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Class: B.E / I.T

Roll no: 62

Subject: IS LAB

DOA	DOC	Remarks	Sign
	1/11/21		

- Alpha - Beta pruning :

Alpha - beta pruning = Alpha beta pruning is a modified version of the min max algo.
It is an optimization technique for the minmax algo.

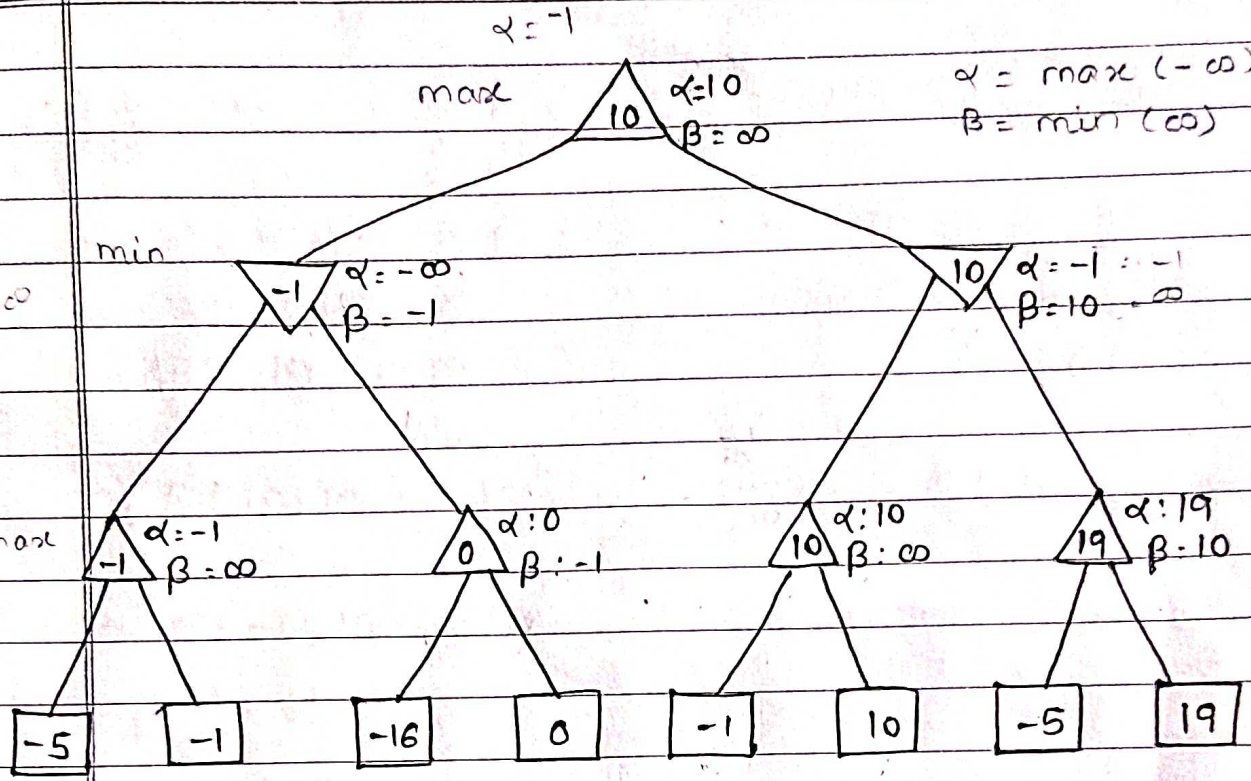
- Alpha (α) : the best (high - value)
  - Initial value of alpha is $-\infty$

- Beta (β) = the best (highest value)
  = Initial value is beta is $+\infty$

- Rules & Conditions :
  1) the max player will only update the value of alpha.
  2) we will only pass the alpha, beta values to the child nodes.
  3) the min player will only update the value of B.
  4) Node values will be passed to upper node instead of values of alpha & beta.

- Condition to prune : $a \geq b$ or $b \leq a$

- when alpha is greater than or equal to beta.



1) $\alpha(-\infty, -5) = -5$ - max (bottom left)
$\alpha(-\infty, -1) = -1$
$\alpha(-5, -1) = -1$

2) $\beta(\infty, -1) = -1$ - min (left node)

3) $\alpha(-\infty, -16) = -16$
$\alpha(-\infty, 0) = 0$ - max (bottom ~~right~~ left)
$\alpha(-16, 0) = 0$ (left node)

4) $\beta(-1, 0) = -1$ - min (left node)

5) $\alpha(-\infty, -1) = -1$ - top (max)

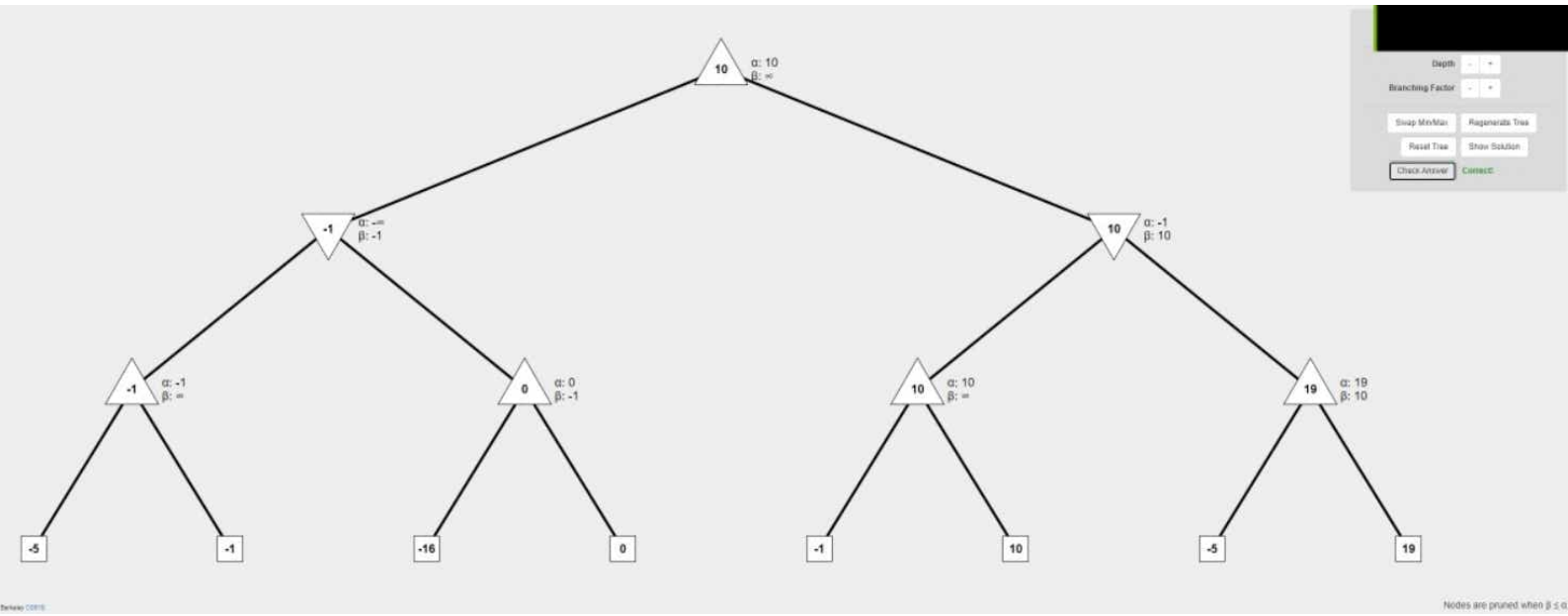
6) $\alpha(-\infty, -1) = -1$ - max (right node)
$\alpha(-\infty, 10) = 10$ (bottom left)
$\alpha(-1, 10) = 10$

7) $\beta(\infty, 10) = 10$ - min (right node

8) $\alpha(-\infty, -5) = -5$
$\alpha(-\infty, 19) = 19$ - max (bottom right)
$\alpha(-5, 19) = 19$ (right node)

9) $\beta(10, 19) = 10$ - min (left node)

10) $\alpha(-1, 10) = 10$: max (Solution).


10
α: 10
β: ∞
-1
α: -∞
β: -1
10
α: -1
β: 10
-1
α: -1
β: ∞
0
α: 0
β: -1
10
α: 10
β: ∞
19
α: 19
β: 10
-5
-1
-16
0
-1
10
-5
19
Depth
Branching Factor
Swap Min/Max
Regenerate Tree
Reset Tree
Show Solution
Check Answer
Correct!
Nodes are pruned when β ≤ α