Project Report: Online Fitness Coaching System

John Anderson

Project Overview

The aim of this project was to design and implement a basic database system for an Online Fitness Coaching platform. This system allows clients to book sessions, follow workout plans, receive nutrition guidance, and manage payments. The goal was to create a system that is both scalable and easy to understand, using Entity-Relationship (ER) modeling, Microsoft Access, and MySQL.

System Features

The system includes the following core functionalities:
- Client Registration and Management: Clients can enroll in free or premium plans and track fitness goals.
- Coach Management: Coaches are stored with their specialties and availability.
- Session Scheduling: Clients can book live or pre-recorded coaching sessions.
- Workout Plans: Coaches design various workouts, which are stored and tracked.
- Nutrition Plans: Custom meal plans are assigned to clients based on goals.
- Payments: The system tracks payments made by clients for premium services.

Design Process

1. Requirements Gathering:
   - We identified entities like Client, Coach, Session, Workout, NutritionPlan, and Payment.
   - Relationships such as books, conducts, creates, assigned, and makes were established based on user interactions.

2. ER Diagram (Chen Style):
   - A hand-drawn ER diagram using Chen notation was drafted, followed by a digital version in Draw.io.
   - All entities included attributes (with underlined primary keys) and clear relationship diamonds.

3. Database Implementation:
   - Tables were created in Microsoft Access using the ER diagram as a guide.
   - Sample data (5–10 records per table) was added to simulate realistic use cases.

- SQL CREATE TABLE scripts were generated to replicate the schema in MySQL Workbench.

Tools Used

- Microsoft Access – for initial database creation and relationship visualization.
- Draw.io – for digital ER diagram creation.
- MySQL Workbench – for generating and testing SQL scripts.
- GitHub – for project file storage and version control.

Challenges Faced

- Design Scope Management: It was important to keep the model simple enough for a mini project while still representing a realistic system.
- Relationship Mapping: Some relationships, like between clients and sessions, required careful relationship visualization.(1:M).
- Tool Limitations: Microsoft Access has limited export capabilities to MySQL; therefore, manual script creation was necessary.
- Data Normalization: Ensuring that all data was stored efficiently without redundancy required additional effort in designing foreign keys and attributes.

Conclusion

This project provided hands-on experience in data modeling, ER diagramming, SQL script creation, and basic database design principles. The resulting system meets the core needs of a fitness coaching platform and could be expanded in the future to include features like progress tracking, messaging, and mobile access.