Code Instructions – Nutrition Data Analysis Project

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1. Files Needed to Run the Program

Before running the code, make sure the following files are saved in the **same folder**:

- nutrition_analysis.m – This is the main script that runs the program.
- getStats.m – A function used to calculate the average and standard deviation for each nutrient.
- filterFoods.m – A function that filters the data based on a nutrient threshold.
- cleaned_nutrition_dataset.csv – This is the dataset being analyzed.

Make sure MATLAB is opened in the same folder where all of these files are saved.

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2. How to Run the Code

- Set the **Current Folder** to the location where the files are stored.
- In the **Command Window**, type:
- nutrition_analysis
- Press Enter. This will launch the program and open up a menu that you can interact with.

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3. How the Menu Works

Once the program starts, you'll see a numbered menu pop up with different options. You can use your mouse or arrow keys to select what you want to do.

Here's what each option does:

1. Show Summary Statistics

- Calculates the **mean** and **standard deviation** for each nutrient in the dataset.
- The output is shown in a table with two rows: one for the averages and one for the standard deviations.

2. Sort Data by a Nutrient

- Lets you choose a nutrient (like Protein or Fat).
- Displays the top 10 food items that have the **highest value** for that nutrient.

3. Filter Foods by Nutrient Threshold

- You pick a nutrient and set a maximum value.
- The program shows all foods that are **less than or equal to** that value for the nutrient you chose.

4. Compare Two Nutrients (Scatter Plot)

- You select two nutrients to compare.
- The program will generate a **scatter plot** showing how those two nutrients relate across all the foods.

5. Predict Caloric Value

- This option uses a **regression model** that predicts calories based on the sum of Fat and Protein.
- You enter the total Fat + Protein value, and it estimates the corresponding **Caloric Value**.

6. Exit

- This closes the program.

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4. Notes

- The program loops back to the main menu after every action, unless you choose to exit.
- It uses built-in MATLAB menus, so it's easy to navigate.
- The dataset has over 3,000 food items, and all operations use the full dataset.
