Programming Project 1, Due 10/5/2018

Solving the 8-puzzle using A* algorithm

Note: You can work alone or in a team of TWO max

You are to implement A* search algorithm and apply it to 8-puzzle problem, using any language of your preference.

In addition to coding of A* algorithm, you should implement the state space representation, the operators, the *g* (cost) and TWO *h*(heuristic) functions of the 8-puzzle problem. Your program should be able to accept different initial and goal states as input from users and generate the best solution path as output. In addition, report (1) the number of nodes generated, and (2) the number of nodes expanded, in your output for both heuristic functions.

Your program should be well documented, and you should turn in the following in **hard copy**:

- an external documentation describing the 8-puzzle formulation, the program structure, global variables, functions/procedures, etc.
- your program source codes (with necessary inline documentation).
- the execution results for some example pairs of initial and goal states.

Sample inputs:

Initial state:	Goal State:
1 2 3	1 2 3
7 4 5	8 6 4
6 8 0	7 5 0

Initial state:	Goal State:
2 8 1	3 2 1
3 4 6	8 0 4
7 5 0	7 5 6

In addition, each member should also upload everything (e.g. report, code, etc) to Canvas.

Warning: Any form of cheating will subject you to severe disciplinary act.