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DOP

DOA

Remarks

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Min-max Algorithm :-



min max algorithm :-

min-max algorithm is recursive a back tracking algo which is used in decision-making and game theory. It provides an optimal move for the player assuming that opponent is also playing optimally.

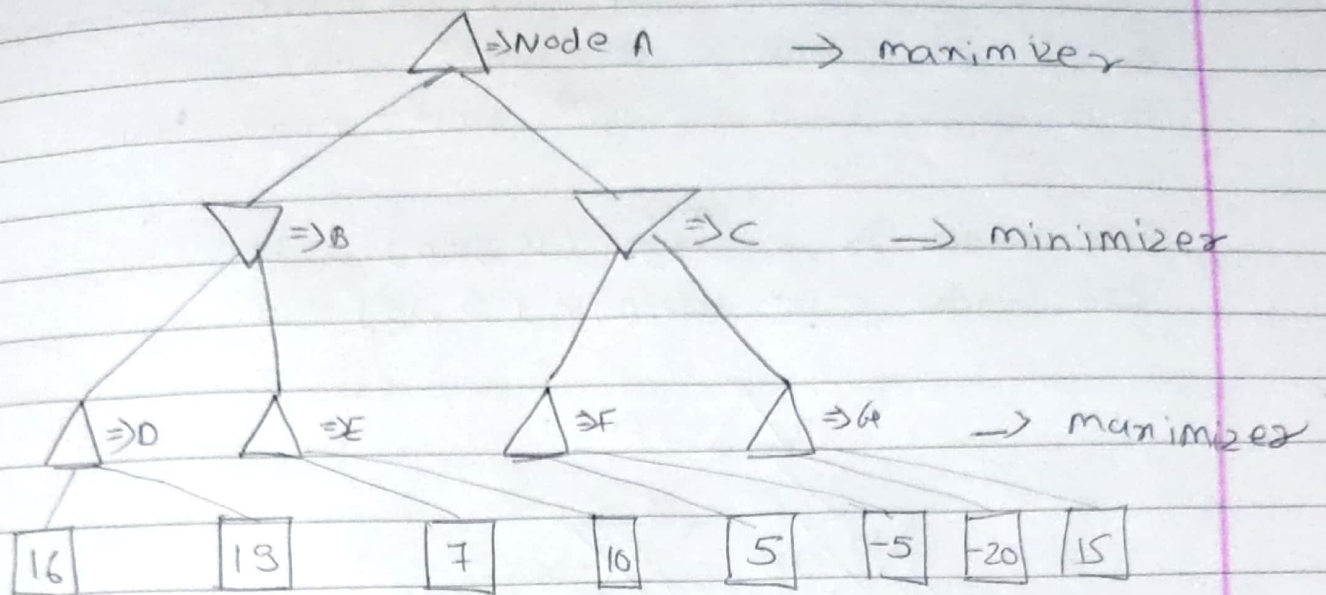
- Min max algo uses recursion to search through the game tree.
- In this algo two players play the game, one is called MAX and other is called MIN.
- min-max algo is mostly used for game playing in AI.

• Step 1 :-

Lets take A is the initial state of the tree. Suppose maximizer takes first turn (when) which has worst-case initial value = $-\infty$ and minimizer will take next turn which has worst case initial value = $+\infty$.

• Step 2 :-

First we find the utilities value for the maximizer, it's initial value is $-\infty$ so we will compare each value is terminal state with initial value of maximizer and determine the higher holding values. It will find the maximum among all.

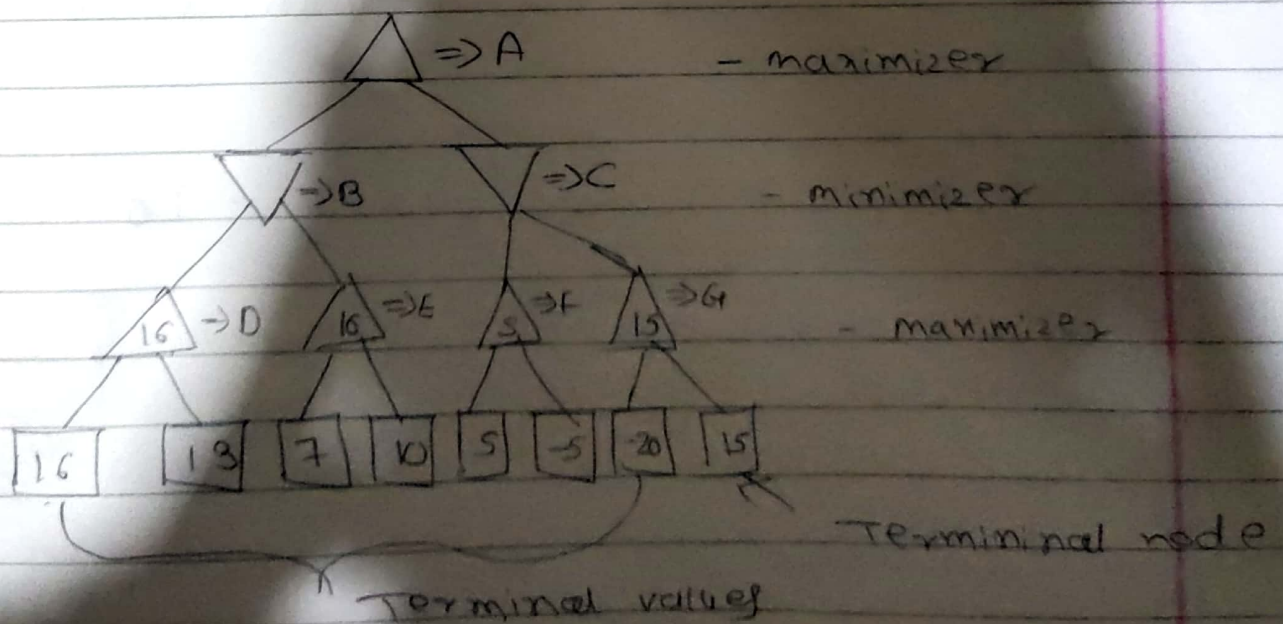


For node D: $\max(16, -\infty) \Rightarrow \max(16, 13) = 16$

For node E: $\max(7, -\infty) \Rightarrow \max(7, 10) = 10$

For node F: $\max(5, -\infty) \Rightarrow \max(5, -5) = 5$

For node G: $\max(-20, -\infty) \Rightarrow \max(-20, 15) = 15$

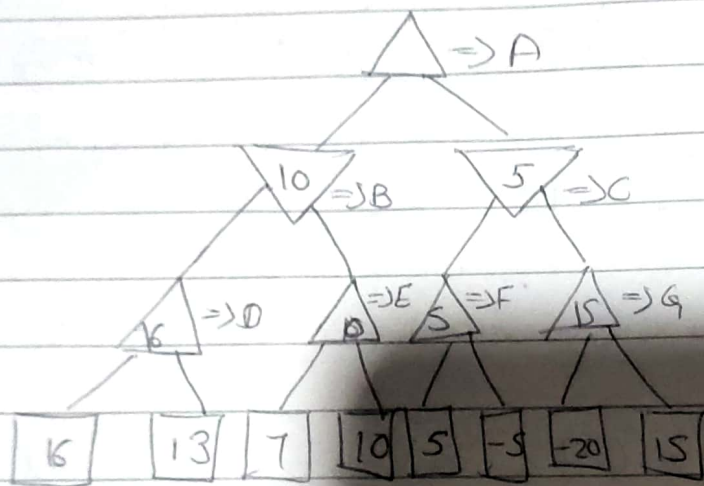


• Step 3:

In the next step, it's a turn for minimize
So it will compare all nodes value with two and will find the 3rd layer node value.

For node B - $\min (16, 10) = 10$

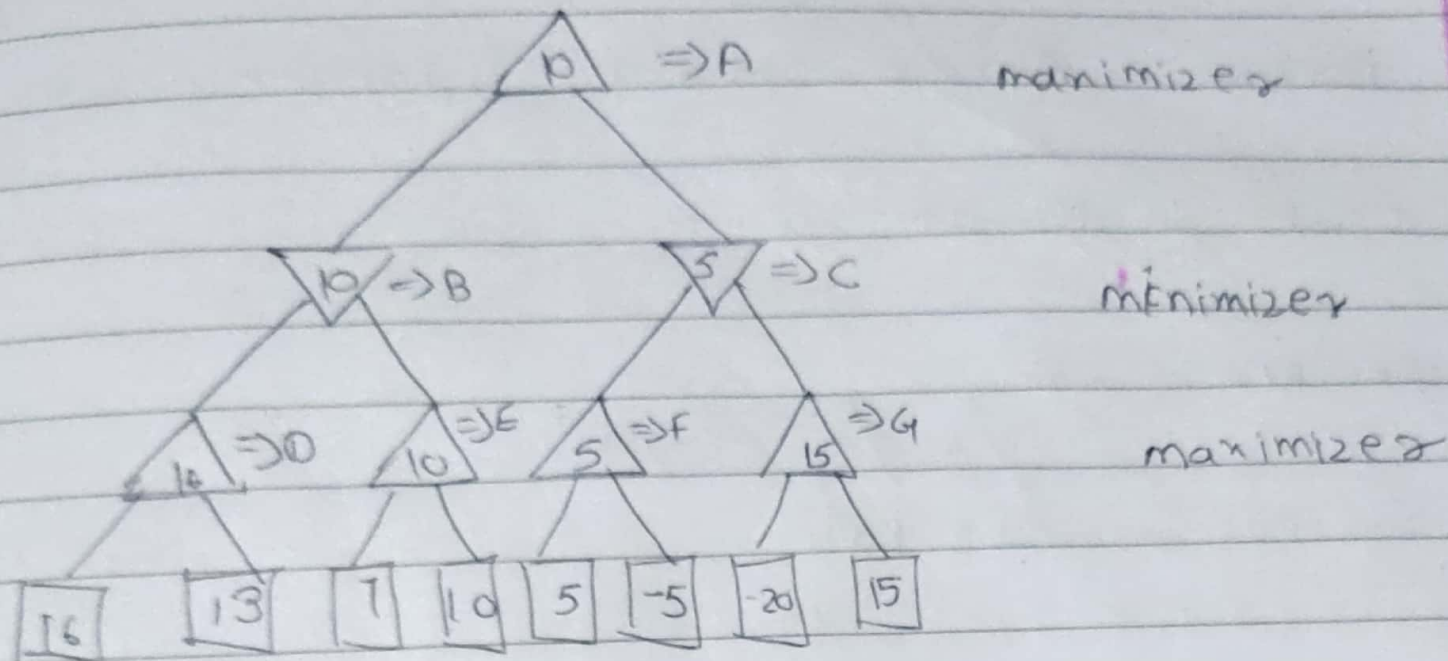
For node C - $\min (5, 15) = 5$



Step 4:

Now it's a turn for maximizes and
it will again choose the maximum of all nodes
value and find the maximum value for the
root node.

For node A : $\max (10, 5) = 10$



Hence, it was the complete work flow of the minimax algorithm with two player game.