CS 461 - Program 1 Report
Binh Nguyen - 16168354

8-puzzle problem

Goal State: 1 2 3
4 5 6
7 8 E

Method: A* search using manhattan distance heuristic

References

1. https://www.geeksforgeeks.org/check-instance-8-puzzle-solvable
2. https://github.com/salimt/algs4-princeton/tree/master/8%20Puzzle
3.

Main classes:

Node.java class:

- Implement Comparable<Node> to override the compare function based on heuristic cost (for Priority Queue to work).
- Variables:
  - parent node
  - sliding action for the empty tile
  - coordinates of the empty tile
  - current puzzle state
  - Manhattan heuristic cost
- Has getters, setters, constructors and some other functions.

Utils.java class:

- Has helpers functions for reading & processing inputs
- Has related functions for A* search

EightPuzzle.java class (Main program):

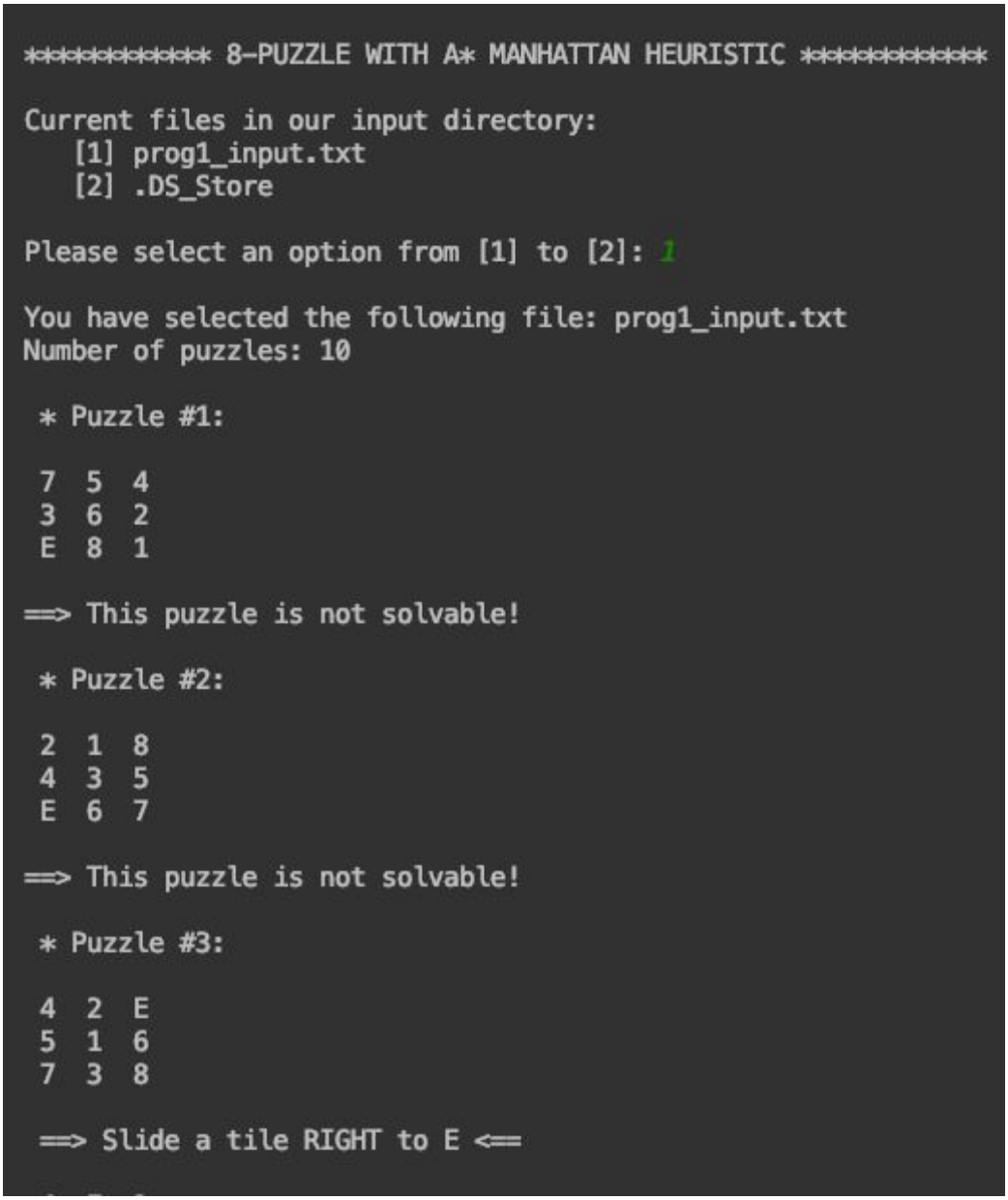
- Process the input datafile into a list of puzzles
- Loop through the puzzle list and apply A* search
- For every puzzle, report the solution whether there is a solution

Main Data Structures: Priority Queue & Hash Set for A* Search, 2D char array for puzzle state.

Running Instruction: Open the project under IntelliJ IDE, build & run EightPuzzle.java Module.

CS 461 - Program 1 Report
Binh Nguyen - 16168354

Screenshots:



CS 461 - Program 1 Report
Binh Nguyen - 16168354