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Date

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Min - max Algorithm :-

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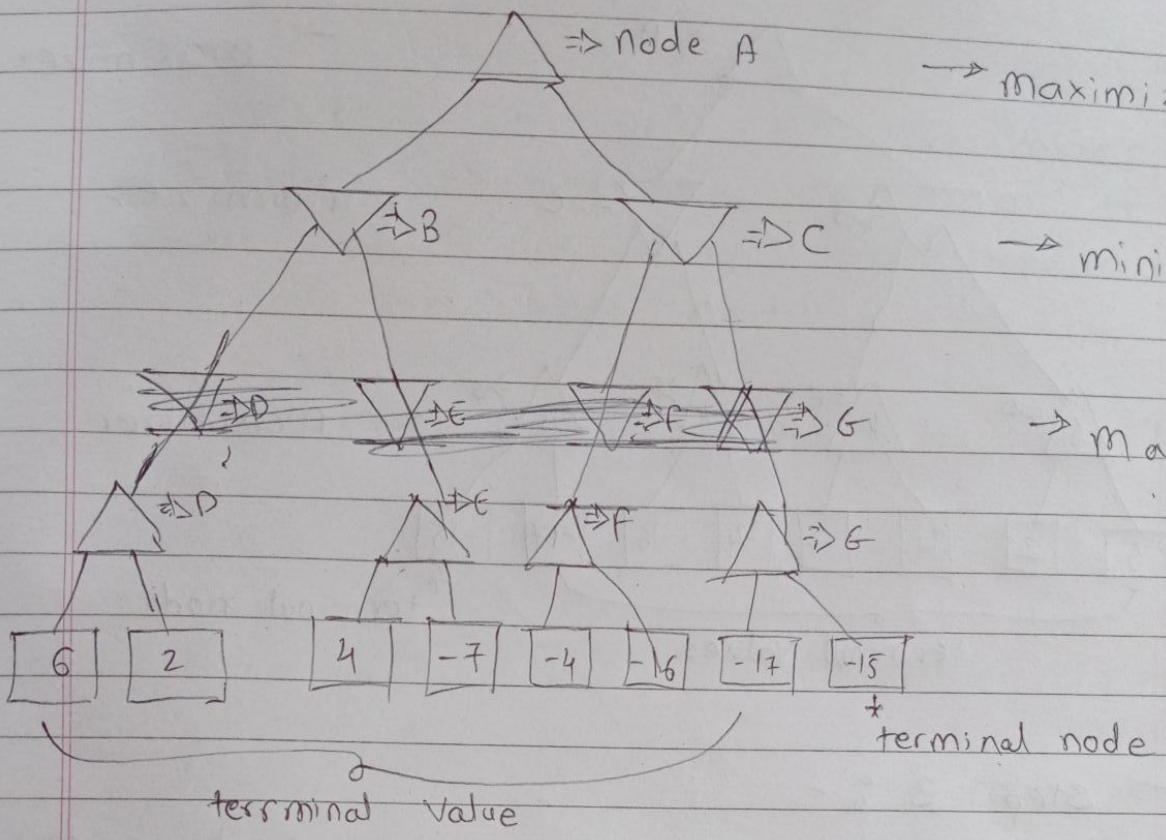
min - max algorithm :-

min max algorithm is a recursive or backtracking 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 maximizes takes first turn (when or) which has worst-case initial value = -initially, and minimize will take next turn which has worst case initial value = +infinity



- Step 2 :-

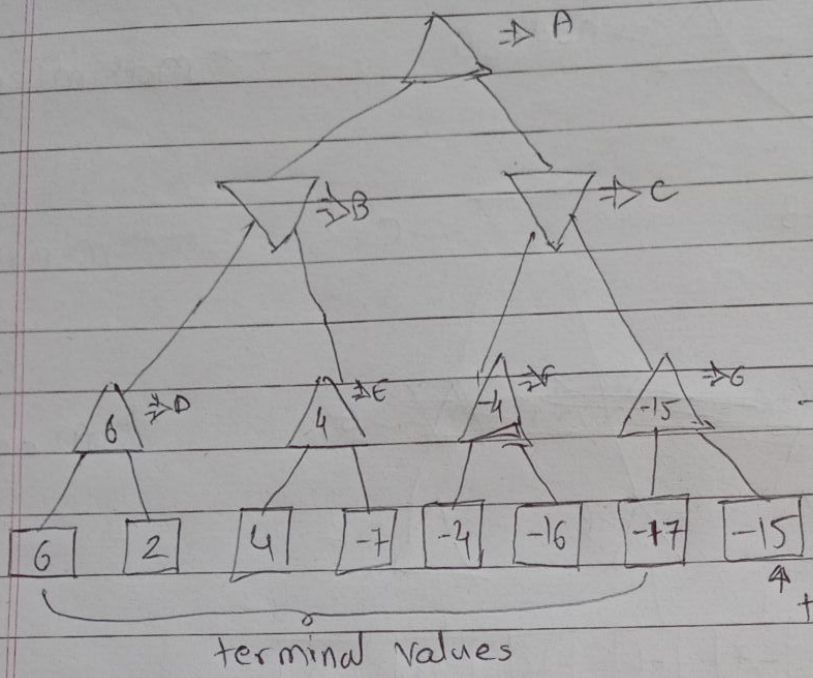
First we find the utilities value for the maximizer, its initial value is $-\infty$, so we will compare each value in terminal state with initial value of maximizer and determines the higher nodes values. It will find the maximum among all.

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

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

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

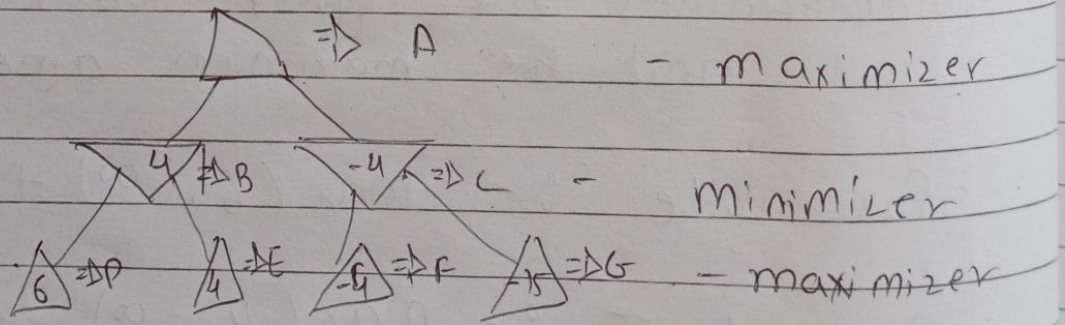
For node G :- $\max(-17, -\infty) \Rightarrow \max(-17, -15) = -15$



- Step 3 :-

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

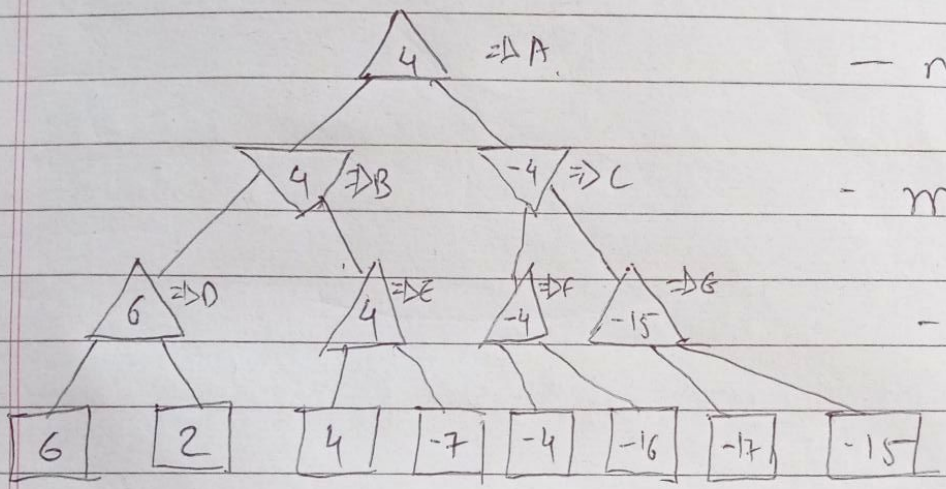
For node B = min (6, 4) = 4
For node C = min (-4, -15) = -4



- Step 4 :-

⇒ Now its turn for maximizes & it will again choose the maximum of all nodes values & find the maximum value for the root node

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



- maximizer
- minimizer
- maximizer

Henie, it was the complete workflow of the mimimax algorithm with two player game.