

# Analysis and Design of Algorithms

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Branch: CSE

## AIM:

1. Create a binary search tree by reading the inputs from file 'numbers.txt'. Display the inorder walk of the tree.
2. Compute the lowest common ancestor of binary search tree. Take the input from user after displaying the binary tree (in -order walk)

## Question 1:

### Pseudo Code:

Define/Create a Binary Search Tree

Input values

Define a Inorder function to print values in Inorder Traversal

START

inorder(p : pointer to a tree node)

    if p != nullptr

        inorder(p->left)

        Visit the node pointed to by p

        inorder(p->right)

    end if

end procedure

END

## Output:

```
Windows PowerShell
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PS C:\Users\DELL\OneDrive\Desktop\Labs> python -u "c:\Users\DELL\OneDrive\Desktop\Labs\IIIT FUNE LABS\3 Third Sem\Analysis and Design of Algorithms\LAB 3\Q1.py"
Binary Search Tree : [4, 2, 3, 1, 7, 6]
Inorder Traversal : 1 2 3 4 6 7
PS C:\Users\DELL\OneDrive\Desktop\Labs> █
```

## Question 2:

### Pseudo Code:

Define/Create a Binary Search Tree

Input values

Define a function to print values in Inorder Traversal

Display Inorder traversal of Tree

Define a function to find Lowest Common Ancestor of user inputted values

Take input from user for finding Lowest Common Ancestor

START

lowestCommonAncestor(root, v1, v2) {

    node = root

    if node is None:

        return None

    if node.val > v1 and node.val > v2:

        return lowestCommonAncestor(node.left,v1,v2)

    elif node.val < v1 and node.val < v2:

        return lowestCommonAncestor(node.right,v1,v2)

    else

        return node

}

END

(\*node.val is current node; v1, v2 are user inputted values)

### Output:

```
Windows PowerShell
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PS C:\Users\DELL\OneDrive\Desktop\Labs> python -u "c:\Users\DELL\OneDrive\Desktop\Labs\IIIT PUNE LABS\3 Third Sem\Analysis and Design of Algorithms\LAB 3\Q2.py"
Enter no.of Nodes : 6
Enter nodes : 4 2 3 1 7 6
Inorder Traversal : 1 2 3 4 6 7
Enter two values of nodes in bst : 1 3
Lowest common ancestor of entered values is : 2
PS C:\Users\DELL\OneDrive\Desktop\Labs> 
```