**CS41 Programming Assignment #3**

**Total Point:** 100 **Due Date:** 04/25/2017, Thursday

**Assignment Description:**

1. Design and implement a class for binary trees, following the specification of Figure 10.14, (**bt\_class.h**) on page 536. Your design should use the binary tree node class (**bintree.h,** Figure 10.6 page 486, **bintree.template**) form Chapter 10. ***All three files are posted on BlackBoard.***
2. Write an application program (the test driver program) to store a list of integers into a **binary search tree**. The program will:
3. Read integer data from a text file and store **unique** integers into a binary search tree. That is, if the given integer is already in the tree, just ignore the item.
4. After all data are stored in the tree, implement a loop with options which allows the user to:

* Display all the integers in the binary tree
* Add a value to the tree
* Delete a value from the tree
* Find a value within the binary tree, and display its subtree
* Exit the program

**You should print appropriate messages for each selected operation.**

**Provided code:**

File **assignment3.zip** at the “Assignments” section of Blackboard contains:

* bintree.h: Node class, in full content
* bintree.template: Nodoe class implementation, in full content
* File bt\_class.h: class documentation only, you implement the **class declaration**
* File bt\_class.template: You have to provide the class implementation codes
* File Tree\_application.cpp: You have to implement

Note: These files are available on website [www.cs.colorado.edu/~mian/chapter10](http://www.cs.colorado.edu/~mian/chapter10) too.:

If you do not like to use the **template** version of these files, then you can modify them so that the tree will store integer only.

**Grading:**

Print the **source code, program input/output text,** for grading. ***The turn in documents must be legible. Extremely tiny font or light/blur inks used in printing make it impossible to read and grade your assignments.***

The program should include the following information as comment on top of application program source code:

* Programming assignment number
* Name(s) of your programming team
* Brief description on what the program will do