

Data Structures and Algorithms Lab

07. Trees Part III

Subject Code: 17ECSP201

Lab No: 07

Semester: III

Date: 10 Oct, 2017

Batch: C2

Question: Computer Representation of a Binary Search Tree

Objective: Usage of list representation to implement a BST and its operations

Implement and add the following functions to the BST code that was implemented in the lab number 07. You are supposed to implement as many functions as you can in the given time slot.

1. Implement the recursive Tree search algorithm given below:

TREE-SEARCH (x, k)

If x = NULL or k = key[x]

then return x

If k < key[x]

then return TREE-SEARCH(left[x], k)

else return TREE-SEARCH(right[x], k)

2. Count and print the number of edges in the tree
3. Find and delete all the duplicate nodes from the tree.
4. Count the number of nodes having value greater than the given value K
5. Print the in-order predecessor of the given item
6. Print the in-order successor of the given item
7. Find the minimum valued item from the tree
8. Make a duplicate copy of the existing binary search tree. The function is passed with new root initialized to NULL and existing root of the tree. Wisely decide the return type of the function.
9. Print the address of the root node
10. Find and print the number of comparisons made to search a given item from the tree
11. Count the number of nodes present at level 1 of the tree

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12. Implement the `insert_into_bst` function using recursion
13. Count and print the number of leaf nodes present in the tree
14. Find the memory occupied by the tree in terms of bytes
15. Find the number of edges between root node and the largest element in the tree

**** Happy Coding ****