

# DATABASE DESIGN DOCUMENT

## Database Purpose:

The purpose of the database in the Squashbusters Center Management project is to effectively manage and streamline operations within a fitness center. It will serve as a centralized platform for data storage, organization, and analysis, facilitating various aspects of the center's operations.

## Business Problems Addressed:

- Streamlined membership tracking and renewal management, ensuring accurate invoicing and timely member communication.
- Optimization of class scheduling based on attendance trends, leading to better class offerings and improved member satisfaction.
- Efficient tracking of equipment condition and maintenance tasks, ensuring equipment safety and minimizing downtime.
- Accurate tracking of membership fees, payments, and dues, enabling precise financial reporting and effective financial management.
- Effective coordination of staff schedules, roles, and certifications, ensuring proper staffing and efficient employee management.
- Customizable reports on member demographics, class attendance, revenue summaries, and equipment utilization, enabling data-driven decision-making and performance analysis.

## Business Rules:

- Each Employee shall have one unique employee ID.
- Each member shall have one unique member ID.
- Each class/event shall have one unique class ID.
- Each attendance record must link a member to a specific class.
- Each equipment item shall have a unique equipment ID.
- Each maintenance record must be associated with specific equipment item.
- Each payment must be associated with a member.
- Unique locker assignments.
- Each member can be associated with multiple fitness classes.
- An employee can have many certifications.

## Design Requirements:

- Utilize Crow's Foot Notation, a standardized graphical representation, for designing the ERD.
- Clearly indicate the primary key fields in each table by labeling them as PK.
- Establish relationships between tables by drawing lines that directly connect the fields involved in the relationship.
- Use a "one" notation next to the field where the line originates to indicate the table on the one side of the relationship.
- Use a crow's feet symbol next to the field where the line terminates to indicate the table on the many sides of the relationship.

## Design Decisions:

Entity Name	Why Entity Chosen	Relationship With Other Entities
Member Profiles	To store and manage member information, payment history, and contact details for efficient membership management and personalized experiences.	A member can have multiple payment records.  A member can attend multiple fitness classes.  A member can have multiple membership records
Staff Profiles	To track employee information, roles, certifications, and work schedules for effective staff management and scheduling.	One staff member can have multiple certifications.
Fitness Classes	To manage class details, instructors, schedules, and attendance for organizing and tracking fitness classes.	One fitness class can have multiple attendees (members).  One fitness class can have one instructor.

		One fitness class is associated with a specific class type.
Class Types	To define and categorize different types of fitness classes allowing for better organization and management of classes based on their specific characteristics and instructor qualifications.	Multiple fitness classes can belong to the same class type.  One class type requires a specific certification ID.
Class Attendance	To track member attendance, analyze popularity, optimize scheduling, and identify trends for class offerings.	One attendance record corresponds to one member attending a specific fitness class.
Equipment Catalog	To maintain a catalog of fitness equipment for efficient tracking of equipment details, location, and maintenance history	One equipment item can have multiple maintenance records.
Equipment Maintenance History	To track maintenance history inspection, repairs and replacements for proper equipment maintenance	One maintenance record corresponds to one equipment item.
Payment	To track membership fees, payments, and dues for accurate invoicing and financial reporting.	One payment record corresponds to one member's payment transaction.
Locker	To manage locker assignments and availability for members to store personal belongings.	One locker is assigned to one member.
Certifications	Tracks certifications and credentials held by employees and instructors, ensuring they are qualified for specific classes or events	One certification is associated with multiple staff members.
Calendar Dimension	Provides calendar information, like the day of the week, to simplify scheduling queries by specific days.	Used as a reference for scheduling queries and is indirectly related to other entities for scheduling classes and events.