
SNS COLLEGE OF ENGINEERING
COIMBATORE-107


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INSTITUTIONS

Binary Tree

Binary Tree

- Binary tree is a special type of tree data structure in which every node can have a **maximum of 2 children**. One is known as left child and the other is known as right child.
- A tree in which every node can have a maximum of two children is called as Binary Tree.

Different types of binary tree:

1. **Strictly Binary Tree**

- In strictly binary tree, every node should have exactly two children or none
- A binary tree in which every node has either two or zero number of children is called Strictly Binary Tree
- Strictly binary tree is also called as **Full Binary Tree** or **Proper Binary Tree**

Complete Binary Tree

- A binary tree in which every internal node has exactly two children and all leaf nodes are at same level is called Complete Binary Tree.
- Complete binary tree is also called as **Perfect Binary Tree**
- In complete binary tree all the nodes must have exactly two children and at every level of complete binary tree there must be 2^{level} number of nodes.

Extended Binary Tree

- A binary tree can be converted into Full Binary tree by adding dummy nodes to existing nodes wherever required.
- The full binary tree obtained by adding dummy nodes to a binary tree is called as Extended Binary Tree.

Properties

- Trees are used to represent data in hierarchical form.
- Binary tree is the one in which each node has maximum of two child- node.
- The order of binary tree is ‘2’. Binary tree does not allow duplicate values.
- While constructing a binary, if an element is less than the value of its parent node, it is placed on the left side of it otherwise right side.

Advantages of Binary Tree

- Searching in Binary tree become faster.
- Binary tree provides six traversals.
- Two of six traversals give sorted order of elements.
- Maximum and minimum elements can be directly picked up.
- It is used for graph traversal and to convert an expression to postfix and prefix forms.