

Tree Terminology in DSA

A **Tree** is a non-linear data structure that organizes data hierarchically. To study trees effectively, it's important to understand some commonly used **terminologies**:

Tree Terminologies

1. Root

- The topmost node in a tree.
- Every tree has exactly one root node.

2. Parent

- A node that has one or more children.

3. Child

- A node that descends from another node (connected directly to its parent).

4. Siblings

- Nodes that share the same parent.

5. Leaf Node (External Node)

- A node that has no children.

6. Internal Node

- A node that has at least one child.

7. Degree of a Node

- The total number of children of a node.

8. Level of a Node

- The depth or distance of the node from the root.
- Root is at **level 0** (sometimes level 1, based on convention).

9. Height of a Tree

- The longest path from the root to any leaf node.

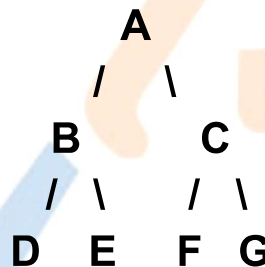
10. Depth of a Node

- The number of edges from the root to that node.

11. Subtree

- A tree formed from any node and all its descendants.

Example-



Terminology	Definition	Example from Tree
Root	The topmost node in a tree.	A is the root node.
Parent	A node that has children.	A is the parent of B and C.

Child	A node that descends from another node.	B and C are children of A.
Siblings	Nodes that share the same parent.	B and C are siblings.
Leaf Node	A node with no children.	D, E, F, G are leaf nodes.
Internal Node	A node that has at least one child.	A, B, C are internal nodes.
Degree	Number of children a node has.	A has degree 2, B has degree 2.
Level	The depth or height from the root (starting from 0).	A: level 0, B/C: level 1, D/E/F/G: level 2
Height	Longest path from node to a leaf.	Height of tree is 2 (A → B → D).
Depth	Number of edges from root to the node.	Depth of F is 2 (A → C → F).
Subtree	A tree formed from a node and its descendants.	Subtree of B includes D and E.