**Full Binary Tree** A Binary Tree is full if every node has 0 or 2 children. Following are examples of full binary tree.

18

/ \

15 30

/ \ / \

40 50 100 40

18

/ \

15 20

/ \

40 50

/ \

30 50

18

/ \

40 30

/ \

100 40

***In a Full Binary, number of leaf nodes is number of internal nodes plus 1***  
       L = I + 1  
Where L = Number of leaf nodes, I = Number of internal nodes  
See [Handshaking Lemma and Tree](http://www.geeksforgeeks.org/handshaking-lemma-and-interesting-tree-properties/) for proof.

**Complete Binary Tree:** A Binary Tree is complete Binary Tree if all levels are completely filled except possibly the last level and the last level has all keys as left as possible

Following are examples of Complete Binary Trees

18

/ \

15 30

/ \ / \

40 50 100 40

18

/ \

15 30

/ \ / \

40 50 100 40

/ \ /

8 7 9

Practical example of Complete Binary Tree is [Binary Heap](http://quiz.geeksforgeeks.org/binary-heap/).

**Perfect Binary Tree** A Binary tree is Perfect Binary Tree in which all internal nodes have two children and all leaves are at same level.  
Following are examples of Perfect Binaryr Trees.

18

/ \

15 30

/ \ / \

40 50 100 40

18

/ \

15 30

A Perfect Binary Tree of height h (where height is number of nodes on path from root to leaf) has 2h – 1 node.

Example of Perfect binary tree is ancestors in family. Keep a person at root, parents as children, parents of parents as their children.

**Balanced Binary Tree**  
A binary tree is balanced if height of the tree is O(Log n) where n is number of nodes. A height-balanced binary tree is defined as a binary tree in which the depth of the two subtrees of every node never differ by more than 1.

**Maximum number of nodes in a Binary Tree at level L:**

Let T be a binary tree. For every L ≥ 0, there are no more than 2^L nodes in level L

Let T be a binary tree with λ levels. Then T has no more than 2^λ – 1 nodes

**Sibling Nodes:**

Nodes which have same parent.

**Degree of a tree:**

The number of subtrees of a node is called the degree of the node. In a binary tree, all nodes have degree 0, 1, or 2.

The degree of a tree is the maximum degree of a node in the tree. A binary tree is degree 2.