

CSC230 Lab 10

Goal: This lab will teach you about tree operations.

Part I

Download the **lab10.zip** file from Canvas. Extract the contents of lab10.zip to your working directory. There are three files in the contents. They are treeNode.h, tree.h, and test.cpp.

In this lab, do NOT modify anything in treeNode.h and test.cpp. Your work is to implement the methods in tree.h file. In the tree.h file, please implement the following methods:

- treeBSearch(V x, TreeNode<V>* t)
- isLeaf(TreeNode<V>* t)
- height(TreeNode<V>* t)
- nNodes()
- insert(V x)

After finishing the implementation, type the following command to compile the code.

```
g++ test.cpp
```

where file test.cpp tests the implementations of the methods. The execution result of test.cpp is:

```
jikaili$ ./a.out
1
0
8
The Tree Looks Like:
      9
     /
    8
   \
    7
   /
  6
 /
5
 \
 4
 /
3
 \
 2
```

The tree is rooted at node 5.

Your implementation must have the exactly same result.

Requirements and Hints:

- The tree should be **sorted**, the values of left subtree are smaller than the root; the values of the right subtree are larger than the root
- When you insert a node, pretend that you are searching the value, insert the node to the place where it falls off the tree

Wrap up

Zip you C++ files and the downloaded data files into lab10.zip. Submit the completed file to Canvas.