**7-3 Project Documentation**

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### **Design Consideration and Overview:**

**Classes and Data Structures used:**

* Class: ItemTracker encapsulates all core logic for data loading, processing, display, and file output.
* Encapsulation: Uses private data members (map<string, int> itemFrequency) and helper methods for modularity.

#### **Private Methods in the program:**

* loadItemsFromFile(filename)  
   Reads purchase data from a text file and populates a map with item frequencies.
* writeFrequencyToFile(filename)  
   Outputs item-frequency pairs to frequency.dat for backup.

#### **Public Methods in the program:**

* ItemTracker(inputFile) – Constructor to initialize the program and load data.
* findItemFrequency(item) – Looks up and prints how many times an item was purchased.
* printAllFrequencies() – Lists all items and their frequency counts.
* printHistogram() – Displays item frequencies as asterisks.

### **Main program flow**

**Initialization** ItemTracker object is created using input file CS210\_Project\_Three\_Input\_File.txt.

Frequencies are loaded into “frequency.dat” file

**Menu Loop** Displays 4 options:

* + Lookup item frequency
  + Print all items and counts
  + Show histogram (bar chart using asterisks)
  + Exit program

**User Input Validation** Ensures valid selection between 1 and 4.

### **Files Used**

* **Input**: CS210\_Project\_Three\_Input\_File.txt – List of items purchased.
* **Output**: frequency.dat – Backup file containing item-frequency pairs.

### **Features**

* File I/O for persistence
* Map for efficient word counting
* Histogram visualization
* Input validation & structured menu

### **Pseudocode: START**

### **CREATE ItemTracker object with input file "CS210\_Project\_Three\_Input\_File.txt"**

### **REPEAT**

### **DISPLAY menu:**

### **1. Search item frequency**

### **2. Display all item frequencies**

### **3. Display histogram**

### **4. Exit**

### **PROMPT user for menu choice**

### **VALIDATE input (must be 1-4)**

### **SWITCH on user choice:**

### **CASE 1:**

### **PROMPT user for item name**

### **CALL findItemFrequency(item)**

### **CASE 2:**

### **CALL printAllFrequencies()**

### **CASE 3:**

### **CALL printHistogram()**

### **CASE 4:**

### **DISPLAY "Goodbye"**

### **EXIT loop**

### **UNTIL user selects option 4**

### **END**

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### **Sample Output**

Menu:

1. Search Item

2. Display Frequencies

3. Show Histogram

4. Exit

> Potatoes was purchased 4 times.

> Potatoes \*\*\*\*

> Pumpkins \*\*\*\*\*

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