COMP 3005

Winter 2024

Project: Health and Fitness Club Management System

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Date: April 12, 2024

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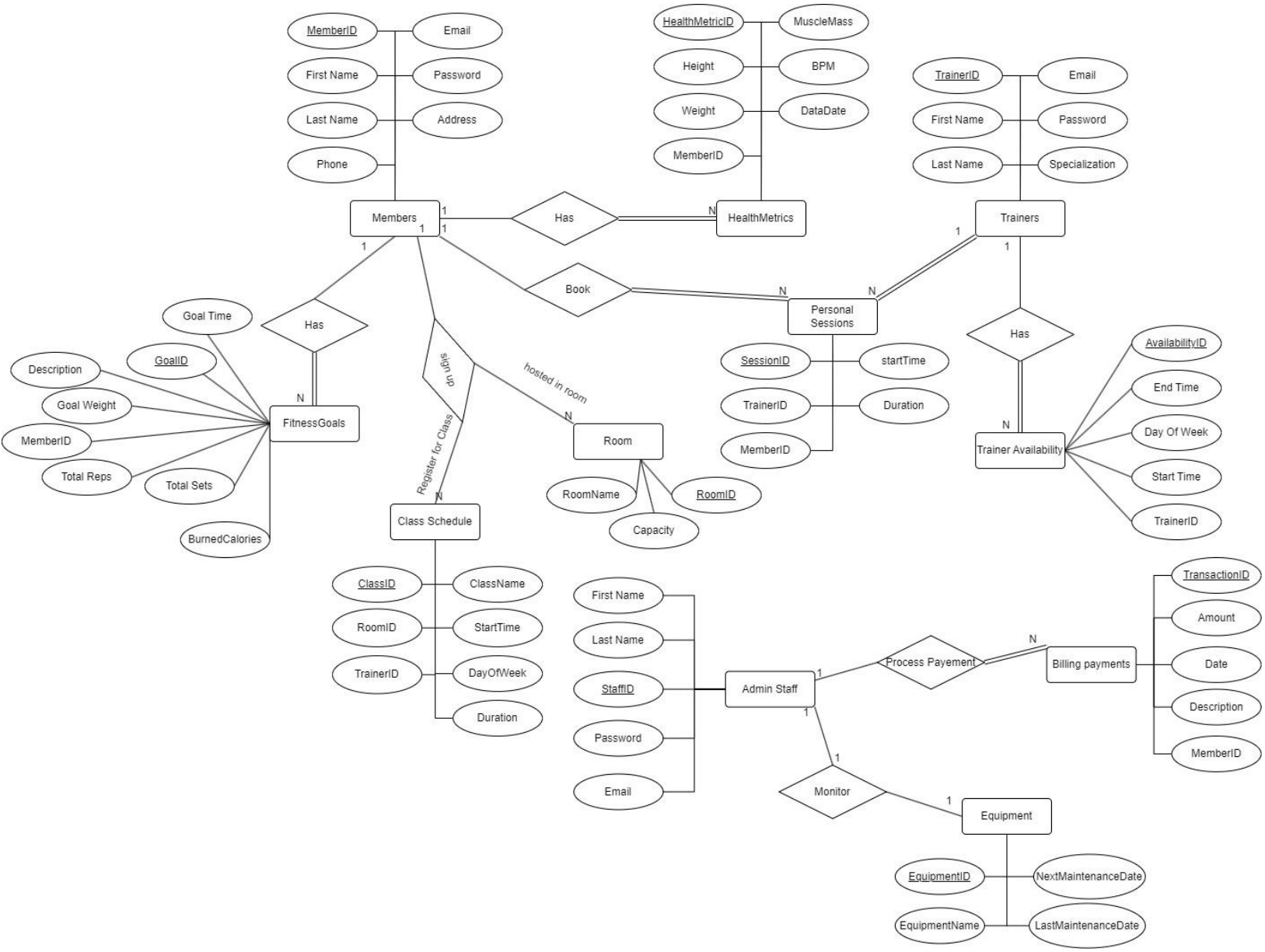
1. Conceptual Design



Requirment	Assumption	Representation in ER Model
Members should be able to register and manage their profiles,	Members will register through the website, and they will enter all of their information	Member Entity: Attributes include MemberID, FirstName, LastName, Email, Password, Address, Phone
Members establish personal fitness goals (you can	All members can add Health and fitness data to their account. So it a 1 to many relationship, and all HealthMetrics and	- FitnessGoals Entity: Attributes include GoalID, Description, Goal Weight, MemberID (FK),

determine suitable fitness goals such as weight and time, and members will set the values), and input health metrics.	FitnessGoals participate (meaning they have an assigned MemberID)	TotalReps, TotalSets, BurnedCalories, GoalTime - HealthMetrics Entity: Attributes include HelthMetricsID, Height, Weight, MemberID (FK), MuscleMass, BPM, DataDate
Members can schedule, reschedule, or cancel personal training sessions with certified trainers. Additionally, they should be able to register for group fitness classes.	The member would confirm the date and time with the trainer prior the registration, but the system anyway checks if the registration for a personal session is within the Trainer's availability. All Personal Sessions have an assigned Trainer and Member (Total Participation), and each Member can have multiple sessions. Classes have partial participation. Members have the option to register for any class, but they don't have to.	- Personal Session Entity: Attributes include SessionID, TrainerID (FK), MemberID (FK), startTime, Duration, DayOfWeek. - Class Schedule Entity: Attributes include ClassID, RoomID (FK), TrainerID (FK), ClassName, StartTime, DayOfWeek, Duration.
Trainers should have the ability to manage their schedules and view member profiles.	Trainers can adjust their schedule in the website. Trainers also make sure that they agree for a session in person with the member.	- Trainer Entity: Attributes include TrainerID, Email, FirstName, LastName, Password, Specialization. - TarinerAvailability Entity: Attribtes include AvailabilityID, StartTime, EndTime, DayOfWeek, TrainerID(FK)
Administrative Staff should be equipped with features to manage room bookings, monitor fitness equipment maintenance, update class schedules, oversee billing, and process payments for membership fees, personal training sessions, and other services.	This Gym pays its customer when they use it. There is no recurring memberships, and they pay for the classes and personal sessions after attending them. The Staff members process those payments by assigning a bill to a MemeberID. That way the member will see the payment request from their dashboard. The staff admin can access the Equipment directory and can access all billing transaction.	- AdminStaff Entity: Attributes include StaffID, Email, Password, LastName, FirstName - Billing Entity: Attributes include TransactionID, Amount, Date, Description, MemberID (FK) - Equipment Entity: Attributes include equipmentID, EquipmentName, NextMaintananceDate, LastMainatanceDate - Room Entity: Attributes include RoomID, RoomName, Capacity

2. Reduction to Relation Schemas

Added Class registration Table as shown in the diagram to avoid null values in the Class Schedule table. This showcases the relationship between the Member and the ClassSchedule table where the member can sign up for a class and that registration

can be saved into the registration table. All the relations will follow the ER model. The above figure shows how much the system is member-centric. Most Billing, HealthMetrics, FitnessGoals are mainly used for Members hence they use a MemberID as a Foreign Key. The TrainerID is used in the class schedule to assign a trainer to a class, and also used in the personal training sessions table along with the second Foreign Key MemberID.

3. DDl File

The DDL File is found under the "**SQLCode**" folder on the GitHub page.

https://github.com/Samimnif/COMP3005-Health-Fitness-Club/blob/main/SQLCode/ddl.sql

4. DML File

The DML File is found under the "**SQLCode**" folder on the GitHub page.

https://github.com/Samimnif/COMP3005-Health-Fitness-Club/blob/main/SQLCode/dml.sql

5. Implementation

For this project, I created a web app in Python using Flask. I have two Python files in the project folder.

main.py hosts the flask webserver that implements all the web page routes and accesses the data either directly in the routing functions or using one of the defined functions in the **database_access.py** file.

database_access.py file contains a lot of defined setter and getter functions that are used in both the Webserver in **main.py** and in the command line tool that is also available in the **database_access.**py file (Under the main section at the bottom of the file).

Most of the functions are used in the Webserver. My focus in this project was the website UI. I included functions like Member registration, Member Login, Trainer Login, and Staff Login.

The Members can see their dashboard and profile. They can update their profile info and add Health Metrics and Fitness Goals to their dashboard. There is also a

section for Billing and payment. Whenever they attend a class or personal session, the Staff would send a Billing Payment Request to the Member Account. The member then can pay using their payment Card. In the classes tab, Members can schedule, reschedule or cancel personal sessions with Trainers and they can register/unregister for a class.

The Trainers have their dashboard where they can check their availability schedule and they can update and adjust it. They have access to the member directory list, and they can search by name, last name or member ID. Each member in that list has a link that the trainer can press to reveal the Member profile information and the scheduled session that they booked with that specific trainer.

We are assuming here that the Trainer and the Member do agree on a time and date beforehand, but either way, the system does check if the selected personal session daytime is within the selected Trainer's availability.

The Admin Staff have also their own dashboard, they can access the Equipment list and see the last time was serviced and the next time it should be serviced (we are assuming that the system will use that date to send a notification to staff emails). The Staff also can delete and add classes to the class list (this will adjust the class list options that the members can select). Staff can also check all billing transactions of all members, and they can process a billing by assigning an invoice to their account so that they pay for it from their account.

We are assuming here that the only way the Gym accepts payments is through the website through personal accounts. The billing happens manually since it pays as you use kind of a Gym (the staff will manage the transactions).

6. GitHub Repository

The YouTube video Link is included in the GitHub page linked below.

https://github.com/Samimnif/COMP3005-Health-Fitness-Club