**CS 210 Project Three - Grocery Tracking Program**

The Grocery Tracking Program was created to help Corner Grocer make better inventory and store layout decisions. It processes a list of items sold throughout the day, counts how often each item was purchased, and even saves this data to a backup file for future use. By analyzing this information, the grocer can easily spot trends in customer preferences and adjust their store setup to maximize efficiency and sales.

The program has an uncomplicated menu that lets users pick from four options. First, you can search for a specific item to see how many times it was sold. This is handy for quickly checking if an item is popular. Second, you can view a complete list of all items and their frequencies, giving you the big picture of daily sales. Third, a histogram option uses asterisks to represent how often each item was purchased visually. Finally, you can exit the program when you’re done. The program also automatically saves all the frequency data into a backup file called frequency.dat, so there’s no risk of losing the data.

I used a std::map to store the item data when designing the program because it’s efficient and keeps everything organized. It allows the program to quickly look up, add, or update items while sorting them alphabetically. For file handling, the program reads a text file (CS210\_Project\_Three\_Input\_File.txt) with a list of items sold and writes the frequencies to the backup file. I also made sure to include input validation to avoid crashes, such as ensuring the user can only choose valid menu options and gracefully handling errors if the input file is missing.

Of course, there were a few challenges along the way. For example, figuring out how to handle file errors was tricky at first, but the program now checks if the input file exists and shows a clear error message if it doesn’t. Another challenge was making sure the program handled invalid user input smoothly. This was solved by adding checks to ensure only valid choices were entered for the menu. Finally, I had to ensure the program could handle larger files efficiently, and using a std::map helped with that.

Overall, the Grocery Tracking Program was a simple but powerful tool for the Corner Grocer. It’s easy to use, provides detailed insights into daily sales, and keeps the data safe with a backup file. Screenshots of the program in action—including the menu, item search, frequency list, histogram, and backup file—are included to show how it works.

**Screenshots of the program**A screenshot of a computer screen

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