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Project : Nutrition App

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Nutrition App Project

Project Overview

The **Nutrition App** is a comprehensive Java-based application designed to help users take control of their diet and nutrition. In today's fast-paced world, maintaining a balanced and healthy diet can be challenging. This app addresses that challenge by providing a centralized platform where users can manage their dietary preferences, plan meals, track nutritional intake, and make informed food choices. It offers tools for managing user profiles, creating and organizing recipes, planning meals, tracking nutritional goals, and generating shopping lists. The primary objective of this project is to promote healthy eating habits by offering a user-friendly platform for meal planning and nutritional tracking.

Purpose and Objectives

The primary objective of the Nutrition App is to promote healthy eating habits by offering a user-friendly and intuitive platform for meal planning and nutritional tracking. The app aims to:

1. **Simplify Meal Planning**: Help users create balanced meal plans tailored to their dietary preferences and nutritional goals.
2. **Track Nutritional Intake**: Allow users to monitor their daily intake of calories, protein, fat, and carbs, ensuring they stay within their recommended limits.
3. **Encourage Healthy Choices**: Provide tools such as ingredient substitution suggestions and recipe categorization to help users make healthier food choices.
4. **Enhance Organization**: Generate shopping lists based on meal plans, making grocery shopping more efficient and reducing food waste.

Target Audience

The Nutrition App is designed for:

- **Health-Conscious Individuals**: People who want to maintain a balanced diet and track their nutritional intake.
- **Fitness Enthusiasts**: Individuals who need to monitor their macronutrient intake to achieve fitness goals.
- **Busy Professionals**: Those who want to plan meals in advance to save time and ensure they eat healthily.
- **Families**: Parents who want to plan meals for their families while ensuring nutritional balance.

Detailed Features of the Nutrition App

1. User Profile Management

This feature allows users to create and manage their profiles, which include personal details and dietary preferences.

Functionality:

- **Add Profile:**
    - Users can create a new profile by entering their name, age, weight, and dietary preferences (e.g., vegetarian, vegan, non-vegetarian).
    - Profiles are saved to a file (`userProfiles.txt`) for future access.
- **Update Profile:**
    - Users can update their age, weight, or dietary preferences.
    - The app ensures the updated profile is saved to the file.
- **Delete Profile:**
    - Users can delete their profile by entering their name.
    - The app removes the profile from the file.
- **View Profiles:**
    - Users can view all saved profiles, including their details.

Significance:

- Helps users personalize their experience by saving their dietary preferences and goals.
- Ensures data persistence by saving profiles to a file.

2. Recipe Management

This feature allows users to create, edit, delete, and view recipes.

Functionality:

- **Add Recipe:**
    - Users can add a new recipe by entering:
        - Name: The name of the recipe.
        - Ingredients: A comma-separated list of ingredients.
        - Nutritional Values: Calories, protein, fat, and carbs per serving.
        - Preparation Steps: Step-by-step instructions for preparing the recipe.
    - Recipes are saved to a file (`recipes.txt`).
- **Edit Recipe:**
    - Users can modify the ingredients, nutritional values, or preparation steps of an existing recipe.
    - The app updates the recipe in the file.
- **Delete Recipe:**
    - Users can delete a recipe by entering its name.
    - The app removes the recipe from the file.
- **View Recipes:**
    - Users can view all saved recipes, including their ingredients, nutritional values, and preparation steps.

Significance:

- Provides a centralized repository for storing and organizing recipes.

- Ensures users have access to accurate nutritional information for each recipe.

3. Meal Planning

This feature allows users to create meal plans and generate shopping lists.

Functionality:

- **Create Meal Plan:**
  - Users can select recipes from their collection to create a meal plan.
  - The app saves the meal plan to a file (`mealPlan.txt`).
- **View Meal Plan:**
  - Users can view the current meal plan, including the selected recipes.
- **Generate Shopping List:**
  - The app generates a shopping list based on the ingredients required for the recipes in the meal plan.
  - The shopping list is displayed to the user.
- **Export Meal Plan:**
  - Users can export the meal plan to a file for future reference.

Significance:

- Helps users plan balanced meals in advance.
- Simplifies grocery shopping by generating a shopping list.
- Ensures users have access to their meal plans across sessions.

4. Nutritional Goal Tracking

This feature allows users to track their daily nutritional intake and compare it with their goals.

Functionality:

- **Set Goals:**
    - Users can set daily goals for calories, protein, fat, and carbs.
    - Default goals are provided, but users can customize them.
- **Track Intake:**
    - The app calculates the user's daily intake based on the recipes in their meal plan.
    - The app compares the user's intake with their goals.
- **View Warnings:**
    - If the user exceeds their goals, the app provides a warning.

Significance:

- Helps users stay within their recommended nutritional limits.
- Encourages healthier eating habits by providing real-time feedback.

5. Search and Filter Recipes

This feature allows users to search for recipes by ingredient and filter them by calories or food type.

Functionality:

- **Search by Ingredient:**
    - Users can search for recipes that contain a specific ingredient.
    - The app displays all matching recipes.

- **Filter by Calories:**
    - Users can filter recipes to display only those with calories less than or equal to a specified limit.
- **Filter by Food Type:**
    - Users can filter recipes to display only those categorized as vegetarian, non-vegetarian, or vegan.

Significance:

- Makes it easier for users to find recipes that meet their dietary needs and preferences.
- Encourages healthier choices by allowing users to filter recipes based on nutritional content.

6. Ingredient Substitution

This feature suggests alternative ingredients for common items.

Functionality:

- **Suggest Substitutions:**
    - Users can enter an ingredient (e.g., sugar, butter, milk).
    - The app suggests alternative ingredients (e.g., honey, olive oil, almond milk).

Significance:

- Helps users adapt recipes to their dietary needs or preferences.
- Encourages experimentation with healthier or more accessible ingredients.

7. Recipe Categorization

This feature automatically categorizes recipes based on their ingredients.

Functionality:

- **Categorize Recipes:**
    - The app analyzes the ingredients of each recipe and categorizes it as vegetarian, non-vegetarian, or vegan.
    - Users can view recipes by category.

Significance:

- Makes it easier for users to find recipes that align with their dietary preferences.
- Encourages users to explore new recipes within their preferred category.

8. File Persistence

This feature ensures that user profiles, recipes, and meal plans are saved to files for future access.

Functionality:

- **Save Data:**
    - User profiles are saved to `userProfiles.txt`.
    - Recipes are saved to `recipes.txt`.
    - Meal plans are saved to `mealPlan.txt`.
- **Load Data:**
    - The app loads saved data when it starts, ensuring users can pick up where they left off.

Significance:

- Ensures data persistence across sessions.
- Provides a seamless user experience by saving and loading data automatically.

9. Error Handling and Input Validation

This feature ensures the app handles invalid input and errors gracefully.

Functionality:

- **Input Validation:**
  - The app validates user input (e.g., ensuring age and weight are positive numbers).
- **Error Handling:**
  - The app uses `try-catch` blocks to handle exceptions and provide meaningful error messages.

Significance:

- Prevents crashes and ensures the app runs smoothly.
- Provides clear feedback to users when they enter invalid input.

10. User-Friendly Interface

This feature ensures the app is easy to navigate and use.

Functionality:

- **Text-Based Menu:**
  - The app uses a text-based menu system to guide users through its features.

- **Clear Prompts:**
    - The app provides clear prompts and instructions for each feature.
- **Error Messages:**
    - The app displays meaningful error messages when something goes wrong.

Significance:

- Makes the app accessible to users of all technical skill levels.
- Ensures users can easily navigate the app and access its features.

Architecture of the Project

The project is built using **object-oriented programming (OOP)** principles. It consists of the following classes:

1. **Main**: The entry point of the application. Displays the main menu and handles user input.
2. **App**: Manages the core functionality of the app, including user profiles, recipes, and meal planning.
3. **UserProfile**: Handles user profile management, including saving and loading profiles from a file.
4. **RecipeManager**: Manages recipes, including adding, editing, deleting, and categorizing them.
5. **Recipe**: Represents a single recipe with attributes such as name, ingredients, nutritional values, and preparation steps.
6. **DietPlanner**: Manages meal planning, nutritional goal tracking, and shopping list generation.

The app uses **file I/O** to persist data, storing user profiles, recipes, and meal plans in text files (`userProfiles.txt`, `recipes.txt`, `mealPlan.txt`).

Technology Used

Programming Language

- **Java**: The app is written in Java**Tools and Frameworks**
- **Java Development Kit (JDK)**: Used for compiling and running the application.
- **Text Files**: Used for data persistence (`userProfiles.txt`, `recipes.txt`, `mealPlan.txt`).

Development Environment

- **IDE**: IntelliJ IDEA .
- **Command Line**: For compiling and running the app without an IDE.

Justification

Alignment with Project Theme

The **Nutrition App** aligns with the theme of "**Savour the flavours of health**" for promoting healthy eating habits and effective meal planning. It provides users with tools to:

- **Plan Balanced Meals**: By allowing users to create meal plans and track nutritional intake.
- **Adapt Recipes**: Through ingredient substitution suggestions and recipe categorization.
- **Stay Organized**: By generating shopping lists and exporting meal plans.

Conclusion

The **Nutrition App** is a functional and user-friendly application that promotes healthy eating habits through effective meal planning and nutritional tracking. It demonstrates strong adherence to object-oriented programming principles and provides a solid foundation for future enhancements. By addressing a real-world need, the project highlights the practical applications of programming in everyday life.

GitHub Link :

https://github.com/KHANDAKERALIARIYAN/Nutrition-App.git