DATA STRUCTURES
ASSIGNMENT-2

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1Q)

INORDER TRANSVERSAL: A K B J C L I D E F H G

PREORDER TRANSVERSAL: L K A J B C I H E D F G

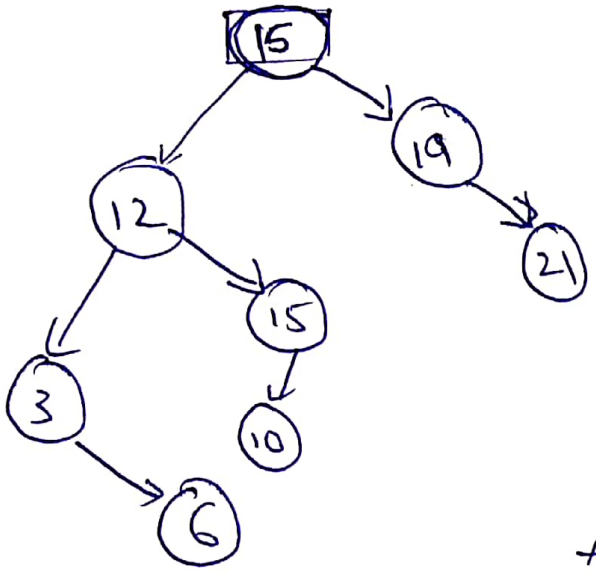
POSTORDER TRANSVERSAL: A B C J K I D E F G H L

BREADTH FIRST ORDER TRANSVERSAL:

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

2Q) After deletion and addition,

The final tree would be



The tree is not an AVL tree.

3Q) Height of the tree is 3

The largest number of nodes $\rightarrow 2^{n+1} - 1$

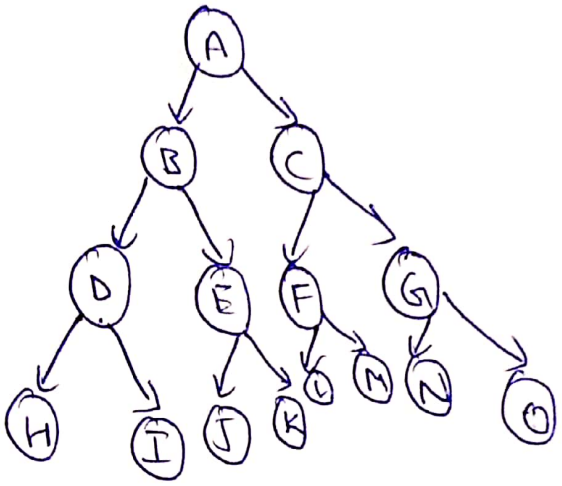
$\rightarrow 2^4 - 1$

$\rightarrow 15$

The smallest number of nodes

$\rightarrow 2^n = 2^3 = 8$

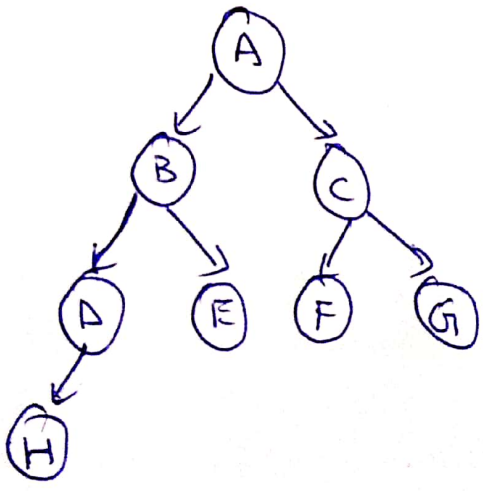
Tree with largest number of nodes is



Internal Nodes → A, B, C, D, E, F, G

leaf Nodes → H, I, J, K, L, M, N, O

Tree with smallest number of nodes 8



Here

Internal Nodes

→ A, B, C, D

leaf Nodes

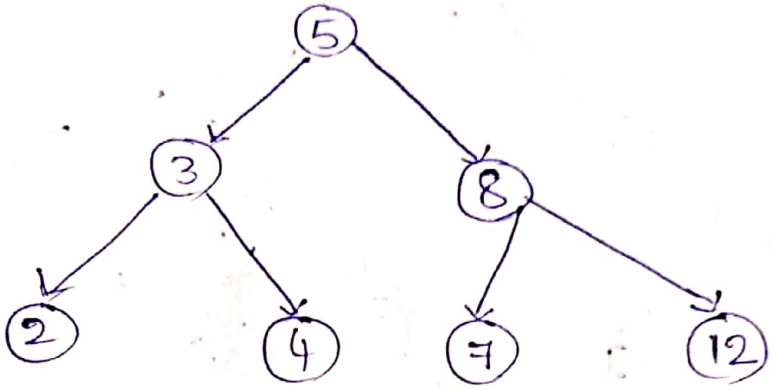
→ E, F, G, H

4Q) False,

In Pre-order transversal of tree, the first printed item is not smallest one

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

Ex:



Here

Pre order becomes 5 3 2 4 8 7 12

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

5Q) The breadth first transversal of given no is

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

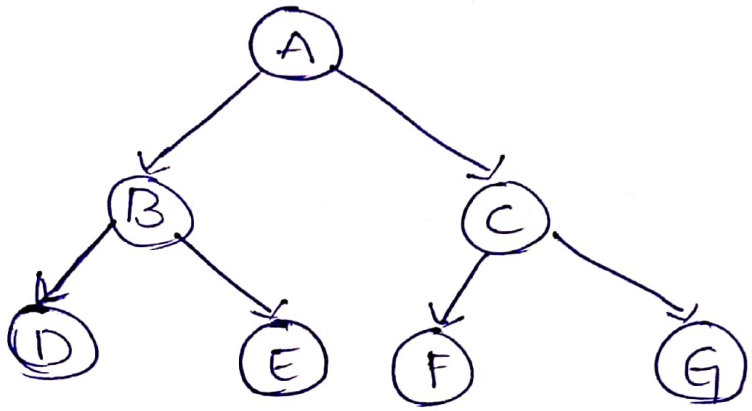
2	3	5	10	8	7	22	11	13	20	24	16	Null	Null	Null

Deletion and addition is not possible in this tree because this is not binary search tree. This operations only exist for b.s.t

6Q) The post order transversal sequence for Binary search tree is given as

10, 30, 20, 150, 300, 200, 100

Let us consider the binary search tree as

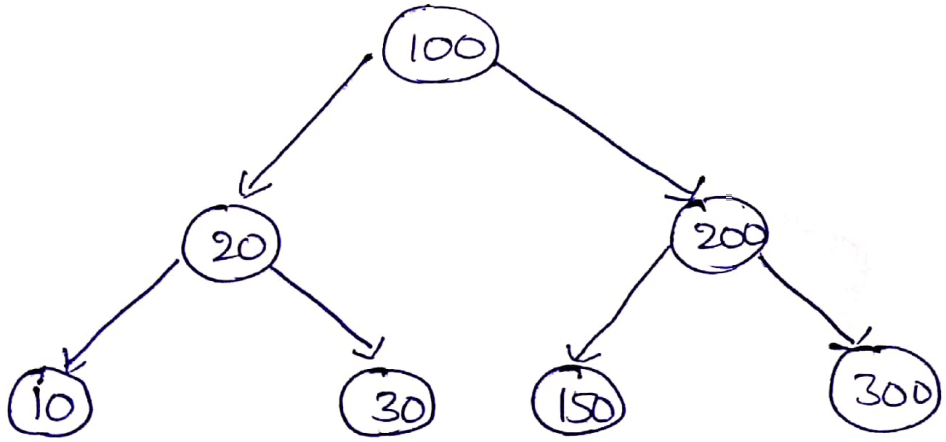


The post transversal for this tree will be

DEBFGCA

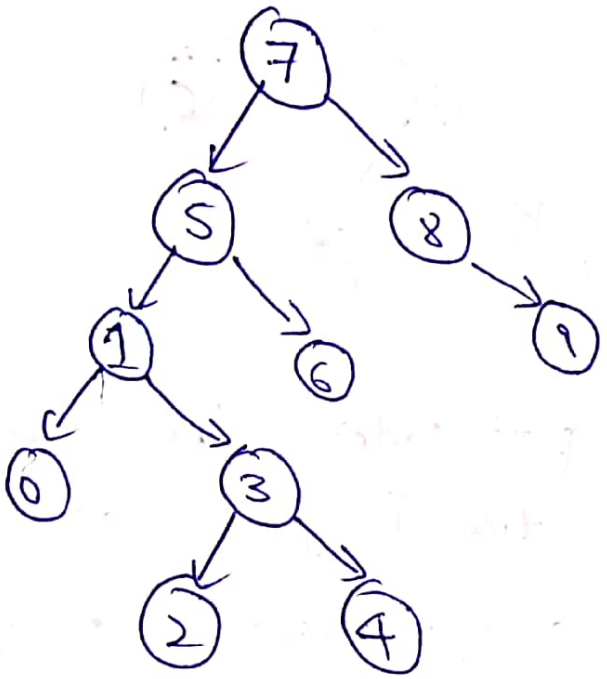
A - 100
B - 20
C - 200
D - 10
E - 30
F - 150
G - 300

∴ The final Binary tree will be



7Q) Option (3)

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



The Inorder Transversal of the above tree will be

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

Since given tree is complete binary tree all the levels are filled completely so level 2 should $2^2 = 4$, level 1 should be $2^1 = 2$