What did you learn from doing this lab?

I learned basic C++ syntax. Furthermore, I learned how to work with arrays and make sure I am indexing the proper elements from the array. I also learned how to format output with setw(). After doing this lab I see that C++ has a lot of similarities of Java, however it has a lot less convenience when it comes to arrays to. Here you are left to do all the dirty work.

What did you find challenging about the lab?

I found working with and indexing into arrays quite challenging. Arrays being static in size makes things a lot more difficult. I was exploring a little bit and found that making header files is difficult as well and is something I hope we go over in class. In my exploration of header files I found it hard to understand where to put my class. The nature of C++ feels like a stripped down language compared to java and especially python, that will take some time to get used to. Overall, the main part of the lab that was difficult for me was the frequency count array. I wanted to use a hashmap, but figuring out a way with arrays needed creativity. Once I figured out mapping the array with the size max – min + 1, the rest came a lot easier.

What would you recommend changing if this lab is reused in future years?

One thing I found limiting was the ability to only use arrays. I think this design requirement narrows the scope of the project and doesn't allow students to explore. An example of this is when it comes to the frequency count analysis. This is a perfect instance to use a hashmap, however we are limited to arrays. Learning about other data structures besides the array would be a good learning experience. Another thing I would suggest is to have a test with invalid inputs. For example a file with one input, this forces the programmer to check the input list and make sure there are enough elements. And you could have test files with letters in it, to make the student validate the input before blindly putting it into the array.