CS 271 / CS 462
Programming Assignment # 7

Submit

1. pa7.cpp
2. bst.h
3. bst.cpp
4. makefile

Textbook Chapters

- Chapter 10 - Structs
- Chapter 12 - Trees
- Chapter 15 - Intro to C++

Documentation and Style (does not apply to the makefile)

- Each program must have header comments.
- Each program must have explanatory inline comments.
- Each program must follow the course guidelines for documentation and style.

All Programs must compile. Any programs that does not compile or a makefile that has errors will receive a grade of zero.

Step by Step Instructions

1. Create a folder for this assignment.

   On page 502 in the textbook, there is a C program that implements a binary search tree. You should use this code as a starting point.

   For this assignment, you will convert the C program into a C++ program. You will also separate the binary search tree components from the main function.

   In the programs that you submit you cannot use any of the following C language components:

   NO scanf
   NO printf
   NO C libraries
   NO gcc in the makefile

   One point will be deducted from your assignment score for each occurrence of a prohibited C component.

2. **Create a makefile.**

   Use **g++ -std=c++11** (not gcc) as the compiler command.

   The "all" target should create an executable named pa7.

   You must also have targets for pa7.o and bst.o.

   The source files that need to be compiled and linked are: pa7.cpp and bst.cpp.

   The header file is bst.h.

3. **Create bst.h**

   a) Write a preprocessor wrapper.

   b) Write the struct definition (pg 502, lines 8 - 16)

   c) Write prototypes for the bst functions.

      (pg 502, lines 18 - 22)

Big Picture:

1. create a folder for your work
2. create a makefile
3. create the bst.h file
4. create bst.c
5. create pa7.c
6. make, run, test, debug as needed

4. Create bst.cpp

   a) Include C++ libraries: iostream, iomanip, cstdlib and your header file "bst.h"

   b) From pages 503 and 504 in the textbook, copy the function definitions for insertNode, inOrder, preOrder, and postOrder. Remember that you must change all printf statements to C++ style output.

5. Create pa7.cpp

   c) Include C++ libraries: iostream, iomanip, cstdlib and your header file "bst.h"

   d) From pages 502 and 503 in the textbook, copy the main function. Remember that you must change all printf statements to C++ style output.

6. Make and run pa7

   a) Copy the files to Linux. Use make to compile, link, and create the executable.

   b) Debug as needed.

Submit 4 files:

- pa7.cpp
- bst.h
- bst.cpp
- makefile