Alpha-Beta pruning

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OOP	OOA	Marks	Sign

Alpha - Beta pruning.

→ Alpha Beta runing = Alpha beta pruning is modified version of min max algo. It is an optimization technique for min max algo

- Alpha (α) = The test (highest value).
  = Initial value of alpha is −∞

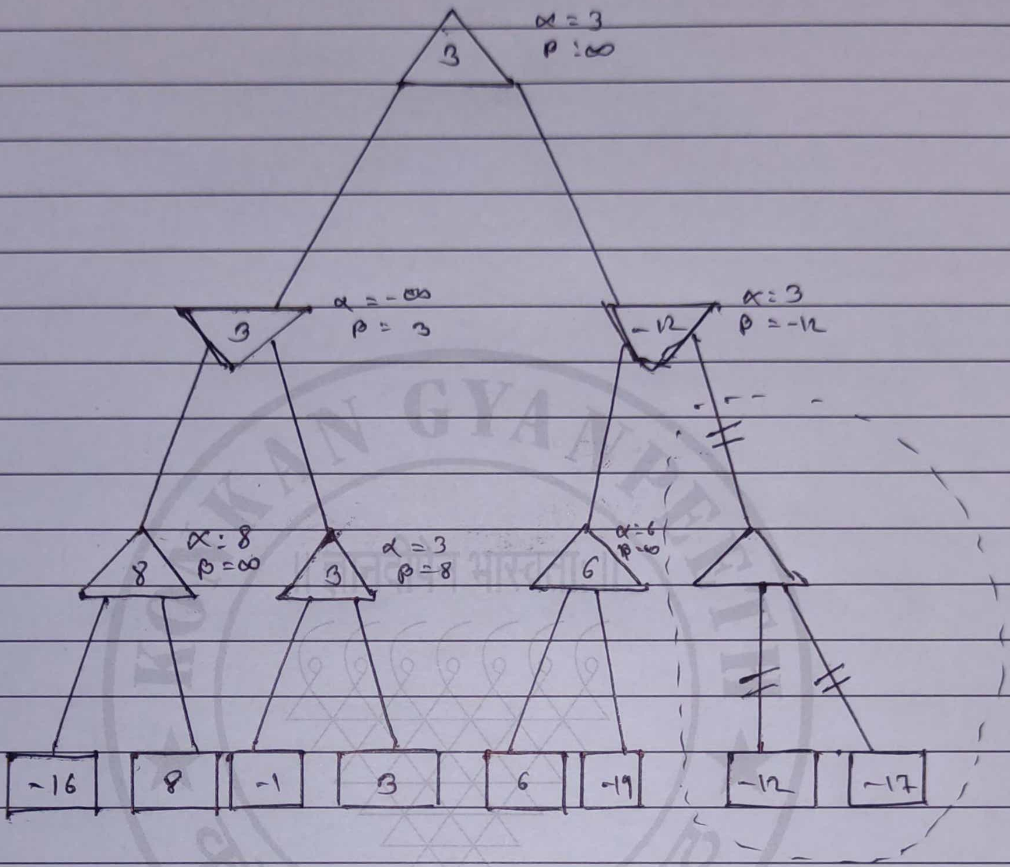
- Beta (β) = The test (highest value)
  = Initial value of ~~alpha~~ Beta is +∞

*** Rules and conditions**

1) max player will only update value of Alpha.
2) min player will only update value of Beta
3) we will only pass alpha beta values to child nodes
4) Node values will be passed to upper nods of values of alpha and beta.

- Condition : a ≥ b or b ≤ a

- when alpha is greater than or equal to beta.



1] $\alpha(-\infty, -16) = -16$

$\alpha(-\infty, 8) = 8$ — Max (Bottom left)

$\alpha(-16, 8) = 8$

2) $\beta(\infty, -16) = -16$ — Min (left)

3) $\alpha(-\infty, -1) = -1$ — Max (Bottom left)

$\alpha(-\infty, 3) = 3$ (left node)

$\alpha(-1, 3) = 3$

4) $\alpha(3, -12)$ — Top (max)

5) $\beta(R, 3) = 3$ - min (right)

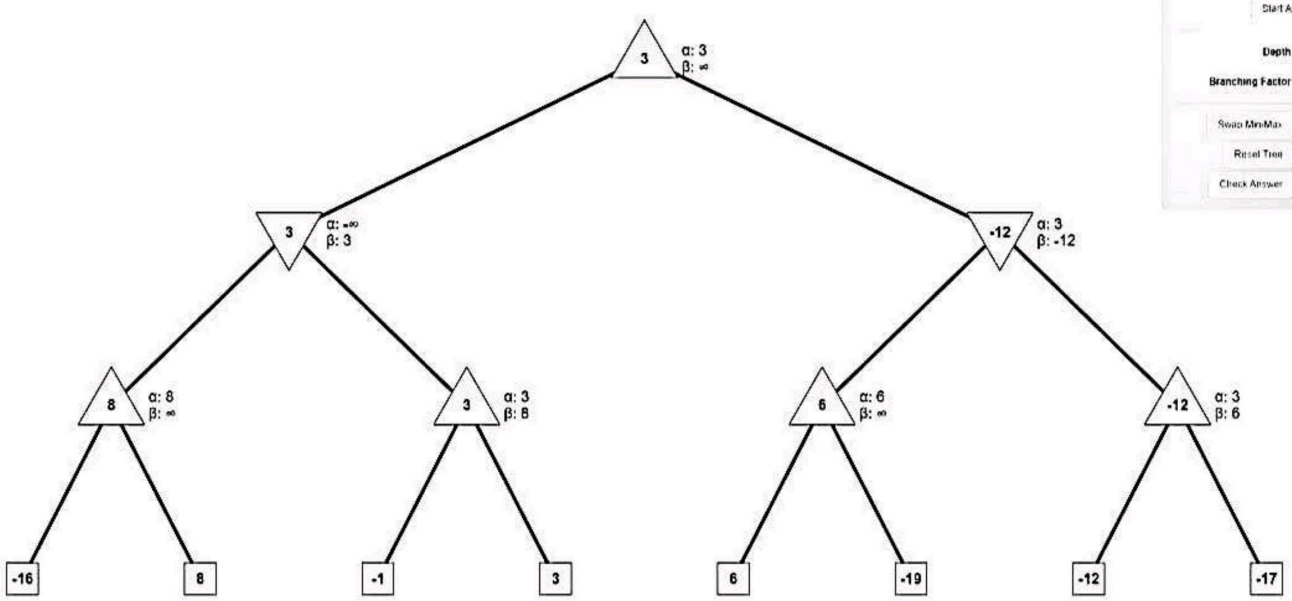
6) $\beta(-\infty, 3) = 3$ - max (Bottom right (right node)

7) $\alpha(3, -12) = 3$
$\alpha(3, -19) = 3$
$\alpha(6, -19) = 6$

8) $\beta(\alpha, -19) = -19$ - min (right)
$\alpha = 3$
$\beta = -12$
$\alpha > \beta$, so next node is pruned.

9) $\alpha = 3$ max
$\beta = \infty$

$\alpha(3, -12) = 3$ solution.



Start Animation

Depth - -

Branching Factor - -

Swap Min/Max | Regenerate Tree

Reset Tree | Show Solution

Check Answer | Correct!

Star | Developed by Alex Kamen for UC Berkeley CS188

Nodes are pruned when β ≤ α