# Project Spec: Personalized Meal Planning and Nutrition Tracker

## Project Description

The **Personalized Meal Planning and Nutrition Tracker** app is designed to help users plan meals based on their dietary preferences, nutritional needs, and health goals. Users can input their dietary restrictions, preferred cuisines, and specific health goals such as weight loss or muscle gain. The app will generate meal plans and grocery lists based on this input. Additionally, the app tracks the nutritional content of meals and provides insights into the user's diet over time. It also integrates with fitness trackers to comprehensively view the user's health progress.

## Key Features

1. **Personalized Meal Planning**:

* Users can input their dietary preferences, restrictions, and health goals.
* The app generates weekly meal plans tailored to user input.
* Grocery lists are automatically created based on the meal plan.

1. **Nutritional Tracking**:

* Tracks users' daily nutritional intake.
* Provides insights into nutritional trends over time.
* Offers recommendations for improving diet based on tracked data.

1. **Fitness Tracker Integration**:

* Syncs with popular fitness trackers (e.g., Fitbit, Apple Health) to track exercise and activity levels.
* Provides a holistic view of user health by combining nutrition and fitness data.

## Use Case

Users who want to lose weight and improve their overall health input their dietary preferences (e.g., avoiding dairy) and their health goals (e.g., weight loss, muscle gain). The app generates a weekly meal plan based on these inputs, preferring Mediterranean cuisine. It also provides a grocery list for easy shopping. As the user follows the meal plan, the app tracks their nutrient intake and, after a month, shows improvement in their overall nutrition. The app then suggests further refining their diet, such as increasing protein intake or reducing sugar consumption.

## Challenges

1. **Developing the Meal Plan Algorithm**:

* A major challenge is creating a flexible and accurate algorithm to generate personalized meal plans based on dietary restrictions and preferences. I have limited experience designing algorithms, so I will need to conduct research and seek assistance refining this aspect.

1. **Nutritional Data Accuracy**:

* Ensuring the accuracy of nutritional information is critical. I have less experience with APIs, and while I can handle essential API integration, ensuring reliable nutritional data for various food items might require additional support or research.

1. **Fitness Tracker Integration**:

* While I have some API experience, integrating external fitness trackers (such as Fitbit or Apple Health) and managing the data flows might be complex. I will need guidance on how to best structure and manage the data from fitness trackers in sync with meal planning data.

## Technology Stack

1. **Backend**:

* **Python** using **Flask** or **Django** to handle routing, meal planning logic, and integration with external services (e.g., Nutrition API).

1. **Frontend**:

* **React** or **Vue.js** for building the user interface, allowing users to input dietary preferences and view meal plans.

1. **Database**:

* **SQLite** for storing user profiles, meal plans, and nutritional data.
* Storing nutrition data will require interaction with a **Nutrition API** (e.g., Edamam or USDA FoodData Central).

1. **APIs**:

* **Nutrition API** for retrieving accurate food and nutrition data.
* **Fitness Tracker API** (e.g., Fitbit or Apple Health) to integrate user activity data.

## External Mechanisms

* **Nutrition API**: The API will fetch nutrition data for each planned meal. Since I have limited experience with APIs, I need help understanding how to properly integrate the API, ensure data accuracy, and handle large datasets.
* **Fitness Tracker API**: Integration with fitness trackers will help sync the user's health data, but I will require more research on handling API authentication and real-time data syncing.

## User Interface

1. **Meal Plan Generation**: The user inputs their preferences (e.g., no dairy, Mediterranean diet), and the app generates a personalized meal plan with recipes.
2. **Nutritional Insights**: The user can view their daily and weekly nutrient intake insights.
3. **Progress Review**: The user can review their diet trends over time and suggestions for improving nutrition.
4. **Fitness Integration**: Data from fitness trackers will be displayed, combining exercise and nutritional data.

## Feasibility

While the project is ambitious, I am excited to work on it given my interest in health and nutrition. My current experience with APIs is limited, especially in integrating external services like fitness trackers, but I am confident that I can overcome these challenges with research and guidance. The nutritional database and meal planning algorithm might require additional support, but I believe I can handle the app's core logic. With help on the API side, particularly with fitness tracker integration and accurate nutritional data, the project is feasible and highly rewarding.

## GitHub Repository Structure

* **README.md**: A brief project overview explains its core functionality (meal planning, nutrition tracking).
* **.gitignore**: Python-style .gitignore ensures that unnecessary files (e.g., \_\_pycache\_\_, .env) are not tracked.
* **LICENSE**: MIT License.
* **docs folder**: For storing the project spec and any additional documentation related to the app (e.g., API references, sketches, or mockups).
* **Project Root**:
  + All Python code (main.py and any supporting modules) will reside in the root folder.
  + A **data** folder will store static files like grocery lists or example datasets.
  + An **img** folder can store any images or diagrams relevant to the project documentation.

## Repository URL

https://github.com/Mayuri9808/personalized-meal-planner