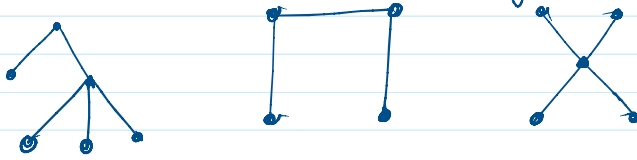Tree :→ A graph G is Called a Tree if

(i) G is Connected.

(ii) G has No Cycle.
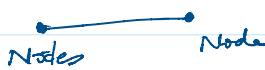
Note :→ Tree is a Simple graph. ie having neither self loop nor parallel edges.

(E)

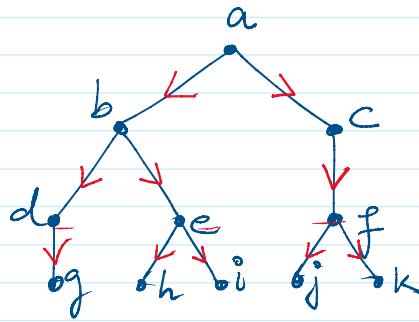② Tree is said to be directed if every edge of the tree assigned a direction.

Terminology Used in Tree :

① Node :→ Vertices / Points

② Link → Edges

③ Root :→ The Node Whose Indegree is Zero is Called the Root of the Tree. The node 'a' is the Root of the Tree graph (Root is always Unique)

④ Path :— A path is the Sequence of nodes. When we traverse form one node to any other node. along the edges.

(E) $a-b-e$, $a-c-f-k$

⑤ Level :→ Level of a node is the Integer Value that measure the distance of the node from the Root.

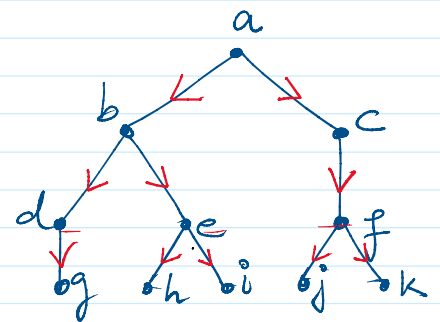Note   Root is always at Zero Level.

a (Root) — 0-level
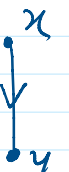
b, c — 1 level

d, e, f — 2 -level

g, h, i, j, k — 3 - Level

$a-b-d-②$

Rooted Tree :→ A rooted tree is a tree which Contain a Unique node Whose Indegree is Zero.

Parent and offsprings :→ If (x, y) is the directed edge. x is parent of y and y is called offsprings or Child of x.
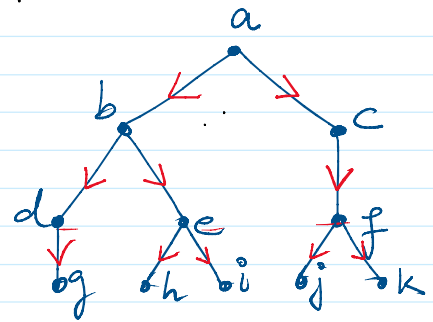
x is parent of y and y is called offsprings or Child of x.

Leaf :→ The nodes of a Tree are called leaves of the Tree if their Outdegree is Zero. (g, h, i, j, k) are the leaves

Leaves are also Called External Nodes or Terminal Nodes.

Siblings :→ The Child of Same parent.

b, c are Siblings.

d, e   "   "

j, k   "   "

h, i   "   "

Interior Nodes / Internal Nodes :→ The Nodes having at least one Child is Called Internal Node.

Ancestor :— Ancestor of a Vertex (Node) other than Root are the nodes in the path from the Root to that Vertex (Node) excluding the Vertex (Node)

Path from a to h $a - b - e - h$

Ancestor of h are a, b, e

Parent of Parent

Descendant ↦ (New generation)   Descendant of Vertex V are those Vertices that have V as the Ancestors.