DATA STRUCTURES

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Section - B
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1) INORDER :- A, K, B, J, C, L, D, E, H, G, F, I.

PREORDER :- L, K, A, J, B, C, I, H, E, D, F, G.

POSTORDER :- A, B, C, J, K, I, D, E, F, G, H, L.

BREADTH-FIRST-ORDER :-

L, K, I, H, A, J, E, F, G, B, C, D.

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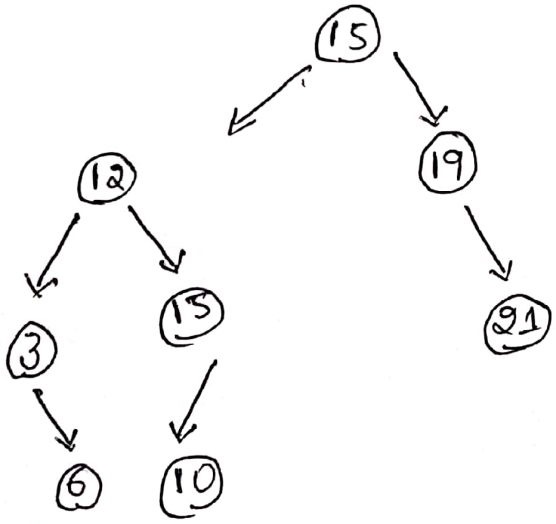
2) The resulted tree would be



It is not an AVL Tree

3. Height of the tree is 3. $\Rightarrow n = 3$

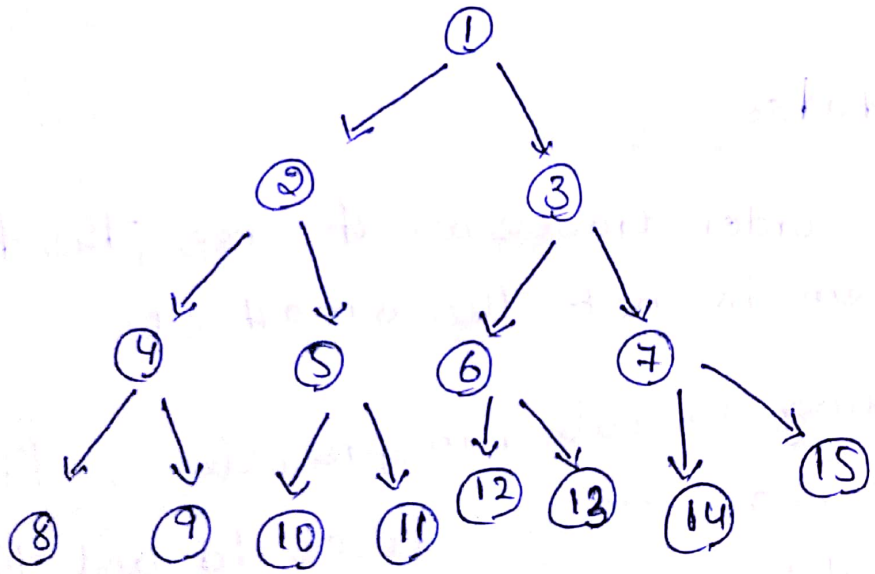
i. The largest number of nodes $= 2^{n+1} - 1 : 2^{3+1} - 1 = 16 - 1$

Largest Number of nodes $= 15$ $= 15$

ii. The Smallest number of nodes $= 2^{n-1} = 2^{3-1} = 2^2 = 4$

Smallest Number of Nodes $= 4$.

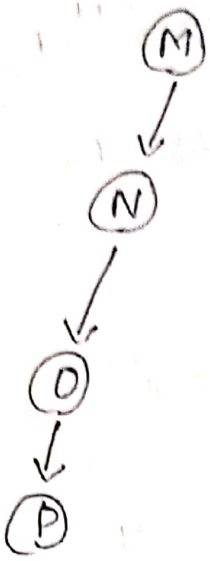
i. Tree with 15 numbers of Nodes



Parent Nodes/Internal Nodes → 1, 2, 3, 4, 5, 6, 7

Leaf Nodes → 8, 9, 10, 11, 12, 13, 14, 15

Tree with lower number of Nodes



Internal Nodes → M, N, O

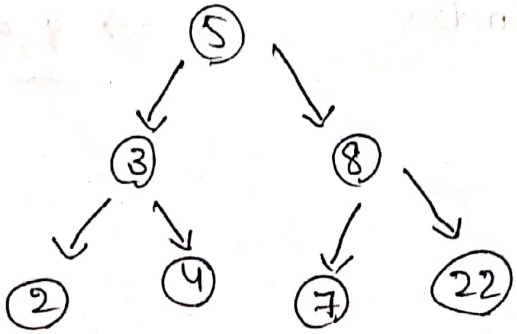
Leaf Nodes → P

4.

It is false

In pre-order traversal of tree, the first printed item is not the smallest.

According to rule, in pre Order we first put root node then left child and then right child. In between them left child is smallest and is not at first place



Here preorder becomes 5 3 2 4 8 7 2 2

Here 3 is smallest in first cycle but not at first place

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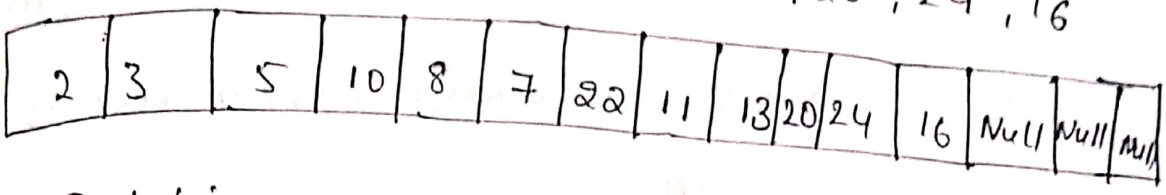
5) The breadth first traversal of given no. is.

2, 3, 5, 10, 8, 7, 22, 11, 13, 20, 24, 16



Deletion & addition operation is not possible in the tree because it is not Binary search tree. This operations only exist for Binary Search Tree.

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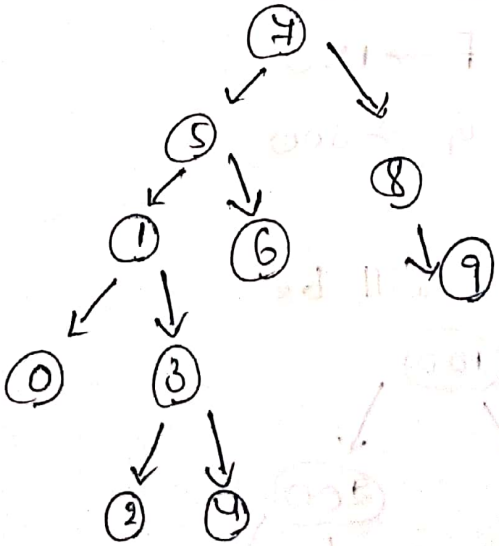
7) If the numbers 7, 5, 1, 8, 3, 6, 0, 9, 4, 2 are inserted in order the binary search tree will be



The in order traversal of the above tree will be

0, 1, 2, 3, 4, 5, 6, 7, 8, 9.

Answer:- option(3).

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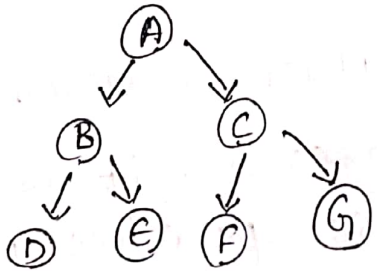
6. The postorder traversal sequence for Binary Sear tree is given as 10, 30, 20, 150, 300, 200, 100

Let us consider the Binary search tree as



The past-traversal for this tree will be.

D E B F G C A

Compare the nodes to given values

A → 100
B → 20
C → 200
D → 10
E → 30
F → 150
G → 300

∴ The final BST will be