

# Data Structure Quiz

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1A) In order : A K B J C L I D E  
F H G

Preorder : L K A J B C I H G D F G

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

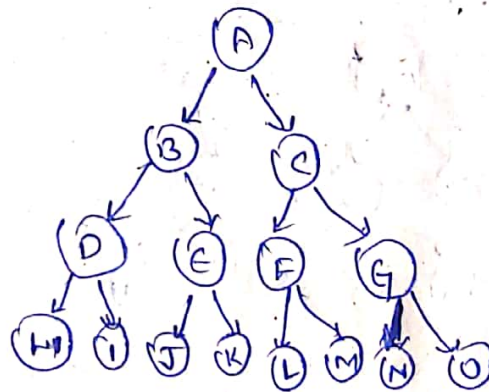
Breadth First Order : L K I H A J E F G B C D

3A) Given, Height of Tree = 3

Largest number of nodes =  $2^{(n+1)} - 1$   
(where n is height) =  $2^4 - 1 = 15$

Smallest number of nodes =  $2^n - 1 = 2^3 - 1 = 7$

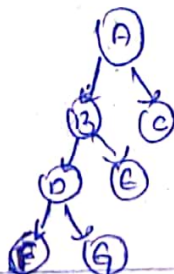
Largest :



Internal nodes : A, B, C, D, E, F, G

Leaf nodes : H, I, J, K, L, M, N, O

Smallest :



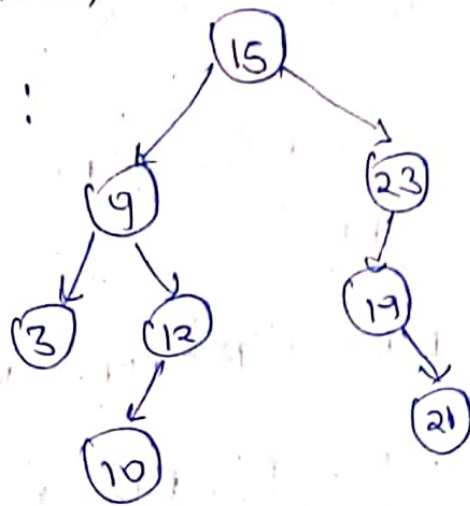
Internal nodes : A, B, D

Leaf nodes : C, E, F, G

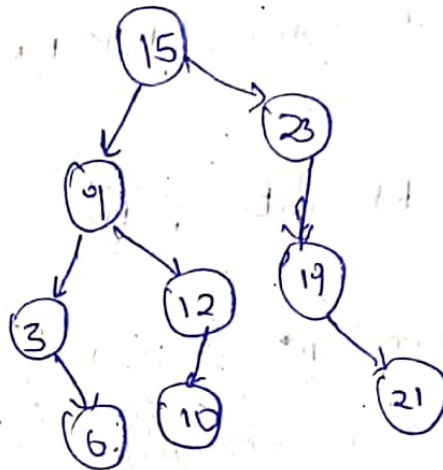
2 Ans)

Given,

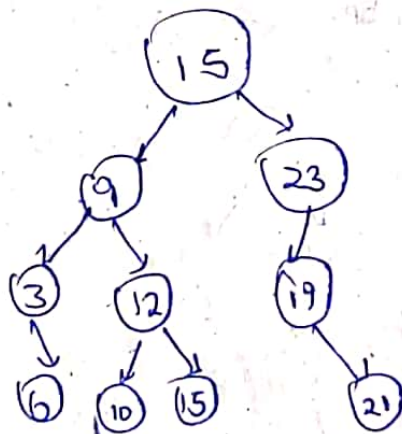
Tree :



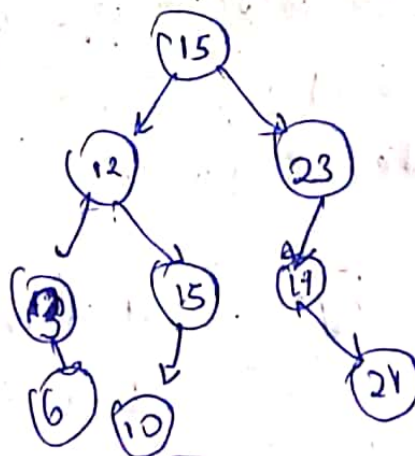
Add 6:



Add 15:



Delete 23 & 9;



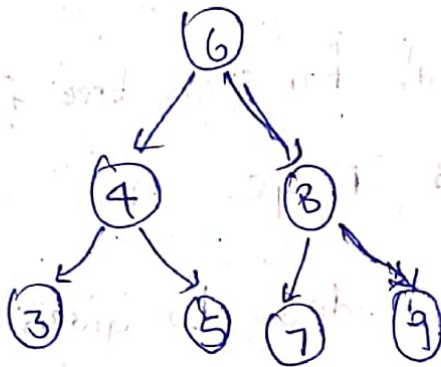
It's not an AVL Tree

4A) The statement is False.

Reason: In pre-order traversal, the first item printed is not the smallest one.

According to the rule, in pre-order, we first put root node, then left child & then right child. Among them left child is smallest which isn't at first place

Eg:



Pre order: 6 4 3 5 8 7 9 at

Here 3 is smallest which isn't first place

5A) The breadth first traversal of given number is

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

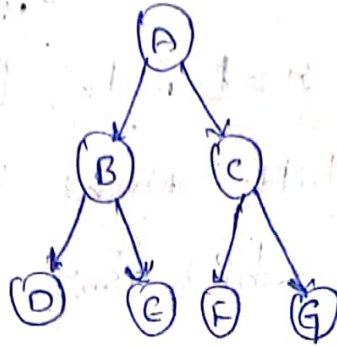
2	3	5	10	8	7	22	11	13	20	24	16	Null
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Deletion & addition operation isn't possible in this tree because it isn't a binary search tree. Such operation exists only for Binary Search Tree.

6 Ans) Postorder sequence for Binary Search

Tree is given as 10, 30, 20, 150, 300, 200, 100.

Considering Binary Search Tree as



Post - Traversal for such tree is

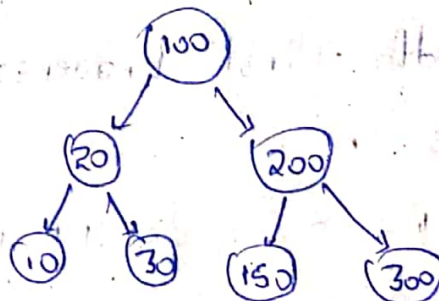
D E B F G C A.

Comparing nodes to given values

A  $\rightarrow$  100 , B  $\rightarrow$  20 , C  $\rightarrow$  200 , D  $\rightarrow$  10

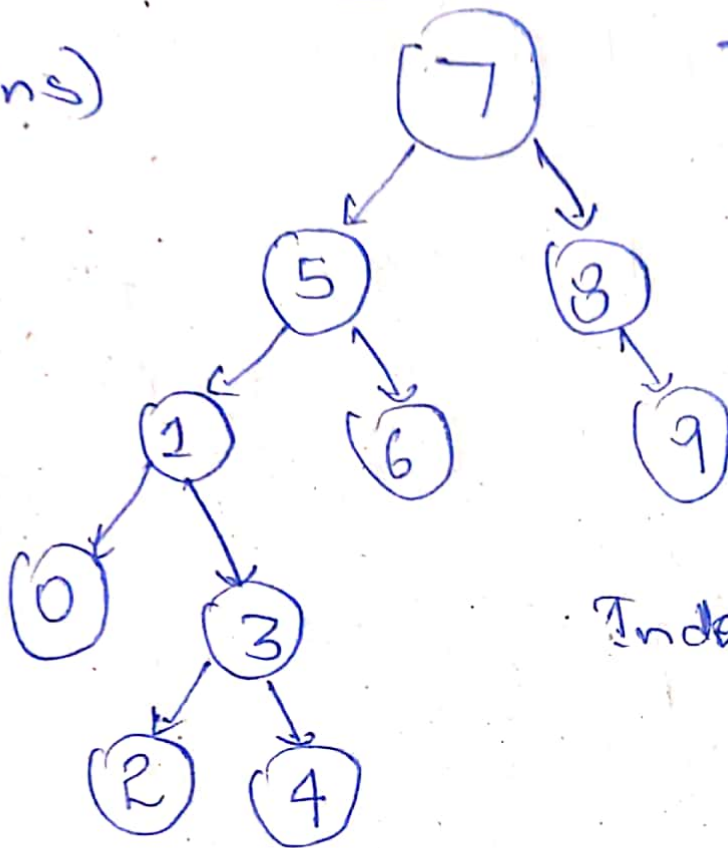
E  $\rightarrow$  30 , F  $\rightarrow$  150 , G  $\rightarrow$  300.

$\therefore$  Final Binary Tree is





7 Ans)



7, 5, 1, 8, 3, 6, 0, 9, 4, 2  
are inserted in order to  
a empty Binary Search  
Tree.

In order: 0 1 2 3 4  
5 6 7 8 9

→ Option c