STANDARD
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* Min-Max Algorithm :-

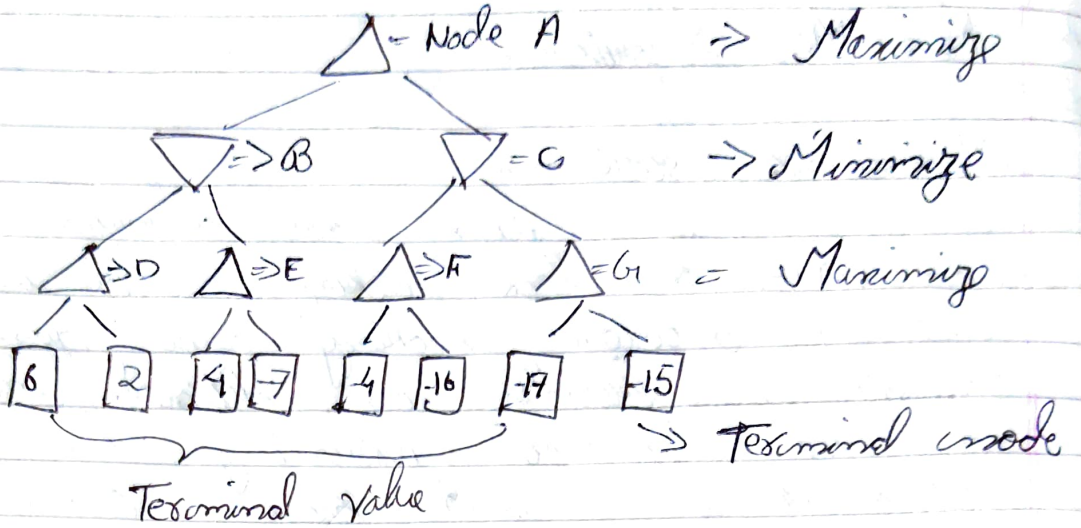
=> Min max algorithm :

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 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 maximize takes first turn which has worst-case initial value = - infinity, and minimize will take next turn which has worst case initial value = + infinity.



* Step 2:

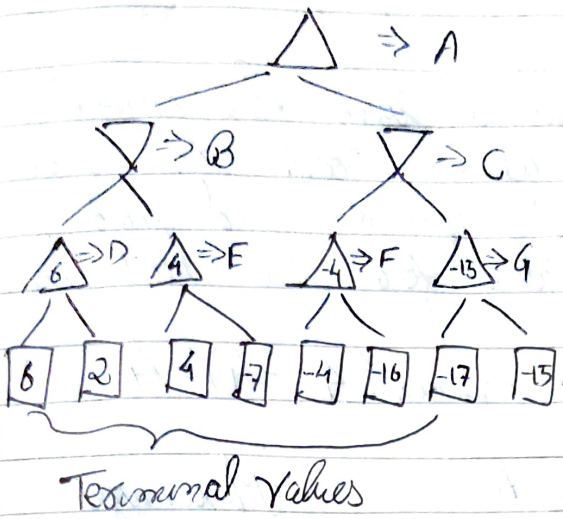
First we find the utilities value for the maximize, its initial value is $-\infty$ So we will compare each value in terminal state with initial value of maximize and determines the higher nodes values. It will find the maximum among all.

For node D: 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 $(-4, -16) =$

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

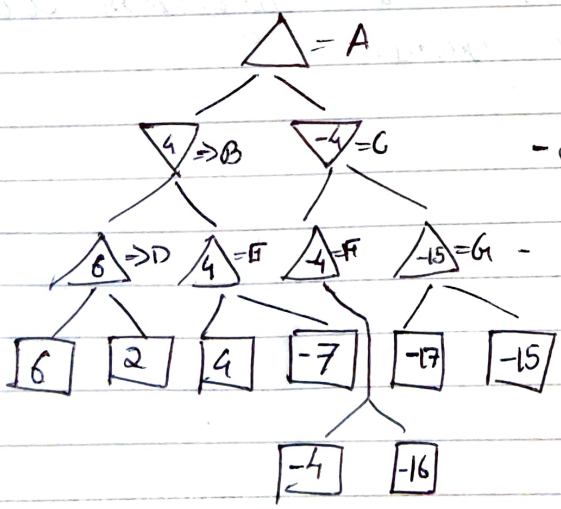


- Maximizer
- Minimizes
- Maximizes
→ Terminal node

⇒ 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(6, 4) = 4
For nod C - min(-4, -15) = -4

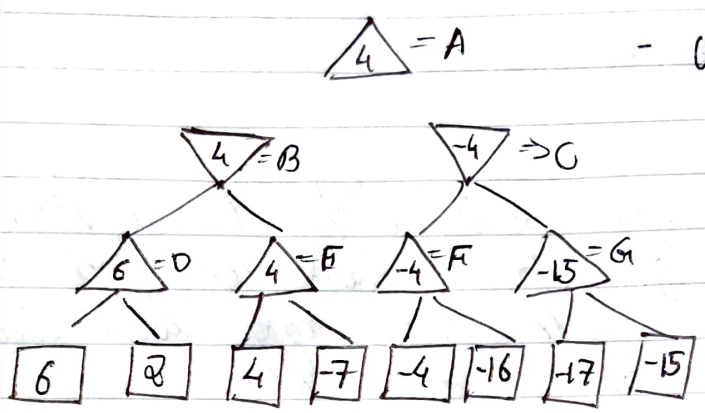


Maximizer (
- Minimizes
- Maximizer

* Step 4:

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

For node A: max(4, -4) = 4



Hence, it was the complete workflow of the min-max algorithm with two player game.