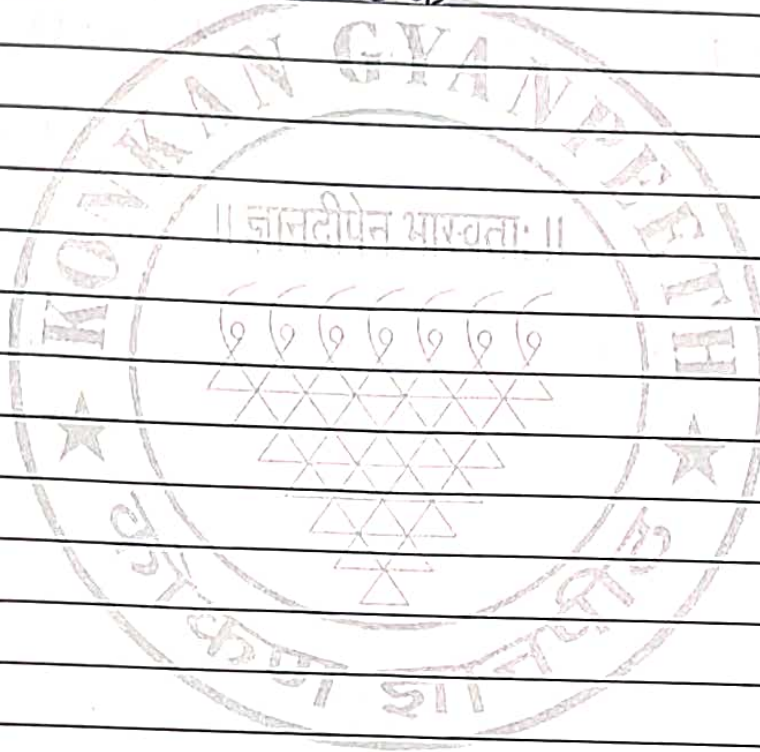


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subject : Is Lab



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 minmax 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.

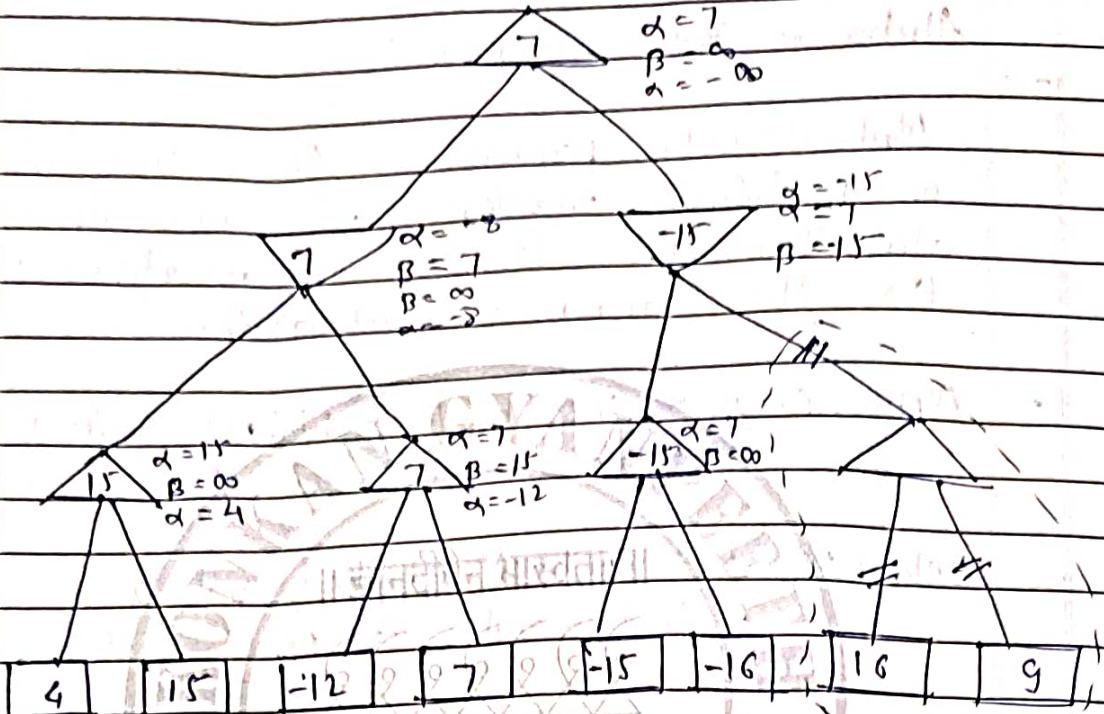
2) The min player will only update the value of β .

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 : $a \geq b$ or $b \leq a$

- When alpha is greater than or equal to beta.



$$1) \alpha(-\infty, 4) = 4$$

$$\alpha(-\infty, 15) = 15 \quad \text{Max (Bottom left)}$$

$$\alpha(4, 15) = 15$$

$$2) \beta(\infty, 15) = 15 \quad \text{Min (left)}$$

$$3) \alpha(-\infty, -12) = -12 \quad \text{Max (Bottom left (left node))}$$

$$\alpha(-\infty, 7) = 7$$

$$\alpha(-12, 7) = 7$$

$$4) \alpha(7, -15) = \quad \text{To (max)}$$

$$5) \alpha(15, 7) = 7 \quad \text{min (right)}$$

$$6) \beta(-9, 7) = 7$$

- 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

$$9) \alpha = 7$$

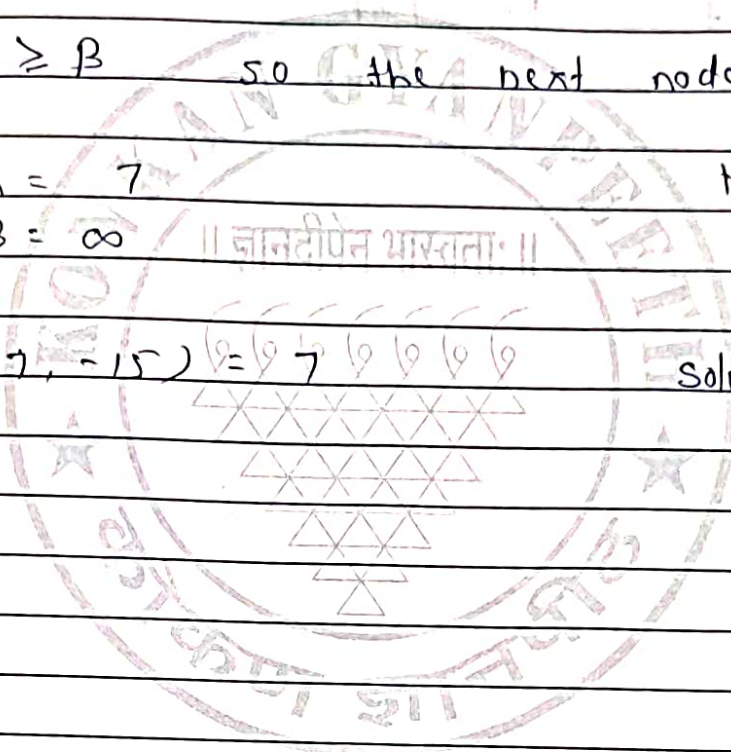
max

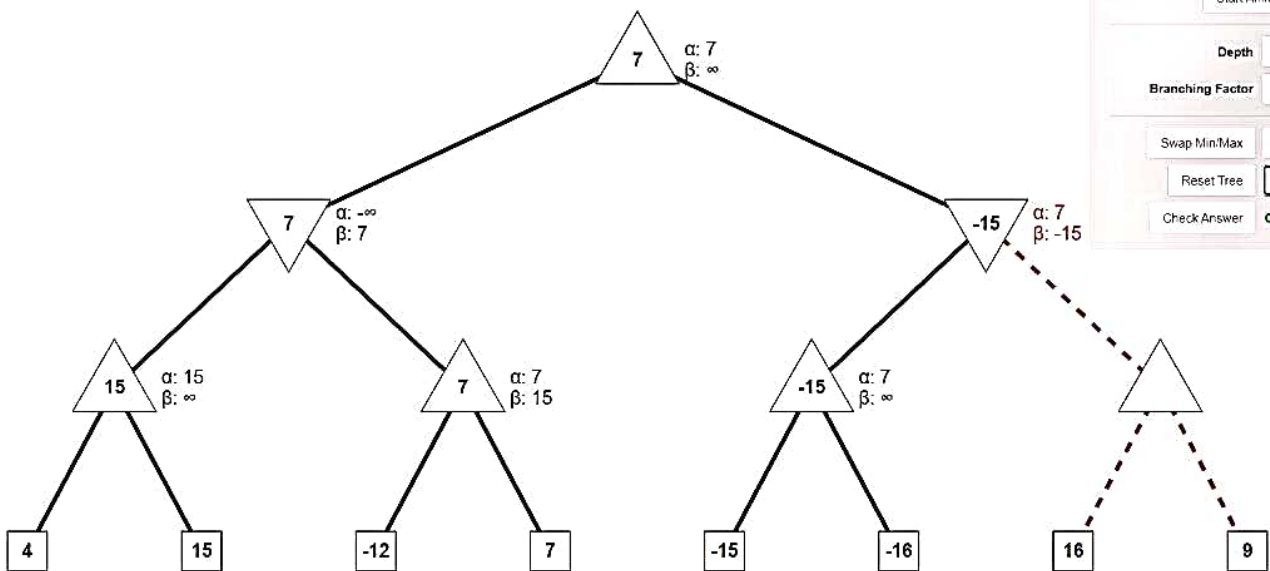
$$\beta = \infty$$

॥ ज्ञानदीपेन धारयता ॥

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

solution





Start Animation

Depth

Branching Factor

Swap Min/Max
 Regenerate Tree

Reset Tree
 Show Solution

Check Answer
 Correct!