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Min-max Algorithm

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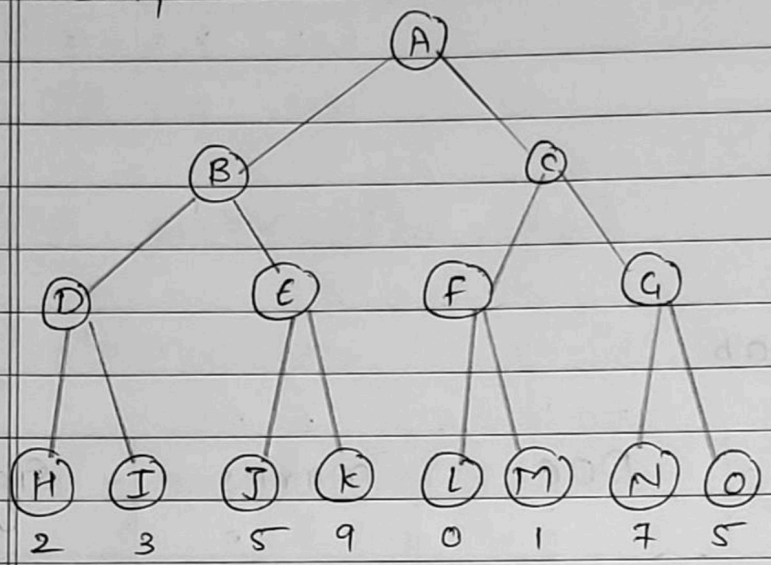
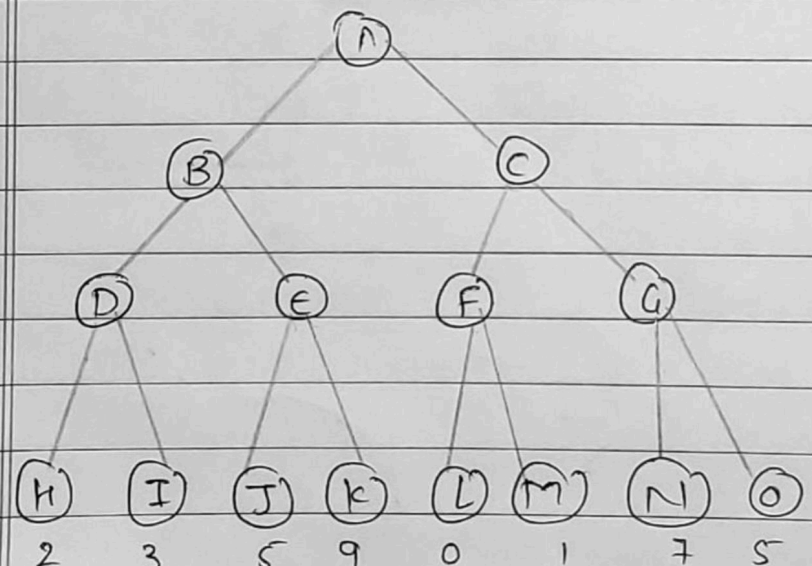
* Min-max Algorithm

In this example, there are two players one is called maximizer and other called minimizer

* Example :-



Step I :- lets take A is the initial state of tree suppose maximizer takes first turn which has worst case initial value = $-\infty$ and minimizer will take next turn which has worst case initial value = $+\infty$



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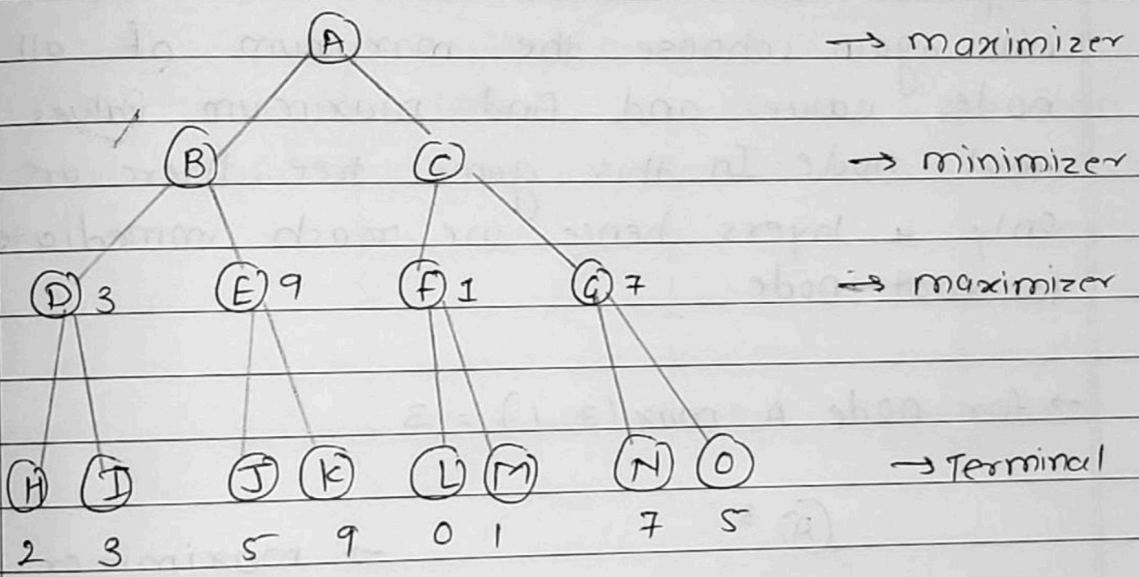
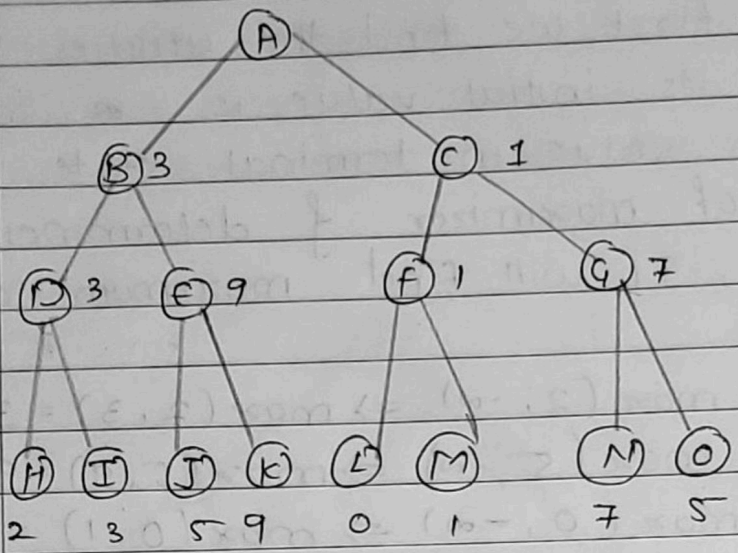
step 2 :- Now, first we find the utilities value for maximizers, its initial value is $-\infty$, so we will compare each value in terminal state with initial value of maximizer & determines higher node values, It will find maximum among the all.

- for node D $\max(2, -\infty) \Rightarrow \max(2, 3) = 3$
- for node E $\max(5, -\infty) \Rightarrow \max(5, 9) = 9$
- for node F $\max(0, -\infty) \Rightarrow \max(0, 1) = 1$
- for node G $\max(7, \infty) \Rightarrow \max(7, 5) = 7$



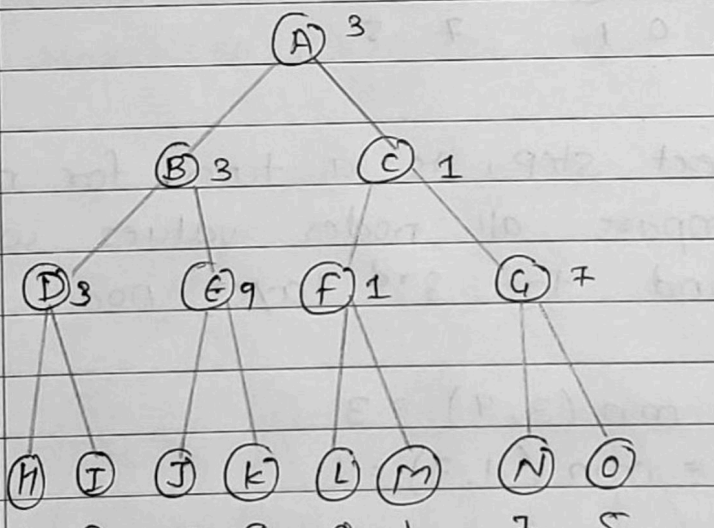
step 3 :- In next step, its a turn for minimizer, so it will compare all nodes values with $+\infty$ & will find the 3rd layer node values.

- for node B = min (3, 9) = 3
- for node C = min (1, 7) = 1



Step 4 :- Now, its turn for maximizer, & it will again choose the maximum of all nodes value and find maximum values for root node. In this game tree, there are only 4 layers, hence we reach immediately to root node.

→ for node A $max(3, 1) = 3$



This is a final solution using minmax algorithm.