Analysis and Design of Algorithms

Semester III, Year **2021-22**

Lab - 3 Date : 06-10-2021

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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)

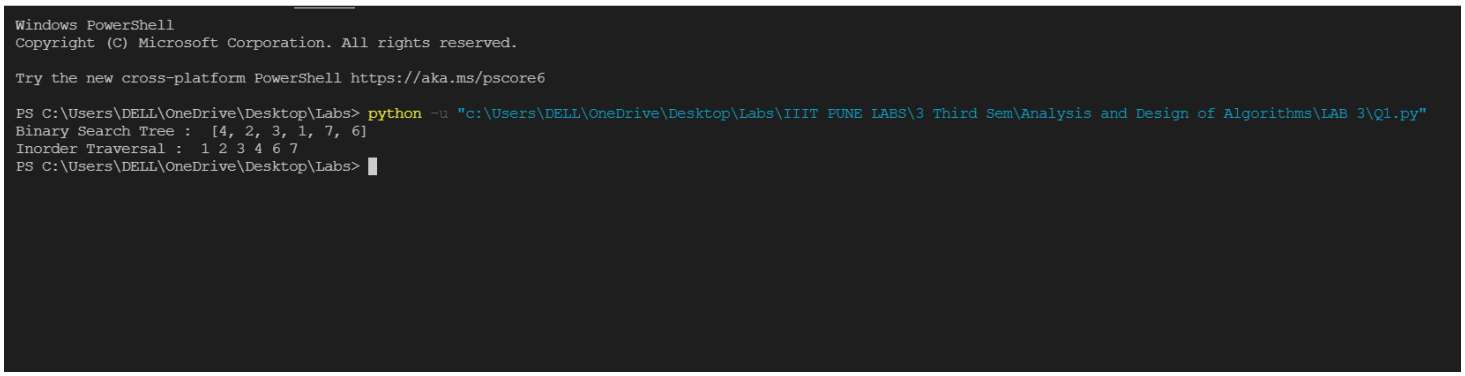
Question 1:

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:



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: