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**Gym & Class Management System**

**Assignment # 1**

**By Azka Maryam-BSE233077**

**Ayesha Malik-BSE233105**

**Abdul Hadi-BSE233222**

**Lecturer Ms. Hina Rashid**

**Introduction to Database System**

**Capital University of Science & Technology**

**Gym & Class Management System**

**Database Planning**

The planning process for the database involves identifying the core entities and their relationships. For this project, we focused on entities such as members, instructors, classes, equipment, schedules, and attendance. Planning included deciding what data each entity should store and how they interact with each other. The main goal is to create an efficient structure that supports class management, attendance tracking, and equipment monitoring.

**Mission Statement & Objectives**

**Mission Statement**

To develop a comprehensive database management system that efficiently handles gym memberships, class schedules, instructor profiles, and equipment inventory, while providing insightful analytics on class popularity and member attendance.

**Objectives**

- Manage gym member profiles, membership types, and attendance records.

- Maintain accurate class schedules and track class popularity.

- Store and monitor equipment inventory and maintenance history.

- Manage instructor profiles and availability.

- Enable fitness progress tracking for members (future enhancement).

- Integrate class reminder notifications for users (future enhancement).

**System Definition**

**Scope**

This system is designed for gym owners and staff to manage day-to-day operations like member registrations, class schedules, instructor profiles, and equipment inventory. It allows tracking member attendance and analysing class popularity, helping gym managers optimize their resources. Future expansions include fitness progress tracking and reminder notifications for members.

**Purpose**

To centralize and streamline gym operations, reducing manual workload and providing valuable insights through class popularity data, member activity tracking, and equipment management.

**System Boundary Diagram**

**User Views and Data Cross-reference**

|  |  |
| --- | --- |
| User View | Data Used |
| Member Management | Member Profiles, Membership Types |
| Class Management | Class Schedules, Instructor Profiles |
| Attendance Tracking | Member Attendance, Class Popularity |
| Equipment Tracking | Equipment Inventory, Maintenance |

**Requirement Collection and Analysis**

**Requirement-Gathering**:  
For this project, Gym managers highlighted a growing need for automated scheduling and attendance tracking, particularly as membership numbers increase. This reflects the wider trend among gyms in Pakistan and globally, where digital systems are increasingly essential for managing large customer bases. A study from the International Health, Racquet & Sports club Association (IHRSA) shows that fitness facilities worldwide are adopting similar digital solutions to improve member experience and operational efficiency.

In Pakistan, gym owners often find it challenging to maintain equipment inventories and track class popularity manually. To address this, features like equipment inventory management and analytics for class popularity were prioritized, allowing gyms to identify popular classes and optimize resources. This aligns with a survey by the Pakistan Fitness Federation (PFF), which indicated that many gym owners seek automated systems to better manage high-demand classes and monitor equipment usage.

**Analysis**:  
The data was analysed to prioritize the main features of the system, including member profile management, class schedules, attendance, and equipment inventory. Insights gained from studies showed a high demand for fitness progress tracking and class reminders to keep members engaged and consistent in their attendance. Worldwide, gyms that use similar features have reported increased customer satisfaction and retention, as digital tracking helps members monitor their fitness journey and stay motivated.