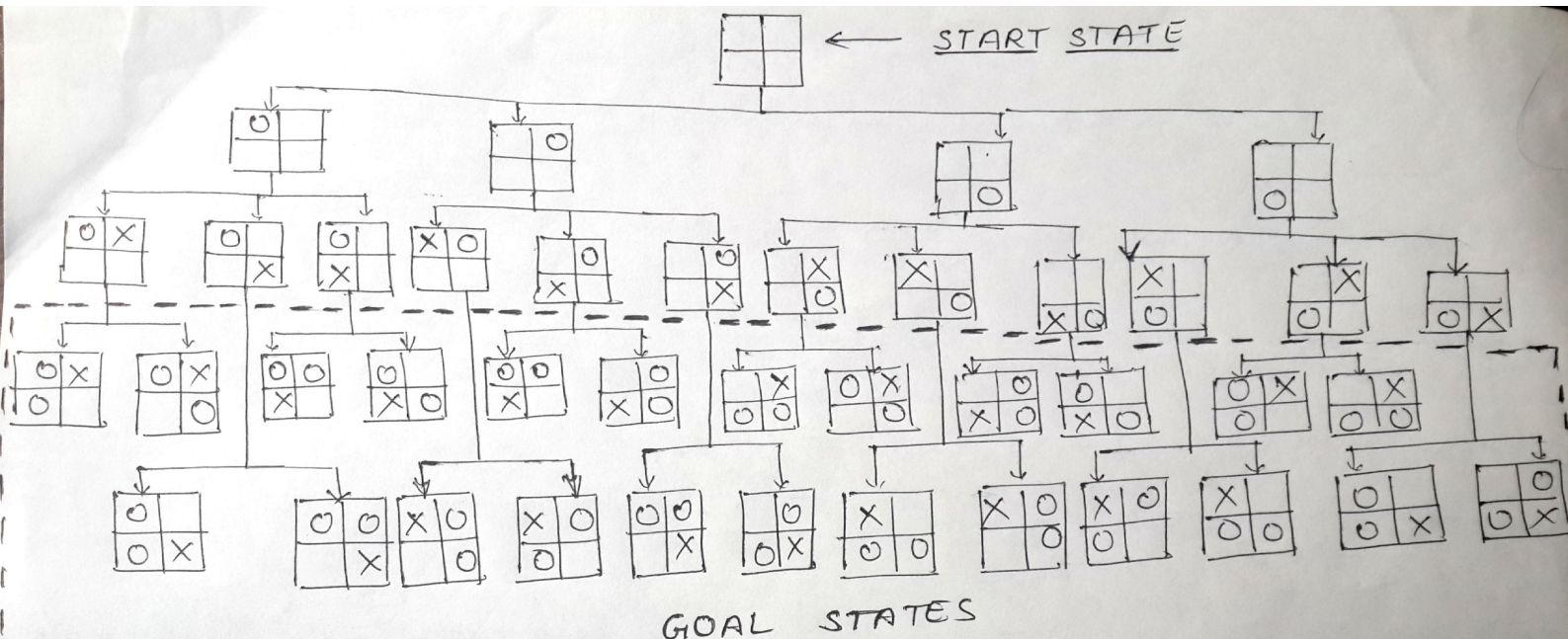


→ 'O' is the first player
→ Since 'O' completed the row/column/diagonal, 'O' loses the game
→ At the same time 'X' wins the game. → Hence the goal states.

Part I : Written Problems

(2) A heuristic function is one which gives an estimate of the cost of reaching a goal state

→ An admissible heuristic never overestimates the minimum cost from node to goal node.

Consider a state N shown below:

h(S) = sum of permutations inversions

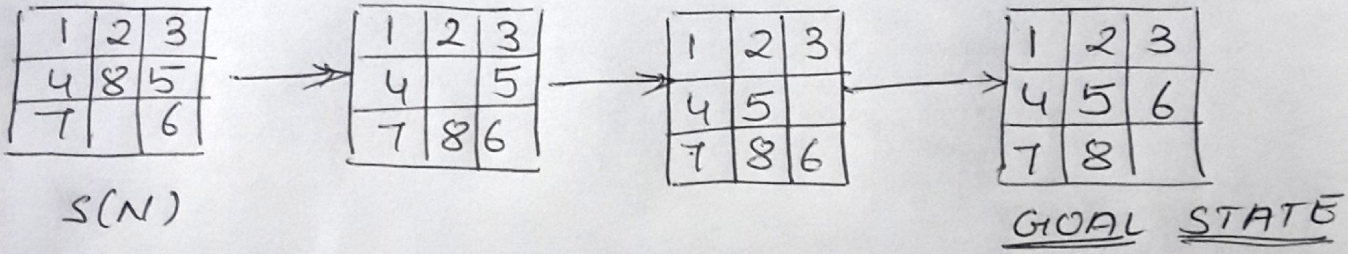
1	2	3
4	8	5
7		6

state(N).

Hence for above state N, the h(N) is :

$$h(N) = 0+0+0+0+3+0+1+0$$
$$= 4$$

If we can solve the state N in less than (4) - h(N) we can say that h is not admissible



We have reached goal state in 3 moves which is less than the heuristic [4 moves]

$h^*(N) = 3$ → minimal cost

$h(N) = 4$ → heuristic estimate cost

$$h(N) > h^*(N)$$

Since the heuristic is overestimating the minimal cost path, it is NOT ADMISSIBLE