Project Documentation: Corner Grocer Item Tracking Program

Overview: This program is designed to help the Corner Grocer analyze the items purchased throughout the day. It reads a list of items from a text file, tracks their frequencies, and provides various functionalities to display this information.

Features:

1. **Look up frequency of a specific item**:
   - Prompts the user to enter an item name.
   - Displays the frequency of the specified item.
2. **Print all item frequencies**:
   - Displays a list of all items along with their frequencies.
3. **Print histogram of item frequencies**:
   - Displays a text-based histogram where each item is followed by asterisks representing its frequency.
4. **Exit the program**:
   - Allows the user to exit the program gracefully.

Data Backup:

- The program creates a backup file (frequency.dat) that contains the frequency of each item.

Class Usage:

- The program utilizes a map (associative array) to store item frequencies, which is efficient for counting and retrieving item occurrences.

Best Practices:

- The code follows industry-standard best practices with meaningful variable names, in-line comments, and clear code structure.

Screenshots:

1. **Menu Display**:

2. **Frequency Lookup**:

```
Menu Options:
1. Look up frequency of a specific item
2. Print all item frequencies
3. Print histogram of item frequencies
4. Exit

Enter your choice: 1


Enter the item you wish to look for: Broccoli
Frequency of Broccoli: 7
```

3. **All Frequencies**:

```
Menu Options:
1. Look up frequency of a specific item
2. Print all item frequencies
3. Print histogram of item frequencies
4. Exit

Enter your choice: 2


Apples: 4
Beets: 3
Broccoli: 7
Cantaloupe: 2
Cauliflower: 6
Celery: 6
Cranberries: 10
Cucumbers: 9
Garlic: 8
Limes: 1
Onions: 4
Peaches: 5
Pears: 1
Peas: 8
Potatoes: 5
Pumpkins: 2
Radishes: 3
Spinach: 5
Yams: 5
Zucchini: 10
```

4. **Histogram**:

```
Menu Options:
1. Look up frequency of a specific item
2. Print all item frequencies
3. Print histogram of item frequencies
4. Exit

Enter your choice: 3


Apples ****
Beets ***
Broccoli *******
Cantaloupe **
Cauliflower ******
Celery ******
Cranberries **********
Cucumbers *********
Garlic ********
Limes *
Onions ****
Peaches *****
Pears *
Peas ********
Potatoes *****
Pumpkins **
Radishes ***
Spinach *****
Yams *****
Zucchini **********
```

Code Highlights:

- The program reads item frequencies from an input file and stores them in a map.
- It includes functions for looking up specific item frequencies, printing all frequencies, and printing a histogram.
- User input is validated to ensure robustness.
- Item frequencies are backed up in a frequency.dat file for persistence.

Explanation of Input Validation:

1. **Validate Menu Choice**:
   - Use cin.fail() to check if the input is not an integer.
   - Use cin.clear() to clear the error flag on cin.
   - Use cin.ignore() to discard the invalid input.
   - Ensure the choice is between 1 and 4.

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Running the Program:

1. **Build and Run**:
   - Save your changes.
   - Click on Build > Build Solution to compile the code.
   - Click on Debug > Start Without Debugging to run the program.
2. **Testing**:
   - Test each menu option to ensure it works as expected with input validation.
   - Check the contents of frequency.dat to ensure it has the correct data.