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Min - Max Algorithm :-

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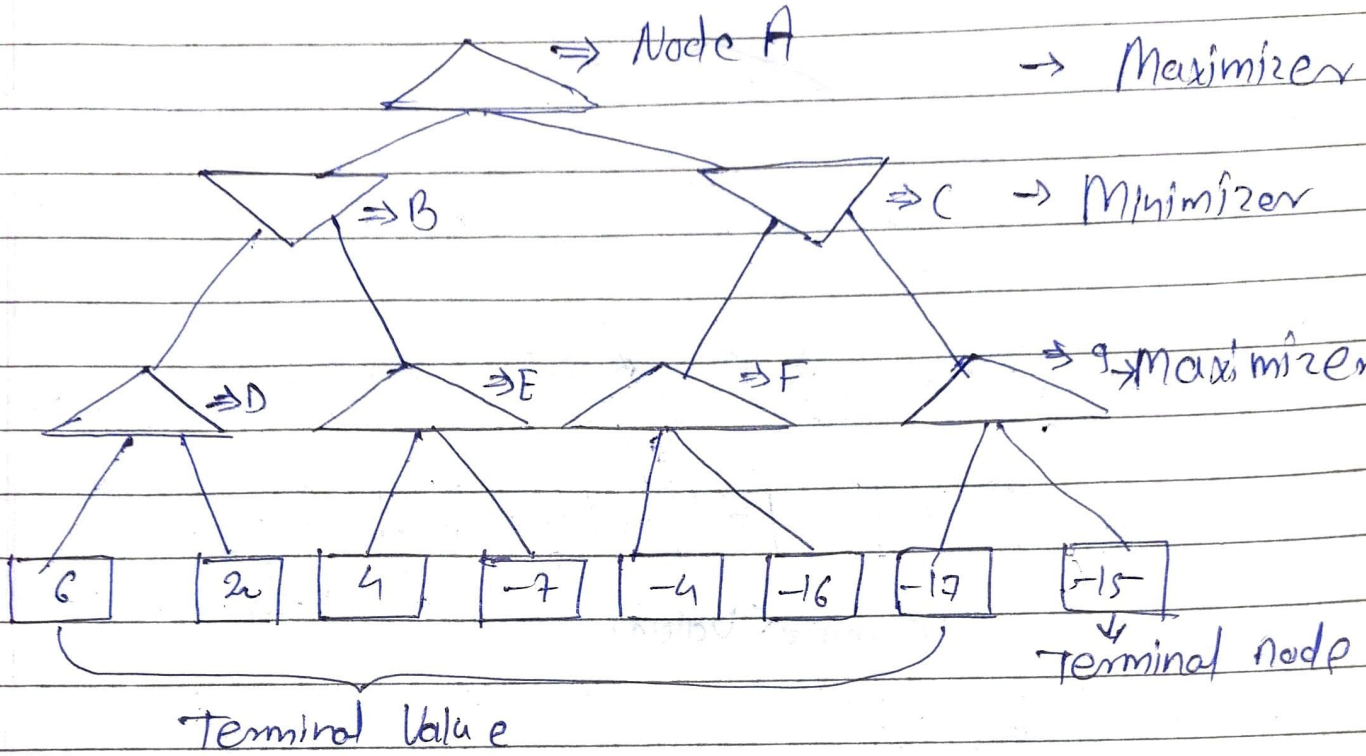
Min max algorithm :-

Min-max algorithm. is a recursive back tracking algo which is used in devision-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 & 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 maximize takes first (chance a) which has worst-case initial value = - infinity & minimize will take next turn which has worst-case initial value = + infinity



Step 2:-

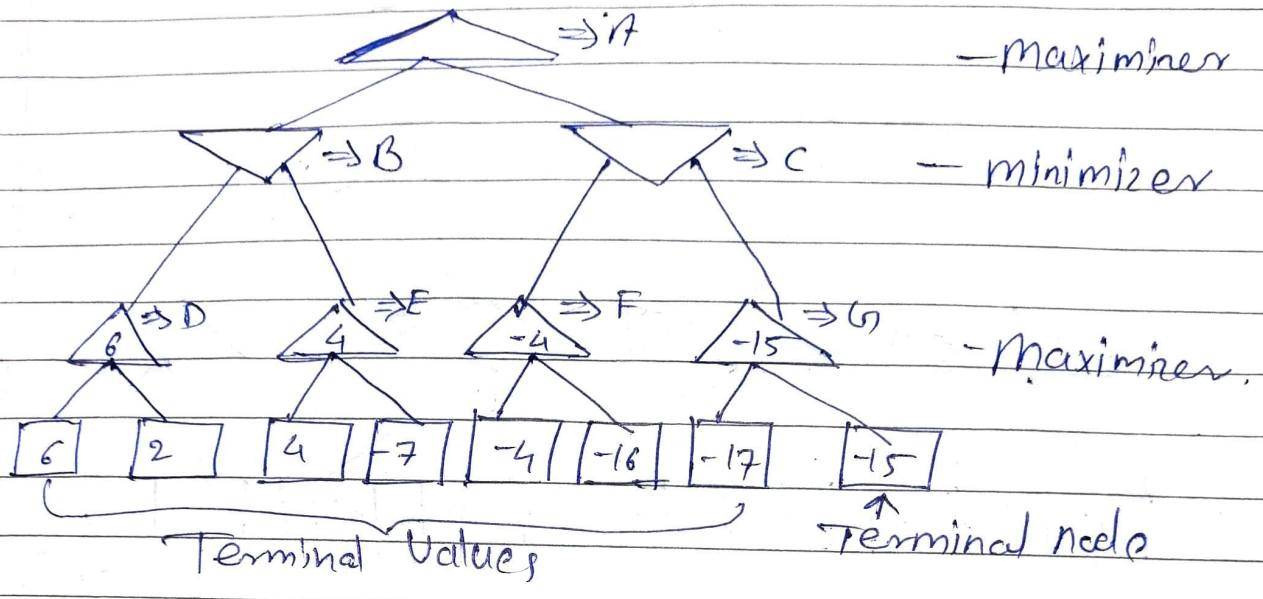
First we find the utilities value for the maximizer. Its initial value is $-\infty$, So we will compare each value in terminal state with initial value of maximizer & determines the higher nodes values, It will find the maximum among all.

For node A: $\max(6, -\infty) \Rightarrow \max(6, 2) = 6$

For node E: $\max(4, -\infty) \Rightarrow \max(4, -7) = 4$

For node F: $\max(-4, -\infty) \Rightarrow \max(-4, -16) = -4$

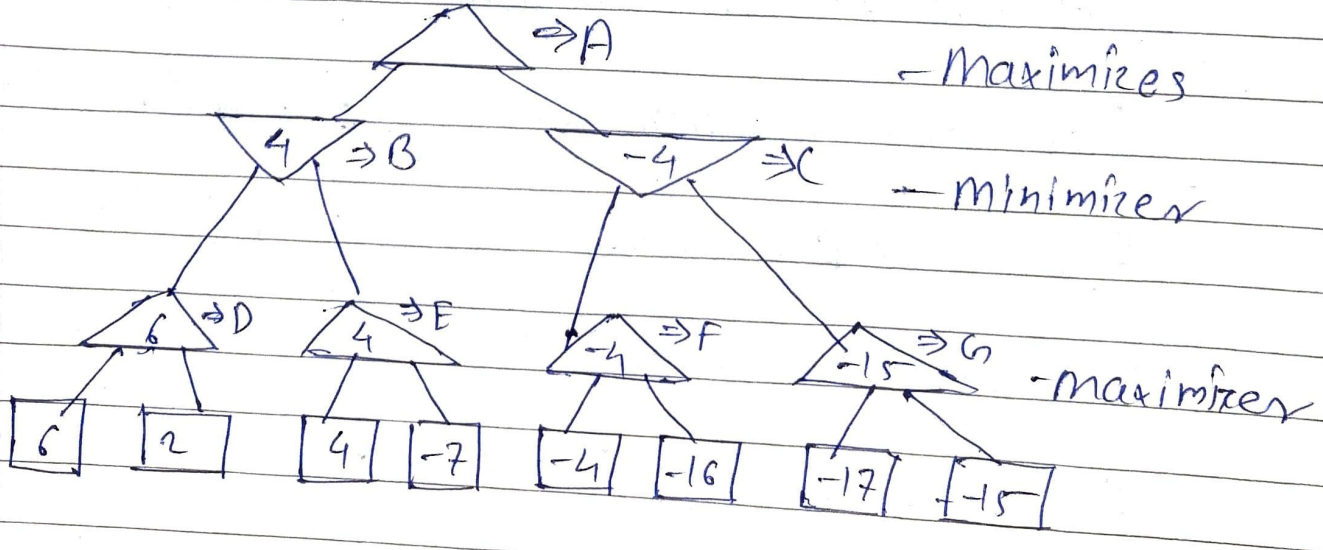
For node G: $\max(-17, -\infty) \Rightarrow \max(-17, -15) = -15$



→ Step 3 :

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

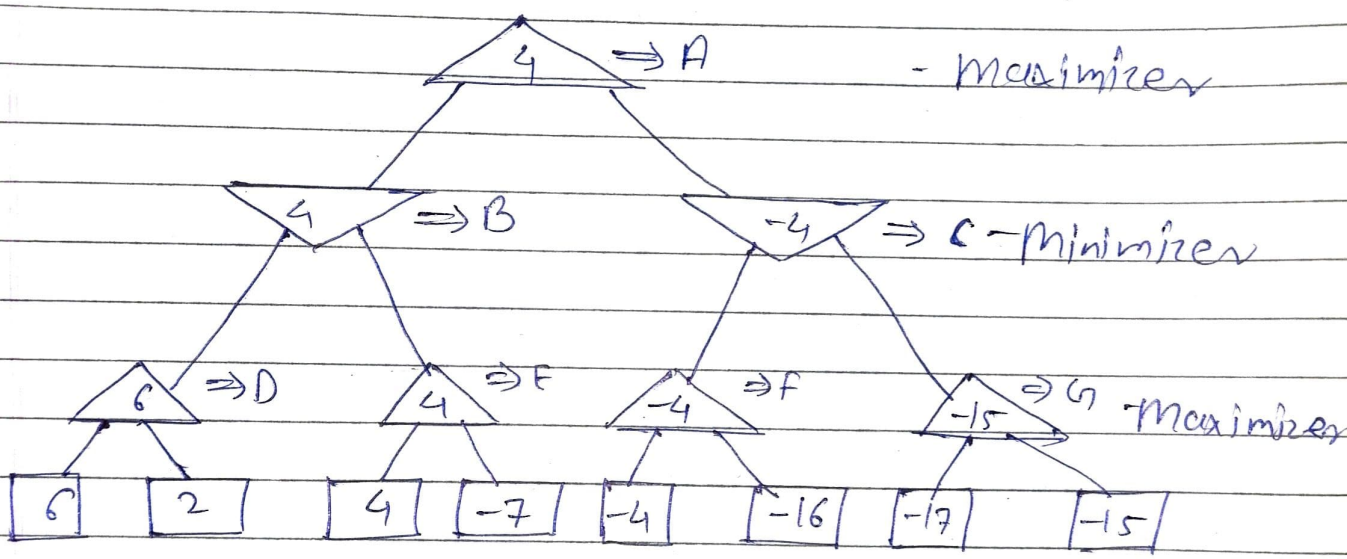
For node B - min (6, 4) = 4
For node C - min (-4, -15) = -4



- Step 4:

Now it's a turn for maximizer & it will again choose the maximum of all nodes values & find the maximum value for the node next.

For Node A: $\max(4, -4) = 4$



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