

A man in a grey tank top and white shorts is performing a push-up on a red mat in a gym. In the background, another person is working out on a machine. The title text is overlaid on the image.

Gym Membership & Workout Tracking

Introduction



The Gym Membership & Workout Tracking System is designed to efficiently manage gym operations, including member registrations, trainer schedules, and payment processing. The database ensures streamlined operations, data integrity.



Objectives



Gym Database System

Comprehensive system for managing gym operations, including memberships, workouts, and data-driven insights.



Membership Management

Streamlined processes for member registration, subscription tracking, and account management.



Workout Tracking

Detailed records of member activities, exercise routines.



Data-Driven Decision Making

Powerful analytics and reporting tools to support informed business decisions.

Business Description

Membership Management

The gym database provides comprehensive membership management, including member registration, subscription plans, and seamless account management.

Payment Processing

Integrated payment processing functionality allows members to securely and conveniently handle subscription payments, ensuring a smooth and efficient financial experience.



Attendance Monitoring

The database tracks and monitors member attendance, providing valuable data for analysis and optimization of gym operations and resources.

Workout Tracking

The system enables members to track their workout activities, and exercise routines, providing valuable insights to help them achieve their fitness goals.

Trainer Management

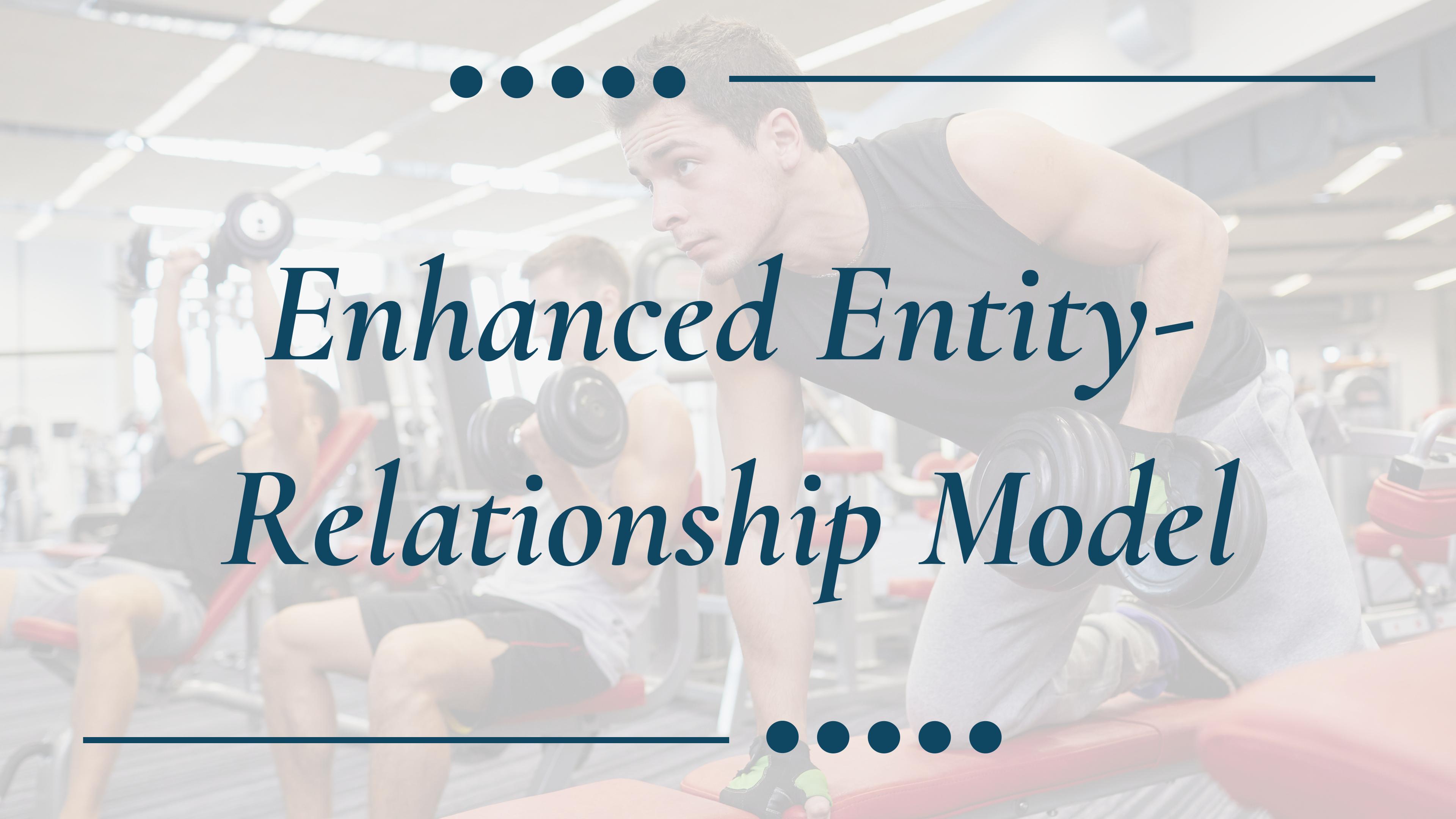
Efficient trainer management ensures that members receive personalized fitness guidance. The system allows for scheduling trainer assignments, tracking trainer availability, and managing specializations, helping optimize trainer utilization and member experience.



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Enhanced Entity- Relationship Model

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A man in a grey tank top and grey shorts is performing a bench press in a gym. He is holding a barbell with weights on both ends. In the background, another person is working out on a machine. The gym has a high ceiling with fluorescent lights.

Core Entities



Member

- member_id (PK):
- name
- age
- gender
- contact_info
- membership_type
(FK
Membership_Plan)
- registration_date
- status



Trainer Super-Type

- trainer_id (PK):
- name
- specialization:
- experience:
- contact_info:
- availability:

Sub-Type

- Full Time Trainer
- Part time Trainer



Membership Plan

- membership_type (PK):
- name
- duration
- cost:
- features

Operational Entities



Workout_Program

Associative Entity - Member & Trainer

- trainer_id (FK Trainer)
- member_id (FK Member)
- Workout_Program_id (PK)
- Workout_Program_date
- Workout_Program_name
- Workout_Program_duration



Class

- class_id (PK)
- name:
- member_id (FK Member)
- trainer_id (FK Trainer)
- date
- time
- location



Attendance

Weak Entity & Associative Entity - Member & Class Schedule

- member_id (FK Member)
- class_id (FK Class_Schedule)
- trainer_id (FK Trainer)
- check_in_time
- check_out_time

Financial Entities



Payment

Super-Type

- payment_id (PK):
- member_id (FK Member)
- amount
- date
- method

Sub-Type

- Online Payment
- Cash Payment



Invoice

- assignment_id (PK):
- trainer_id (FK Trainer)
- member_id (FK Member)
- start_date
- end_date:

Administrative Entities



User Account

Weak Entity

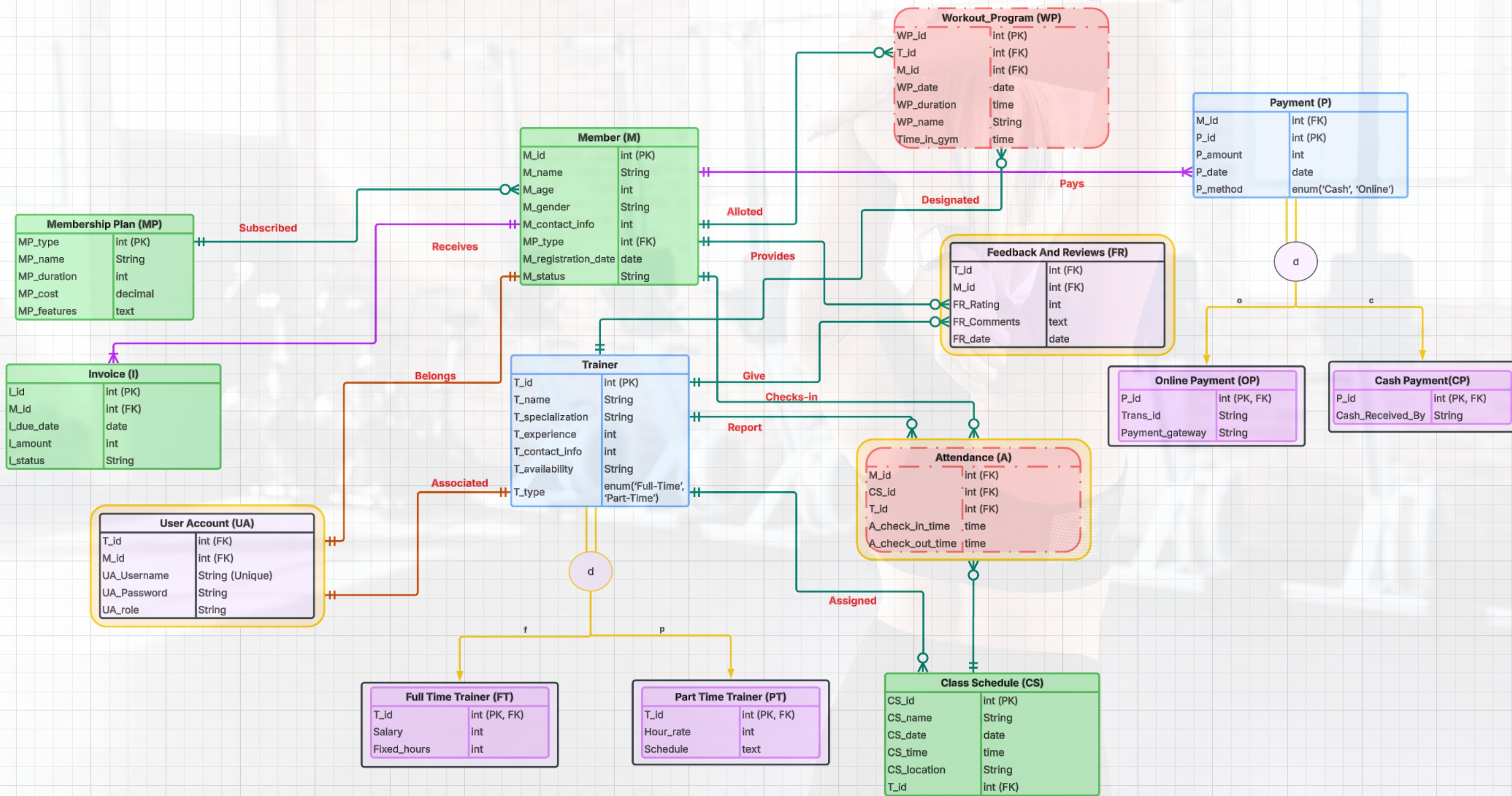
- member_id (FK Member)
- trainer_id (FK Trainer)
- username
- password_hash
- role



Feedback & Reviews

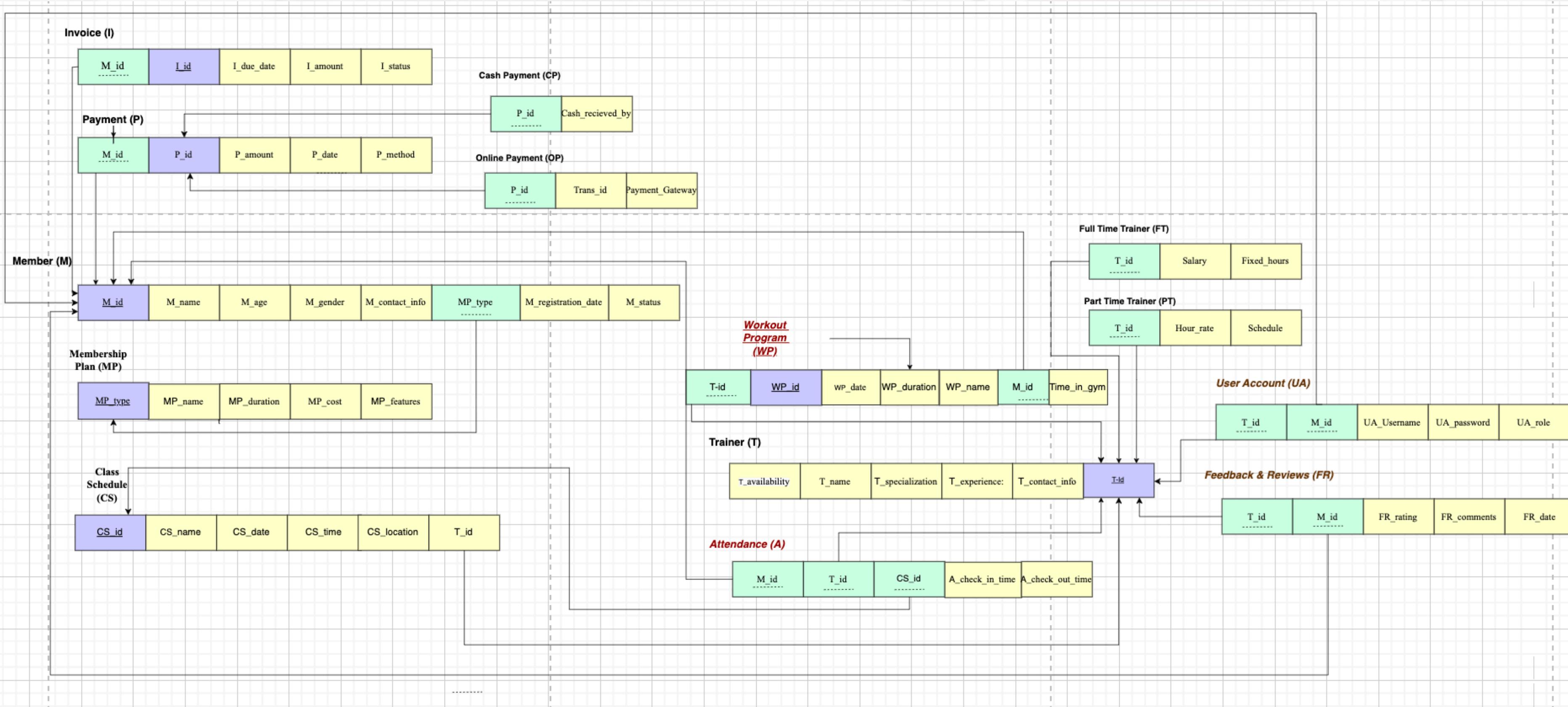
Weak Entity

- member_id (FK Member)
- trainer_id (FK Trainer)
- rating
- comments
- date



A man in a grey tank top and grey shorts is performing a dumbbell row exercise in a gym. He is leaning forward with one arm extended down, holding a black dumbbell. A red weight stack is visible behind him. In the background, another person is working out on a machine. The image has a light gray overlay.

Relational Model



SQL

Implementation & Application



The implementation phase of the Gym Management System involved **setting up the database schema, inserting sample data, executing key queries, and addressing challenges** to ensure a fully functional system. This section outlines the steps taken to bring the relational model to life in MySQL Workbench.

Sample Data Population

To ensure the Gym Management System functions smoothly, we populated the database with some data.

We Included:

- Active vs. Inactive members
- Different membership plans (Basic, Premium, VIP)
- Trainers with varying experience levels and specializations
- Diverse payment methods (Cash, Online)
- Workout logs tracking different types of exercises



Query Execution

To test the system's functionality, we executed a few SQL queries..

M_id	M_name	M_age	M_gender	M_contact_info	MP_type	M_registration_date	M_status
1	John Doe	25	Male	john@example.com	1	2025-03-09	Active
2	Jane Smith	30	Female	jane@example.com	2	2025-03-09	Active

1) Retrieve All Active Members with Membership Type

Name	Workout_Name	Date	Duration	Amount_Of_Time_In_Gym
John Doe	Full Body Workout	2024-03-07	60	75
Jane Smith	HIIT Training	2024-03-06	45	60
Mike Johnson	Yoga Basics	2024-03-05	40	50

2) Track Workout Progress of Each Member

	T_id	T_name	Total_Reviews	Average_Rating
0	1	Sarah Connor	3	4
1	2	James Brown	0	None
2	3	Alice Green	0	None

3) Retrieve the Trainer Performance Ratings

UI Development with Streamlit

To make the Gym Management System more user-friendly, we built a UI using Streamlit, with real time updates in the database.



- Member Management – View, add, and update member details effortlessly.
- Trainer & Class Scheduling – Assign trainers, check schedules, and manage class bookings.
- Payments & Invoices – Tracking payments and monitor pending transactions.
- Feedback Collection – Collect member reviews for trainer performance.
- Custom SQL Query Execution – Admins can run SQL queries and get real-time results



Member Management

	M_id	M_name	M_age	M_gender	M_contact_info	M_status
0	1	John Doe	25	Male	john@example.com	Active
1	2	Jane Smith	30	Female	jane@example.com	Active
2	3	Mike Johnson	35	Male	mike@example.com	Inactive

Add New Member

Name

Paul

Age

10

Gender

Male

Contact

Paul@example.com

Status

Active

Add Member

Member added successfully!





Gym Management System

Go to

- Home
- Members
- Trainers
- Classes
- Payments
- Feedback
- Run SQL Query

Run SQL Query

Enter your SQL query:

Select * from Member

Execute Query

	M_id	M_name	M_age	M_gender	M_contact_info	MP_type	M_registration_date	M_status
0	1	John Doe	25	Male	john@example.com	1	2025-03-09	Active
1	2	Jane Smith	30	Female	jane@example.com	2	2025-03-09	Active
2	3	Mike Johnson	35	Male	mike@example.com	3	2025-03-09	Inactive
3	5	Paul	10	Male	Paul@example.com	None	2025-03-11	Active



Potential Issues

Issue 1: Data Redundancy & Duplicate Entries

- Issue: Running multiple INSERT INTO queries without checks can lead to duplicate member or payment records.
- Solution: Added UNIQUE constraints on critical attributes (e.g., member email, username).

Issue 2: Data Consistency in Supertype-Subtype Relationships

- Issue: The database includes subtypes. If not properly enforced, inconsistencies may arise.
- Solution: Used generalization-specialization constraints to ensure subtypes inherit from the correct supertype and maintain data consistency.





Thank you