Page No. :
Date :

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class : BE / IT

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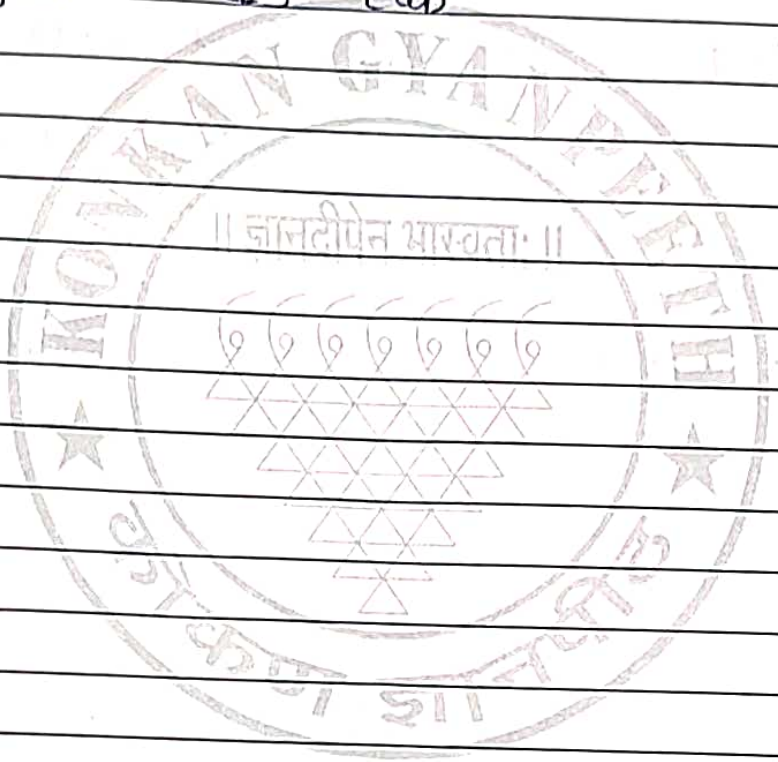
subject : Is Lab



Page No. :
Date :

Alpha - Beta Pruning :

→

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

- Alpha (α) = The best (highest - value)
  = Initial value of alpha is $-\infty$.

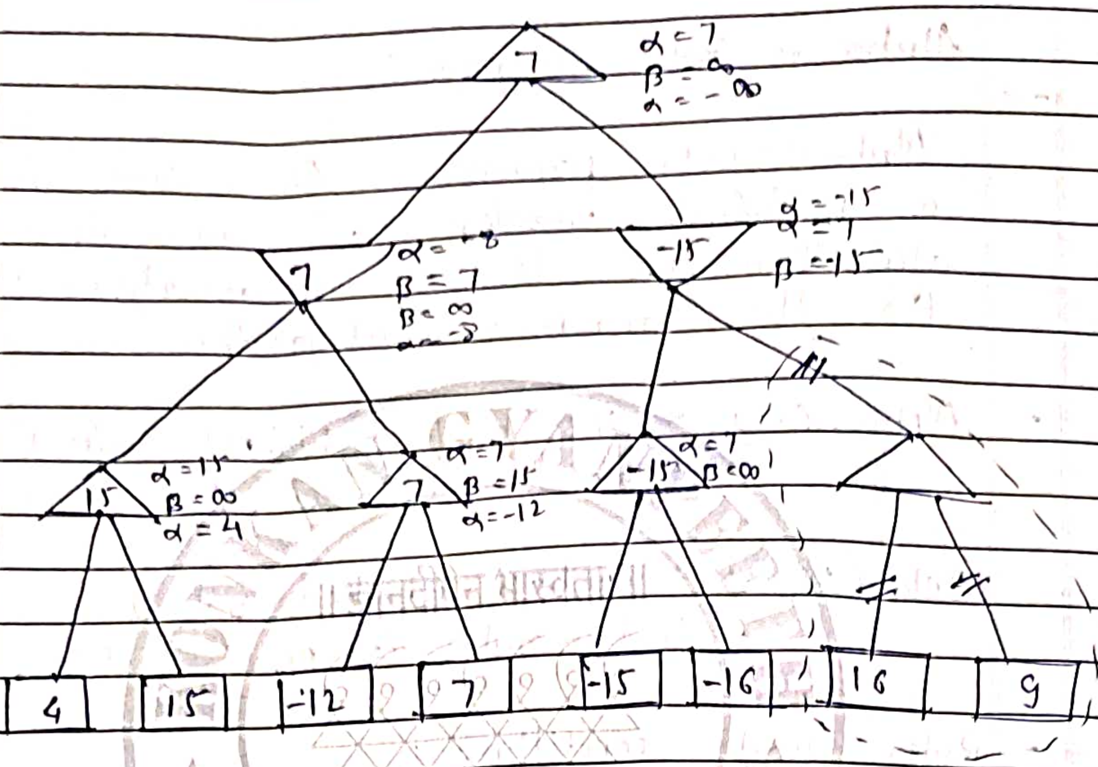
Beta (β) = The best (highest value)
= Initial value is beta is $+\infty$

- Rules and conditions :

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

- condition to prune : $\alpha \geq b$ or $b \leq \alpha$

- When alpha is greater than or equal to beta



1) $\alpha(-\infty, 4) = 4$
$\alpha(-\infty, 15) = 15$ — Max (Bottom left)
$\alpha(4, 15) = 15$

2) $\beta(\infty, 15) = 15$ — Min (left

3) $\alpha(-\infty, -12) = -12$ — Max (Bottom left (left node)
$\alpha(-\infty, 7) = 7$
$\alpha(-12, 7) = 7$

4) $\alpha(7, -15) =$ To (max)

5) $\alpha(15, 7) = 7$ — min (right)

6) $\beta(-9, 7) = 7$ - Max (Bottom right (right node)

7) $\alpha(7, -15) = 7$
$\alpha(-15, -16) = -15$
$\alpha(-15, -16) = -15$

8) $\alpha \geq \beta$ so the next node is pruned

9) $\alpha = 7$ Max
$\beta = \infty$

$\alpha(7, -15) = 7$ solution