Design Document

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Database Purpose:

- **Membership Management:** All data pertaining to gym members is centrally stored in the database. Personal information, membership status, contact information, payment information, and membership preferences are all included. It makes it possible to track member information, subscription plans, and membership renewals effectively.
- **Trainer Management:** The database contains details about gym instructors or trainers, including their credentials, availability, and member assignments. This allows for efficient trainer matching and member-trainer allocation.
- **Exercise Programs and Subscription Packs**: The database contains information on the numerous workouts plans and subscription packages that the gym offers. This covers information about workout plans, cost, accessibility, and member preferences. It makes sure that customers may choose the subscription packages that best meet their fitness objectives.
- **Equipment Inventory:** The database keeps track of the availability, upkeep schedules, and condition of the gym equipment inventory. This information helps with scheduling and guarantees that the gym equipment is in top condition.
- **Merchandise Management:** Inventory and sales data for gym merchandise are stored in the database. This allows for efficient merchandise tracking, stock management, and sales transactions. It helps in understanding merchandise demand and optimizing inventory levels.
- **Business Analytics:** The database provides insights into member demographics, well-liked exercises, subscription pack preferences, and item sales. It also facilitates data analysis and reporting. Making informed company decisions, developing marketing plans, and enhancing services are all made easier with the use of this data.
- **Scalability:** The database can scale to handle more records as the gym grows and the volume of data rises, guaranteeing its long-term viability and adaptability.

Business Problems Addressed:

- **Membership and Data Management:** Managing member data, subscription plans, and payment records without a reliable database can be time-consuming and error prone. The database simplifies the procedure, cutting down on administrative mistakes and guaranteeing accurate and current member data.
- **Instructor and Trainer Allocation:** Without a centralized system, efficiently allocating trainers to members and monitoring their schedules might be difficult. Utilizing the database, the best instructors are assigned based on member preferences and trainer availability.
- **Equipment and Inventory Management:** It's essential to keep track of maintenance schedules, equipment availability, and gym equipment to provide a secure and efficient workout environment. By effectively monitoring equipment inventory and maintenance, the database lowers downtime and safety hazards.
- **Merchandise Sales and Inventory:** The database streamlines the management of the gym's inventory of goods, ensuring that the proper items are always on hand. Additionally, it offers perceptions on trends in the sales of goods, facilitating wiser purchase choices.
- **Data-Driven Decision Making:** The database's business analytics and reporting features provide information on member demographics, well-liked workouts, and goods choices. Making data-driven judgments about marketing tactics, service enhancements, and business expansion is beneficial.
- **Scalability and Adaptability:** Scaling operations and maintaining data can be difficult as the gym industry expands. The database system is made to develop and change to meet the gym's changing needs, assuring its long-term profitability and expansion.

Business Rules:

- A member may have zero or more subscriptions.
- A member may purchase zero or more merchandise.
- A member may use zero or more equipment.
- A member may select zero or more exercise.
- A member may perform zero or more exercise.
- A member may be associated with zero or more trainers.
- A trainer teaches one or more exercise.
- A subscription must contain one or more exercise.

Design Rules:

- Use Crow's Foot Notation.
- Specify the primary key fields wherever required, by specifying PK beside the fields.
- Draw a line between the fields of each table to show the relationships between each table. This line should be pointed directly to the fields in each table that are used to form the relationship.
- Specify which table is on the one side of the relationship by placing a one next to the field where the line starts.
- Specify which table is on the many sides of the relationship by placing a crow's feet symbol next to the field where the line ends.

Entity Name	Why is entity included?	Relationship to others
Exercise	This entity contains crucial information such as the name, type, time slot, and the number of attendees for the exercise. It plays a vital role in providing exercise specifics.	This entity has an identifying relationship Session and Selection.
Merchandise	This entity is essential for the allocation of merchandise data. It includes information about the merchandise, including color, price, size, and style. It also indicates which merchandise items are currently available for sale and which are in stock.	This entity has an identifying relationship with Purchase.
Selection	The entity is required for defining the relationship between members and the exercise plan that they have chosen.	Selection entity has a relationship with the Members and Exercise entity.
Session	This entity encompasses session details, specifying which exercises are conducted by which trainers and identifying the members who have signed up for these sessions.	This entity has a relationship with Exercise, Trainer, and Subscriptions entity.
Performs	This entity is tasked with managing member subscription IDs and Exercise IDs, allowing us to discern which exercises are undertaken by specific members.	Performs entity has a relationship with Exercise and Members entities.
Purchase	The entity holds data for purchases made by which member and what merchandise they bought.	This entity is related to Members and Merchandise entities.
Members	This is the core entity in the database. It holds the data of all the members in the gym and gives us all the details about the members. It helps us track which member is assigned what trainer and subscription details.	As the main entity, it has multiple relations. It is related to the Selection, Performs, Purchase, ContactInfo, Usage and Subscriptions entities.
Trainer	This entity contains vital information about the trainer,	This entity is related to the ContactInfo and

	including their name, email, gender, start date, experience, salary, and contact details. It provides a comprehensive overview of the trainer's profile.	Session entities.
Subscriptions	The Subscription entity shows the data about how many members have subscribed, what is the price of the plan and the duration of the subscription.	This entity has a relationship with Session and Members entities.
Usage	This entity holds the data about which member is using what equipment.	Usage entity is related to Equipment and Members entities.
Equipments	This entity is responsible for storing all the equipment details such as, the quantity, the cost, and the name of the equipment.	This entity holds a relationship with the usage entity.
Contactinfo	This entity stores the Trainer ID and Member ID, enabling us to easily access the contact information for both members and trainers.	This entity holds a relationship with the Trainer and Members Entity.

Entities Relationship:

From	To	Relationship
Members	Purchase	one to many
Members	Selection	one to many
Members	ContactInfo	one to many
Members	Usage	one to many
Members	Performs	one to many
Members	Subscriptions	many to many
Subscriptions	Session	one to many
Trainer	Session	one to many
Trainer	ContactInfo	one to many
Exercise	Selection	one to many
Exercise	Session	one to many
Exercise	Performs	one to many
Equipments	Usage	one to many