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FAI Assignment 3

Task :

1) Perform alpha-beta pruning of following tree.

2) Explain benefit you achieved over exhaustive search.

Course & Batch :- PG-DAI, March 24
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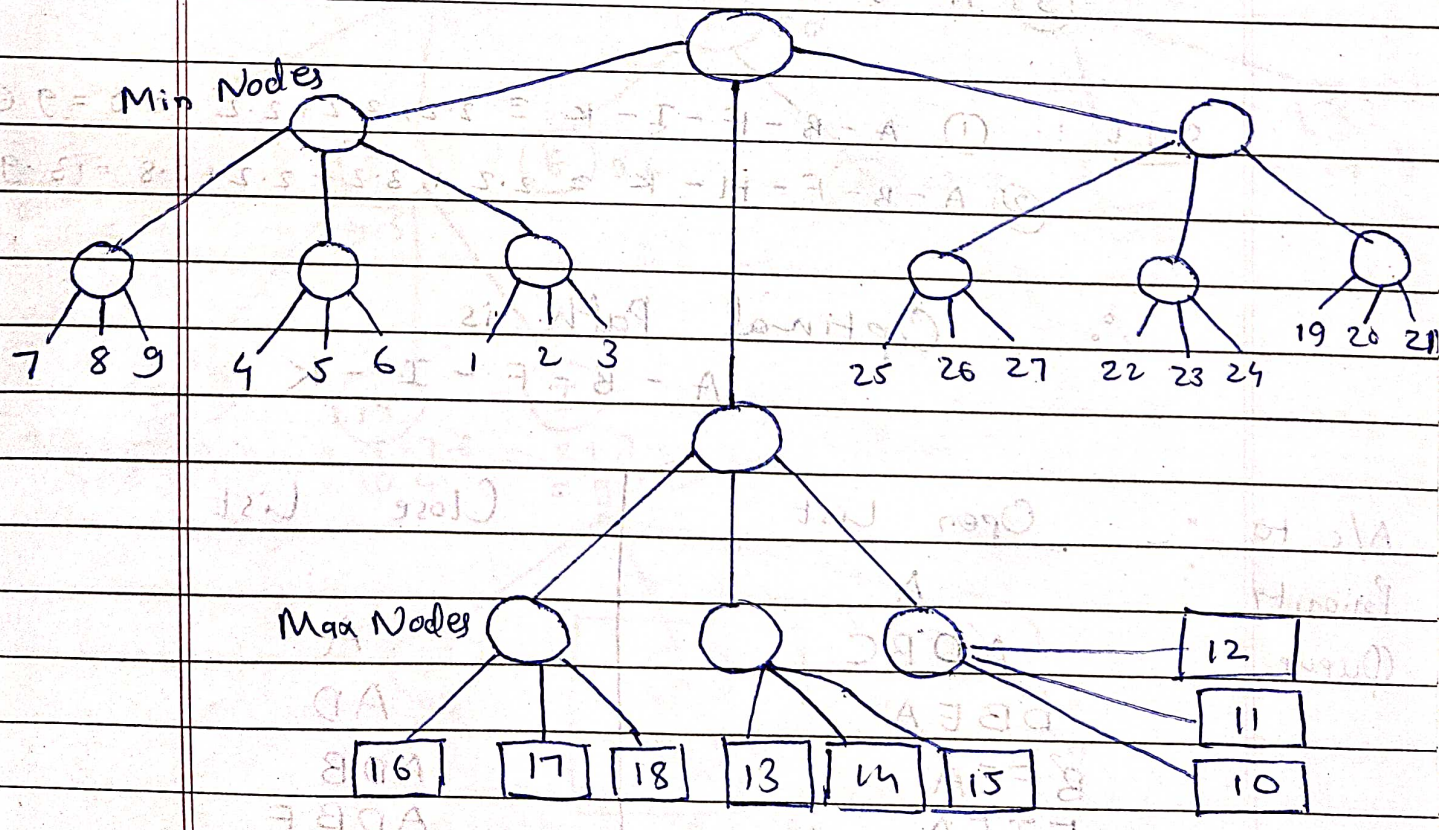
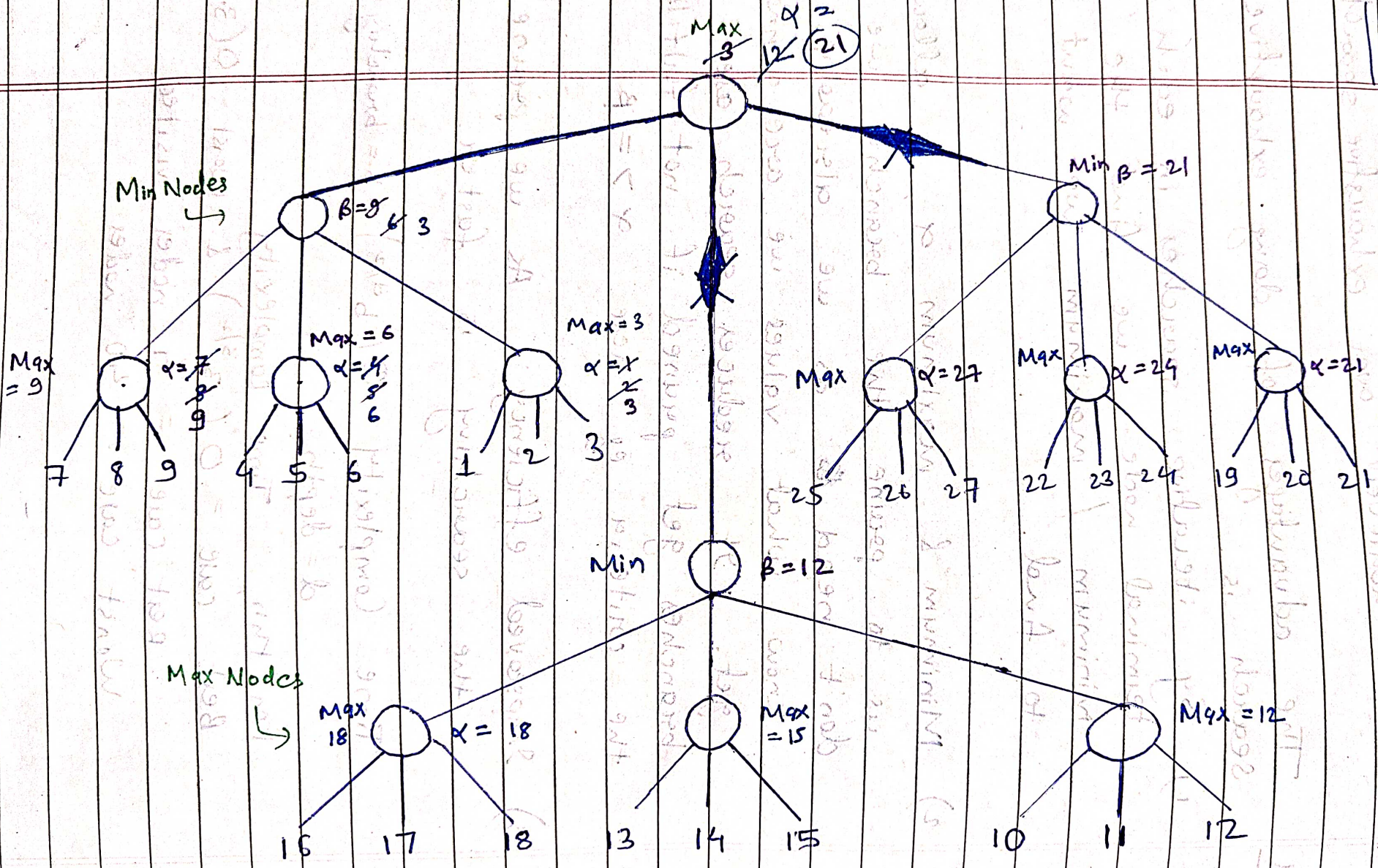
Date of submission :- 17/04/24.



Sol'n

A. Performing :-



Original / Default Condition → $\alpha = -\infty$ & $\beta = +\infty$

If $\alpha >= \beta \Rightarrow$ Prune

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8. Benefit achieved over exhaustive search.

Ans The advantages of doing exhaustive search is.

1) By iterative searches in each terminal node, we find the minimum / maximum we want to find.

2) Minimum & maximum α, β allow us to prune the branches we don't need as we already know what values we are going get. It reduces search as branches get pruned if not fulfilled the criteria eg. here, $\alpha >= \beta$

3) Improved efficiency :- As we prune, the searching is faster.

Time Complexity $O(b^{d/2})$ b = branching factor, d = depth.

For this, Time complexity

Best case = $O(3^{3/2})$ & worst = $O(3^3)$

Best case = 4 nodes visited

Worst case = 40 nodes