CS 2401 Spring 2022

Lab 13: Binary Trees

Due: Friday 4/15 at 11:59 PM

Given the struct Bnode in btreelab.cc, create a little program that can build a binary search tree from the names listed in the file, *names.txt.*

You can use the inorder traversal that I have given you to see that the names are in there.

Now, write a function that searches for and counts the number of times that a particular name occurs. Let the user input the name from the keyboard. (A description of the algorithm for this appears in your book on p. 523). The output for the function should just say: "Your search name appears 5 times." With the number being correct, of course.

Finally write a function that counts the number of names (not unique names) that are in the tree and greater than (i.e. come after in the alphabet) the search name. This later function will work better if it is done recursively. Think of it like this:

- If the search name is less than or equal to the name in the current node, add in the size of the right subtree.
- Move to the left and repeat.
- If the name in the current node is less than the search name, move to the right without counting anything.
- The base case is when you hit NULL, a condition that will return a 0.

Submit a copy of your source code, along with a script that looks for the names "Matthew" and "Jessica."