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Assignment Id : 01

1.a) What are the least and greatest number of leaf nodes in a binary tree with n nodes?

Ans : Least Number of Lead Nodes in a binary tree with n node is **1**

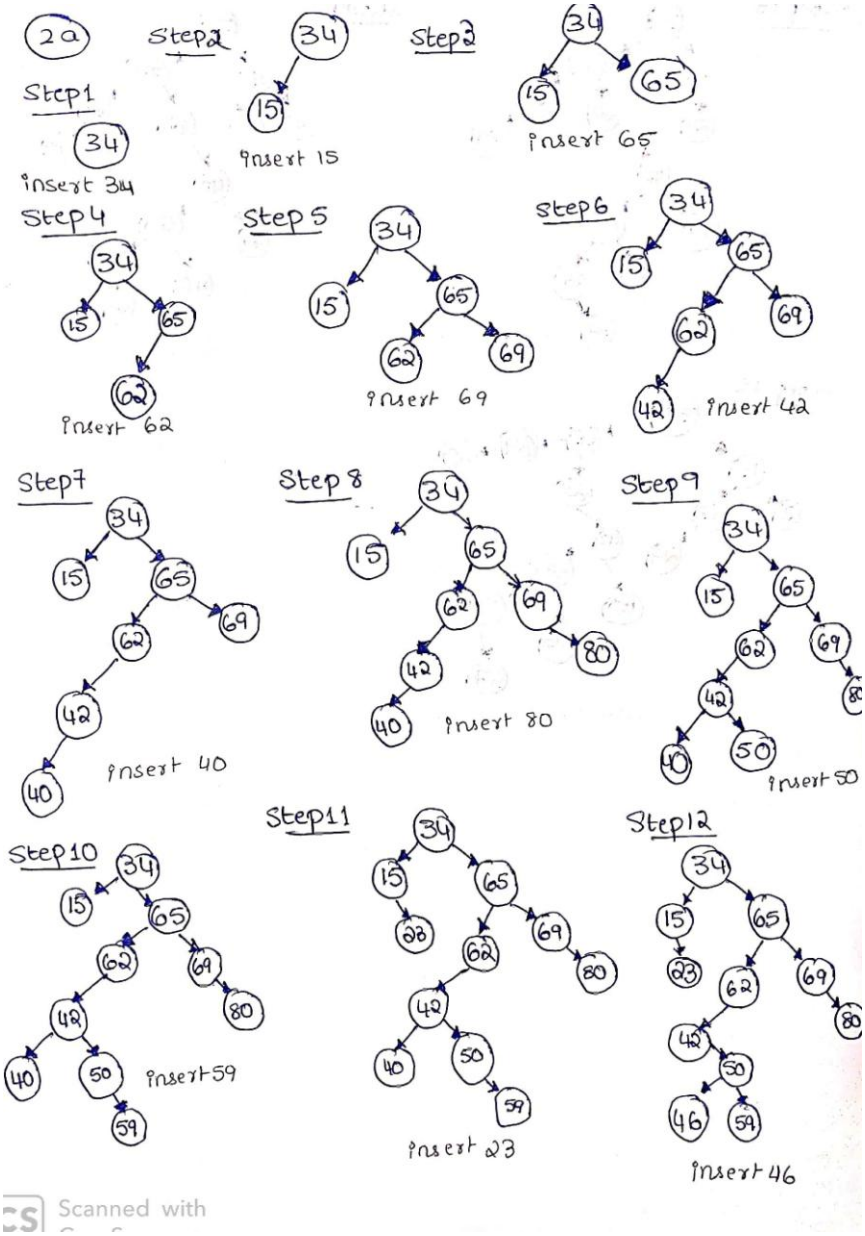
Greatest Number of leaf nodes in a binary tree with n nodes is **(n+1)/2 .**

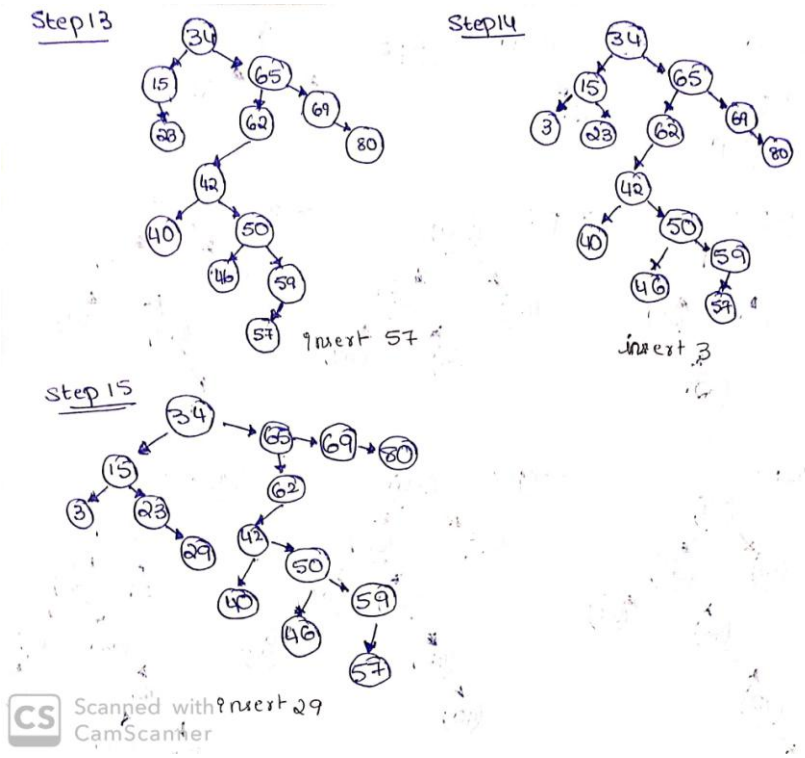
1.b What is the relationship between the number of nodes in a full binary tree and the number of leaf nodes?

Ans : In a full Binary Tree with N leaves contain **2N-1** nodes**.**

2.a) Insert the following 15 randomly generated objects into a binary search tree in the order they are listed

34, 15, 65, 62, 69, 42, 40, 80, 50, 59, 23, 46, 57, 3,29.





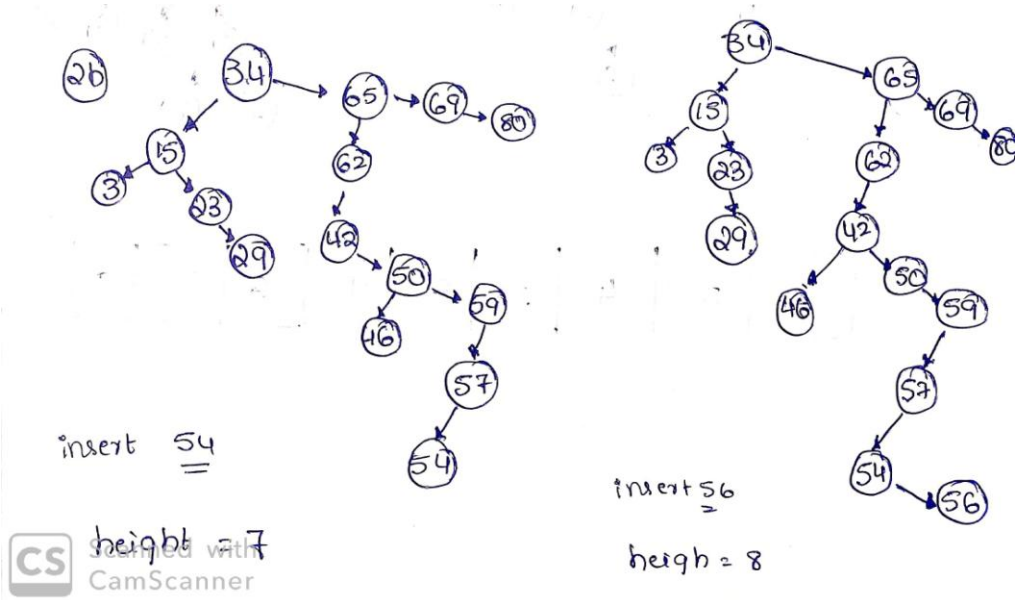
2.b Give two integers that could be inserted into this tree that would increase the height of this tree.

Ans : Height of the tree is 6.

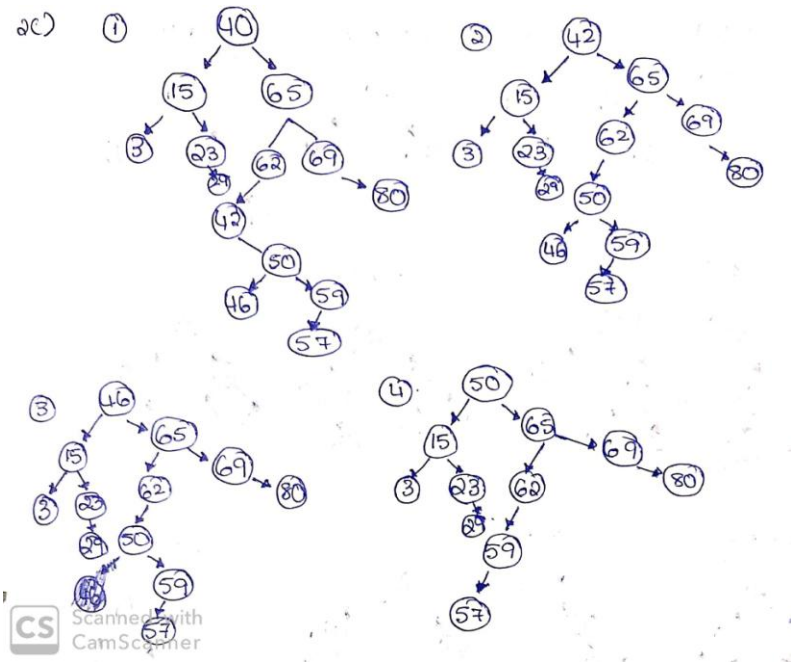
By adding integer we can increase the height of a binary tree

one integer : 54

other integer : 56



2.c Remove the root node four times by copying up the smallest element of the right sub-tree, show the final tree.



3. Insert the following n objects, in the order given, into a binary min-heap and place your answer into the following table

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