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Subject : ISLab

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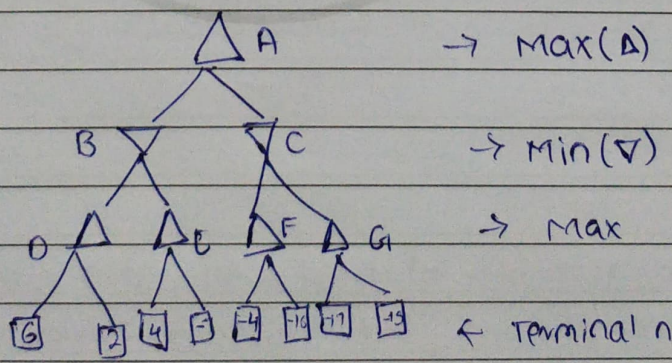
Min Max Algorithm:

Min max algo is a recursive backtracking algo which is used in division-making 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:

Let is take A as the intial state of the tree. suppose maximice takes first turn (when or) which has worst-case initial value -infinity, and minimice will take next turn which has worst-case initial value = +infinity.



Step 2:

First we find the utilities value for the max, its initial value is

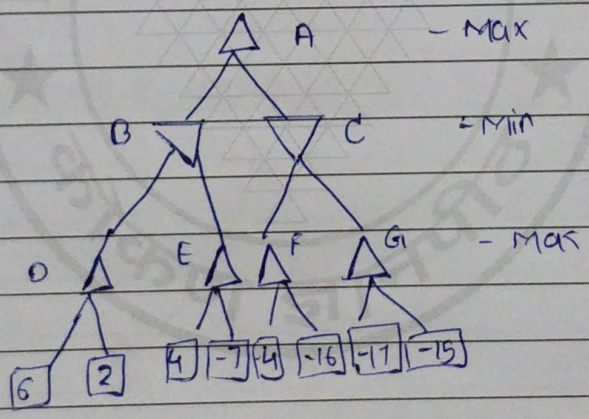
is $-\infty$, so we will compare such value in terminal state with initial value of maxmizer and determines the higher nodes values. It will find the maximum among all.

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

for node B: $\max(4, -\infty) \Rightarrow \max(4, -7) = 4$

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

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

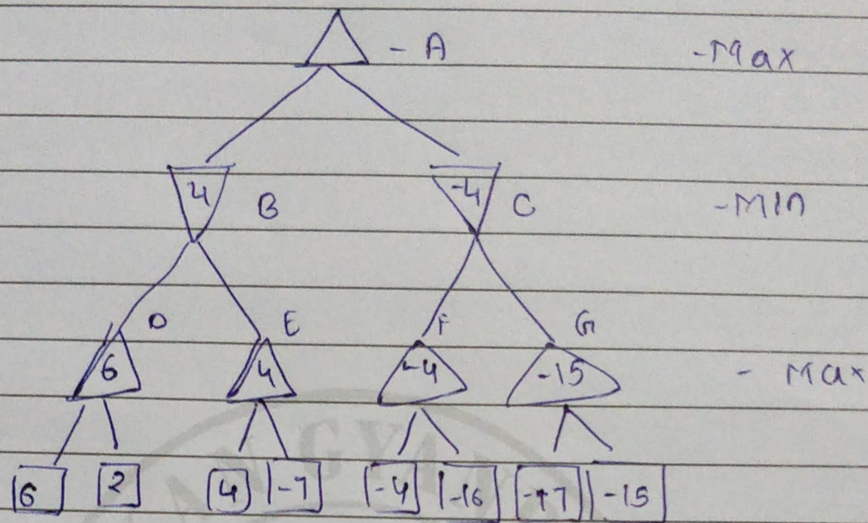


- Step 3:

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 - $\min(6, 4) = 4$

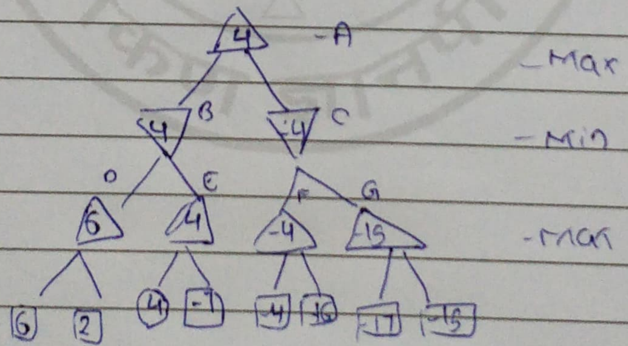
for node C - $\min(-4, -15) = -4$



-Step 4:

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

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



Hence, It was the complete workflow of the minmax algorithm with two player game.