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Subject :- Is lab

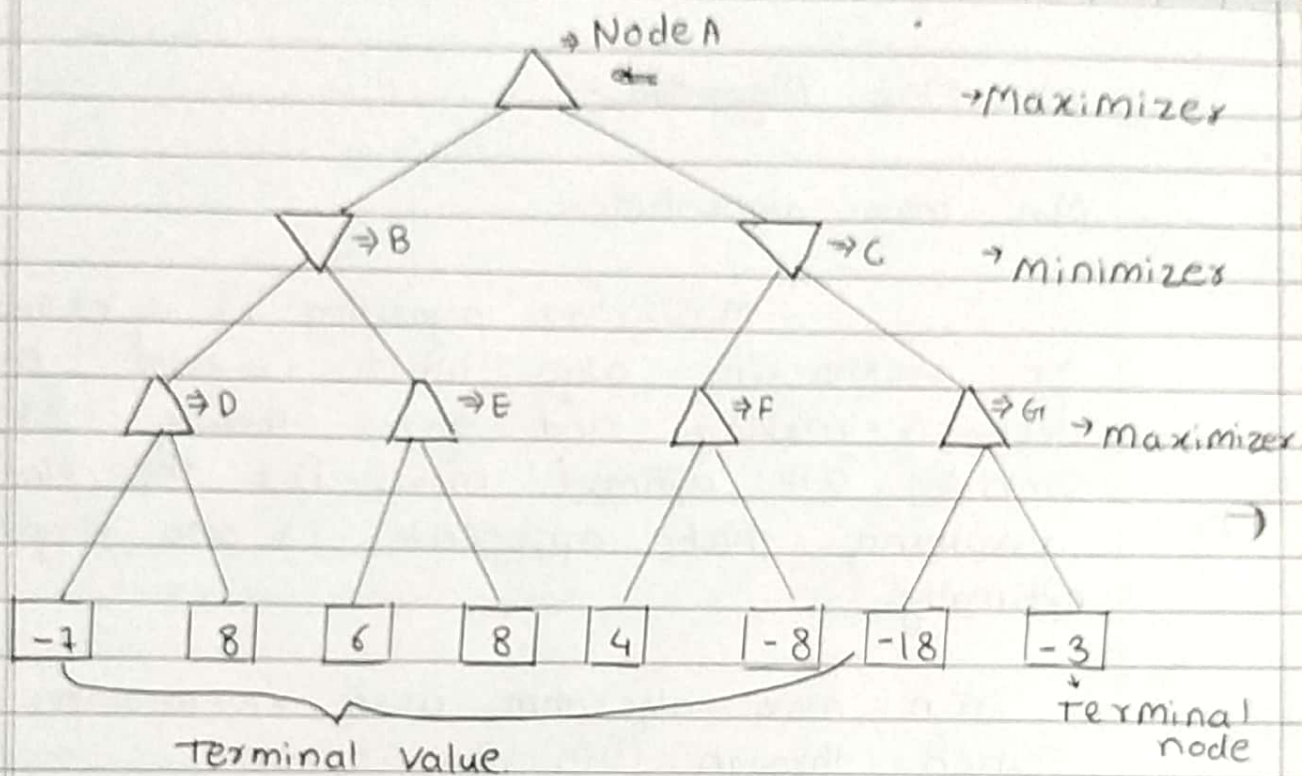| D.o.P	D.o.A	Remark	Sign.

Min-Max Algorithm:-

Min max algorithm:

Min-max algorithm is a recursive or backhacking algo. which is used in decision-making and game theory. It provides an optimal move for the player assuming that apponent is also Playing optimally.

- Min max algorithm uses recursion to search through the game-tree.
- In this algorithm two palyers play the game one it is called Max and other is Called MIN.
- Min-max algorithm is mostly used for game Playing in AI.

Step 1:-

Lets take A is the initial state of the tree. Suppose maximizer takes first turn (when or) which has worst-case initial value = -infinity, and Minimiger will take next turn which has worst-case. initial value = + infinity.

→ Node A

→Maximizer

→B

→minimizer

→D →E →F →G →maximizer

→)

| -7 | 8 | 6 | 8 | 4 | -8 | -18 | -3 |

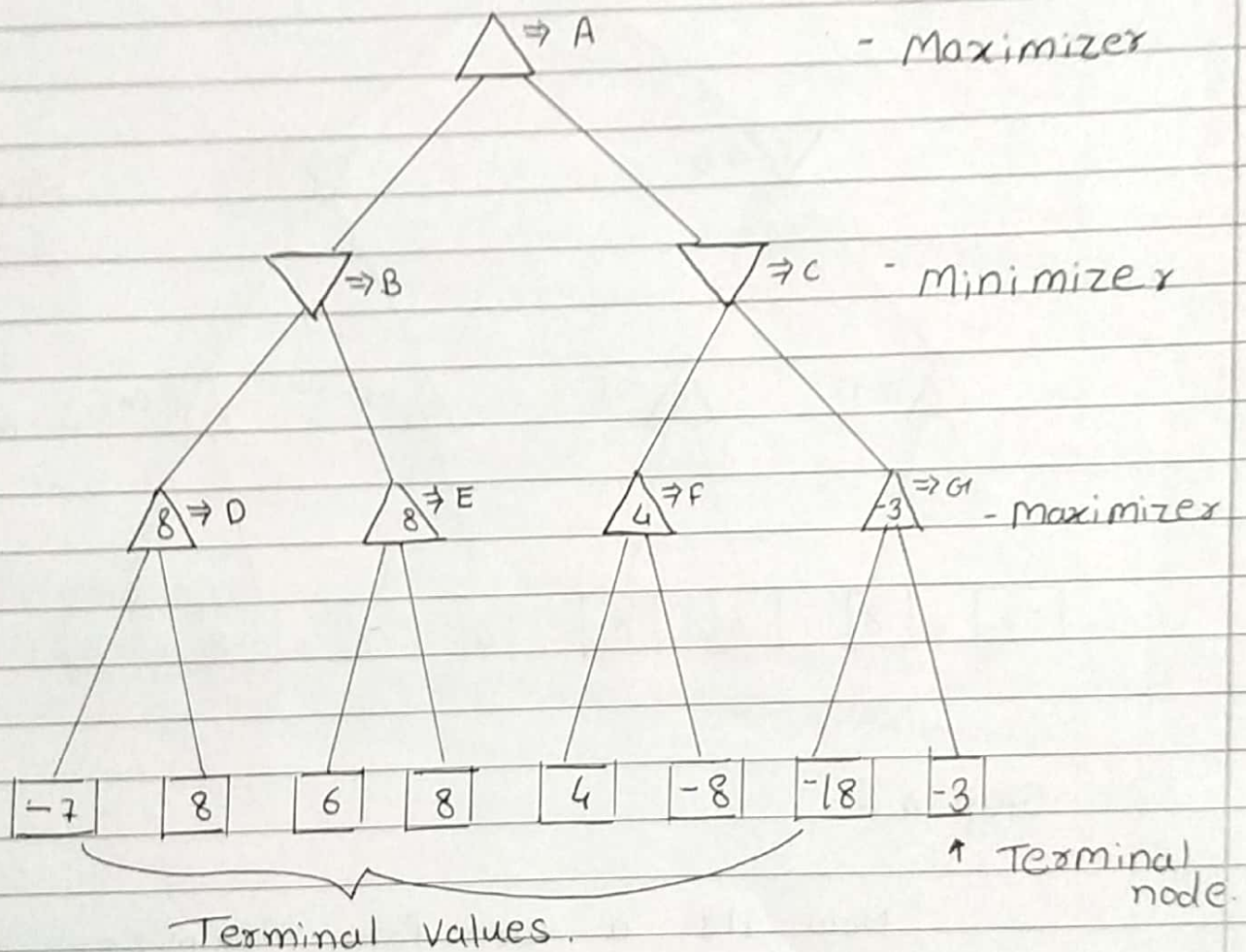Terminal value.

Terminal node

Step 2 :.

First we find the ultilities value for the Maximizer, its initial value is $-\infty$, So we will Compare each value in terminial state with $-)$ initial value of Maximizer and determines the higher nodes values. It will find the maximum among all.

for node D : max $(-7, -\infty) \Rightarrow (-7, 8) = 8$

for node E : max $(6, -\infty) \Rightarrow (6, 8) = 8$

for node F : max $(4, -\infty) \Rightarrow (4, -8) = 4$

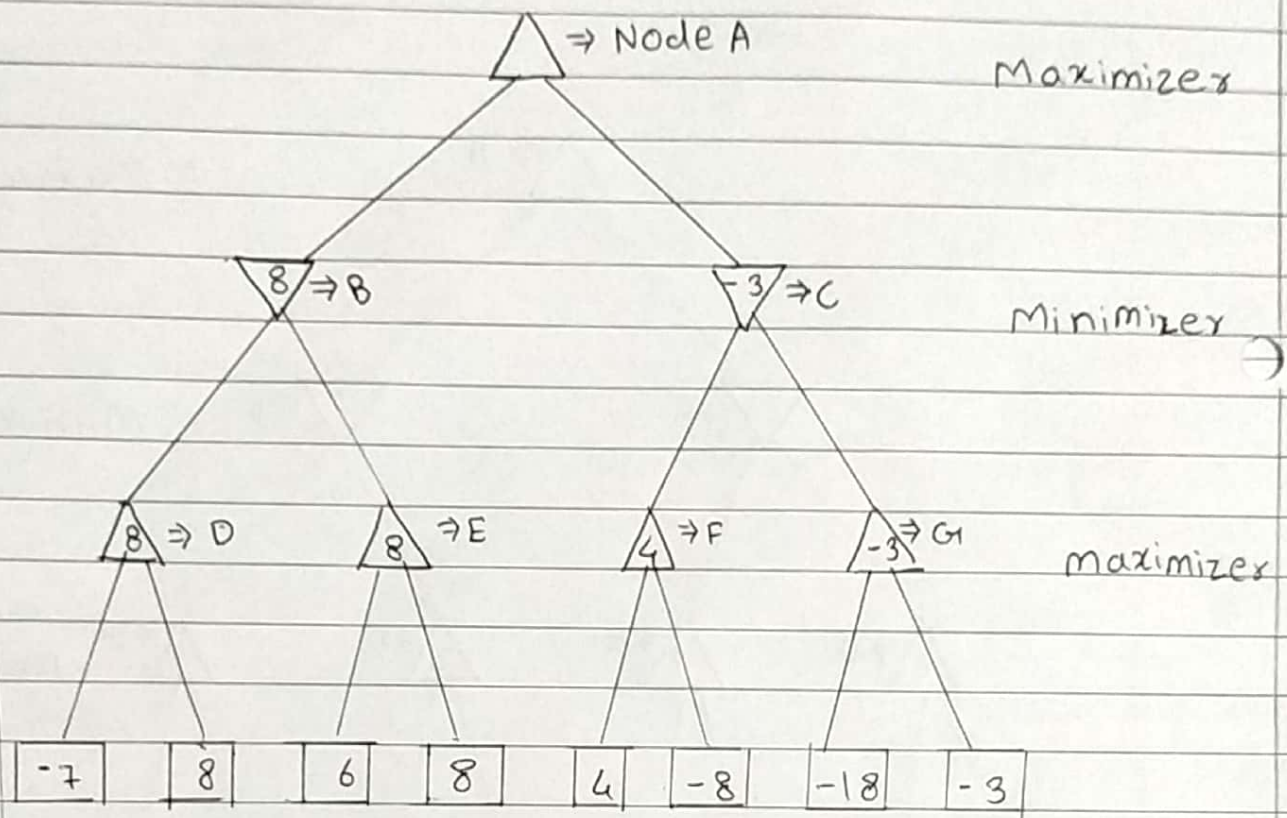for node G: max $(-18, -\infty) \Rightarrow (-18, -3) = -3$

Step 3 :-

   In the next step, it's a turn for minimizer
So it will Compare all nodes value with two,
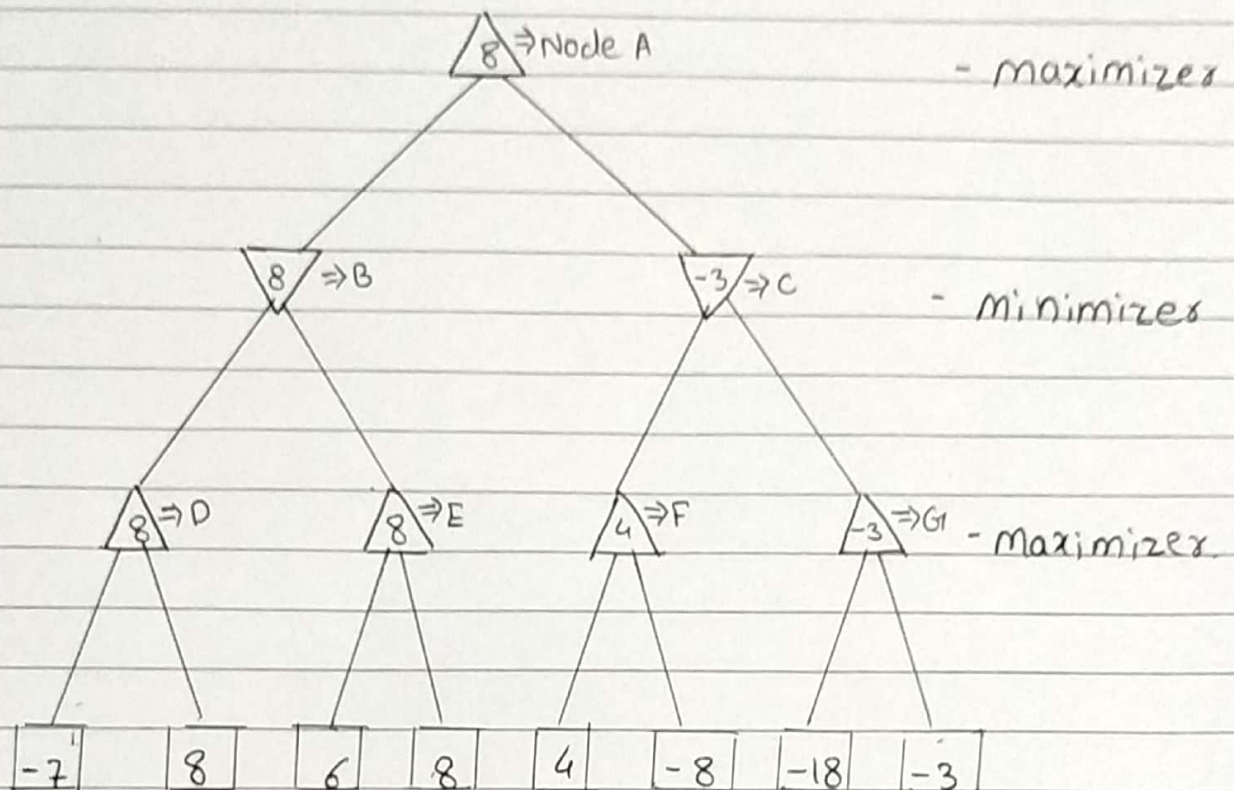and will find the Third layer node value.

for node B : min (8,8) = 8
for node C : min (4,-3) = -3

⇒ Node A — Maximizer

8 ⇒ B   -3 ⇒ C — Minimizer

8 ⇒ D   8 ⇒ E   4 ⇒ F   -3 ⇒ G — maximizer

| -7 | 8 | 6 | 8 | 4 | -8 | -18 | -3 |

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 (8, -3) = 8

8 ⇒ Node A — maximizer

8 ⇒ B — minimizer
-3 ⇒ C

8 ⇒ D — maximizer
8 ⇒ E
4 ⇒ F
-3 ⇒ G

-7 8 6 8 4 -8 -18 -3

Hence it was the complete workflow of the
Minmax algorithm with two player game.