

DAMG6210 – Nutrition Tracking System

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Database Purpose

The purpose of this database is to support users in managing their nutrition and fitness goals by tracking their progress, dietary habits, exercise routines, and consistency. It aims to motivate users by alerting them to their achievements and areas for improvement through detailed insights and reports on their nutritional intake, streaks, and overall goal progress. The database provides comprehensive summaries of daily, weekly, and monthly activity, facilitating better adherence to nutritional goals and healthier lifestyle choices.

Business Problems Addresses

- By tracking individual progress, dietary habits, and exercise routines, the solution personalizes the user experience, increasing user engagement, which is essential for maintaining motivation towards health and fitness goals.
- The database helps by tracking streaks and providing alerts and reports that encourage users to stick to their daily routines and long-term goals.
- The system analyzes data to find areas where users can improve their nutrition and exercise habits. This helps users make better health decisions, leading to improved outcomes.
- The database facilitates goal tracking and provides achievement reports, which helps users to stay motivated and focused on their objectives.
- This database performs recipe calculations based on serving sizes and nutritional values, providing users with accurate information to support their dietary decisions.
- The system ensures the privacy and security of user data through robust security measures, including encryption, access controls, and regular audits. This safeguards sensitive information and maintains user confidentiality.

Business Rules

- Each user must have a unique profile containing personal information such as name, age, gender, height, weight, and dietary preferences.
- Users can create, update, and delete their profiles as needed.
- Users can log their food intake by recording details such as meal name, food, portion size, and time of consumption
- Each food entry must be associated with the user who logged it and include nutritional information such as calories, macronutrients (carbohydrates, proteins, fats), and micronutrients (vitamins, minerals).
- Users can track their physical activities by recording details such as activity type, duration, and calories burned.
- Each activity entry must be associated with the user who performed it and include relevant metrics for tracking fitness goals.
- The system must provide tools for users to monitor their progress towards these goals and receive alerts or recommendations for adjustments.
- The system should calculate the nutritional content of each recipe and meal to help users make informed choices and meet their dietary requirements.
- Users can track their water intake by recording the amount of water consumed throughout the day.
- The system should provide visualizations or reminders to encourage users to stay hydrated and meet their hydration goals.
- Users should have control over their data and the ability to manage privacy settings and permissions.
- Users can view reports and insights summarizing their nutritional intake, physical activity levels, progress towards goals, and overall health metrics.
- The system may offer trend analysis, comparisons with recommended guidelines, and personalized recommendations for improving health outcomes.

Design Decisions:

ENTITY NAME	WHY ENTITY INCLUDED	HOW ENTITY IS RELATED TO OTHER ENTITIES
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User	This entity represents the individuals who will be using the app. It's essential for personalizing the app experience, managing access, and associating user activities and records.	It is related to almost all other entities. The User entity has a one-to-many relationship with Subscription, Health Goal, Nutritional Profile, Nutritional Log, Activity Log, Water Log, Sleep Log, and Progress Reports, indicating that each user can have multiple instances of these entities.
Subscription	Manages subscription plans and tracks subscription status/period.	Linked to User via User_id and to Payment through Payment_id. It has a one-to-one relationship with Subscription Type, where each subscription is of one type.
Subscription Type	Defines the different types of subscriptions available.	It has a one-to-many relationship with Subscription, meaning each type can be associated with many subscriptions.
Payment	Records details of payments made for subscriptions.	It's linked to User and Subscription, indicating which user made the payment and for which subscription.
Health Goal	Records the specific health goals set by each user.	It has a foreign key from User and a one-to-one relationship with Goal Type. It is also related to Progress Reports as the goals are tracked over time.
Goal Type	Categorizes the different types of health goals available.	It is related to Health Goal, indicating the type of goal each health goal record pertains to.
Nutritional Profile	Stores users biometric data for nutrition and health tracking.	Linked to User containing personalized biometric information.
Nutritional Log	Keeps a log of the user's food intake.	it's related to User and Food, indicating who consumed what food. It also has a relationship with Meal, recording the type of meal when the food was consumed.

Meal	Categorizes food intake into different meal types.	It is related to Nutritional Log as it helps to categorize the food logs into meal types.
Food	Details foods available, including caloric and nutrient content.	It is linked to Nutritional Log, which records the consumption of these foods by users.
Activity Log	Tracks physical activities including duration and calories burned.	It is associated with User, indicating which activities are carried out by which user.
Water Log	Tracks daily water intake of users.	One-to-many relationship with User for multiple water intake logs.
Sleep Log	Monitors sleep patterns by recording sleep duration.	One-to-many relationship with User for multiple sleep logs.
Progress Reports	Records and summarizes user progress towards health goals.	Related to User and Health Goal for tracking health progress.