FITNESS TRACKER MANAGEMENT SYSTEM
Database Project Documentation

By

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PROJECT OVERVIEW

The Fitness Tracker Management System is designed to manage user fitness data, track their activities (steps, calories burned, workouts), and store important user metrics. This database system is a practical application of concepts learned in Database Management Systems, such as data modeling, relational database design, and SQL scripting for data manipulation and retrieval.

The system allows users to log various fitness activities, track their progress, and save the data for long-term use. It also includes user authentication, enabling users to securely access their fitness data.

ENTITY-RELATIONSHIP DIAGRAM (ERD)

The **Entity-Relationship Diagram** (ERD) represents key entities in the **Fitness Tracker Management System**. These entities include Users, Activities, Workouts, and Progress Logs. Below are the entities and their relationships.

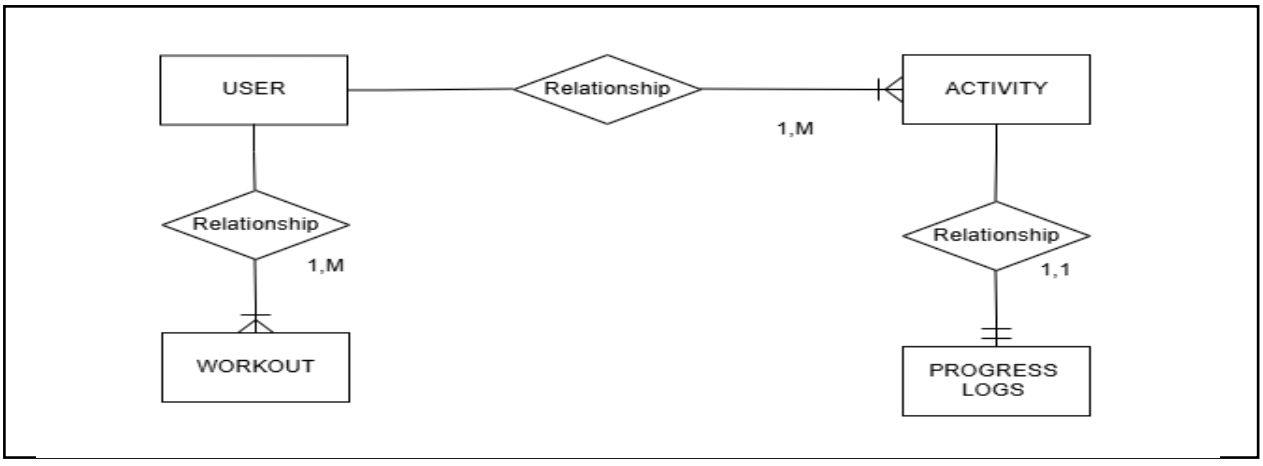

Figure 1. Entity Relationship Diagram

Entities and their Relationships

1. **USER and ACTIVITY**

   - **Type**: One-to-Many (1:N)
   - **Description**: Each user must log multiple activities (e.g., steps, calories), but each activity is tied to one specific user.

2. **USER and WORKOUTS**

   - **Type:** One-to-Many (1:N)
   - **Description:** Each user must perform multiple workouts over time, but each workout log is tied to only one user.

3. **ACTIVITY and PROGRESS LOGS**

   - **Type:** Many-to-Many (M:N)
   - **Description:** Each activity is associated with a single progress log, which contains detailed metrics for that activity.

SQL SCRIPTS

```
-- Create Database
CREATE DATABASE fitness_tracker;

-- Use Database
USE fitness_tracker;

-- Create Users Table
CREATE TABLE Users (
    user_id INT PRIMARY KEY AUTO_INCREMENT,
    username VARCHAR(100) NOT NULL,
    password VARCHAR(255) NOT NULL,
    email VARCHAR(100),
    date_joined DATE
);

-- Create Activities Table
```

```
CREATE TABLE Activities (
    activity_id INT PRIMARY KEY AUTO_INCREMENT,
    user_id INT,
    steps INT DEFAULT 0,
    calories INT DEFAULT 0,
    activity_date DATE,
    FOREIGN KEY (user_id) REFERENCES Users(user_id)
);

-- Create Workouts Table
CREATE TABLE Workouts (
    workout_id INT PRIMARY KEY AUTO_INCREMENT,
    user_id INT,
    workout_name VARCHAR(100),
    duration INT,  -- duration in minutes
    workout_date DATE,
    FOREIGN KEY (user_id) REFERENCES Users(user_id)
);

-- Create Progress Logs Table
CREATE TABLE ProgressLogs (
    log_id INT PRIMARY KEY AUTO_INCREMENT,
    activity_id INT,
    total_steps INT,
    total_calories INT,
    workout_count INT,
    log_date DATE,
    FOREIGN KEY (activity_id) REFERENCES Activities(activity_id)
);

-- Create Daily Summary Table
CREATE TABLE DailySummary (
    summary_id INT PRIMARY KEY AUTO_INCREMENT,
    user_id INT,
    total_steps INT DEFAULT 0,
    total_calories INT DEFAULT 0,
    total_workouts INT DEFAULT 0,
    summary_date DATE,
    FOREIGN KEY (user_id) REFERENCES Users(user_id)
);
.
```


XAMPP for Windows - mysql
mysql -u root
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 8
Server version: 10.4.32-MariaDB mariadb.org binary distribution
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
MariaDB [(none)]> CREATE DATABASE fitness_tracker;
Query OK, 1 row affected (0.003 sec)
MariaDB [(none)]> CREATE TABLE Users (
-> user_id INT PRIMARY KEY AUTO_INCREMENT,
-> username VARCHAR(100) NOT NULL,
-> password VARCHAR(255) NOT NULL,
-> email VARCHAR(100),
-> date_joined DATE
->);
ERROR 1046 (3D000): No database selected
MariaDB [(none)]> USE fitness_tracker;
Database changed
MariaDB [fitness_tracker]> CREATE TABLE Users (
-> user_id INT PRIMARY KEY AUTO_INCREMENT,
-> username VARCHAR(100) NOT NULL,
-> password VARCHAR(255) NOT NULL,
-> email VARCHAR(100),
-> date_joined DATE
->);
Query OK, 0 rows affected (0.018 sec)
MariaDB [fitness_tracker]> CREATE TABLE Activities (
-> activity_id INT PRIMARY KEY AUTO_INCREMENT,
-> user_id INT,
-> steps INT DEFAULT 0,
-> calories INT DEFAULT 0,
-> activity_date DATE,
-> FOREIGN KEY (user_id) REFERENCES Users(user_id)
->);
Query OK, 0 rows affected (0.014 sec)
MariaDB [fitness_tracker]> CREATE TABLE Workouts (
-> workout_id INT PRIMARY KEY AUTO_INCREMENT,
-> user_id INT,
-> workout_name VARCHAR(100),
-> duration INT, -- duration in minutes
-> workout_date DATE,
-> FOREIGN KEY (user_id) REFERENCES Users(user_id)
->);

```
Query OK, 0 rows affected (0.010 sec)

MariaDB [fitness_tracker]> CREATE TABLE ProgressLogs (
    -> log_id INT PRIMARY KEY AUTO_INCREMENT,
    -> activity_id INT,
    -> total_steps INT,
    -> total_calories INT,workout_count INT,
    -> log_date DATE,
    -> FOREIGN KEY (activity_id) REFERENCES Activities(activity_id)
    -> );
Query OK, 0 rows affected (0.013 sec)

MariaDB [fitness_tracker]> CREATE TABLE DailySummary (
    -> summary_id INT PRIMARY KEY AUTO_INCREMENT,
    -> user_id INT,
    -> total_steps INT DEFAULT 0,
    -> total_calories INT DEFAULT 0,
    -> total_workouts INT DEFAULT 0,
    -> summary_date DATE,
    -> Bye

Hanz Edward@DESKTOP-QS0KBN7 c:\Users\Hanz Edward\Desktop\xampp
# mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 9
Server version: 10.4.32-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statem

MariaDB [(none)]> USE fitness_tracker;
Database changed
MariaDB [fitness_tracker]> CREATE TABLE DailySummary (
    -> summary_id INT PRIMARY KEY AUTO_INCREMENT,
    -> user_id INT,
    -> total_steps INT DEFAULT 0,
    -> total_calories INT DEFAULT 0,
    -> total_workouts INT DEFAULT 0,
    -> summary_date DATE,
    -> FOREIGN KEY (user_id) REFERENCES Users(user_id)
    -> );
Query OK, 0 rows affected (0.013 sec)
```