Programming Project 1

Solving the 8-puzzle using A* search algorithm

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

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

In addition to coding of A* search algorithm, provide state space representation, operators, *g* (cost) and two heuristic functions of the 8-puzzle problem. Your program should accept initial and goal states from user and will compute the best path as output.

You will turn in the following as hard copy directly to me in the class, in addition to submitting everything in canvas:

- A report describing 8-puzzle problem formulation, program structure, global variables, functions and procedures, etc.
- Analyze four input/output cases:
    - For each input/output sample, for each heuristic report the following: (1) The solution path from initial state to goal state (2) the number of nodes generated, and (3) the number of nodes expanded.
    - Also summarize the results in a table
- Source code (with necessary inline documentation).

Sample initial and goal states:

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