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Date :

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class : BE - IT

Roll No : [redacted] 72

Subject : IS Lab

DoP	DoA	Remark	Sign

Alpha - Beta pruning :-

→

Alpha - beta pruning : Alpha - beta pruning is a modified version of the min max algo. It is an optimization technique to the minimax algo.

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

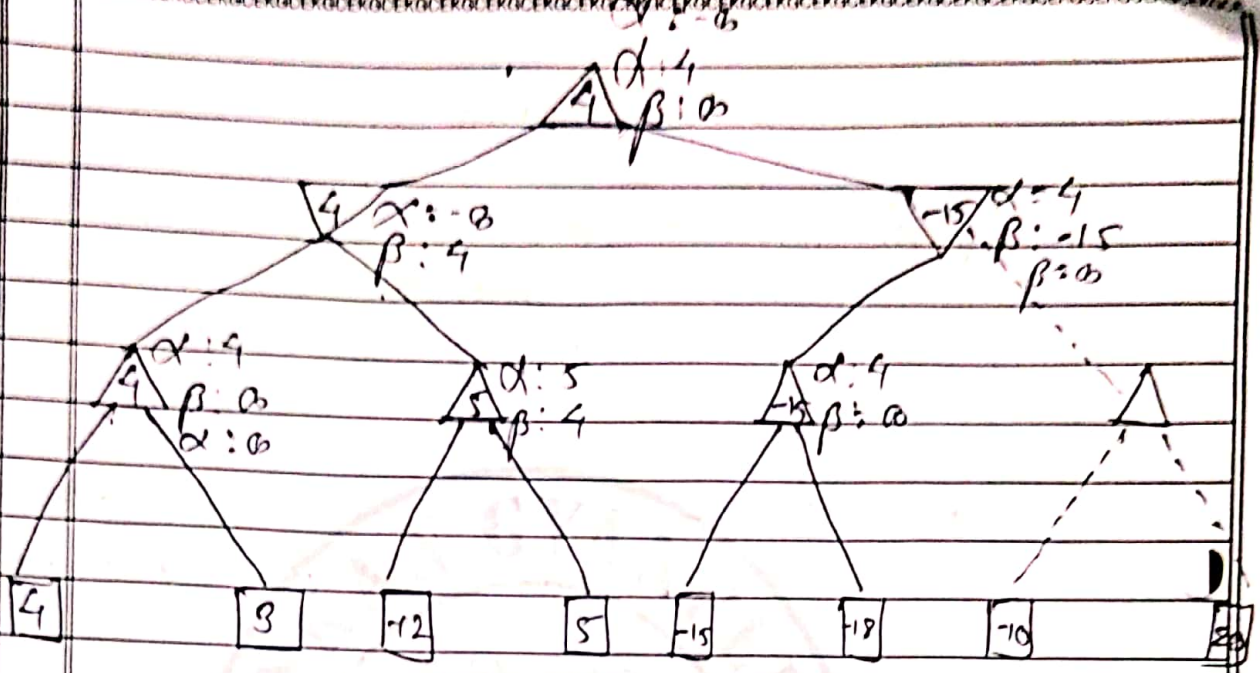
Beta (β) - The best (highest value)
Initial value of beta is $+\infty$

Rules & condition

1) The max player will only update the value of alpha
2) The min player will only update the value of Beta
3) We will only pass the alpha, beta value to the child nodes
4) Node values will be passed to upper nodes instead of value of alpha and beta

Condition to prune : $\alpha \geq b$ and $b \leq a$

when alpha is greater than and equal to beta.



1) $\alpha(-\infty, 4) = 4$
$\alpha(-\infty, 3) = 3$ - max (Bottom left)
$\alpha(4, 3) = 4$

2) $\beta(\infty, 4) = 4$ - min (left)

3) $\alpha(-\infty, -12) = -12$ - max (Bottom left) (left node)
$\alpha(-\infty, 5) = 5$
$\alpha(-12, 5) = 5$

4) $\alpha(4, -15)$ - Top (max

5) $\beta(4, 5) = 4$ - min (right)

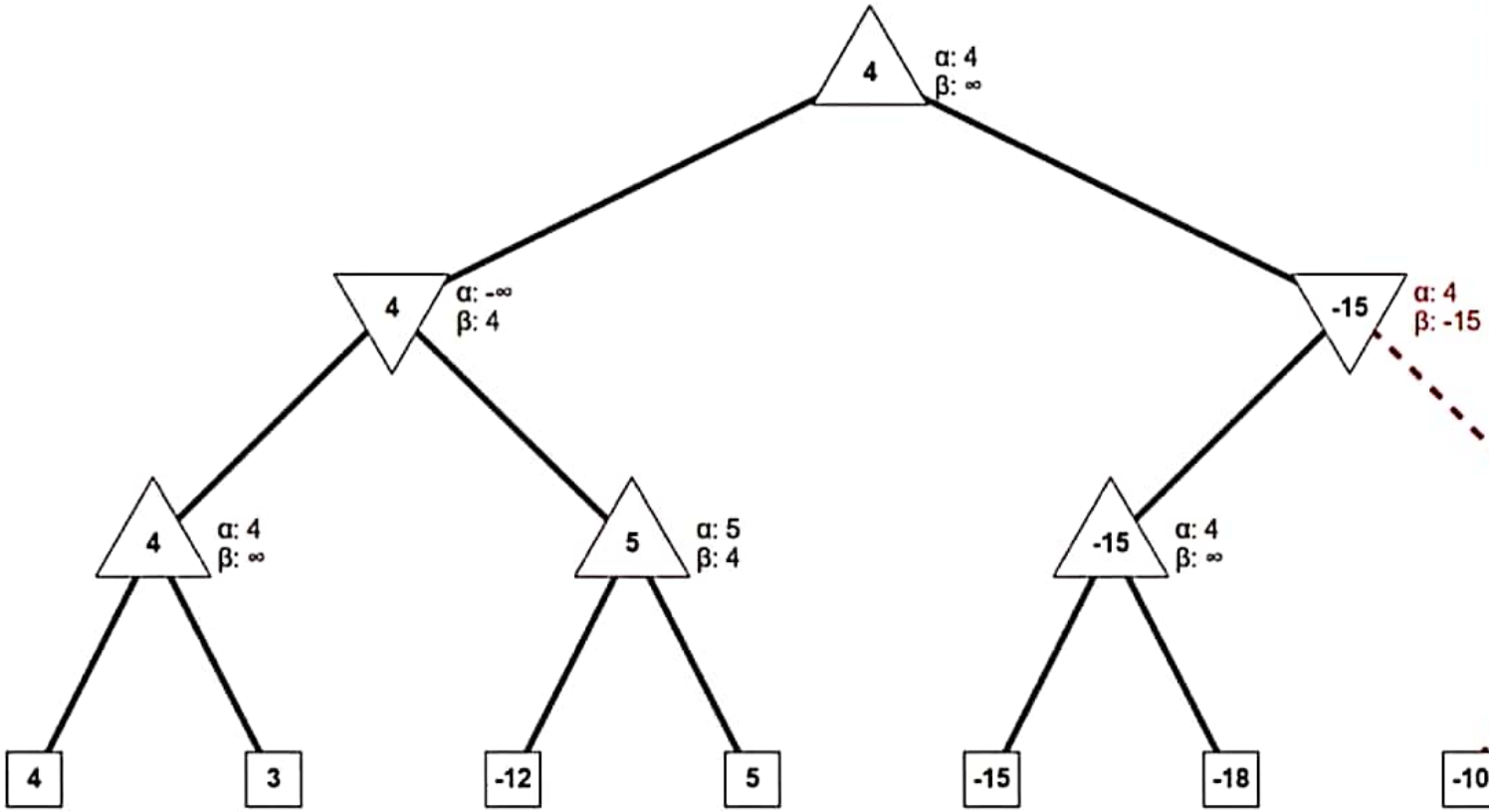
6) $\beta(-\infty, 4) = 4$ - max (Bottom right (right node)

7) $\alpha(4, -19) = 4$
$\alpha(4, -18) = 4$
$\alpha(-19, -18) = -15$

8) $\beta(\infty, -18) = -18$ min (right)
$\alpha = 4$
$\beta = -4$
$\alpha \geq \beta$: so the next node is pruned

9) $\alpha = 4$ max
$\beta = \infty$

$\alpha(4, -4) = 4$ solution



Start Animation

Depth

Branching Factor

Swap Min/Max | Regenerate Tree

Reset Tree | Show Solution

Check Answer | Correct!

Nodes are pruned when β ≤ α