Aybike Battal – 150200343

İlayda Kara – 150220747

Tevhidenur Serdar - 150210335

Table Definitions

Table Name: Participant

-participant_id (Primary Key, INT, NOT NULL, AUTO INCREMENT)

-name (VARCHAR(100), NOT NULL)

-age (INT, NOT NULL)

-gender (ENUM('Male', 'Female', 'Other'), NOT NULL)

-phone (VARCHAR(15), NOT NULL)

Table Name: Food_Nutrition

-food_id (Primary Key, INT, NOT NULL, AUTO INCREMENT)

-food_name (VARCHAR(50), UNIQUE, NOT NULL)

-calories (DECIMAL(5,2), NOT NULL)

-protein (DECIMAL(5,2))

-carbonhydrate (DECIMAL(5,2))

-fat (DECIMAL(5,2))

Table Name: Daily_Caloric_Intake

-intake_id (Primary Key, INT, NOT NULL, AUTO INCREMENT)

-participant_id (Foreign Key, INT, NOT NULL)

-food_id (Foreign Key, INT, NOT NULL)

-date (DATE, NOT NULL)

-serving_size (DECIMAL(5,2), NOT NULL)

Table Name: Daily_Recommendations

-recommendation_id (Primary Key, INT, NOT NULL, AUTO INCREMENT)

-participant_id (Foreign Key, INT, NOT NULL)

-physical_activity_id (Foreign Key, INT, NOT NULL)

-food_id (Foreign Key, INT)

Table Name: Health_Score

-score_id (Primary Key, INT, NOT NULL, AUTO INCREMENT)

-participant_id (Foreign Key, INT, NOT NULL)

-bmi (DECIMAL(4,2), NOT NULL)

-participant_weight (DECIMAL(3,2), NOT NULL)

-participant_height (DECIMAL(3,2), NOT NULL)

Table Name: Progress Reports

-report_id (Primary Key, INT, NOT NULL, AUTO INCREMENT)

-participant_id (Foreign Key, INT, NOT NULL)

-start_date (DATE, NOT NULL)

-end_date (DATE, NOT NULL)

-weight_loss (DECIMAL(5,2))

Table Name: Participant_Physical_Activity

-lifestyle_id (Primary Key, INT, NOT NULL, AUTO INCREMENT)

-participant_id (Foreign Key, INT, NOT NULL)

-physical_activity_id (Foreign Key, INT, NOT NULL)

-physical_activity_hour (INT, NOT NULL)

Table Name: Physical_Activities

-physical_activity_id (Primary Key, INT, NOT NULL, AUTO INCREMENT)

-physical_activity_name (VARCHAR(50), NOT NULL)

-burning_calorie_per_hour (INT)

Table Descriptions

Participant Table

The Participant table acts as the main repository for demographic details of the individuals. The participant_id is the primary key that uniquely identifies each participant. Other fields include participant_name for the name, age for the age of the individual, gender to capture their gender, and phone to store a unique contact number for communication purposes. This will serve as the reference for tracking participant-specific data across other related tables.

Daily_Caloric_Intake Table

The Daily_Caloric_Intake table is used to track daily food consumption by participants to capture their daily intake of food. A record in this table uniquely identifies the intake_id as a primary key. The participant_id serves as a foreign key, related to the Participant table, and the food_id, related to the Food_Nutrition table. It captures the date of consumption of food and serving_size, facilitating analysis of minute details of food consumption.

Food_Nutrition Table

Food_Nutrition includes the foods' nutrition. Food items have unique identifications: the food_id serves as the primary key for this table. This table will hold food items under the attribute called food_name to store the name of the food item, calories to specify calorie content per serving, and nutritional values for protein, carbohydrate, and fat. The table becomes imperative when, together with serving sizes in the Daily_Caloric_Intake table, total intake of both calories and nutrients should be computed.

Physical Activities Table

The Physical_Activities table contains various types of physical activities based on their calorific expenditure. It has used physical_activity_id as a primary key for identifying unique physical activity. The field physical_activity_name defines the name of the activity that may involve running, cycling, and more. Burning_calorie_per_hour represents the average calorie burns per hour of such activities. This table assists the tracking of calorific expenditure alongside the activity log of the participants.

Participant Physical Activity

The Participant_Physical_Activity table stores information about the physical activities of participants. The lifestyle_id is the primary key for each record. The participant_id is the foreign key from the Participant table, while the physical_activity_id relates to the Physical_Activities table. It also stores the physical_activity_hour, which represents the duration in hours a participant performed the activity. This table allows one to track individual activity patterns and their associated calorie burn.

Health_Score Table

The Health_Score table is used for the participants' health measurements, which include BMI, weight, and height. Each record in this table has a unique score_id, which plays the role of the primary key. Participant_id serves as the foreign key in the table to link with the Participant table. Other attributes are bmi for body mass index, participant_weight for present weight, and participant_height for height. This table provides support for health assessment and progress monitoring over time.

Progress_Report Table

The Progress_Report table maintains records of participants' weight loss progress over specific time periods. Each report is uniquely identified by report_id, the primary key. The participant_id field acts as a foreign key referencing the Participant table. Other fields include start_date and end_date to define the tracking period, and weight_loss to record the total weight lost during this period. This table is essential for evaluating participants' health improvement and tracking their fitness journey.

Daily_Recommendations Table

The Daily_Recommendations table offers personalized recommendations on a daily basis to the participants in terms of physical activities and dietary intake. Each record is uniquely identified by recommendation_id, which serves as the primary key. The participant_id field links to the Participant table, while the physical_activity_id and food_id are foreign keys referencing the Physical_Activities and Food_Nutrition tables, respectively. This table provides a customized recommendation to guide the participants in achieving their health and fitness goals.

Relationship Descriptions

- **Participant records Daily_Caloric_Intake** (One-to-Many)
- **Participant receives Daily_Recommendations** (One-to-Many)
- **Participant has Health_Score** (One-to-One)
- **Participant has Progress_Reports** (One-to-Many)
- **Participant performs Participant_Physical_Activity** (One-to-Many)
- **Food_Nutrition is recorded in Daily_Caloric_Intake** (One-to-Many)
- **Food_Nutrition is recommended in Daily_Recommendations** (One-to-Many)
- **Physical_Activities includes Participant_Physical_Activity** (One-to-Many)
- **Physical_Activities is recommended in Daily_Recommendations** (One-to-Many)

Example Queries

1- Retrieve a Participant's Daily Food Intake with Nutritional Information

SELECT p.participant_name, f.food_name, f.calories, dci.serving_size,

    (f.calories * dci.serving_size) AS total_calories, dci.date

FROM Participant p

JOIN Daily_Caloric_Intake dci ON p.participant_id = dci.participant_id

JOIN Food_Nutrition f ON dci.food_id = f.food_id

WHERE p.participant_name = 'John Doe';

2- Find Total Calories Burned by Each Participant in a Given Timeframe

SELECT p.participant_name, SUM(pa.physical_activity_hour * a.burning_calorie_per_hour) AS total_calories_burned

FROM Participant p

JOIN Participant_Physical_Activity pa ON p.participant_id = pa.participant_id

JOIN Physical_Activities a ON pa.physical_activity_id = a.physical_activity_id

WHERE pa.physical_activity_hour IS NOT NULL

GROUP BY p.participant_name;

3- Generate a Health Progress Report for a Participant

SELECT p.participant_name, pr.start_date, pr.end_date, pr.weight_loss, hs.bmi, hs.participant_weight, hs.participant_height

FROM Progress_Report pr

JOIN Participant p ON pr.participant_id = p.participant_id

JOIN Health_Score hs ON pr.participant_id = hs.participant_id

WHERE p.participant_name = 'Jane Smith';