

# Toy-Robot-Simulator

## 1.Introduction

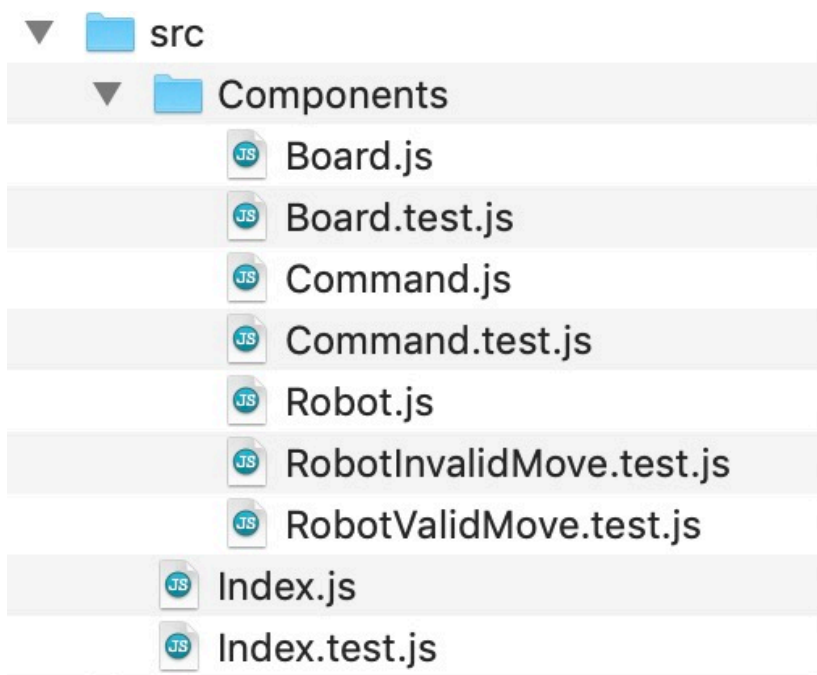
The application is a simulation of a toy robot moving on a square tabletop, of dimensions 5 units x 5 units. There are no other obstructions on the table surface.

Technical stack:

Node.js (JavaScript)

Jest (Testing Library)

## 2.File structure



Index.js : run the main tasks, initialise the Robot, Command, and Board, assign the robot initial position(0, 0, initial) and board size 5\*5, read the robot command from robotMoveCommand.txt, then robot execute the command sequentially.

Robot.js: include robot action(MOVE, TURN, PLACE, REPORT) and execute method to execute all the actions accordingly.

Board.js: check whether the robot position is valid on the board.

Command.js: read user command from robotMoveCommand.txt file and convert to a command array.

### 3. How to use

Open the whole toy-robot-simulator folder in Visual Studio Code(or other IDE). Then open the terminal, and run the following command:

#### **cd toy-robot-simulator**

(if open the terminal in vs code there is no need for this command, no need to go to src folder)

#### **yarn play-game**

(Or **npm run play-game** if use npm package manager,

Or **node ./src/index.js** if do not have yarn package manager locally)

Command could be written and change in robotMoveCommand.txt, each command occupies a line and there is no space in front of each command, the console would print out “Wrong Command” if read invalid command.

Example 1:



```
robotMoveCommand.txt
1 PLACE 0,0,NORTH
2 MOVE
3 REPORT
```

Output:

```
{ X: 0, Y: 1, facing: 'NORTH' }
```

Example 2:

```
robotMoveCommand.txt
1 PLACE 0,0,NORTH
2 LEFT
3 REPORT
```

Output:

{ X: 0, Y: 0, facing: 'WEST' }

Example 3:

```
robotMoveCommand.txt
1 PLACE 1,2,EAST
2 MOVE
3 MOVE
4 LEFT
5 MOVE
6 REPORT
```

Output:

{ X: 3, Y: 3, facing: 'NORTH' }

#### Example 4:

```
robotMoveCommand.txt
1  MOVE
2  LEFT
3  RIGHT
4  REPORT
5  PLACE 4,5,NORTH
6  REPORT
7  PLACE 3,4,NORTH
8  MOVE
9  PLACE 3,4,NORTH
10 RIGHT
11 MOVE
12 MOVE
13 REPORT
14 111
```

#### Output:

{ X: 0, Y: 0, facing: 'INITIAL' }

{ X: 0, Y: 0, facing: 'INITIAL' }

{ X: 4, Y: 4, facing: 'EAST' }

Wrong Command

If uncomment the `console.log(robot.position)` in `Index.js`

```
commands.forEach((command) => {  
  robot.execute(command);  
  console.log(robot.position);  
});  
};
```

Every step of the robot could be seen in the console:

```
{ X: 0, Y: 0, facing: 'INITIAL' }  
{ X: 0, Y: 0, facing: 'INITIAL' }  
{ X: 0, Y: 0, facing: 'INITIAL' }  
{ X: 0, Y: 0, facing: 'INITIAL' }  
{ X: 0, Y: 0, facing: 'INITIAL' }  
{ X: 0, Y: 0, facing: 'INITIAL' }  
{ X: 0, Y: 0, facing: 'INITIAL' }  
{ X: 0, Y: 0, facing: 'INITIAL' }  
{ X: 3, Y: 4, facing: 'NORTH' }  
{ X: 3, Y: 4, facing: 'NORTH' }  
{ X: 3, Y: 4, facing: 'NORTH' }  
{ X: 3, Y: 4, facing: 'EAST' }  
{ X: 4, Y: 4, facing: 'EAST' }  
{ X: 4, Y: 4, facing: 'EAST' }  
{ X: 4, Y: 4, facing: 'EAST' }  
{ X: 4, Y: 4, facing: 'EAST' }  
Wrong Command  
{ X: 4, Y: 4, facing: 'EAST' }
```

## 4. Test

There are altogether 16 test cases, to see the test result, simply run

**yarn test**

```
PASS src/Components/Board.test.js
PASS src/Components/RobotValidMove.test.js
PASS src/Components/RobotInvalidMove.test.js
PASS src/Components/Command.test.js

Test Suites: 5 passed, 5 total
Tests:       16 passed, 16 total
Snapshots:   0 total
Time:        2.823 s
Ran all test suites.
✨ Done in 4.27s.
```

Run the following command to see the test coverage:

**yarn test —coverage**

```
PROBLEMS  TERMINAL  ...  5: bash

PASS src/Components/RobotInvalidMove.test.js
```

| File           | % Stmts | % Branch | % Funcs | % Lines | Uncovered Line #s |
|----------------|---------|----------|---------|---------|-------------------|
| All files      | 100     | 100      | 100     | 100     |                   |
| src            | 100     | 100      | 100     | 100     |                   |
| Index.js       | 100     | 100      | 100     | 100     |                   |
| src/Components | 100     | 100      | 100     | 100     |                   |
| Board.js       | 100     | 100      | 100     | 100     |                   |
| Command.js     | 100     | 100      | 100     | 100     |                   |
| Robot.js       | 100     | 100      | 100     | 100     |                   |

```
Test Suites: 5 passed, 5 total
Tests:       16 passed, 16 total
Snapshots:   0 total
Time:        2.481 s
Ran all test suites.
✨ Done in 3.70s.
```