Project Overview

Motivation

The gym currently operates without any data management system. Furthermore, there is no clear formal sign-up process, meaning that client records are not stored in any centralized location. When the gym was first opened, it had a small community, making it easy for the owner to track client memberships and attendance from memory, or sometimes with an excel sheet. However, as time passed and the gym's popularity grew, the clientele increased significantly, which led to a lack of organization and mismanagement in memberships and payments.

One of the most critical issues is that the gym owner has no reliable way to monitor client subscriptions, package details, and client sessions. This has caused instances where some clients continued to use the gym's facilities without providing any payment, since there was no direct way to track their membership status, and no way for the coach to prove a client's membership was over. Moreover, without a proper database, keeping records of client preferences, session history, and other relevant information posed to be a major challenge for the gym owner and the coaches.

Stakeholders

The primary stakeholders who will benefit from this project are the following:

- **Gym Owners and Coaches:** membership tracking, billing, and attendance.
- **The Clients:** Membership details, attendance history, information about available packages, booking rooms.

Requirements

Below are the requirements concluded from the interview with the owner

- **Coach:** Represents a gym trainer or instructor responsible for guiding clients.
  - ID: A unique identifier for each coach.
  - Phone# Contact number for communication with clients or management.
  - Name Full name of the coach
  - Specialization (multi-leveled) - Areas of expertise
- **Client:** Represents a gym member who purchases a package and attends sessions.
  - ID: A unique identifier for each client.

- Name: Full name of the client.
- Phone#: Contact number for communication and notifications.

- **Room:** Represents a specific area in the gym where private sessions or classes are held.
- ID- A unique identifier for each room.
- Location- Description of where the room is within the gym
- Price_Per_Hour- Hourly rate for booking the room.

- **Package:** Represents a membership plan offered by the gym.
- ID- A unique identifier for each package.
- Name- The name of the package
- Price- Cost of the package.
- Duration - Length of the package
  - Times_Per_Week - Number of sessions allowed per week
  - #Weeks - Total number of weeks covered by the package.

- **Session:** Represents a scheduled workout or training session attended by a client.
- ID - A unique identifier for each session.
- Day - The specific day of the week when the session occurs
- Time - The time at which the session is scheduled

Relations:

- One coach can train multiple clients, multiple clients can be trained by one coach.
- One client can book one room at a certain time, room can be booked by one client at a certain time.
- One coach can manage multiple coaches, multiple coaches are managed by one coach.
- Many clients can pay for a specific package, a specific package can be purchased by multiple clients.
- A session is attended by one coach and multiple clients.

Related Work

This paper involves a conceptual project of a smart gym system that uses variety of technologies such as IoT to integrate a fully immersive and user centric approach to gym habits. Their proposed system includes handling of basic management proceses such as payments, inventories, trainers and employees [1].

This paper showcases the implementation of a fucntional web-based gym management system which uses JAVA and JSP, CSS, JavaScript technologies and utilizes MYSQL database. The system supports the usage of different entities, including coaches, members and system administrators, each entity consists of their own set of privileges and functionalities. The member entity is supported with online booking and complaint features. The coach handles member information and complaint management modules [2].

The paper presents a web-based gym management system, The system manages employees, members, facilities, payroll, receipts and product information. XAMPP Apache and MySQL server were used for the implementation [3].

Bibliography

[1]N. Kashmar, M. Adda, and H. Ibrahim, "Access Control Metamodels: Review, Critical Analysis, and Research Issues," *Journal of Ubiquitous Systems & Pervasive Networks*, vol. 3, no. 1, 2021, doi: https://doi.org/10.5383/JUSPN.03.01.000. Available: https://iasks.org/articles/juspn-v16-i2-pp-93-102.pdf

[2]D. Zhao, F. Wang, and X. Zhu, "Design and Implementation of Gym Management System Based on Web," *Atlantis highlights in social sciences, education and humanities*, pp. 44–51, Jan. 2023, doi: https://doi.org/10.2991/978-94-6463-192-0_6

[3]M. Adul Shakoor, M. Abbas, M. I. Mehdi, and S. Hussain, "(PDF) DATABASE AND TRANSACTIONS MANAGEMENT SYSTEM FOR A SMART GYM: LAYYAH FITNESS CENTER," *ResearchGate*, 2018. Available: https://www.researchgate.net/publication/340491607_DATABASE_AND_TRANSACTIONS_MANAGEMENT_SYSTEM_FOR_A_SMART_GYM_LAYYAH_FITNESS_CENTER