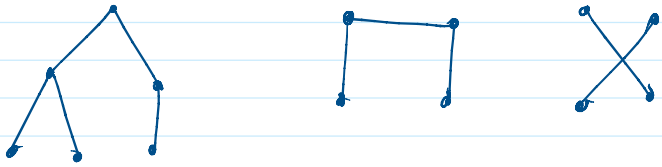
D2014 9.11.20

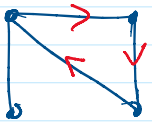
Monday, November 9, 2020 2:02 PM

Tree A Connected acyclic graph G is called a Tree

① Connected ② Acyclic (Have No Cycle)



Tree



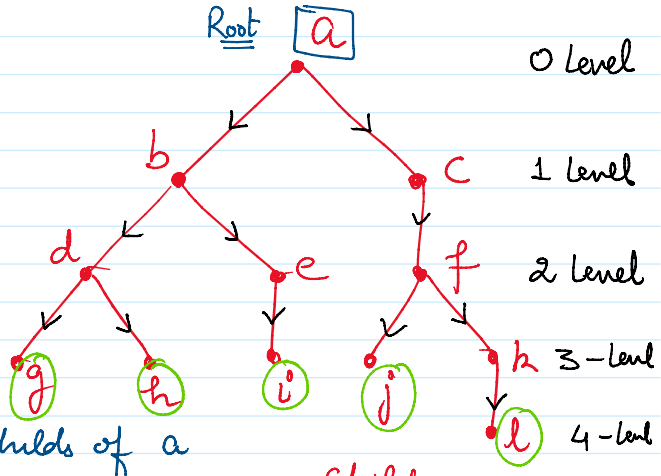
Not a Tree (There is a cycle)

① Node / Vertex :

② Edge / Link.

③ Root : Node / Vertex having Indegree Zero. Called Root

Vertex 'a' is a Root



④ Parent and Child :→

a is a parent of b, c	b, c are the childs of a
b " " " " d, e	d, e " " " " b
d " " " " g, h	g, h " " " " d
e " " " " i	i " " " " e

Child

Off spring

⑤ Leaf :→ The Nodes having no child is called Leaf :

Outdegree of Leaf = 0

g, h, i, j, l → Leaves

⑥ External Nodes : Root & Leaves

⑦ Internal → All other Inbetween Root & Leaf — Internal Nodes.

⑧ Siblings :→ Two or more nodes having same parent is called Siblings

g, h ; j, k d, e b, e Siblings

⑨ Ancestor :→ The Vertices in the path from root to a vertex V are called the Ancestors of V.

Ancestors of g are d, b, a

" " " " e b a

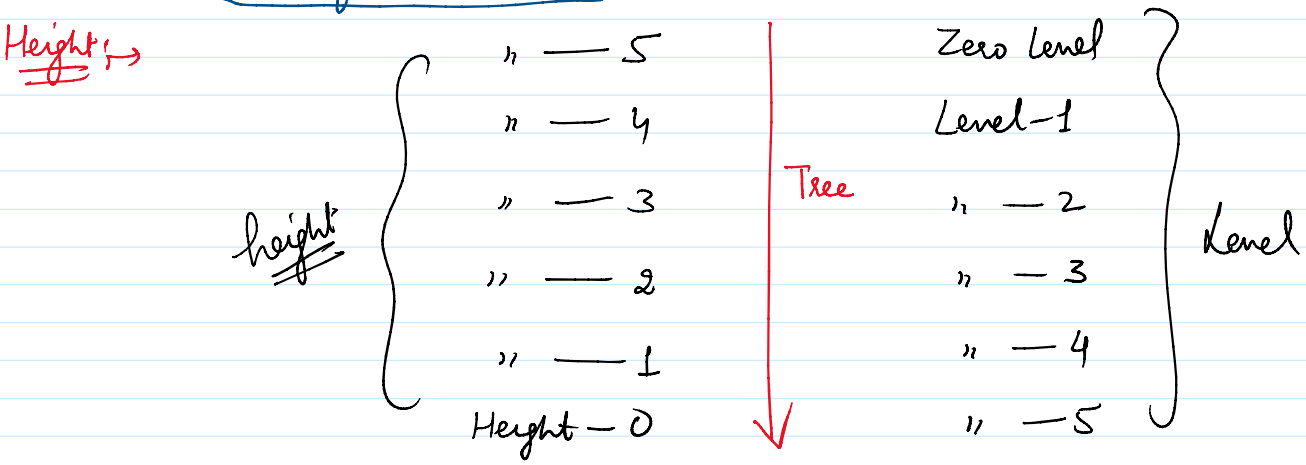
Ancestors of g are d, b, a

" " i " e, b, a

(10) **Descendant**: the descendant of a vertex 'v' are those vertices that have V as Ancestor.

(11) **Level**: Level of a node is an integer value that measure the distance of node from the Root.

Level of Root = Zero



Height of a Node is the length of Longest path from Leaf to Node.

Height of Leaf = 0

(Ex) Height of l = 0

" " g, h, i, j, k = 1

" " d, e, f = 2

" " b, c = 3

" " a (Root) = 4

Note

Height of Root = Height of Tree

Depth → Level

Root Height Leaf

Root

Depth

Leaf

Depth of Root = 0 = Level 0

" " b, c = 1

" " d, e, f = 2

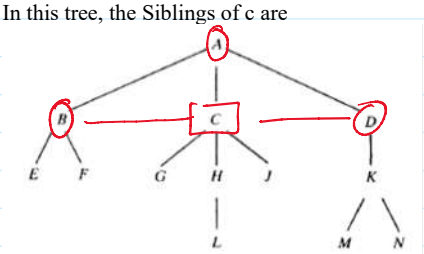
Sub Tree :- A part of Tree

Forest :- A connected graph G is called forest if its all Components are Tree.

In a rooted tree , a node with no child is termed as

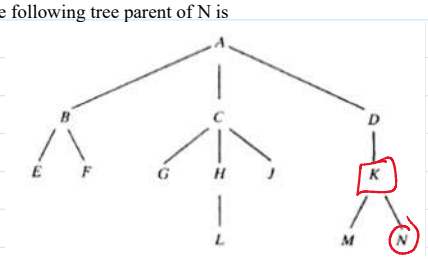
(a) Leaf (b) Internal node (c) Root node (d) None of these

In this tree, the Siblings of c are



(a)H, J, L (b) D, B (c) H, J (d) H, J, K

In the following tree parent of N is



(a) K (b) D (c) A (d) all of these

In a rooted tree, parents of parents of a vertex/Node is termed as

(a)Incident vertex (b) Precedent vertex (c) Descendant vertex (d) Ancestor vertex