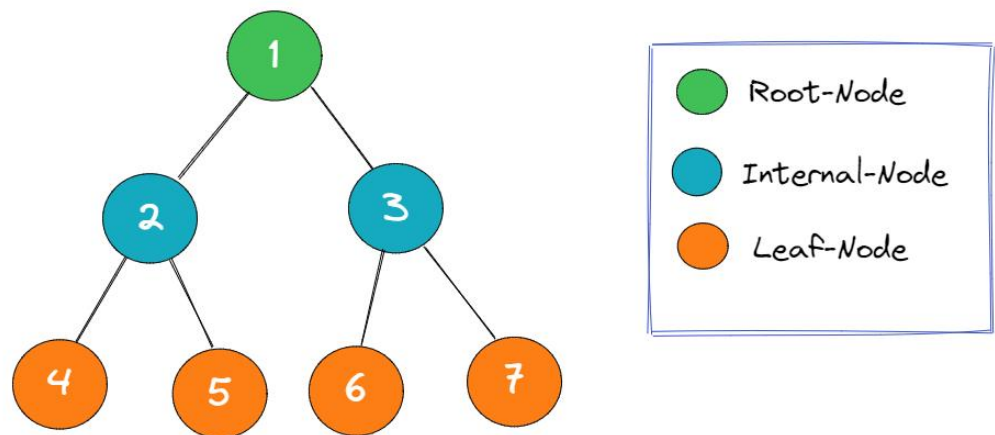


Tree Data Structure

- In simple words we can say it is used to explain the hierarchical relationships.
example - family tree.
- This hierarchical structure of trees is used in Computer science as an abstract data type for various applications like data storage, search and sort algorithms.



Note:- There are some terminology Like Sibling, Cousin, Ancestor .
Let's take some example:-

1. Sibling :-

If we take node ● 2 & ● 3 . They are sibling because node ● 1 is its parent.
Same as for node ● 4 & ● 5 . Its parent node is ● 2 .

2. Cousin :-

If we take node ● 4 & ● 5 . They are cousins of node ● 6 & ● 7 , Because node ● 2 & ● 3 are sibling and its parent node is ● 1 .

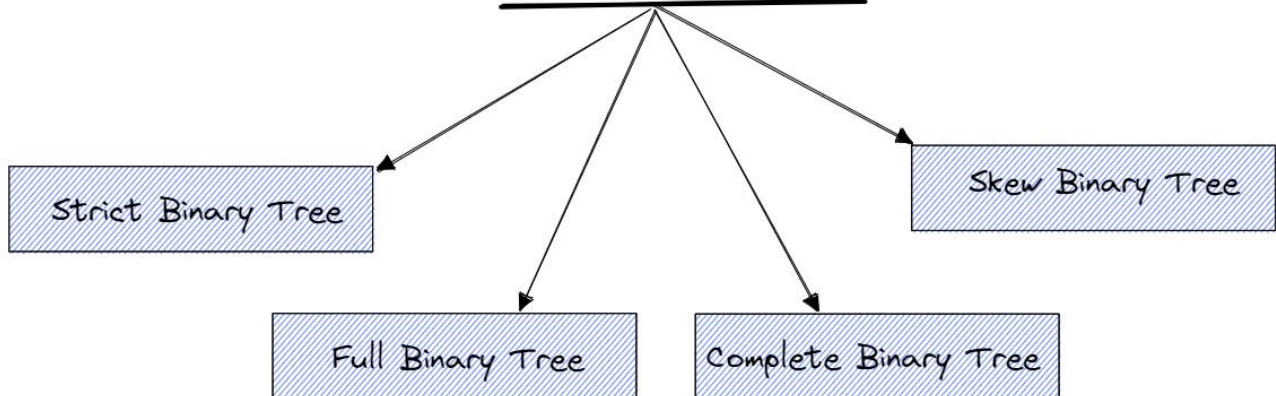
3. Ancestor :-

for node ● 4 & ● 5 , ● 6 & ● 7 , There Ancestor is node ● 1 .

Binary Trees

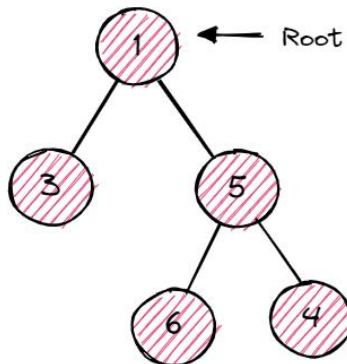
- A tree is called binary tree if node has zero, one or two children.
- We can visualize a binary tree as consisting of root node, left child & right child.

Types of Binary Trees



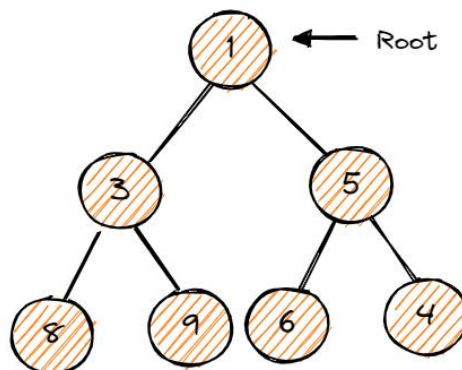
1. Strict Binary Tree :-

A binary tree is called strict binary tree if each node has exactly two children or no children.



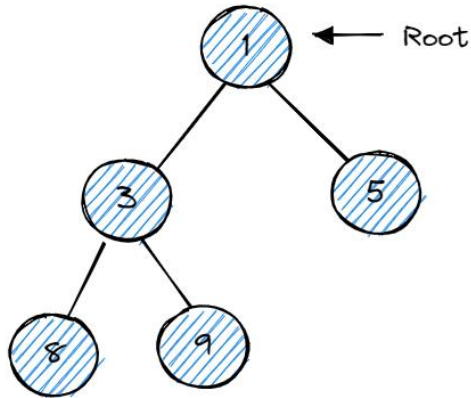
2. Full Binary Tree :-

A binary tree in which each node have two children and all the leaf nodes are on the same level.



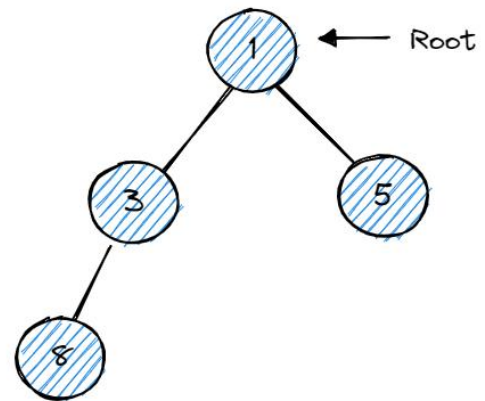
3. Complete Binary Tree :-

→ Binary tree in which all the levels are completely filled except possibly the lowest one, which is filled from the left.



✓ Complete Binary tree

✓ Full Binary tree

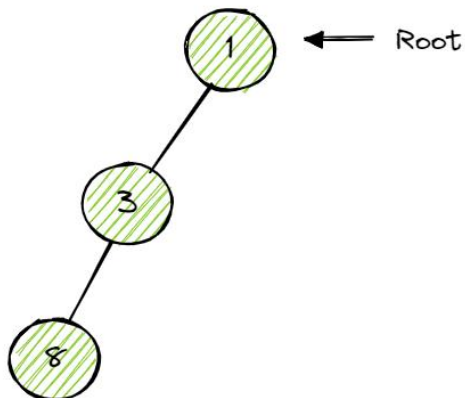


✓ Complete Binary tree

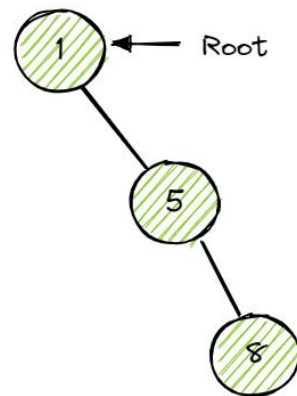
✗ Full Binary tree

4. Skew Binary Tree :-

→ Binary tree in which every parent has exactly one child.



Left-Skew
Binary tree



Right-Skew
Binary tree