README.md

# RobotPathFinder

**Arrays Assignment for ICS3U1**
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Work log can be found in the commit history of this GitHub repository

## Description

- Reads and parses a map file into 2D array format
- Computes the shortest path from the starting position to the goal
- Displays the map and animates the shortest path

## Project Organization

| Package | Description |
|---|---|
| algorithm | files related to calculating the shortest path in the maze |
| backend | files related to the processing and calculations that is not part of the algorithm |
| frontend | files related to the JavaFX components displayed on screen |
| tests | test cases files and JUnit test files for the algorithm |

## Features

- Application icon
- A file select dialog to select the map
- Validates the map to ensure that it is of the proper dimensions, there are no invalid characters, and there is a possible path
- Buttons at the top of the animation window to easily restart the animation or select another map
- Window resizes automatically according to the size of the screen (90% of the height or width of the screen, depending on which is smaller)
- The size of each cell changes automatically depending on the dimensions of the map and the size of the window
- Keeps track of the number of moves made by the robot

## Map Legend

| Cell Contents | Meaning |
|---|---|
| 0 | Obstacle |
| 1 | Empty Space |
| R | Starting Position |
| G | Goal Position |

Each character in the map should be separated with a whitespace character with a new line separating each row.