

Artificial Intelligence

Programming Assignment #1

Due date : Dec. 8, 2020

Languages : C, C++, Python

Please use the following search algorithms to solve the 8-puzzle problem.

- (a) Iterative-Deepening Search (IDS)
- (b) Uniform-Cost Search
- (c) Greedy Best-First Search
- (d) A* search
- (e) Recursive Best-First Search (RBFS)

Input : A state of random layout of 1, 2, 3, ..., 8, blank.

Goal state :

1	2	3
8		4
7	6	5

(加分20%) **Input :** A state of random layout of 1, 2, 3, ..., 15, blank.

Goal state :

1	2	3	4
12	13	14	5
11		15	6
10	9	8	7

Output for each algorithm :

- (a) The number of movements (state changes) from the initial state to the goal state.
- (b) The maximum number of states ever saved in the memory during the process.

Please explain the strategy you used in this search problem.