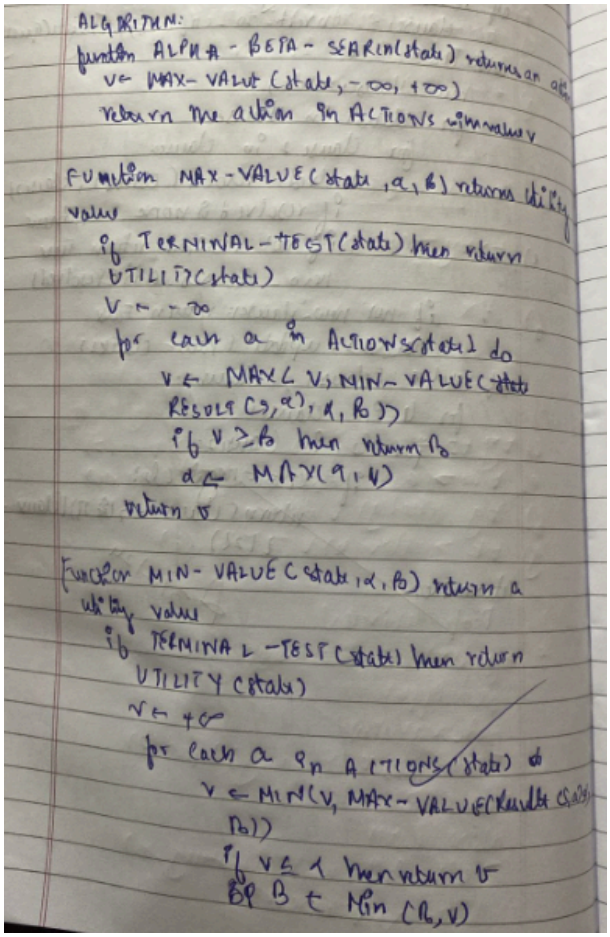
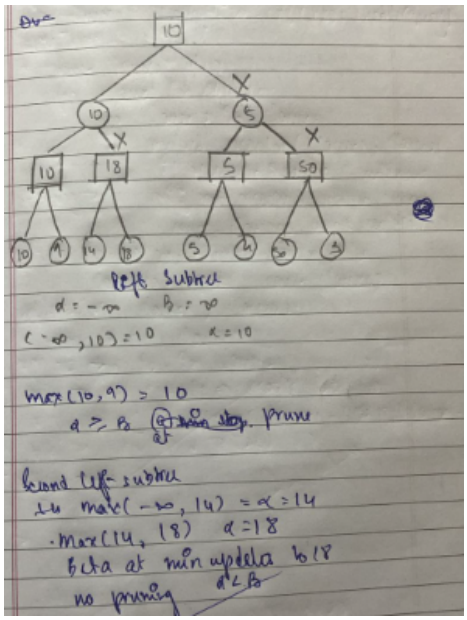
Date:17/12/24

Program Title:Implement Alpha-Beta Pruning.

Algorithm:



Tree:



Code:

```
import math
def alpha_beta_pruning(depth, nodeIndex, isMax, values, alpha, beta):
    if depth == 3:
        return values[nodeIndex]
    if isMax:
        best = -math.inf
        for i in range(0, 2):
            val = alpha_beta_pruning(depth + 1, nodeIndex * 2 + i, False, values, alpha, beta)
            best = max(best, val)
            alpha = max(alpha, best)
            if beta <= alpha:
                break
        return best
    else:
        best = math.inf
        for i in range(0, 2):
            val = alpha_beta_pruning(depth + 1, nodeIndex * 2 + i, True, values, alpha, beta)
            best = min(best, val)
            beta = min(beta, best)
            if beta <= alpha:
                break
        return best
values = [10, 9, 14, 18, 5, 4, 50, 3]
alpha = -math.inf
beta = math.inf
result = alpha_beta_pruning(0, 0, True, values, alpha, beta)
print("Optimal Value:", result)
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Snapshot of the Result:

```
Optimal Value: 10
```