8 Puzzle Problem

The 8 puzzle consists of eight numbered, movable tiles set in a 3x3 frame. One cell of the frame is always empty thus making it possible to move an adjacent numbered tile into the empty cell. Such a puzzle is illustrated in the following diagram.

7	2	4
5	*	6
8	3	1

Initial State

*	1	2
3	4	5
6	7	8

Final State

The program is to change the initial configuration into the goal configuration.

Rules

The empty space can only move in four directions: Up, Down, Right, Left. The empty space cannot move diagonally and can take only one step at a time (i.e. move the empty space one position at a time). You can play the game online at this link (http://faramira.com/downloads/8puzzle/index.html).

Write code that takes the initial state as input and print the optimum number of moves to convert the initial state to the goal state using A* search algorithm using two **separate** heuristics.
You may use -1 to denote a blank state.
Heuristic 1 = No. of misplaced tiles
Heuristic 2 = sum of Euclidean distances of misplaced tiles to goal positions in board n

Sample Input

1 5 4

8 2 -1

3 7 6

Sample Output

No. of moves required using heuristic one = 19

No. of moves required using heuristic two = 19

Sample Input

1 2 6

5 4 8

3 7 -1

Sample Output

No. of moves required using heuristic one = 16

No. of moves required using heuristic two = 16