

CS 411 - Artificial Intelligence I  
Fall 2019  
Assignment 7  
Department of Computer Science, University of Illinois at Chicago

**Write a program which performs iterative deepening a-star (IDA\*) search to find the solution to any given board position for 15 puzzle using two types of heuristics:**

- 1. Number of misplaced tiles**
- 2. Manhattan Distance**

[https://en.wikipedia.org/wiki/Iterative\\_deepening\\_A\\*](https://en.wikipedia.org/wiki/Iterative_deepening_A*)

Input

The input should be given in the form of a sequence of numbered tiles for initial board configuration, '0' indicating the empty space (see example below)

Output

1. Moves
2. Number of Nodes expanded
3. Time Taken
4. Memory Used

Submission

Please submit a zip file with filename <netid>\_idastar.zip including following files:

- Source Code
- Readme.txt including instruction to run the code

Programming Language

You can choose from C++, Java or Python

Rubric

Implement ida\* search with heuristic 'number of misplaced tile' => 6

Implement ida\* search with heuristic 'manhattan distance' => 6

Print the moves to reach the solution => 3

Print number of nodes expanded => 2

Print total memory usage => 2

Print total time taken => 2

Coding style, comments, readme instruction => 4