Assignment No. 1

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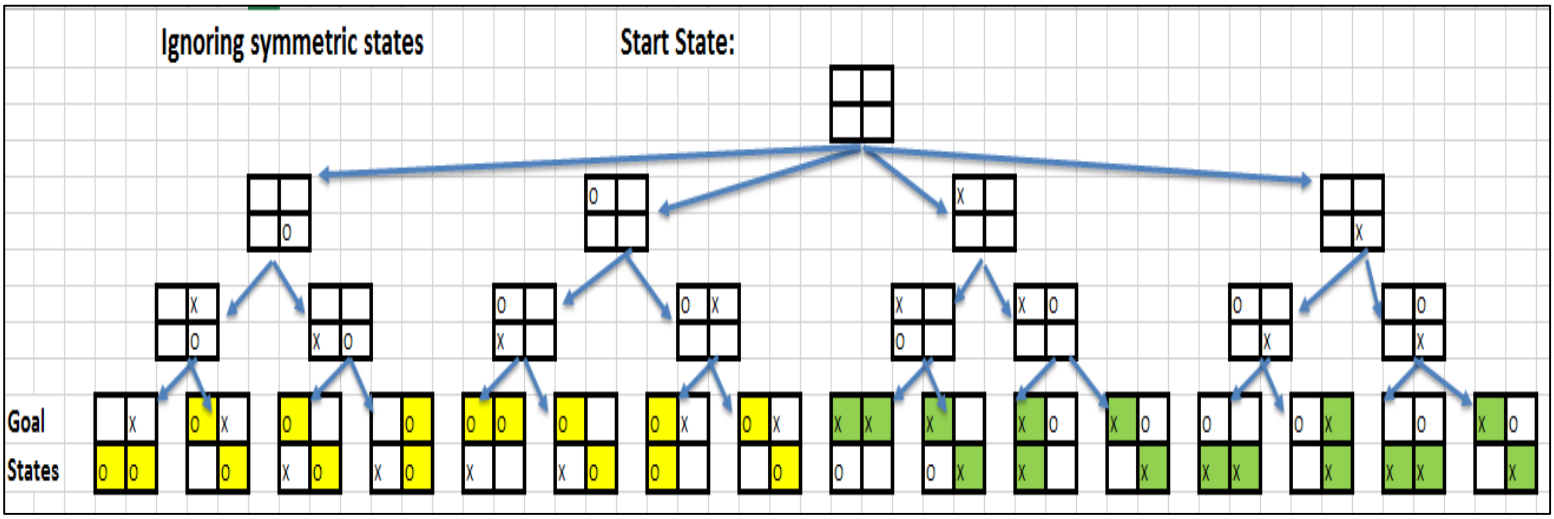
Solution 1: Following image shows the state graph for given tic-tac-toe game.



Solution 2:

For given heuristic function is not admissible.

Proof:

Consider an instance of 8-Puzzle problem.

1	2	3
4	5	
7	8	6

State (N)

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1	2	3
4	5	6
7	8	

Goal State

In above instance, we need just one step to reach our Goal state from State(N). But as per our heuristic function we will get value of h(N) as follows:
h(N) = 0 + 0 + 0 + 0 + 0 + 1 + 1 + 0 = 2
But, h*(N) = 1, i.e. optimal path value is 1.
So, here h(N) > h*(N). Hence we can state that heuristic h(s) = sum of permutation inversions is not admissible.