

CST 370

Programming Assignment (Binary Search Tree)

1. Download the source programs for Binary Search Tree (**BST.cpp**, **BST.h**, and **Sample_BST_tester.cpp**) from iLearn.

- (a) Change the current **search ()** function to a **recursive** version.
- (b) Add a new member function called **inOrder ()** that implements the inorder traversal algorithm of a binary search tree. Your function should display each node data on the screen.

```
void BST::inOrder()
```

- (c) Add a new member function called **preOrder ()** that implements the preorder traversal algorithm of a binary search tree. Your function should display each node data on the screen.

```
void BST::preOrder()
```

- (d) Add a new member function called **nodeCount ()** to count the number of nodes in a binary search tree. In this function, you should use a **recursive** function. You can't just use a variable such as "mySize".

```
int BST::nodeCount()
```

- (e) Update the **Sample_BST_tester.cpp** to show the execution of the functions.

Grading

I will download your code on my computer and execute it. If your code does not compile, you may lose more than 50% of your points (based on my discretion). If your code compiles, but still produces incorrect results you may still lose more than 30% of your points (based on my discretion).

Your code should have the following characteristics for you to get full points on the assignment

- 1. Compile without error.
- 2. Produce correct output.
- 3. Good programming structure.
- 4. Comments. (Title, Abstract, Author, ID, and Date are mandatory.)
- 5. Meaningful and related variable names.

Extra credit

You will receive extra credit equal to 10% of your score if you submit a video (a link) explaining how you implement it (as well as some running samples of your program). Note that there is a separate place for you to submit the video link and that is where extra credit will be recorded. It should be

submitted before the submission is closed (i.e., two days after the submission due date), but not subject to the late submission penalty. I will initiate a new topic on Discussion Forum to publish the video link to the class.

What to turn in?

Submit your source programs **and** '**HomeworkSubmission_yourlastname.pdf**' as a single zipped file '**Program6_yourfullname**' on iLearn. For the program, please include only the source files needed to compile and run successfully.

If you do not submit the above mentioned documents in the format specified your assignment will not be graded.

Homework Submission_yourlastname.pdf

For each homework problem, you are expected to submit screenshots of the results obtained from running your code. You should also explain what each screenshot means and why the result on the screenshot is correct.

This link explains how to take screenshots in Mac and Windows.

<http://www.take-a-screenshot.org/>