Calor-E Documentation/README

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Context of the App

This project was developed using Python and leverages the Streamlit framework for building interactive web applications.
We have named it Calor-E and it was inspired by ChatGPT. The app integrates external APIs (USDA FoodData Central and Spoonacular) for real-time nutritional data and meal planning suggestions.

How to run the app:

1. First, clone or download this repository to your local machine.

2. Make sure you have Python 3.8 or higher installed.

3. In your terminal, navigate to the project folder and install the required dependencies listed in requirements.txt.

4. A .env file containing the necessary API keys has been shared privately with the professor and should be placed in the project's root directory.

5. To run the app, use the following command in your terminal:
streamlit run app.py
(You only need to run app.py to launch the entire application, but you might have to change the path in your terminal to the folder with the project)

6. Once the app is running, open your browser to start using it.

What the App does:

Calor-E offers three core features, each accessible through separate tabs:

1. **Daily Calorie Calculator**
   Users input personal data (age, weight, height, gender) and activity level. The app then calculates and displays their estimated daily calorie needs using the Mifflin-St Jeor equation – a widely accepted formula in nutrition science (Mifflin

et al., 1990). This approach helps them understand their energy requirements and how to tailor their diet accordingly.

2. **Food Calorie Lookup**
   This feature allows users to search for any food item by entering its name (e.g., “apple”, “chicken breast”) and specifying the desired quantity and unit (grams or ounces). The app then queries the USDA FoodData Central API and retrieves comprehensive nutritional information, including calories, protein, fat, carbohydrates, fiber, vitamins, and minerals. Results are displayed in clear and easy-to-read tables, ensuring that users can quickly identify the most important nutrient values. For additional insight, the app generates a pie chart that visualizes the macronutrient distribution (protein, fat, and carbs), helping users better understand the nutritional profile of their selected food item.

3. **Personalized Meal Planner**
   The meal planner helps users create a daily meal plan that meets their specific calorie and macronutrient goals. Users start by setting a daily calorie target and defining their preferred macro distribution (percentages of protein, fat, and carbs). They can further customize their plan by specifying dietary preferences (e.g., vegetarian, vegan, gluten-free) and identifying any allergies or foods to avoid. The app then uses the Spoonacular API to generate a tailored meal plan, which includes visually appealing images, estimated preparation time, servings, and direct recipe links for each suggested meal. Additionally, the app provides a breakdown of the total daily calories and compares the actual macronutrient distribution of the generated meals with the user’s target macros, displayed as interactive pie charts for easy interpretation.

Overall, the app serves as a user-friendly, integrated solution to support healthy eating habits and informed nutrition choices.

The APIs we used:

1. USDA FoodData Central API
This API, maintained by the United States Department of Agriculture (USDA), provides reliable and comprehensive data on the nutrient composition of a wide range of foods. In our app, it supports the Food Calorie Lookup feature by allowing users to search for food items and retrieve detailed nutritional profiles, including calories, macronutrients, vitamins, and minerals. This ensures that users have access to up-to-date and authoritative nutritional data.

2. Spoonacular API
The Spoonacular API is maintained by Spoonacular, a third-party recipe and food database platform. We use it to power the Personalized Meal Planner feature, enabling us to generate daily meal plans that align with the user’s calorie and macronutrient targets, as well as any dietary preferences or allergies they specify. The API returns meal

suggestions complete with images, preparation times, servings, and links to detailed recipes, supporting users in implementing their nutrition goals in practical ways.

Bibliography

Mifflin, M. D., St Jeor, S. T., Hill, L. A., Scott, B. J., Daugherty, S. A., & Koh, Y. O. (1990). A new predictive equation for resting energy expenditure in healthy individuals. The American Journal of Clinical Nutrition, 51(2), 241–247. https://pubmed.ncbi.nlm.nih.gov/2305711/