



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



DEPARTMENT OF INFORMATION TECHNOLOGY

19ITT101-PROGRAMMING IN C AND DATA STRUCTURES

I YEAR - II SEM

UNIT 5 – Trees

TOPIC 2 – Binary Search Tree



Binary Search Trees

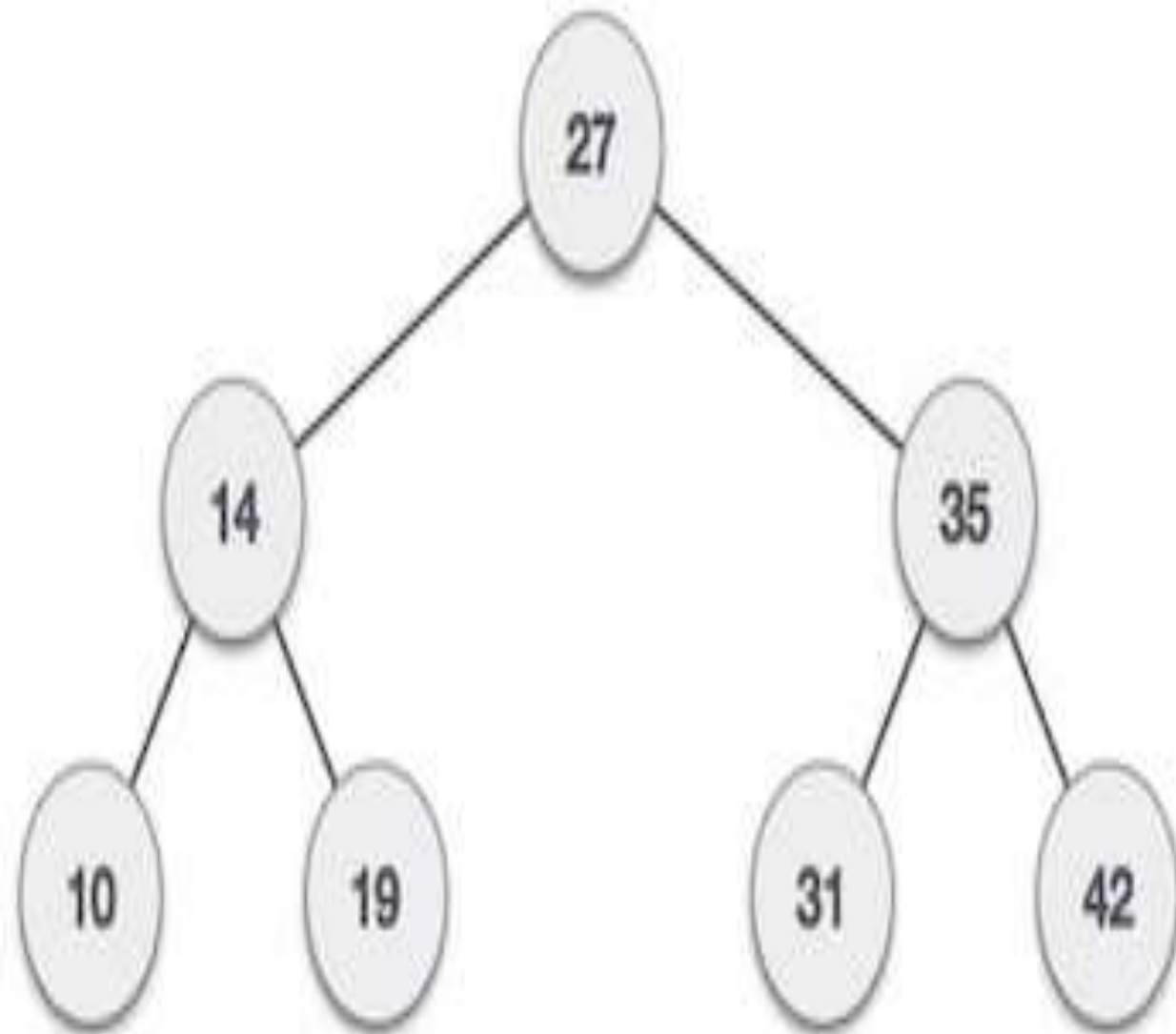


- A Binary Search Tree (BST) is a tree in which all the nodes follow the below-mentioned properties –
 - The value of the key of the left sub-tree is less than the value of its parent (root) node's key.
 - The value of the key of the right sub-tree is greater than or equal to the value of its parent (root) node's key

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left_subtree (keys) < node (key) ≤ right_subtree (keys)
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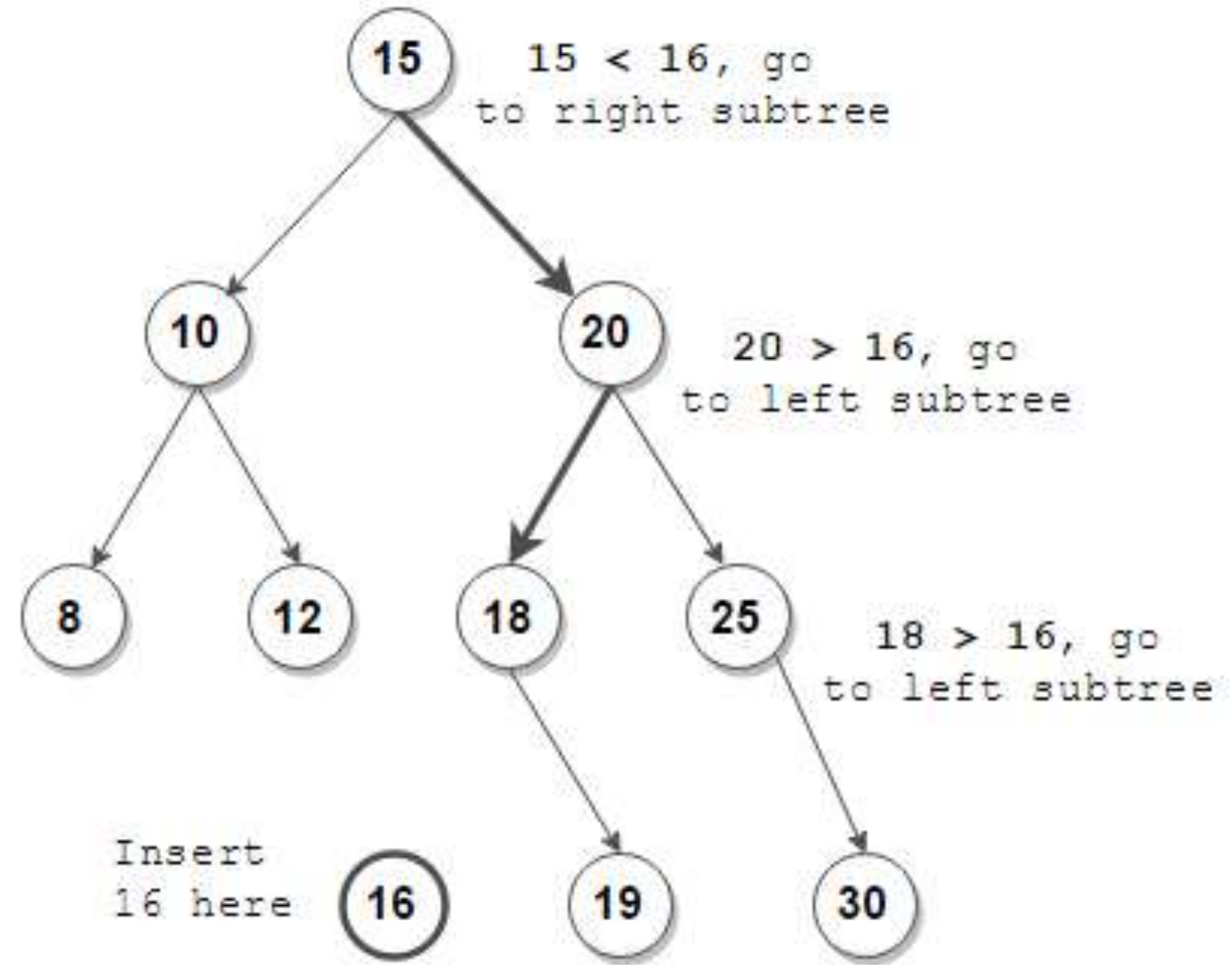
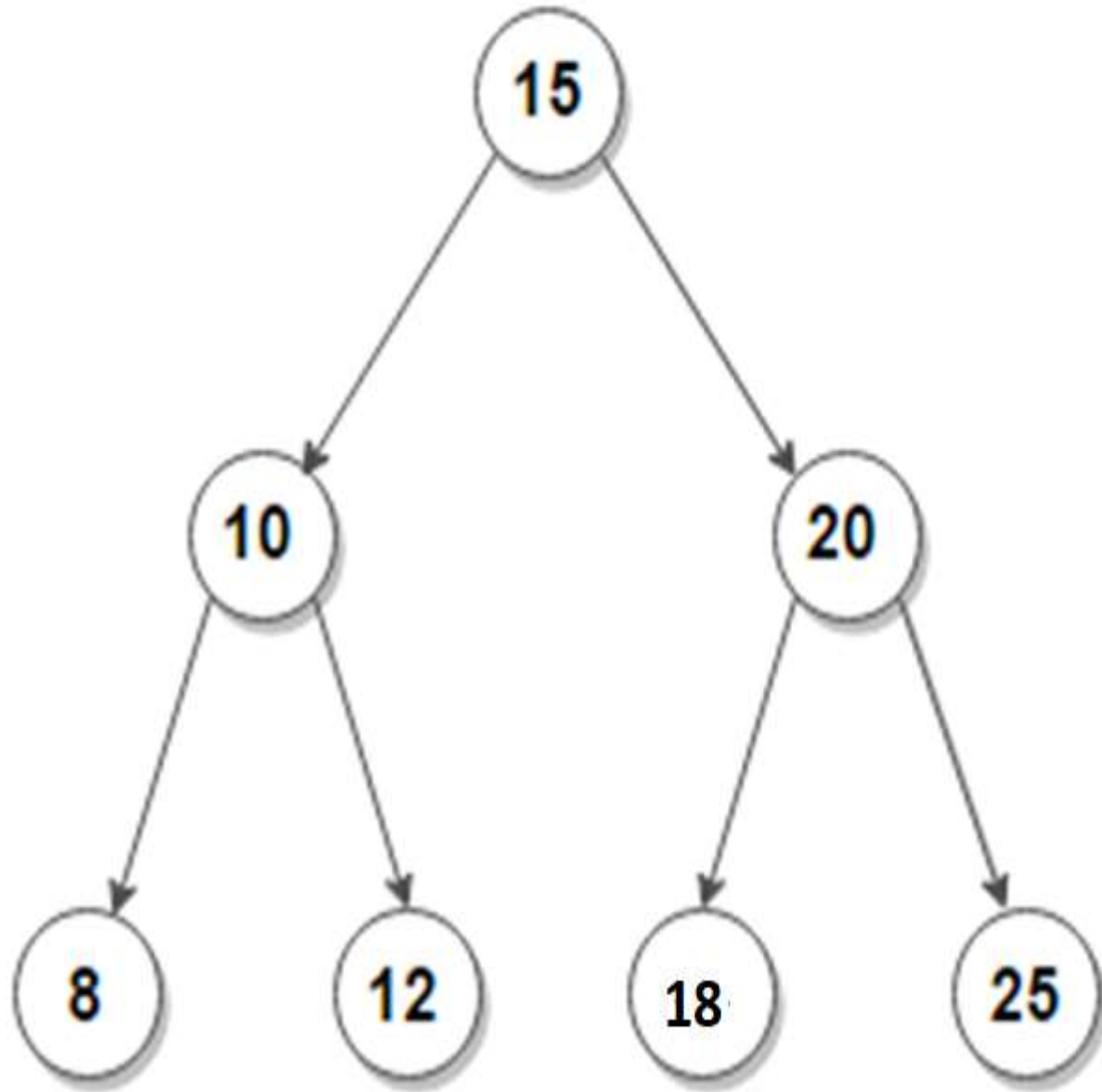
Operations of Binary Search Tree



- **Search** – Searches an element in a tree.
- **Insert** – Inserts an element in a tree.
- **Delete** – Delete an element in a tree.
- **Pre-order Traversal** – Traverses a tree in a pre-order manner.
- **In-order Traversal** – Traverses a tree in an in-order manner.
- **Post-order Traversal** – Traverses a tree in a post-order manner.



Insertion



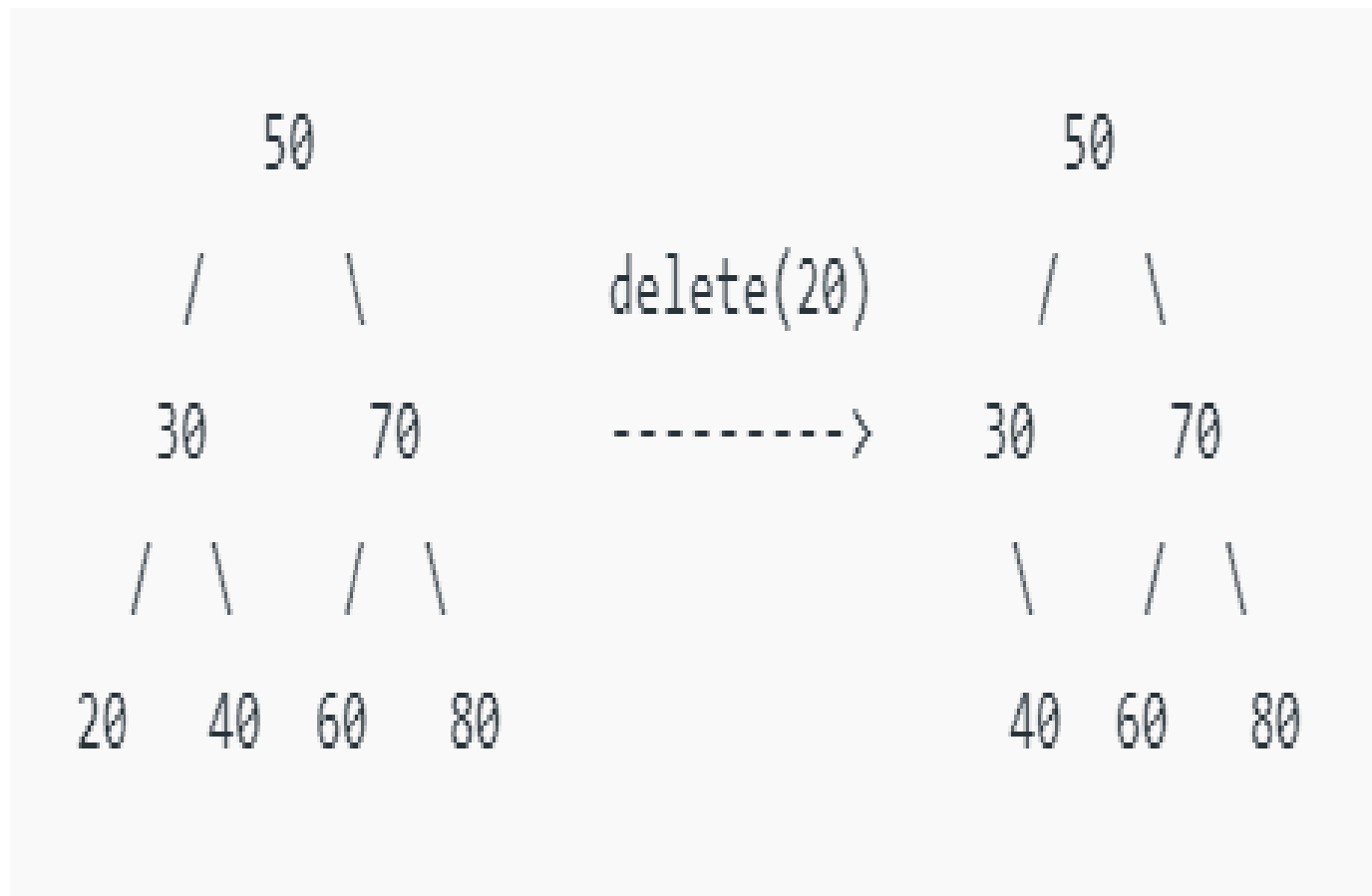
Insert (root, 16)



Deletion

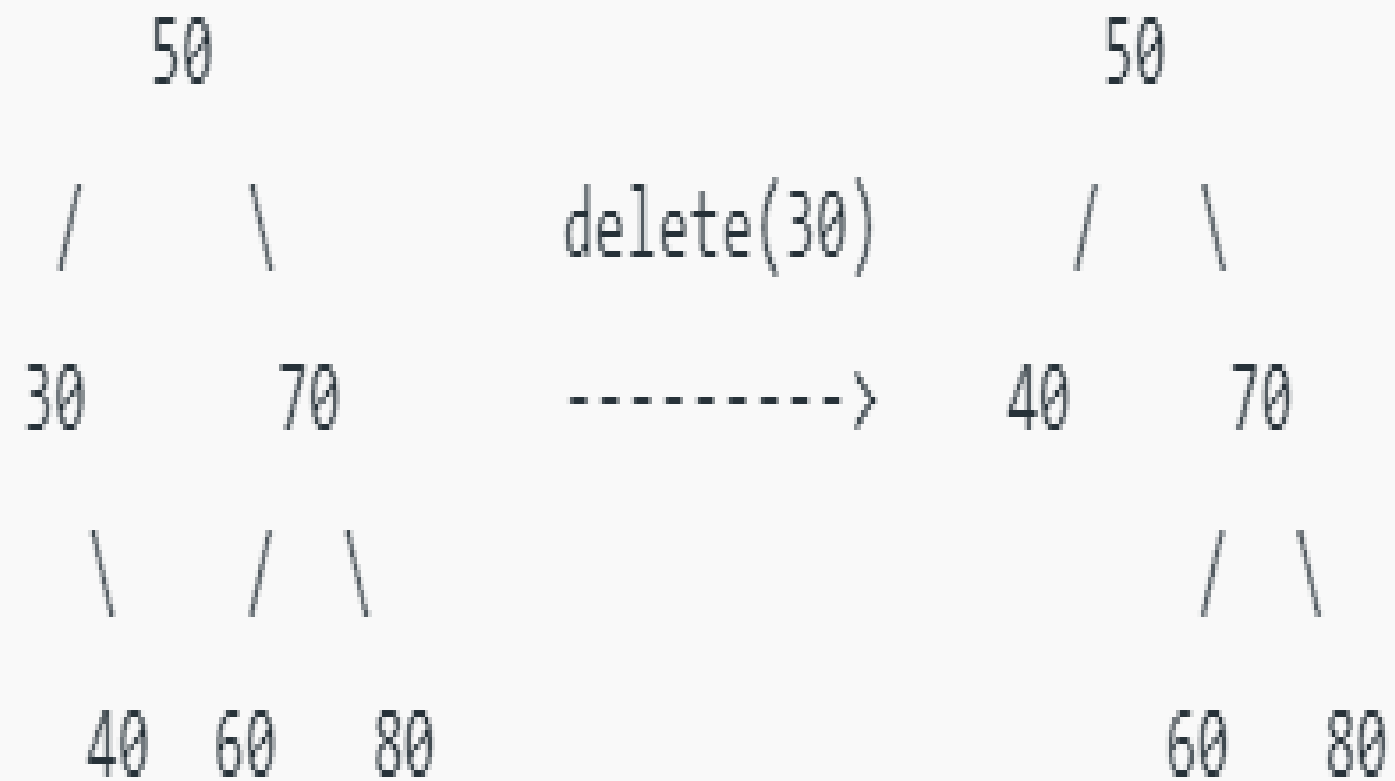
➤ **Node to be deleted is the leaf:**

Simply remove from the tree.





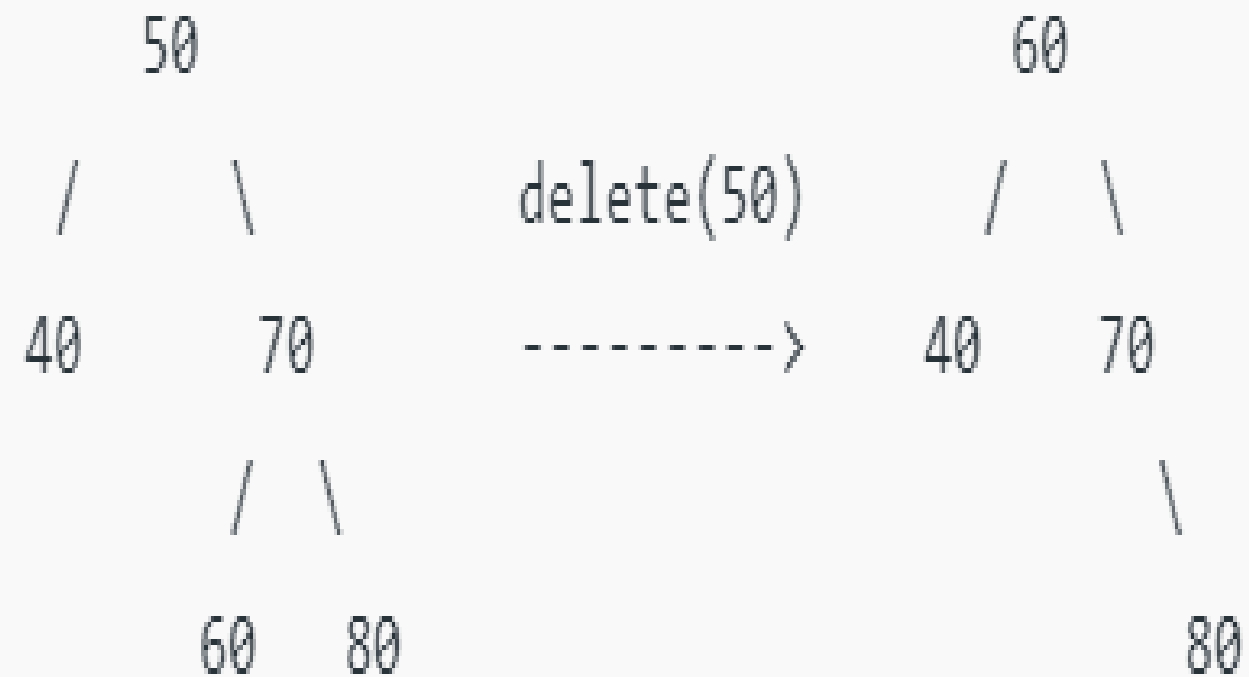
Deletion



- **Node to be deleted has only one child:**
Copy the child to the node and delete the child



Deletion



➤ Node to be deleted has two children:

Find inorder successor of the node. Copy contents of the inorder successor to the node and delete the inorder successor. Note that inorder predecessor can also be used.