CS 210 Project 3 Design Documentation

The program we will be focusing on today is for the company Corner Grocer. They need an application that can count the frequency of items purchased. These items are listed in a text file separated by a new line. The company specified that it needs to be a command line program that has a menu. The menu options and their respective functions are as follows:

1. A search function that allows a user to search for a specific item and get the frequency of that item.
2. A function that displays all the words found within the file with their respective frequencies displayed numerically.
3. A function that displays all the words found in the input file displayed as a graph.
4. An option to exit the program.

The program functions as follows. When it is run it displays the menu and is awaiting input:

A screenshot of a computer program

Description automatically generated

By selecting menu option one we can enter a word to search for:

A screenshot of a computer

Description automatically generated

It will also tell us if it did not find the word:

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Menu option two will display all words with its numeric frequency:

A screenshot of a computer screen

Description automatically generated

Menu option two will display all words as a graph:

A screen shot of a computer screen

Description automatically generated

Finally, menu option 4 will exit the program:

A screenshot of a computer program

Description automatically generated

With this, all design requirements have been met. The program also ensures that only the specified menu items can be chosen and will prompt the user to input another option if it isn’t one of the 4 valid options. The program primarily relies on a map. It initializes the map from the input file by counting the frequency of each item and allocating the map as needed. All other functions such as searching or displaying the frequency use the map to read through its keys and associated values. Maps also avoid the need for opening and closing the input file more than once or iterating through a vector for each separate function. It is an efficient solution to map one value to another.