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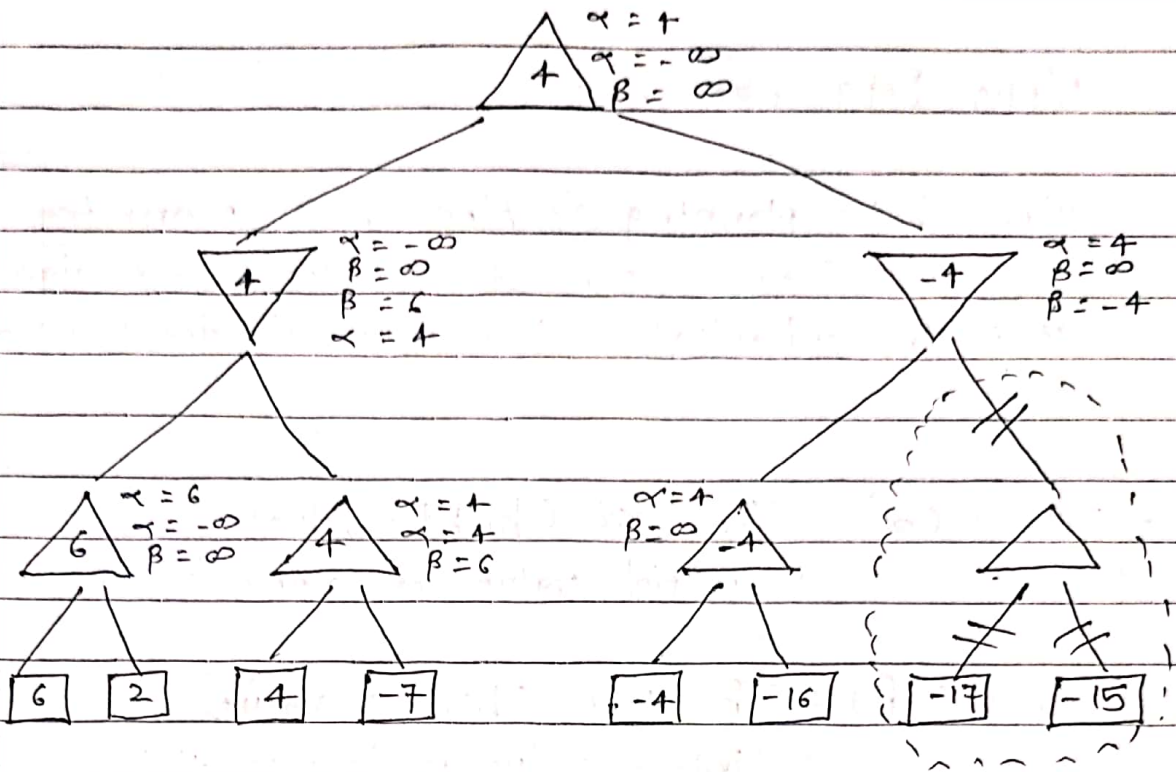
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Alpha-Beta ^{rule} planning:-

Alpha-beta planning \Rightarrow Alpha beta planning is a modified version of the min Max algo.

It is an optimization technique for the MinMax algo.

- Alpha (α) = The test (highest value)
= Initial value of alpha is $-\infty$.
- Beta (β) = The test (lowest 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 the alpha, beta values to the child nodes.
 - 4] Node values will be passed to upper node instead of values of alpha and beta.
- Condition to : $a \geq b$ or $b \leq a$.
- when alpha is greater than or equal to beta.



$$1] \alpha(-\infty, 6) = 6$$

$$\alpha(-\infty, 2) = 2$$

$$\alpha(6, 2) = 6$$

- Max (Bottom left)

$$2] \beta(\infty, 6) = 6$$

- Min (left)

$$3] \alpha(-\infty, 4) = 4$$

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

$$\alpha(4, -7) = 4$$

- Max (Bottom left)
(left node)

$$4] \alpha(4, -4)$$

- Top (Max)

$$5] \beta(6, 4) = 4$$

- Min (right)

$$6] \beta(-\infty, 4) = 4$$

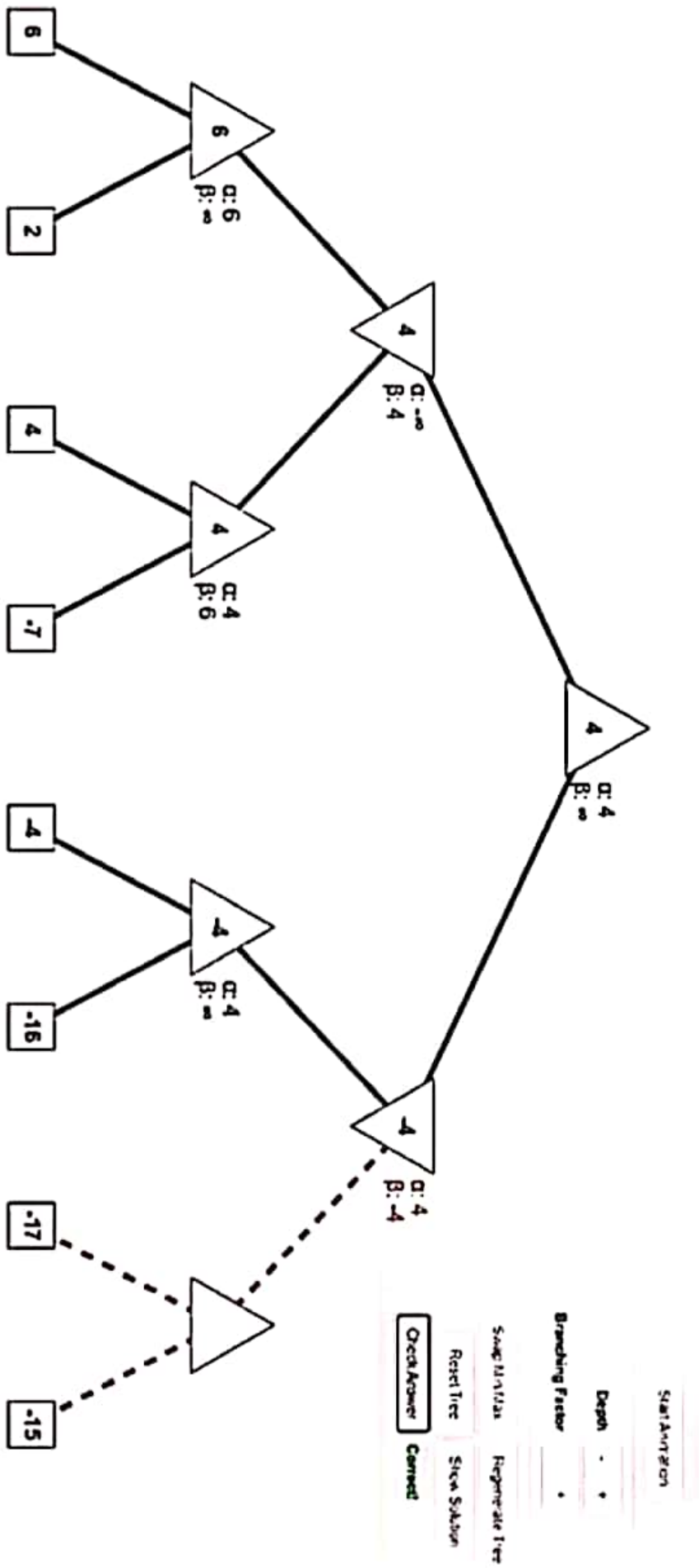
- Max (Bottom right)
(right node)

$$\begin{aligned} 7] \quad \alpha(4, -4) &= 4 \\ \alpha(4, -16) &= 4 \\ \alpha(-4, -16) &= -4 \end{aligned}$$

$$\begin{aligned} 8] \quad \beta(\infty, -16) &= -16 && - \text{Min (right)} \\ \alpha &= 4 \\ \beta &= -4 \\ \alpha &> \beta \end{aligned}$$

$$\begin{aligned} 9] \quad \alpha &= 4 && \text{Max} \\ \beta &= \infty \end{aligned}$$

$$\alpha(4, -4) = 4 \quad \text{Solution.}$$



Q: 4 B: 4

Nodes are turned when B: 5