Assignment 2
“The Shoe Maze”

Intelligent Systems

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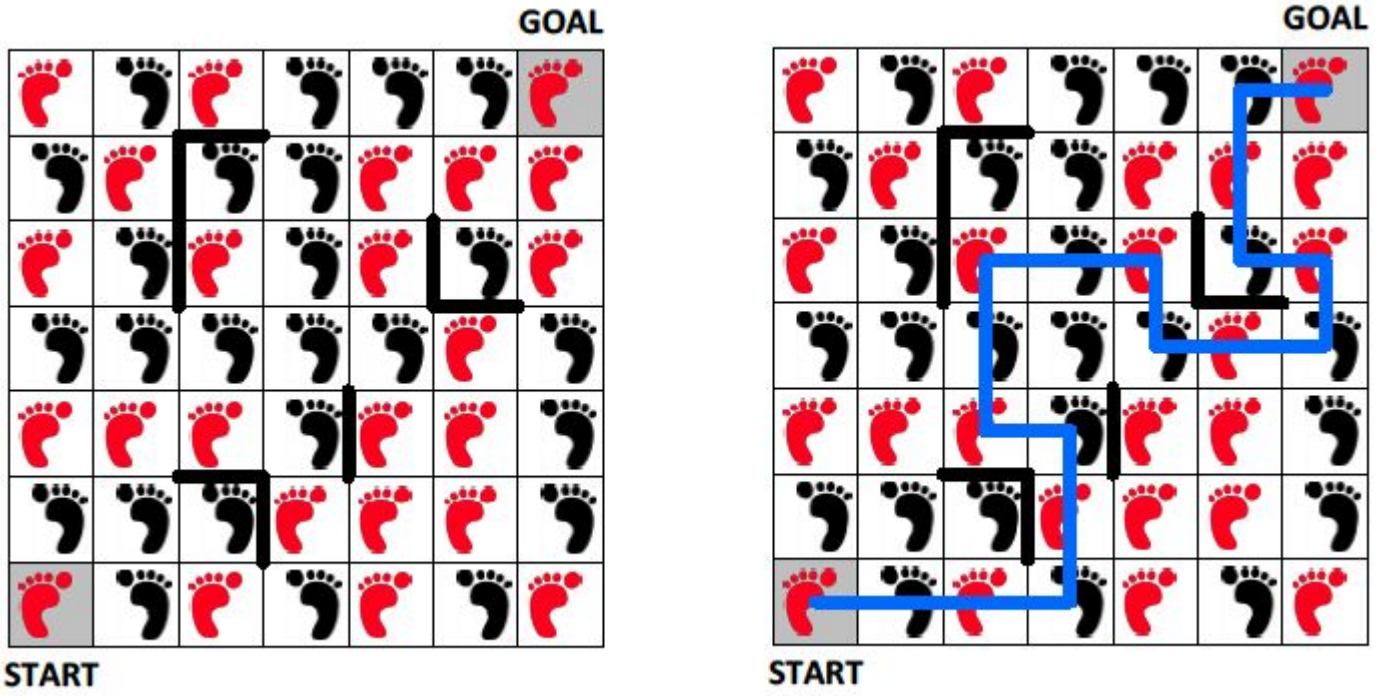
Description of the problem

- **The Shoe Maze**
  - The Shoe Maze is a puzzle from a Nintendo DS game in Professor Layton's saga.
  - The game consists of a grid representing a maze. Each square has a shoe drawn, which can be left or right.
  - The squares can have walls on any of their 4 sides, and it is not possible to go beyond the limits of the grid.
  - Knowing the complete structure of the labyrinth (location of the initial and final squares, and the distribution of the shoes and walls), the objective of the game is to move square by square from the initial square to the final square in such a way that shoes of different feet alternate.
  - The possible movements are up, down, left and right.

Description of the problem

- **Example**



You are asked to

- **Formulation of the problem**
  - State of the problem (data structures in R)
    - Initial State
    - Final State (of function to check the goal is achieved)
  - Actions
    - Conditions
    - Effect
    - Cost
  - **Theory**: For your formulation, define values for
    - b, d and m.

You are asked to

- **R implementation**
  - Complete functions for formulation in the file problems
    - **\problems\shoe-maze-[XX].R**
  - Validate functions by modifying the corresponding
    - **\demos\main-[XX].R**
  - Solve the problem using both Breadth first search and Depth first search.

Submission

- **Format**
  - ZIP file with all the R code
    - (commented when needed)
  - TXT document with theory answers.
- **Criteria**
  - Correct solution and theory questions (7,5%).
  - Documentation and Efficiency of the code (2,5%).