CS380 - HW3 Informed Search

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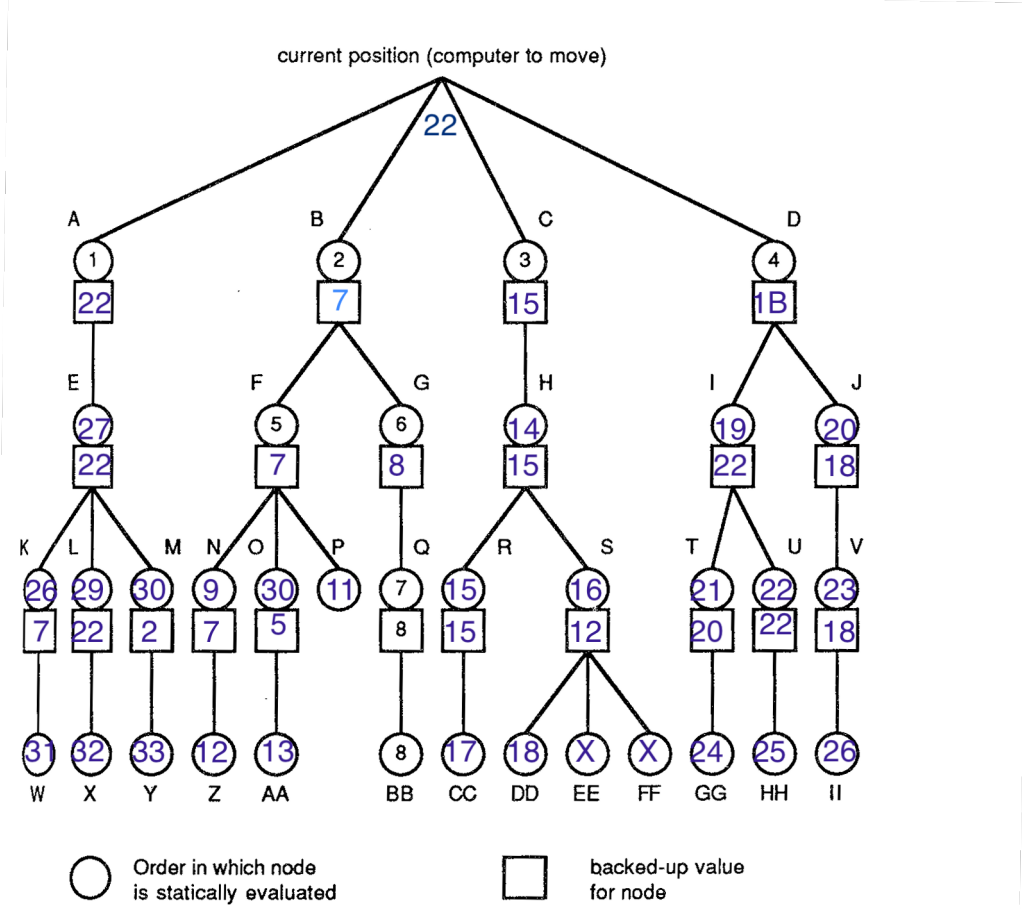
1 Algorithm A*

- **h0(node): 0** is an admissible heuristic as it will never overestimate the number of nodes which are required to get to the goal state
- **h1(node): number of tiles out of place** is also an admissible heuristic since it can never overestimate the number of nodes that need to be traversed to reach the goal state. The max value of h1 heuristic is 8 which is the maximum value the puzzle can be away from the goal state.
- **h2(node): sum of distances out of place** is also an admissible heuristic
- **h3(node): 2*DT(node)**: is also an admissible heuristic since the max value of direct tile reversals are between on 0 and 2 so it can never overestimate the goal.
- **h4(node): h2(node) + 3*S(node)**: This is not admissible for edge cases as it will overestimate the distance to goal.
- **h5(node): h1(node) + h3(node)** : The sum would not overestimate the number of moves required to reach the goal state.
- **h6(node): h2(node) + h3(node)** : Since h2 and h3 are both admissible and when either one is at max the other one is going to be minimum so it won't overestimate the distance.
- **h7(node): maximum of all admissible heuristics in h1(node), h2(node) ... h6(node)**:The maximum for all the admissible heuristics is a valid heuristic since none of them overestimate the distance to the goal.

2 Minimax, Alpha-Beta

Part A and B



Static values for nodes: A 4, B 15, C 13, D 10, E 20, F 9, G 8, H 10, I 10, J 8, K 5, L 20, M 3, N 7, 0 6, P 0, Q 9, R 12, S 10, T 15, U 10, V 9, W 7, X 22, Y 2, Z 7, AA 5, BB 8, CC 15, DD 12, EE 13, FF 13, GG 20, HH 22, II 18.

Part C The computer will move to the Node D.

PART D The computer will move to Node A.