**COMSATS University Islamabad**

**FALL 2022**

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| **Course Title:** | Data Structures and Algorithms | | | | **Course Code:** | | CSC211 | **Credit** **Hours**: | | 4(3,1) |
| **Instructors:** | Aamer Mehmood | | | | **Programme Name** | | BSE | | | |
| **Semester:** | 2nd | **Batch:** | SP22 | **Section:** | A | | **Date:** | |  | |
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**LAB ASSIGNMENT 3**

Pseudocode:

1. Define the Node Class, representing a single node.
2. Define BST Class and create a node type variable.
3. Create InsertRecursive function that takes a currentnode and a value to be inserted.
4. In the InsertRecursive function, If the currentnode is equal to the nullptr, return value inserted into the root.
5. If the value is less than the value of currentnode, then recursively call insertRecursive to insert value to the left side of the currentnode until it reaches nullptr or value is greater than value of currentnode.
6. If the value is greater than the value of currentnode, the recursively call insertRecursive to insert value to the right side of the currentnode until it reaches the nullptr or value is less than value of currentnode.
7. After calling the InsertRecursive recursively, It returns the main root.
8. Create a searchRecursive function that takes currentnode and a value to be searched.
9. In the searchRecursive function, If the currentnode is equal to the nullptr then it returns false.
10. If value to be searched is equal to value of currentnode, then it returns true
11. If value to be searched is less than value of the currentnode, it recursively calls the searchRecursive function until nullptr or value is reached or greater than currentnode.
12. If value to be searched is greater than the value of currentnode, it recursively calls the searchRecursive function until nullptr or the value being search is reached or is less the currentnode.
13. Create a InOrderTraversalRecursive function that takes currentnode.
14. Until nullptr is reached, It displays the data in InOrderTravesal using recursion.
15. Create a insert function the takes value and it assigns the value to the tree using insertRecursive function.
16. Create a search function the takes value and searches it in tree using searchRecursive Function.
17. Create a inordertraversal function that displays the tree in in order form.
18. In main function, create a tree and insert values in to it using insertfunction
19. To display the tree values, display it using inordertraversal function.
20. Search the value in the tree using the search function.