

Artificial Intelligence HW #1

8 Puzzle

Due: Tuesday, 1 October 2019, 23:59

Write a python code to solve the 8-puzzle problem using A* search algorithm. In this assignment, you write the heuristic function as the number of misplaced tiles.

Input data format

An input file is a plain text, written as two lines: the start state and goal state. States are space-delimited (1 blank space). They include the numbers 0-8, where 0 represents the empty space, and each number represents the 8 tiles of the puzzle. Let assume that the start state and goal state are given as:

1	2	
3	4	5
6	7	8

Start state

	1	2
3	4	5
6	7	8

Goal state

Then, the input file is written as follows:

1 2 0 3 4 5 6 7 8

0 1 2 3 4 5 6 7 8

You can assume that the initial board positions always leads to the goal state.

Output data format

An output is a sequence of states (line by line) from the start state to the goal state. States should be space-delimited (1 blank space) as same as the one of the input file. **You print the output to stdout.** Here are examples.

1 2 0 3 4 5 6 7 8

1 0 2 3 4 5 6 7 8

0 1 2 3 4 5 6 7 8

Execute

python your-student-id_hw1.py --input input.txt

ex) python 2014123123_hw1.py --input input.txt

- You should write your code in **one python file**.
- You must follow the naming rule “student-id_hw1.py”.
- **argparse** module (<https://docs.python.org/3/library/argparse.html>) helps to parse command-line options.

Submit (제출)

The image shows a submission interface for 'Assignment#1'. On the left, there is a logo with a stylized figure and the text '파일 선택' (File Select) and '어떻게 작동하나요?' (How does it work?). On the right, there is a form with the following fields: '이름' (Name), '성' (Surname), and '이메일 주소' (Email Address). Above the form, there is a file selection area showing '2014123123_hw1.py' and a '+ 다른 파일 추가' (Add other files) button. Below the form, there is an '업로드' (Upload) button.

1. <https://www.dropbox.com/request/de9VwuSFJADVJbCLMSXj> 클릭
2. 파일 선택 클릭 → 본인 컴퓨터에서 “student-id_hw1.py”를 선택
3. 이름, 성, 이메일 작성 (현재 dropbox 시스템상 필수임)
A. 여러분의 개인 정보를 수집하지 않음
4. 업로드
5. 다시 제출하려면 “student-id_hw1_1.py”, “student-id_hw1_2.py” 등으로 수정 버전을 붙여서 제출 (한번 업로드된 파일은 수정이 불가능)

Plagiarism

No plagiarism will be tolerated. If the assignment is to be worked on your own, please respect it. If the instructor determines that there are substantial similarities exceeding the likelihood of such an event, he will call the two (or more) students to explain them and possibly to take an immediate test (or assignment, at the discretion of the instructor) to determine the student's abilities related to the offending work.