot that is not on the table can choose the ignore the MOVE, LEFT, RIGHT and REPORT commands.
- Input can be from a file, from standard input or through a UI with four buttons and scrolling log of the result, as the developer chooses. (This might depend on the dev stack you use)
- Provide test data to exercise the application.

Constraints

- The toy robot must not fall off the table during movement. This also includes the initial placement of the toy robot.
- Any move that would cause the robot to fall must be ignored.
    - Example Input and Output:
        i. PLACE 0,0,NORTH
        MOVE
        REPORT
        Output: 0,1,NORTH
        ii. PLACE 0,0,NORTH
        LEFT
        REPORT
        Output: 0,0,WEST
        iii. PLACE 1,2,EAST
        MOVE
        MOVE
        LEFT
        MOVE
        REPORT
        Output: 3,3,NORTH

Deliverables

- The code source files, the test data and any test code.
- All files should be managed under a local GIT repository.
- Your knowledge of good coding practices.
- Your knowledge of software design.

Time

- This task should take you no more than a 2-3 hours to complete.

NOTE:

- This task should be completed in the language of your choice.