

[illegible]

Due: Tues. Nov. 15, 2021, 11:59pm

Problem Set 8: Binary Search Tree

Since you are spending more time on the team project, I want to keep this assignment considerably less “rigorous”. Start by downloading the incomplete project code attached to this assignment. If using MacOS, be sure to use the correct version of the graphic library files (fssimplewindow and yspng, specially).

Once downloaded, you need to fill in the code needed for **BST::insertItem()**, **BST::printlnOrder()**, **BST::findItem()**, and **BST::retrieveItemCount()**. We will work on **BST::deleteItem()** together so we can get a feel for how pointers and recursion can work.

Here is the sample text file included in the project that you may use for testing (The Gettysburg Address*¹):

Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battlefield of that war. We have come to dedicate a portion of that field, as a final resting place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this.

Abraham Lincoln

Eng Computation B. Fall 2022, PS08

Word Cloud

I used the word frequency developed using the BST to create a *very, very simple* word cloud, making use of the GraphicFont library I developed (which is included in the zipped project file).

Note that the word cloud used in the title above requires that the placement of each word be perfectly located based on pixel reasoning so that the cloud can fill in tiny spaces between words. I did not accomplish this level of sophistication for this assignment. Instead, I created a word cloud using the following simple rules:

- Words whose count is 1 will be shown only if user asks for them
- Some common words (e.g., “the”, “a”, “and”, etc.) can also be omitted.
- Whatever size (S) is selected for words with a count of 1, the size is increased by a factor for each increase (e.g., $2S$, $3S$, $4S$, $5S$, $5S$, and $6S$ for word counts of 2, 3, 4, 5, and 6)
- The location of each word is randomly selected for each word (i.e., random X , random Y).
- The transparency of each word to about 0.6 so that you can see words that are covered up.
- The colors can be randomized (i.e., rainbow)

Feel free to play around with the graphics so you get to understand how it all works.

Deliverables

1 zip file, containing your whole project. I advise that you include your name in comments at the top of each of the files. I expect your project will at least include the following:

wordCloud_main_andrewID.cpp	<< contains <i>main()</i> and some other code
BST_andrewID.h	<< contains your new code as well as mine

Upload the zip file to the class Canvas page before the deadline (Tuesday, Nov.15, 11:59pm), although I expect that you'll finish this assignment rather quickly so you can work on the Team Project.

Learning Objectives

Template classes in C++

Using Binary Search Trees.

Reading and writing to files.

Use OpenGL primitives along with code written by others.

Searching references (online or textbook) for C++ library functions.