2248-CSE-5335-002 WEB DATA MANAGEMENT

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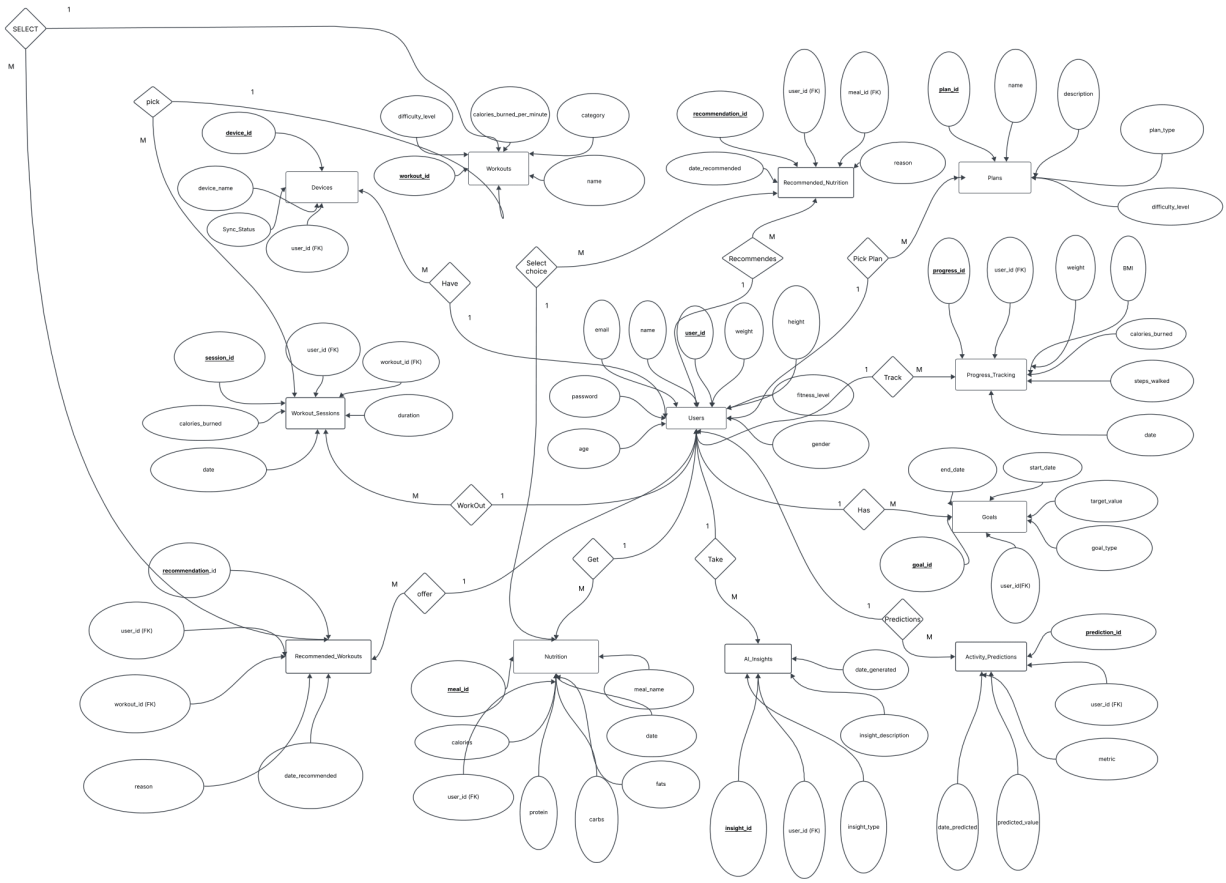
FitXpert AI – ENTITY RELATIONSHIP DIAGRAM

ER Diagram for FitXpertAI



Key Entities & Relationships:

- **Users Table** – Stores user credentials, fitness level, and demographics.
- **Workout Sessions Table** – Tracks exercise sessions, duration, and calories burned.
- **Progress Tracking Table** – Logs steps, BMI, and calorie expenditure.
- **Nutrition Table** – Stores meal intake, calories, and macronutrient breakdown.
- **AI Insights Table** – Provides AI-based fitness recommendations.
- **Activity Predictions Table** – Uses AI models to predict user progress.
- **Recommended Workouts & Nutrition Tables** – Offers AI-powered recommendations.

Relationships & Cardinality for AI-Powered Fitness Tracker

One-to-One Relationships (1:1)

1 Users & Devices

- A user may or may not have a connected device (smartwatch, fitness tracker).
- Each device is uniquely linked to one user.

2 Users & Goals

- A user may have only one active fitness goal at a time.
- Each fitness goal belongs to a specific user.

3 Users & AI Insights

- A user can receive AI-generated insights, but each insight entry belongs to a specific user.

One-to-Many Relationships (1:M)

1 Users & Workout Sessions

- A user can log multiple workout sessions.
- Each workout session belongs to only one user.

2 Users & Progress Tracking

- A user's progress is logged multiple times (daily, weekly, monthly).
- Each progress tracking record is linked to a single user.

3 Users & Nutrition Logs

- A user can log multiple meals in a day.
- Each nutrition entry belongs to one user.

4 Users & Recommended Workouts

- A user can receive multiple AI-recommended workouts.

5 Users & Recommended Nutrition

- A user can receive multiple AI-recommended meal plans.
- Each recommended meal plan is personalized for a single user.

6 Users & Activity Predictions

- AI can generate multiple predictions for a user based on past fitness data.
- Each prediction belongs to one user.

7 Workout Sessions & Workouts

- A workout session is linked to a specific workout type (e.g., Running, Weightlifting).
- Each workout type can be performed in multiple sessions.

Many-to-Many Relationships (M:N)

1 Users & Workouts

- A user can perform multiple types of workouts.& Each workout type can be chosen by multiple users.

2 Users & Goals

- A user can set multiple long-term goals over time (e.g., weight loss, muscle gain).
- Each goal type can be selected by multiple users.

3 Users & Nutrition Recommendations

- AI can suggest multiple meal plans to a single user based on progress.
- The same meal recommendation can be used by multiple users.