COMP 203 Data Structures and Algorithms, Fall 2024

Lab Assignment 9

Deadline: 09.12.2024 11:00 am

Read the questions and rules carefully. They are clear and well defined.

Rules:

1. **No Cheating:** You are not allowed to collaborate with your friends and use any kind of websites or AI. If your homework gives a sign of any of them, **directly it will be graded as zero**.
2. **Goal:** Please do your homework alone. Our main aim is to **learn**.
3. **Submission:** Submit your work in **one java files. DON'T USE ZIP/RAR etc. In these cases, your points will be deducted by 30%.**
4. **Coding policy:** Explain your code in comments. **This is a must!**
5. **Latency policy:** A 30% deduction will be applied for each day of late submission.

Files to submit: BinaryTree.java

1. Implement Binary Tree abstract data structure from Node Structure. **(100pt)**

Hint: A Node has a value, right child and left chid as 2 nodes.

a. Implement a Node<E> class (for Binary Tree) and Binary Tree class and their constructors in java. (5x2=10pt)

b. void PreOrderTraversal(Node<E> root) to implement PreOrder Traversal for the given tree and it prints the traversal order.(15pt)

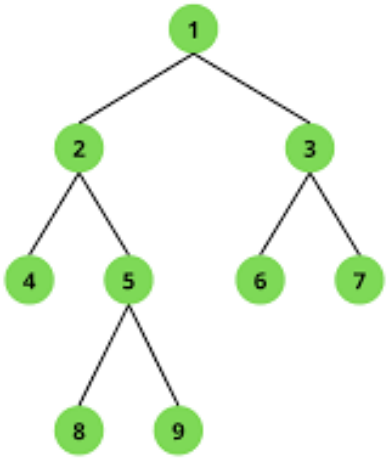
c. void PostOrderTraversal(Node<E> root) to implement PostOrder Traversal for the given tree and it prints the traversal order.(15pt)

d. int height(Node<E> root) to find the height of the given tree and returns the height. (15pt)

e. Boolean find(Node<E> root, E element) to return true if element is found in the tree, else return false. (15pt)

f. Create the following binary tree. (15pt)

g. Test all your functions in the main. (For find, one found case, and one not found case. (15pt)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