

CS 5200 Database Management Systems

Project Proposal

Gym Management System

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Project Description

The goal of this project is to design and implement a **Gym Management System**, a relational database application that helps streamline interactions between gym members and personal trainers. The system provides an efficient way to manage memberships, trainer appointments, workout plans and exercise records within a single application. It aims to replace manual or paper-based methods with a digital solution that improves communication, tracking, and overall management inside a gym.

The application supports two main types of users, **Members** and **Personal Trainers**. Members can take a subscription at a gym, log their workouts, record sets and exercises, and view personalized workout plans created by their trainers. They can also book appointments with trainers depending on their availability. Trainers, in turn, can view and manage their appointments, create workout plans tailored to individual members, start and record appointment sessions, and monitor their clients' progress over time.

From a database perspective, the system models real-world relationships between key entities such as gyms, trainers, members, appointments, workouts, and exercises. Each interaction, like booking an appointment or logging a workout, is captured and maintained using relational tables to ensure data consistency and reliability. Overall, this project aims to create a structured and scalable database solution that enhances the efficiency of gym operations while improving the user experience for both members and trainers.

Data Description:

The database contains information on the **Members** that have subscribed to a **Gym**, and the **Personal Trainers** that are employed at the gym. Members are allowed to take appointments with a personal trainer based on their availability, and the trainers can in turn create workout plans, which members can then use for their workouts. The database can also track the workouts of a particular member, logging each exercise that they've done, and the number of sets and reps performed.

Each gym is uniquely identified by a unique identifier and the gym name, the database also keeps track of contact information of the gym such as phone number and email address. A gym can employ multiple trainers and host multiple members through membership subscriptions, each with attributes like start and end dates, membership status, and cost. This structure allows the system to handle multiple gyms independently while maintaining data integrity for both staff and members. A trainer who is employed at the gym, can attend **Appointments** created by members. Members can create new appointments with a trainer, based on their specific muscle group specialization. An instance of an appointment is associated with only a single member and a trainer, while a member can create one to many appointments, and a trainer can take one to many appointments. Based on these appointments with a member, a trainer can create **Workout Plans** for the member, based on the focus muscle group specialization. A workout plan may contain multiple **Plan Exercises**, containing the details of number of sets and reps to be performed. Each Plan Exercise is linked to a single **Exercise** in the database. A member can then use this Workout Plan created for them, in their **Workouts**.

Overall, this database design ensures a clear representation of how gyms operate digitally, by managing memberships, workout tracking, and trainer-member interactions in a relational and scalable structure. It supports easy data retrieval for workout history, progress tracking, appointment management, and gym administration activities such as member management, forming the backbone of the Gym Management System.

Software, Apps, Languages, Hardware:

Language:

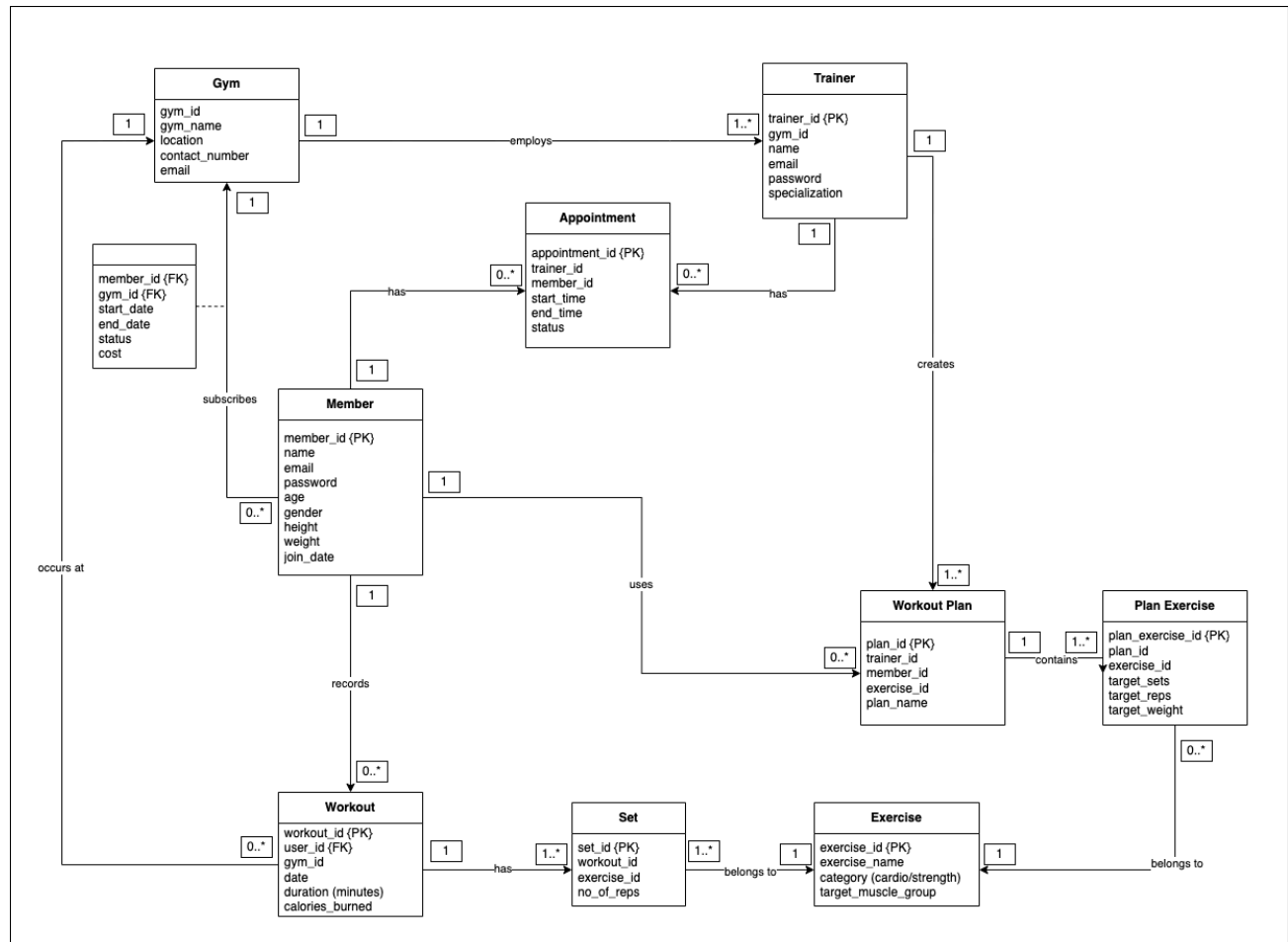
Python on backend, Python on frontend

SQL for database management

Why does this interest you?

In many gyms today, the process of matching an athlete or a member to a gym trainer who has a specific specialization still needs an upgrade. Currently, in most gyms, members are assigned to a random trainer who may or may not have been specialized in a particular type of workout that the users have interest in. With this implementation, athletes or gym members will have the option to connect or book dynamic appointments with their desired trainer based on their focus muscle group.

UML Diagram - Conceptual Design:



User Interaction:

This application is developed from the perspective of two personas:

1. Members: Users who take a subscription to a gym. They have access to two main features:
 - a. Workouts
 - b. Appointments
2. Trainers: Users who work as an employee at the gym and have specializations such as cardio, calisthenics, yoga, etc. They have access to two features:
 - a. Appointments
 - b. View Member Details

User Flow Diagram:

