# **Read Me – Homework 1**

**The python file “homework1.py” contains the code for solving the 8 puzzle problem using following algorithms:**  
1. Depth First Search  
2. Iterative Deepening Search  
3. A Star Search

**The Command to run the code:**

> python <name\_of\_file> <algorithm\_name>

Examples:

> python homework1.py DEPTH\_FIRST\_SEARCH  
> python homework1.py ITERATIVE\_DEEPENING\_SEARCH   
> python homework1.py A\_STAR\_SEARCH

**After this you will be asked to input the initial state of the board.**

Enter the state as 3x3, each tile separated by a space and rows separated by new line.

Examples:

\* 1 2   
7 4 3  
8 6 5

1 \* 3  
4 2 5  
7 8 6

Next, the code shall execute and will output the sequence of moves to reach goal state, total moves and total number of states enqueued to the console.

**Assumptions:**

* The initial state entered is a Valid configuration
* The Blank tile is denoted by \*
* Sequence Order of generating states: Up, Down, Left, Right
* Hence when these states are pushed on stack and retrieved, Right shall pop first
* Duplicates states are not pushed to the stack

**Observation:**

For the given sequence, A Star gave the best performance in terms of space (states generated) and time(to reach goal), followed by Iterative Deepening and Depth First Search respectively.