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Min - max Algorithm :

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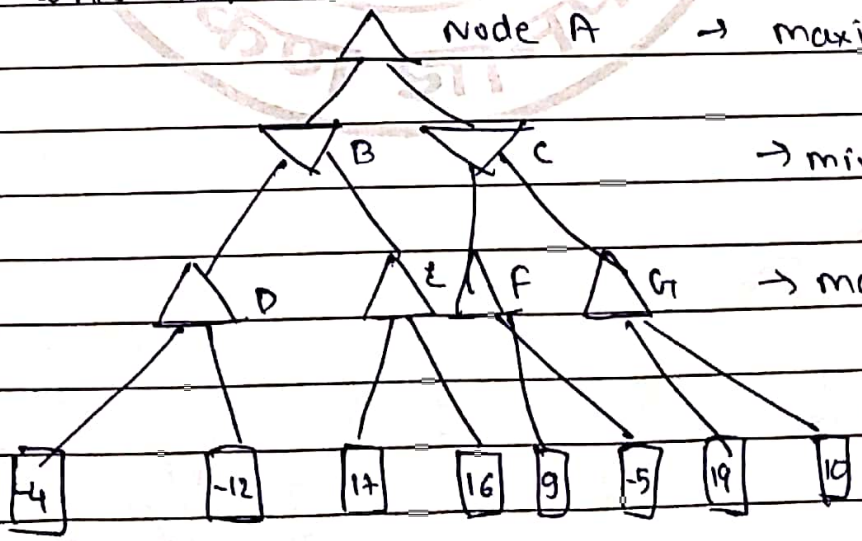
Min-max Algorithm is a recursive or back-tracking algo which is used in decision-making and game theory. It provides an optimal move for the player assuming that opponent is also playing optimally.

- Min-max algo uses recursive to search through gametree.
- 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:-

Let's take A in initial state of the tree. Suppose maximiser takes first turn (when 0) which has worst-case initial value = infinity, and minimise will take next turn which has worst case initial value = + infinity.



- Step 2 :-

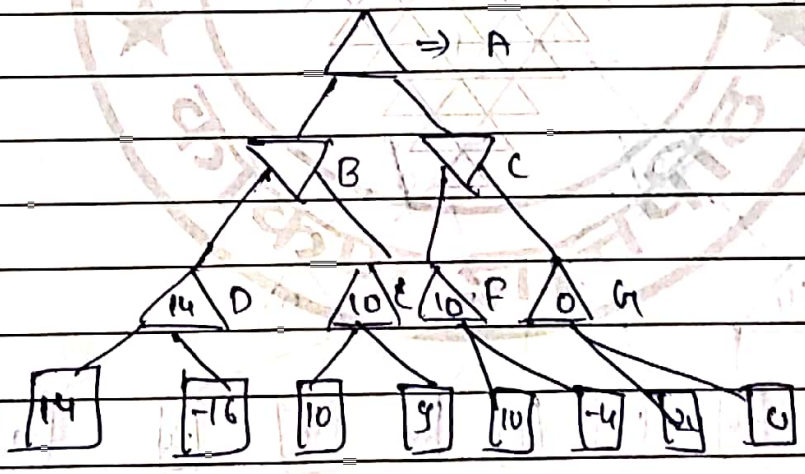
First we find the utilities value for the maximizer. Its initial value is $-\infty$, so we will compare each value in terminal state with initial value of maximizer and determine its higher value of maximizer.

For node D :- $\max(14, -\infty) \Rightarrow \max(14, -16) = 14$

For node E :- $\max(10, -\infty) \Rightarrow \max(10, 9) = 10$

For node F :- $\max(10, -\infty) \Rightarrow \max(10, -4) = 10$

For node G :- $\max(-20, -\infty) \Rightarrow \max(-20, 0) = 0$

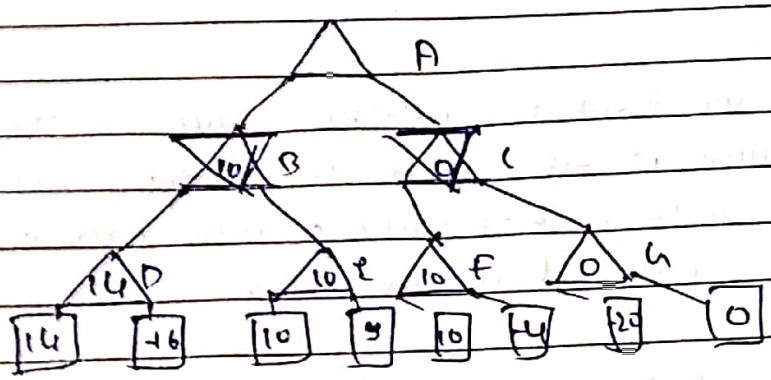


- Step 3 :-

In this step, it's turn for minimizer, so we will compare all nodes value with two, so it will compare the minimum values

For node B :- $\min(14, 10) = 10$

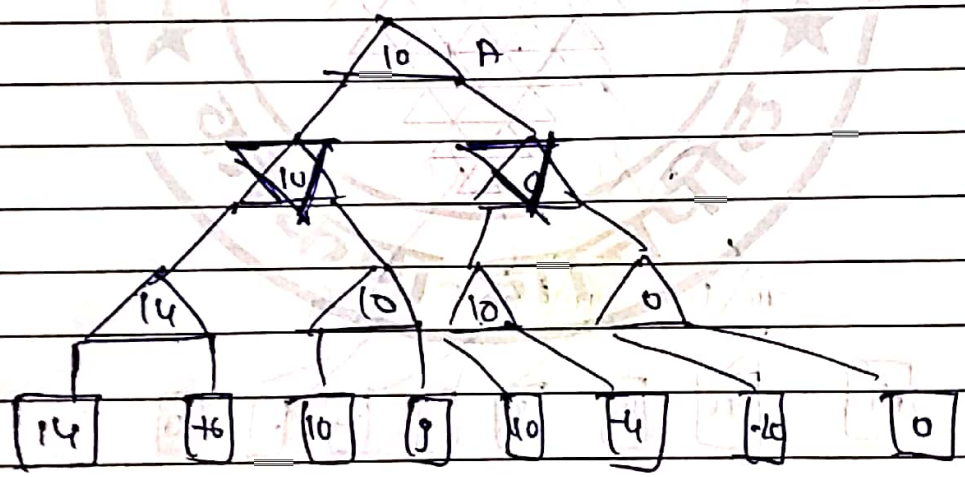
For node C :- $\min(10, 0) = 0$



- Step 4 :-

Now its turn for maximizer, and it will again choose the maximum of all nodes values and find maximum value for the root node.

For node A (10,10) ⇒ 10



Hence, it was complete workflow of Minmax algorithm with two players game.