DS/CMPSC 442: Artificial Intelligence
Fall 2024
Project-1 Demonstration about the python file

1. File Description

This file will further demonstrate the expected input and output for the project-1 (both solution_q1.py and solution_q2.py)

2. Sample description

We will use the example in the "example-of-actual-path.pdf" again. Please see Figure1 below about initial state and goal test for this example.

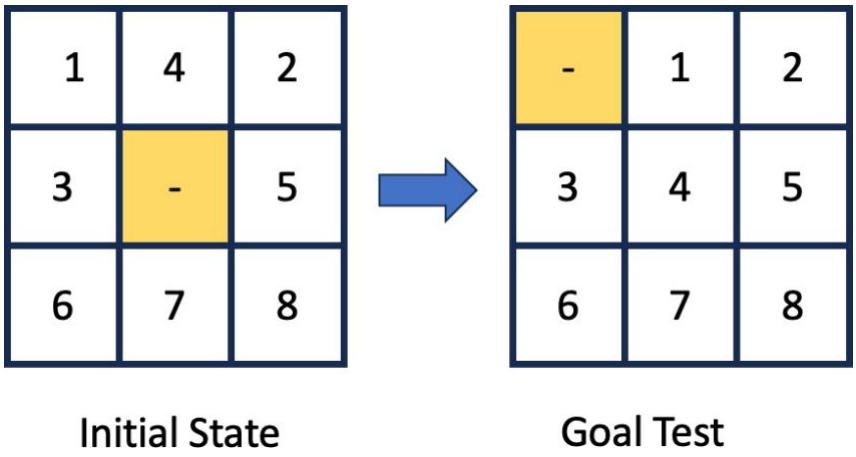

Figure 1. Example of 8-puzzle, where left side is the initial state and right side is the goal test

3. Definition about tile movement

There are four symbols we expected to see in your actual returned path: U,D,R,L; Please see more details at "example-of-actual-path.pdf" under the Canvas project-1.

1. U => tile moves Up
2. D => tile moves Down
3. R => tile moves Right
4. L => tile moves Left

4. Expected input of Figure 1 example

The input.txt file should contain a single line that looks like this (The symbol "_" represents the empty square):

```
1,4,2,3,_,5,6,7,8
```

NOTE: Make sure that there is no whitespace in your input.txt, so no space or tab characters in between the numbers. Only use a single comma without any whitespaces to delimit the different numbers in your file.

5. Expected output of the example in the Figure 1

The actual returned path by DFS is:

7U,8L,5D,2D,4R,7U,8U,5L,2D,4D,7R,8U,5U,2L,4D,7D,8R,5U,2U,4L,7D,8D,5R,2U,4U,7L,8D,5D,2R,1R

The actual returned path by BFS is:

4D,1R

The actual returned path by UCS is:

4D,1R

The actual returned path by A* search is:

4D,1R

NOTE: Make sure that there is no whitespace in your output sequence, so no space or tab characters in between the numbers. Only use a single comma without any whitespaces to delimit the different numbers.

Therefore, when we run the below command in the terminal:

Python solution_q1.py

In the terminal, the expected output for Q1.1 (based on this example) is:

The solution of Q1.1a is: 7U,8L,5D,2D,4R,7U,8U,5L,2D,4D,7R,8U,5U,2L,4D,7D,8R,5U,2U,4L,7D,8D,5R,2U,4U,7L,8D,5D,2R,1R The solution of Q1.1b is: 4D,1R The solution of Q1.1c is: 4D,1R The solution of Q1.1d is: 4D,1R