DATA STRUCTURES AND ITS APPLICATIONS
UE19CS202

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DATA STRUCTURES AND ITS APPLICATIONS

BST Implementation using Dynamic Allocation: Insertion

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Binary Search Tree – An Application of Binary Tree

Background

Problem : find a target key in a list of elements

Sequential: Potentially enumerate every key

Ordered List: Searching can be done on logn

Frequent insertions and deletions : Ordered List is much slower

Solution: Binary Trees provide an excellent solution to this by organizing every element in the list as a node in the tree

Binary Search Tree: Definition

A Binary Search Tree is a binary tree which has the following properties:

- all the elements in the left subtree of a node **n** are less than the contents of node **n**
- all the elements in the right subtree of a node **n** are greater than or equal to the contents of node **n**

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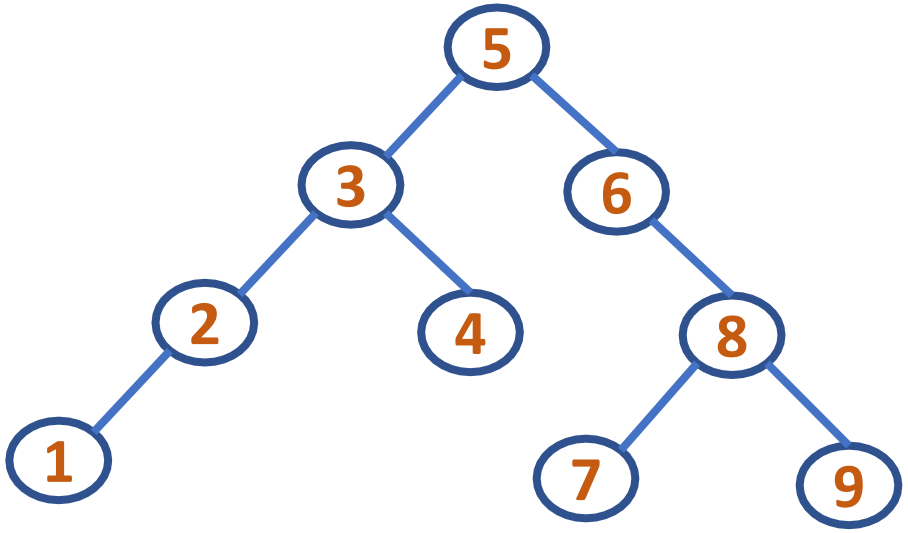
Binary Search Tree – An Application of Binary Tree

A Binary Search Tree with the nodes inserted in the order:
5, 3, 6, 4, 2, 8, 1,7, 9



Binary Search Tree - Implementation

Linked implementation

Here every node will have its own **info** along with the **links to left child** and **right child**

```
typedef struct tree_linked
{
  int info;
  struct tree_linked *left,*right;
}NODE;

NODE *root=NULL; //root points to Root of the tree and initially it is null
```

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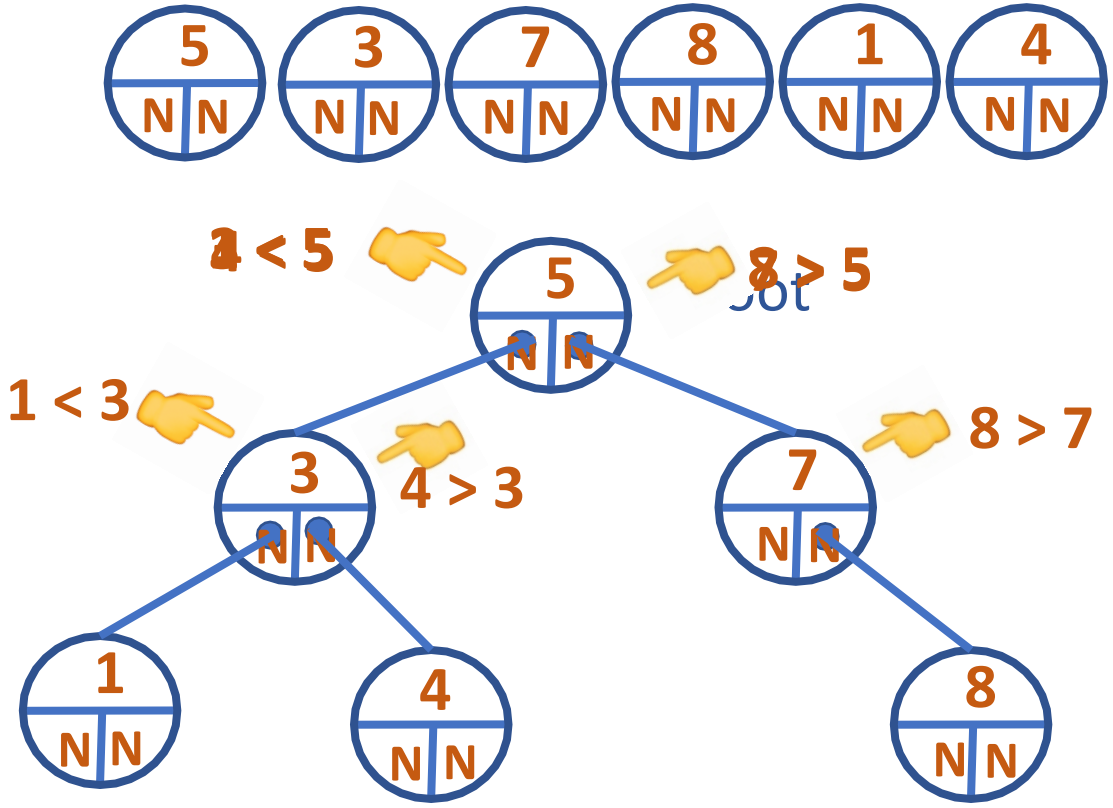
Binary Search Tree - Implementation

Linked implementation: 5, 3, 7, 8, 1, 4



THANK YOU

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