**Grocery Tracker Project Documentation**

**1. Introduction**

This document provides an in-depth explanation of the Grocery Tracker program, developed as part of CS 210 Project Three.

**2. Program Structure**

The program is built around the GroceryTracker class, which manages all functionality.

**2.1 Key Components**

* GroceryTracker class: Main class handling all operations
* itemFrequency map: Stores item names and their frequencies
* File I/O functions: Handle reading from input file and writing to output file
* Menu system: Provides user interface for program interaction

**3. Implementation Details**

**3.1 Data Storage**

We use a std::map<std::string, int> to store item frequencies. This allows for:

* Fast lookups (O(log n) time complexity)
* Automatic sorting of items by name
* Easy iteration for printing all items

**3.2 File Handling**

* Input: Read from "CS210\_Project\_Three\_Input\_File.txt" line by line
* Output: Write to "frequency.dat" in "item frequency" format

**3.3 User Interface**

Implemented a menu-driven interface for easy user interaction.

**4. Key Functions**

**4.1 loadDataFromFile**

Reads the input file and populates the itemFrequency map.

**4.2 saveDataToFile**

Writes the current state of itemFrequency to the output file.

**4.3 printAllFrequencies**

Iterates through the map and prints all items with their frequencies.

**4.4 printHistogram**

Creates a text-based histogram using asterisks to represent frequencies.

**5. Challenges and Solutions**

[Describe any significant challenges you faced and how you overcame them]

**6. Future Improvements**

* Implement data visualization for frequency data
* Add functionality to update item frequencies in real-time
* Create a graphical user interface

**7. Conclusion**

This project demonstrates proficiency in C++ programming, including file I/O, data structures, and user interface design.

**8. Screenshots**

A screenshot of a computer

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A screenshot of a computer

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