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Binary Search Tree

Tree

What is BST?

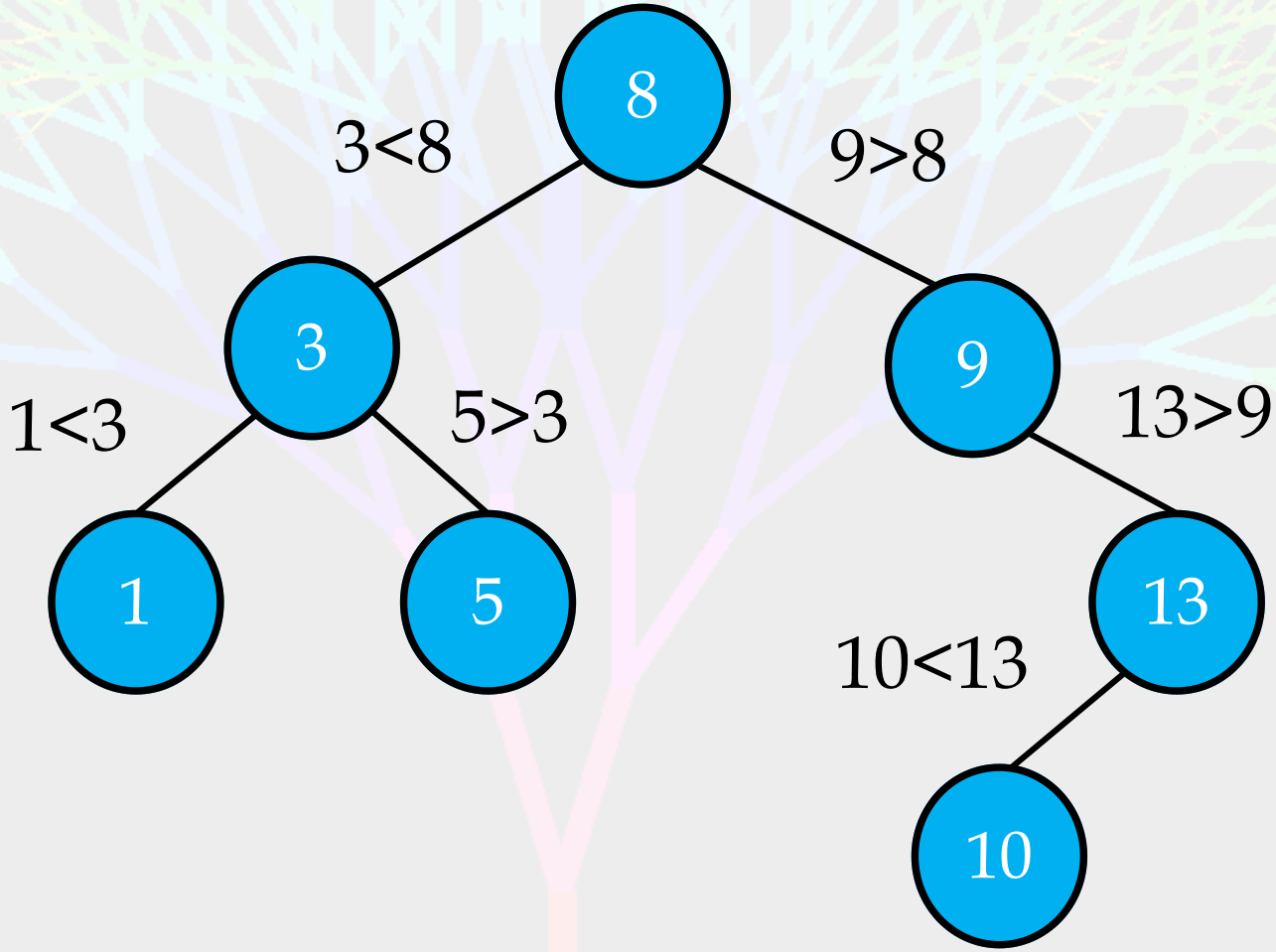
- BST is a binary tree in which for every node, it follows three condition:
  i. First value is the root node of the tree.
  ii. Left child < Node
  iii. Right child > Node

- Some algorithm of BST is:
  - Searching
  - Insertion
  - Deletion

- Tree traversal:
  - Pre order: Root, Left, Right
  - In order: Left, Root, Right
  - Post order: Left, Right, Root

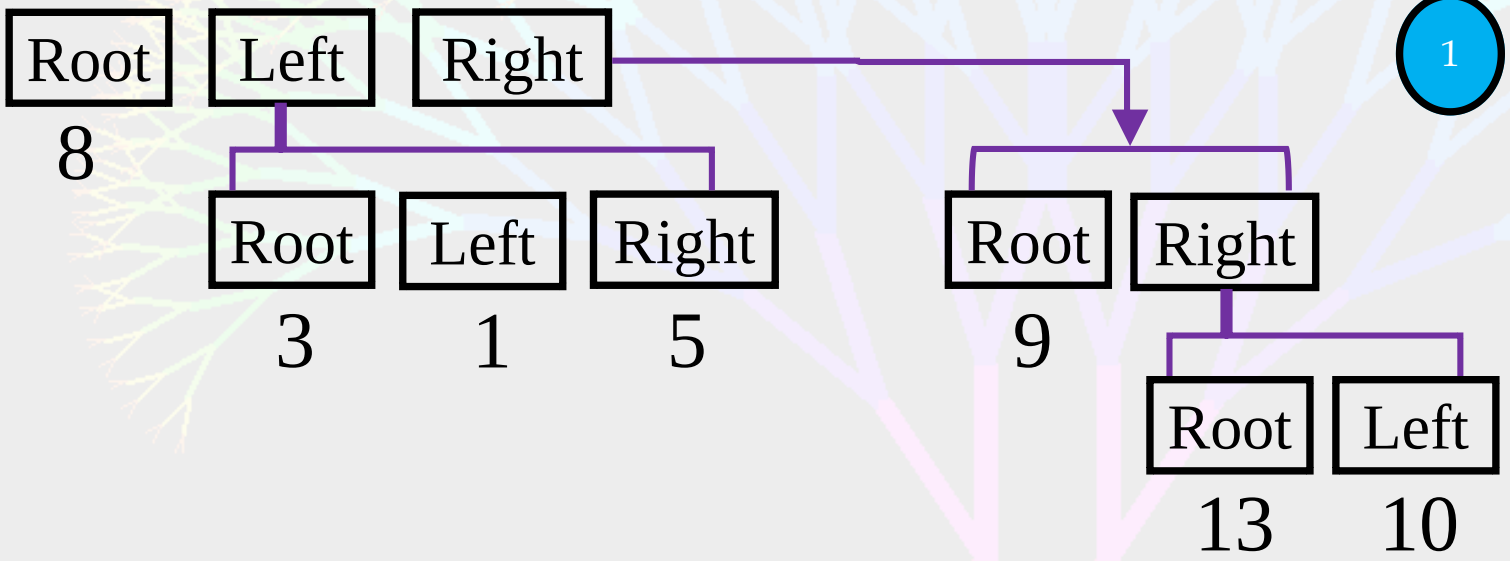
Construct Binary Search Tree

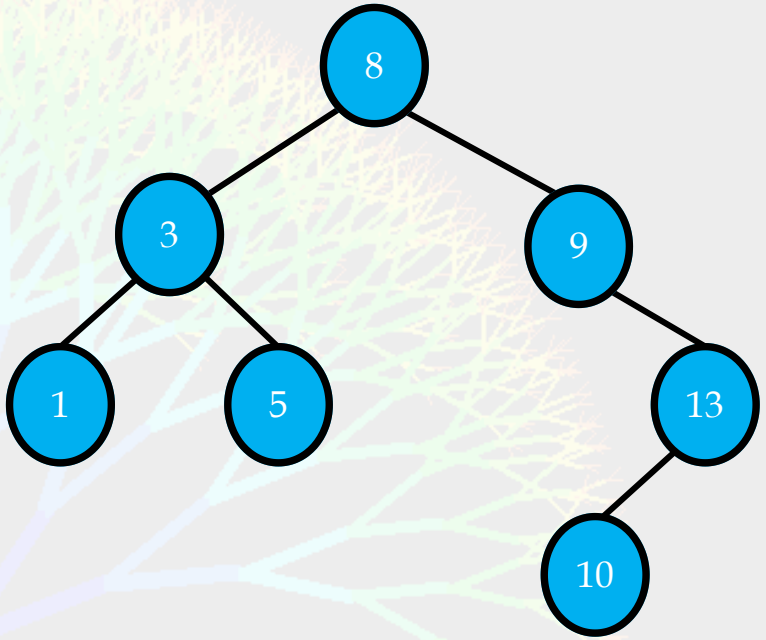
The dataset is: 8, 3, 9, 13, 5, 10, 1



Pre-Order Tree Traversal

The dataset is: 8, 3, 9, 13, 5, 10, 1



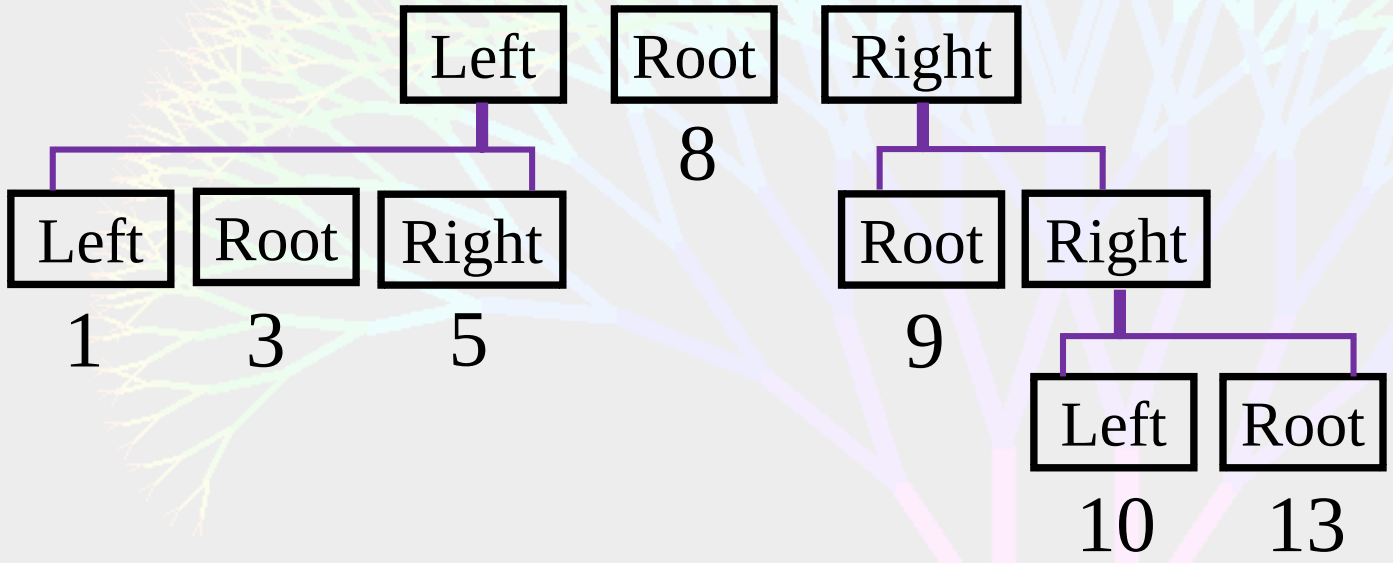


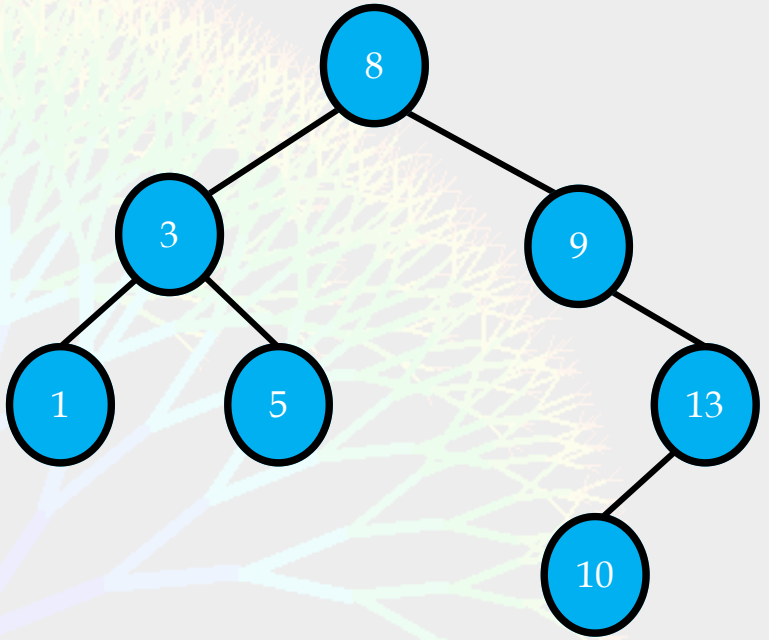
Pre-Order traversal:

8, 3, 1, 5, 9, 13, 10

In-Order Tree Traversal

The dataset is: 8, 3, 9, 13, 5, 10, 1





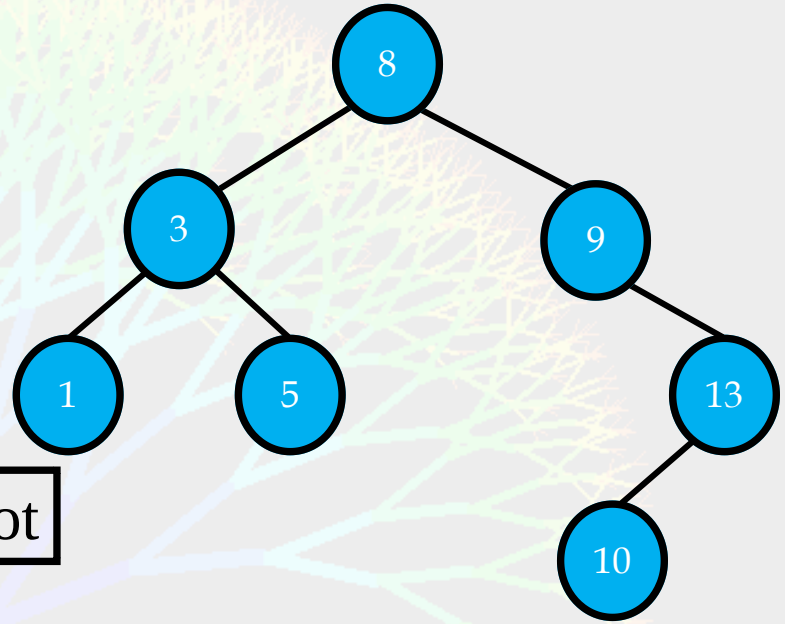
- **In-Order traversal arrange the dataset sorted.**

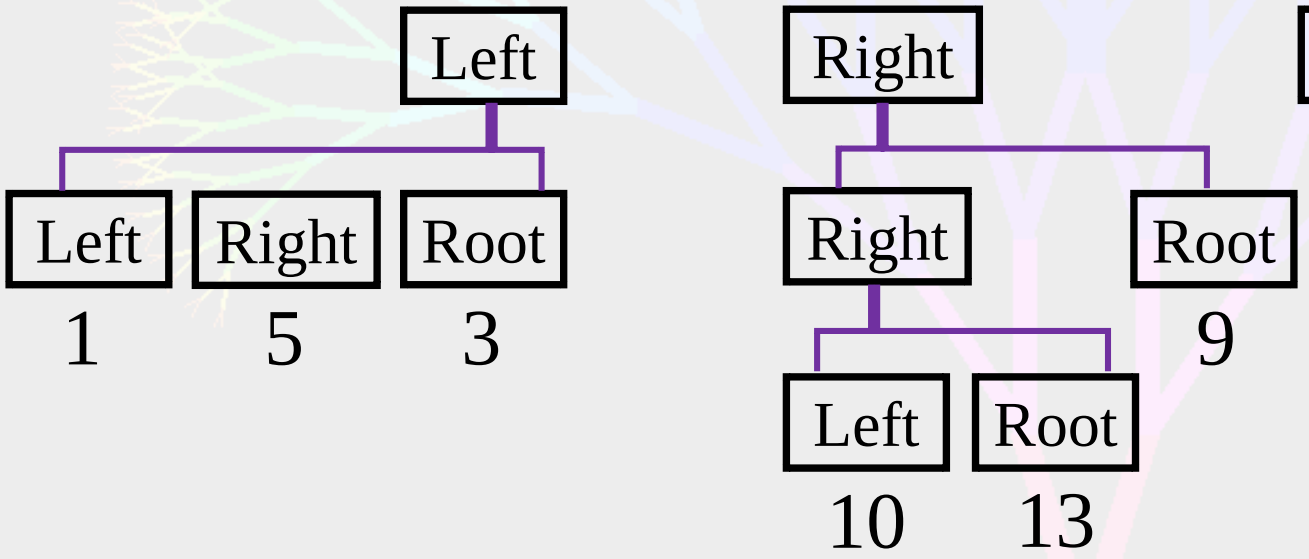
In-Order traversal:

1, 3, 5, 8, 9, 10, 13

Post-Order Tree Traversal

The dataset is: 8, 3, 9, 13, 5, 10, 1





Post-Order traversal:

1, 5, 3, 10, 13, 9, 8

Applications of BST

- Any decision make
- Used to implement simple sorting algorithms
- It is useful for large dataset. (Library books arrangement, dictionary.)
- Used in many search applications where data are constantly entering and leaving
- We generate BST for random dataset.
- If data is sorted then in BST every internal node must be contain a single child.
- This Binary Search Tree property makes it ideal for search operations since we can accurately determine at each node whether the value is in the left or right sub-tree. This is why the Search Tree is named.

Thank You

Any Question ?