Implementation of 8 puzzle problem using A^* search Algorithm

$$f(n) = g(n) + h(n)$$

function A^* search (problem) returns a solution or failure
    node ← a node with n.state = problem.initial state, n
    frontier ← a priority queue ordered by ascending g(n) only element n

    loop do
        if empty (frontier)? then return failure
        n ← pop (frontier)

        if problem.goal test (n.state) then
            return solution (n)

        for each action a in problem.actions(n.state) do
            n' ← childnode (problem, n, a)
            insert [n', g(n) + h(n), frontier]