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class : BE IT

Subject : IS lab

DOP	DOC	Marks	Sign

Alpha - Beta pruning :-

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

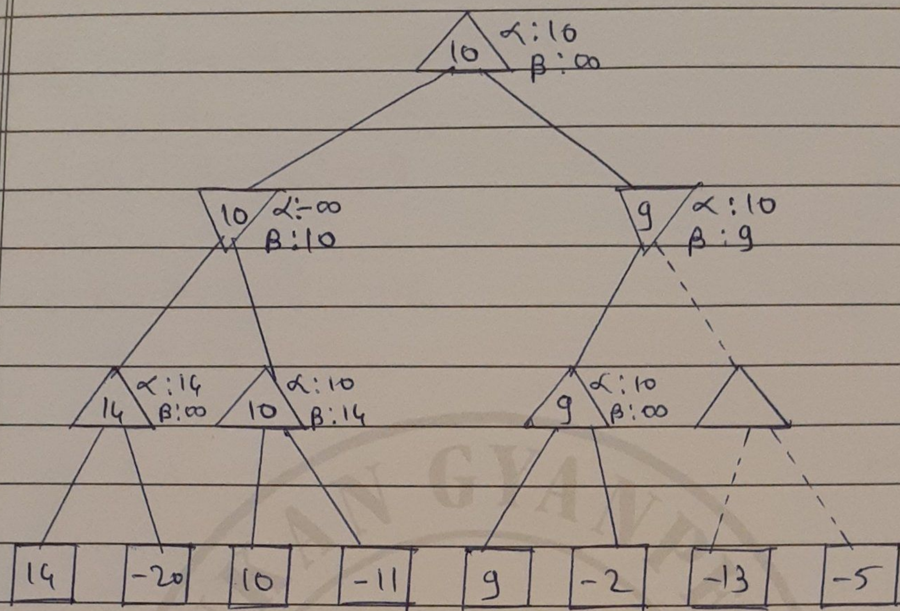
- Alpha (α) = The best (highest value)
  = Initial value of alpha is $-\infty$

- 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 ~~max~~ 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 node insted 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] $\alpha(-\infty, 14) = 14$
$\alpha(-\infty, -20) = -20$ — max (Bottom left)
$\alpha(14, -20) = 14$

2] $\beta(\infty, 10) = 10$ — min (left)

3] $\alpha(-\infty, 10) = 10$ — max (Bottom left)
$\alpha(-\infty, -11) = -11$ (left node)
$\alpha(10, -11) = 10$

4] $\alpha(10, 10)$ — Top (max)

5] β ~~(10, 9) = 9~~ (14, 10) = 10 — min (right)

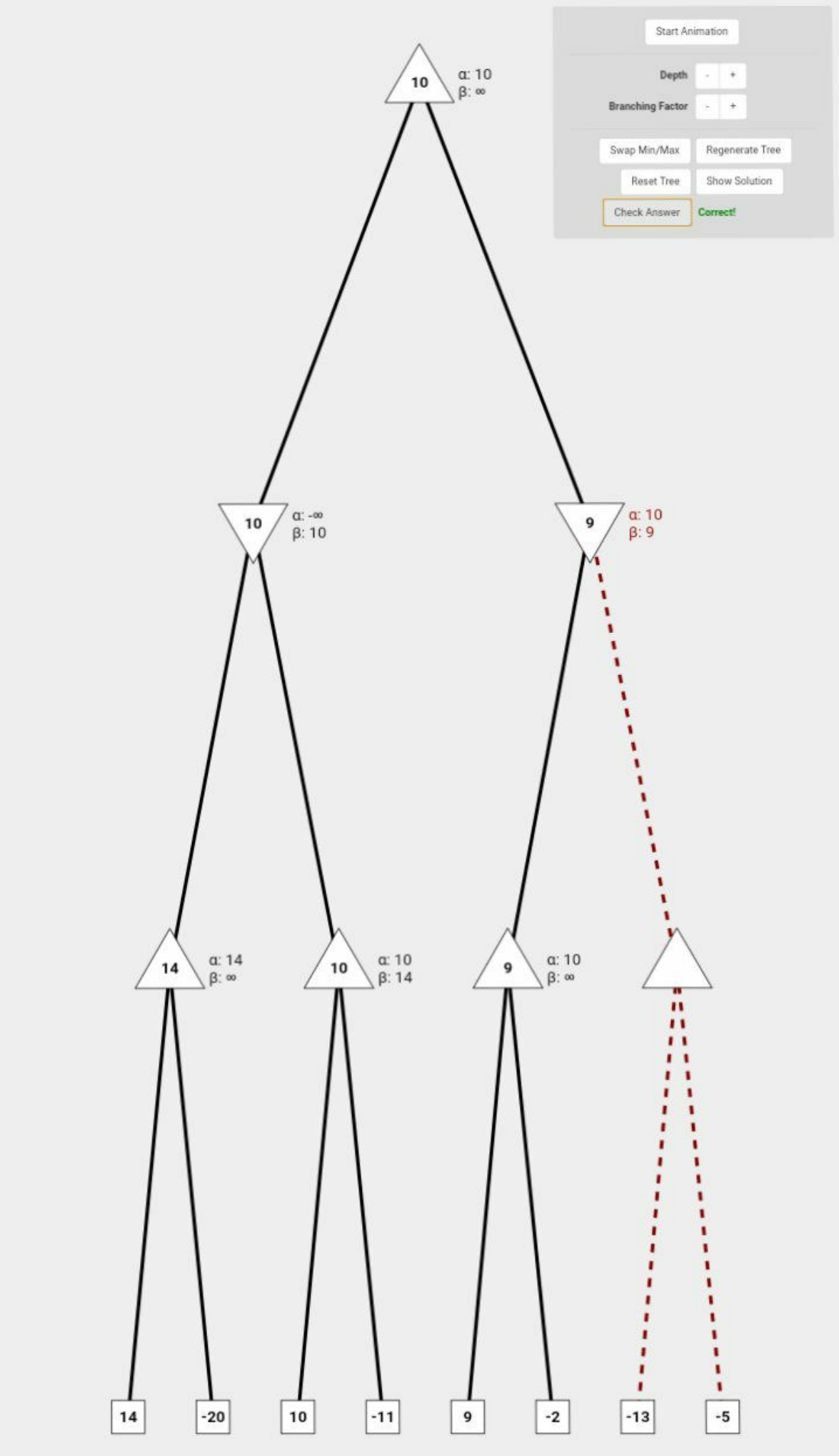
6] $\beta(-\infty, 10) = 10$ — max (Bottom right) (right node)

7] $\alpha(10, 9) = 10$
$\alpha(10, -2) = 10$
$\alpha(9, -2) = 9$

8] $\beta(\infty, -2) = -2$ - min (right)
$\alpha = 10$
$\beta = 9$
$\alpha \geq \beta$ So the next node is pruned

9] $\alpha = 10$ max
$\beta = 9$

$\alpha(10, 9) = 10$ solution.



Nodes are pruned when β ≤