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Introduction:
Tree is a collection of nodes and among those nodes,one node is
taken as root node.Rest of the nodes are taken as disjoint subsets.
Each subsets is a tree again or a subtree again.

Root -> The first node of the tree.

Parent -> A node is a parent to it's very next descendants.

children -> descendants which are connected by a single edge with a node.

Siblings -> Children of same parents.

Descendants -> they are the sets of nodes which can be reached from
a particular node downwards.

Ancestors -> Between the path of two particular nodes,all other nodes
along the path are called ancestors.

Degree of a node -> Number of direct children of a particular node.

Leaf Nodes -> Nodes with degree 0 are leaf nodes./External nodes./Terminal nodes

Non-Leaf Nodes -> Nodes with degrees > 0 are non-leaf nodes/internal nodes/non-terminal nodes.

Levels -> starts from 1 and Horizontally measured .

Height -> Root is of height 0,So height of a tree starts from 0 onwards till the last reachable node.

Forest -> A collection of tree is a forest.

Binary tree -> Every node can have max true children min 0 children.

Shapes of binary tree -> For n nodes , $2nC_n/n+1$ binary trees can be formed.

Binary trees of max height -> For n nodes, 2^{n-1} binary trees of max height are possible.

Binary trees of max height(labeled nodes) -> For n label nodes,$(2nC_n/n+1)*n!$ binary trees of max height are possible.

Minimum Nodes of a binary tree -> n=h+1 (h=height)

Maximum Nodes of a binary tree ->   n= 2^{h+1} -   1 ; (h=height)

Minimum Height of a binary tree -> $\log_2$ (n+1)-1;
Maximum Height of a binary tree -> h=n-1; (n=node)

In Binary tree ,the number of deg(2) = the number of deg(0) + 1

Strict Binary Tree -> The binary tree which can have either 0 child or 2 children.

For Strict Binary Tree ->
Minimum Nodes -> $(2*h)+1$ (h=height)
Maximum Nodes -> $2^{h+1} - 1$
Minimum Height -> $\log_2(n+1)-1$ (n=nodes)
Maximum Height -> $(n-1)/2$ (n=nodes)
External Nodes(Leaf Nodes)=Internal Nodes(Non-leaf nodes)+1

M-**ary Trees** -> the degree of the tree is M,so in M-ary trees,every nodes of the tree can have from 0 to at most M children.Not more than that.

Strict M-ary Trees -> Every nodes of the tree can have either 0 children or M children.

For M-ary Trees->
Minimum Nodes -> $Mh + 1$ (M=degree,h=height)
Maximum Nodes -> $(M^{(h+1)}-1)/M-1)$ (M=degree,h=height)
Minimum Height -> $h= (n-1)/M$
(M=degree,h=height,n=nodes)
Maximum Height -> $\log_M[n(M-1)+1]-1$
(M=degree,h=height,n=nodes)
External Nodes(Leaf Nodes)
        =(M-1)*(Internal Nodes(Non-leaf nodes))+1