Working with

ToyRobot challenge simulator

Table of Contents

1 The application instructions

1.1 Rules of ToyRobot Challenge

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:

1. PLACE X, Y, FACING
2. MOVE
3. LEFT
4. RIGHT
5. REPORT

1. **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 SOUTHWEST 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.

2. **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.

3. **REPORT** will announce the X, Y, and FACING of the robot. This can be in any form, but the 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, or standard input, as the developer chooses.

1.2 Input file format:

The input file should be in the ASCII text file and commands should be listed in separate lines which will be executed in order. Multiple commands in line and multiple files are accepted.

The space lines and invalid commands (compare with rule) will be ignored.

1.3 How to run the application

There is an executable file (ToyRobotSimulator.exe) in the Release folder. Execute the application from the command line. Multiple files will be accepted. If the file placed in the same folder as the Exe file, mentioning the path is not necessary.

ToyRobotSimulator.exe <input Filename1> <input Filename2> … <input Filename N>

For building the project, please use the visual studio 2019 and .Net framework 4.5.

2 The application solution structure

2.1 Document folder

This folder contains related documents for the project.

2.2 Sample Test Files folder

The “SampleTestFiles” folder includes some sample test files which are used in the unit test.

2.3 ToyRobot Challenge project

The ToyRobot Challenge class library represents the object-oriented actual Toy Robot challenge objects that are following the OO rules and principles.

2.4 ToyRobot Simulator Console project

The ToyRobot Simulator console application is responsible for receiving input files and calling the execution function to generate the output data in order sequences.

2.5 Unit tests

The Unit test contains step by step tests of most parts of the project. I tried to validate each unit of the software to make sure it performs as designed and test that the individual parts are working correctly.