COMP3005 Final Project Verison 2 Report

Group Members:
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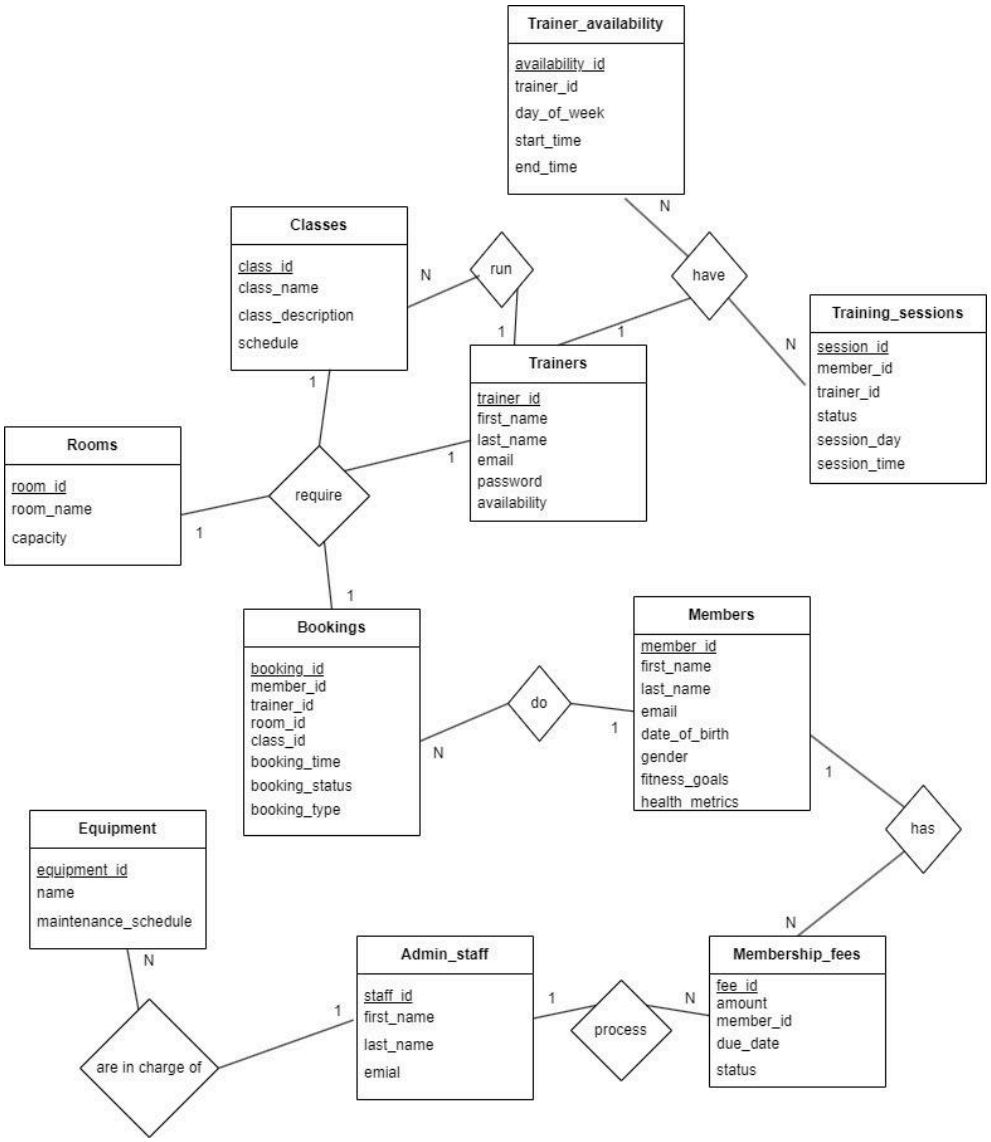
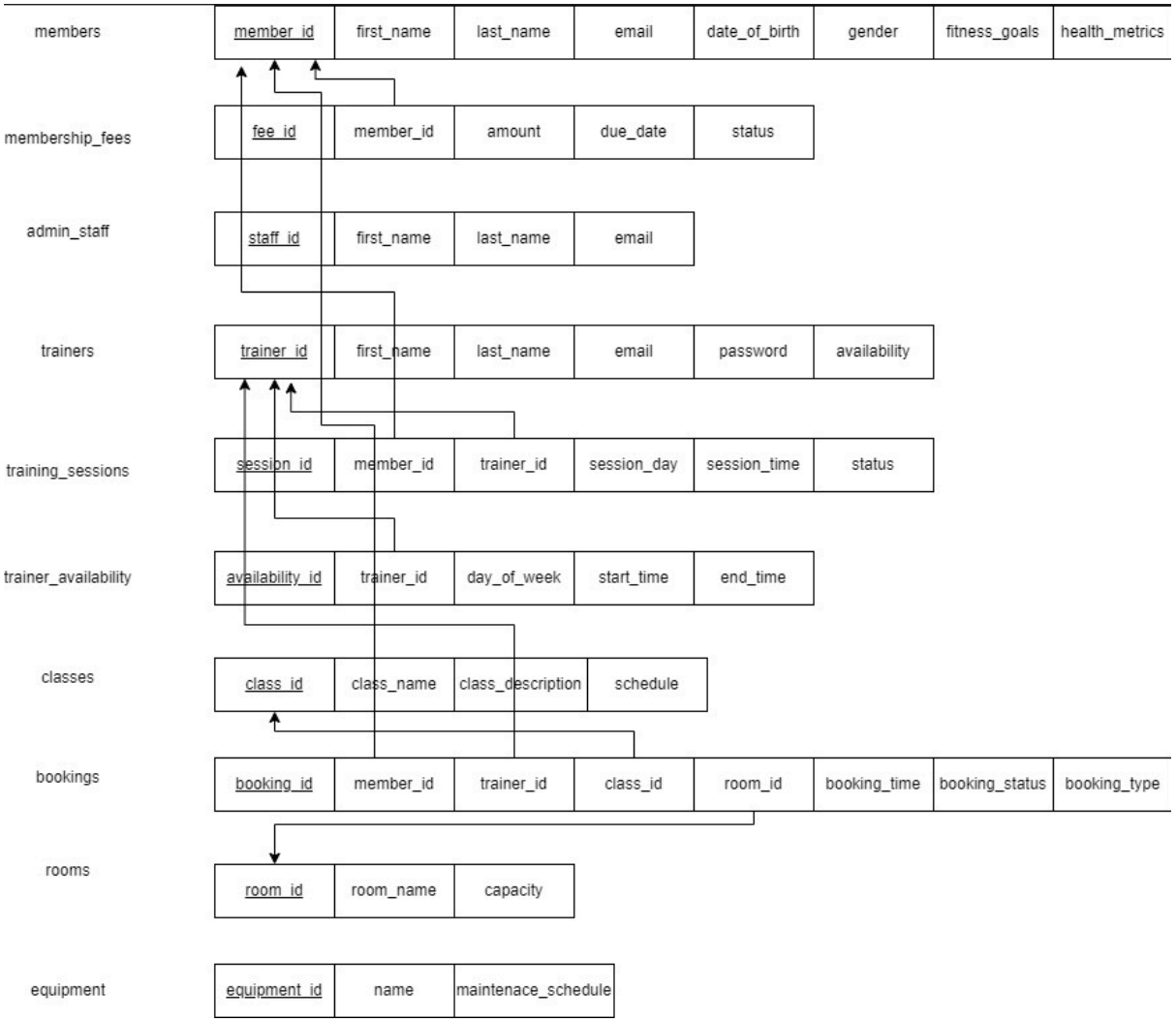
Introduction:

The Health and Fitness Club Management System is designed to provide comprehensive support for club members, trainers, and administrative staff. This software program facilitates various functionalities such as member registration, profile management, scheduling of training sessions, room bookings, equipment maintenance monitoring, class schedule updating, billing, and payment processing.



Conceptual Design:

The conceptual design of the database includes 10 different tables like members, trainers, admin_staff, rooms, equipment, classes, membership_fees, training_sessions, trainer_availability, and bookings. Some relationships are shown by primary and foreign keys. The ER diagram outlines the connectivity and the relationship between the data in the form of entities, attributes, and links connecting them. There are 3 main entities or tables in the relational database and the relationships between them. This system uses 3 main entities members, trainers, and admin_staff. Members are the central entity representing the individuals who use the services offered by the Health and Fitness Club Management System. They can schedule personal or group training sessions, which in turn have membership fees attributed to them. This is shown in the diagram by membership_fees and bookings. Trainers represent the professionals who provide personal training services. They can view the profiles of members who are registered in the club, as well as set a certain weekly availability for themselves. Lastly, the Admin Staff represents the individuals who are responsible for administrative tasks within the Health and Fitness Club. They can manage different administrative tasks such as processing billings to members, scheduling the equipment maintenance schedule, updating class schedules, and managing room bookings.



Conceptual Design to Relation Schemas:

The next step is to consolidate the ER diagram into relational database schemas which is what was done above. This involves mapping the entities and relationships from the ER diagram into tables in the relational database. The mapping schema above organizes effectively the data for the fitness management app allowing efficient data management and retrieval which is very important for the functionality of the application. The Schema defines clear relationships between tables by linking them based on relevant data.

DDL File

The Data Definition Language (DDL) file contains SQL statements to create the tables in the relational database schema. Constraints such as primary keys, foreign keys, and other integrity constraints are defined to ensure data integrity and consistency.

DML File

The Data Manipulation Language (DML) file contains sample data for each table, allowing for the demonstration of the application's functionality. This sample data includes realistic scenarios that represent the typical usage of the system.

Program Functionality

For the implementation of the Health and Fitness Club Management System, utilizing four main files: members.py, staff.py, trainers.py, and main.py. These files collectively form the foundation of our application. It provides functionalities for different user roles and system management tasks. We chose to implement the application in Python due to its simplicity, versatility, and extensive support for web development frameworks. The interface used is PostgreSQL called by the psycopg2 Python library. The user interface of the program uses the command-line interface where user inputs are taken for simple and accessible interaction with the program.

Application Logic:

members.py: This file contains the implementation of functionalities related to member management, including user registration, profile management, dashboard display, and schedule management.

staff.py: Here, we implemented functionalities for administrative staff, such as room booking management, equipment maintenance monitoring, class schedule updating, and billing/payment processing.

trainers.py: This file focuses on functionalities specific to trainers, such as schedule management and member profile viewing.

main.py: Serving as the entry point of the application, main.py orchestrates the interaction between different modules, handling user inputs and invoking appropriate functionalities.

Assumptions:

- An assumption that can be made is for the health metrics and the trainer's availability. The system assumes that health metrics and the trainer’s availability are stored in JSONB format which can be structured and unstructured. This accommodates a variety of data.

GitHub Repository

The source code for the Health and Fitness Club application, including the DDL and DML files, has been uploaded to a public GitHub repository. The repository includes a comprehensive README file that provides instructions for setting up the development environment, running the application, and accessing the database.

Repository Link: https://github.com/seddiksah/COMP3005FinalProject.git

Youtube Video Link: https://youtu.be/M-RllJ7_g7Y

Collaboration:

Seddik Sahraoui(101260039):

- ER-Diagram
- ER-Mapping
- Member Functions
- Main file
- System design
- Demonstration
- GitHub Repository
- Project Report

Mohamed Bouzidi(101265525):

- Project Report
- Trainer Functions
- Staff Functions
- DML file
- DDL file
- Demonstration