Gym Membership System

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Name: Gym Membership System

Technologies Used:

- **PostgreSQL** – Database management system for storing and managing gym-related data.
- **pgAdmin** – Tool for designing, managing, and querying the database.

Concepts Used:

- **ER Diagram** – Designing the structure of the database with entities and relationships.
- **Functional Dependencies** – Identifying dependencies to ensure database normalization.
- **Relational Database Design** – Creating tables and defining relationships based on the ER diagram.

Purpose:

The Gym Membership System is designed to help fitness centers efficiently manage memberships, trainers, workout sessions, and payments. It provides an organized way for members to register, book training sessions, and track their progress, while gym staff can monitor memberships and process payments.

Features:

Member Registration & Management:

- Users can create an account and register as gym members.
- Members can book workout sessions with trainers.
- Members can view their workout history and progress.

Trainer Management:

- Trainers can create workout plans for members.
- Trainers can schedule sessions and track assigned members.

Workout Plans & Sessions:

- Predefined workout plans categorized based on fitness goals.
- Members can enroll in personal or group sessions.

Payment & Subscription Management:

- Members can view and renew their memberships.
- Payments are recorded, and pending payments are tracked.

Database Design:

ER Diagram:

- Entities: Member, Trainer, Workout Plan, Session, Payment, etc.
- Relationships:
    - A member can book multiple sessions with different trainers.
    - A trainer can conduct multiple sessions for different members.
    - A member follows a workout plan assigned by a trainer.
    - Each member has a membership type with a validity period.

Functional Dependencies:

- Ensuring that data redundancy is minimized by identifying dependencies.
- Applying normalization techniques (BCNF) to optimize the database structure.

Relational Schema:

- Designing tables based on the ER diagram while ensuring proper relationships.

PostgreSQL & pgAdmin:

- PostgreSQL: Used to implement the relational schema.
- SQL Queries: Handling CRUD operations (Create, Read, Update, Delete) for managing members, trainers, workout plans, sessions, and payments.

Application Process:

1. Member Registration: Users register and get a membership plan.
2. Session Booking: Members can book sessions with trainers.

3. Trainer Management: Trainers manage workout plans and member progress.
4. Payment Processing: Membership renewals and training session payments are recorded.