

Definition

A tree is a non-linear data structure that consists of a root node and potentially many levels of additional nodes that form a hierarchy. A tree can be empty with no nodes called the **null** or empty tree or a tree is a structure consisting of one node called the **root** and one or more subtrees.

Terminologies used in Trees

- **Root** - the top most node in a tree.
- **Parent** - the converse notion of child.
- **Siblings** - nodes with the same parent.
- **Descendant** - a node reachable by repeated proceeding from parent to child.
- **Leaf** - a node with no children.
- **Internal node** - a node with at least one child.
- **Degree** - number of sub trees of a node.
- **Edge** - connection between one node to another.
- **Path** - a sequence of nodes and edges connecting a node with a descendant.
- **Level** - The level of a node is defined by $1 +$ the number of connections between the node and the root.
- **Height** - The height of a node is the length of the longest downward path between the node and a leaf.
- **Forest** - A forest is a set of $n \geq 0$ disjoint trees.