COMP3005 – Project V2 Report

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2.1 Conceptual Design

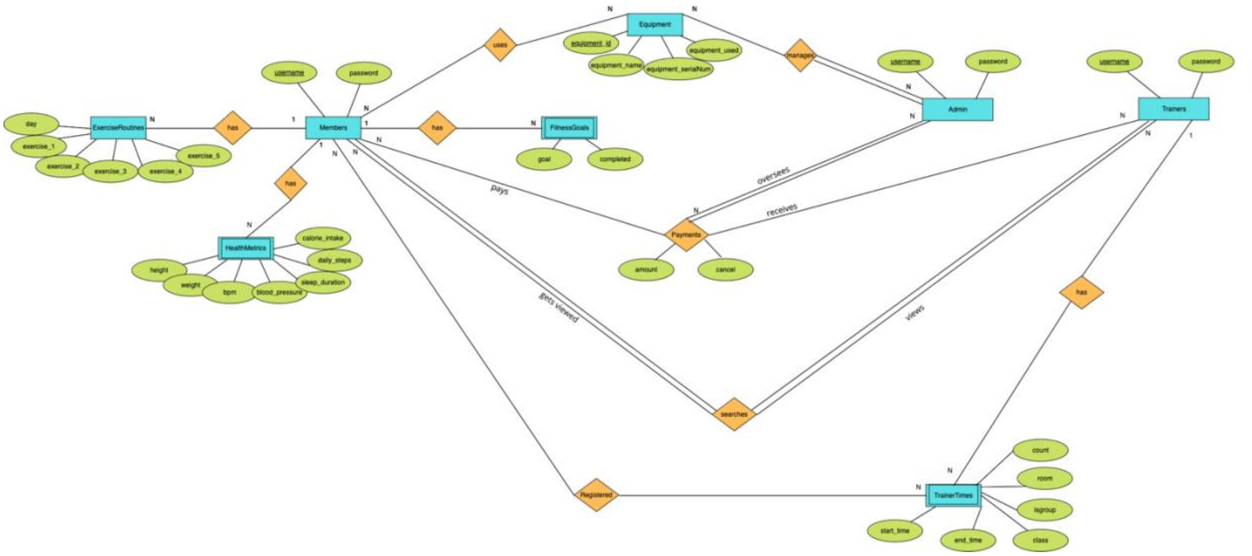
Each user type has a separate table in the database that stores their username and password as a tuple. The three tables are Members, Trainers, and Admin. TrainerTimes contains the time slot for the availability of a trainer, with the username pointing to the Trainers table as a FK. The admin account type can make changes to the 'isgroup' column of the table to schedule group classes, and members can register in a scheduled trainer time to confirm the class. Once a class has been confirmed by the registration of at least one member, an admin can assign a room to the TrainerTimes tuple. The Registered table holds the information for all members who have registered in a class with the id being a FK to the TrainerTimes table to avoid redundancy. The Payments table holds all the transaction information between the member and trainer account types for the Admin to oversee. Additionally, the FitnessGoals and HealthMetrics table hold FK username that points to the owner member in the Members table. Members also receive the recommended exercise routines from the ExerciseRoutines table but there is no other connection between the two. The trainer account type interacts with the TrainerTimes table to provide their availability and with the Payments table to receive their fees, though only the Admin can look at the completed transactions. Trainers can also use the member search function to view results that are a partial-match with the search string. The admin account type interacts with the TrainerTimes table to schedule group classes and to assign/remove a room for a class. They also view all the data from the Payments and Equipment tables. Admin can only oversee transaction details but they can order new equipment if they need to.

Assumptions:
The cardinality of the relation between members and trainertimes can either be one-to-many or many-to-many if the class is scheduled to be a group class by the admin. The only relations with total participation are when the admin oversees the payments, admin managing the equipment, when the trainer searches for members, and the member being 'searched for' by the trainer. However, since the admin isn't restricted to viewing only a number of transactions and similarly the trainer can search for whichever member, we did not make tables for these relationships. The admin can not make changes to the type of class held once a member has registered since fees change based on class type. Similarly, a trainer cannot cancel an availability once a member has registered.

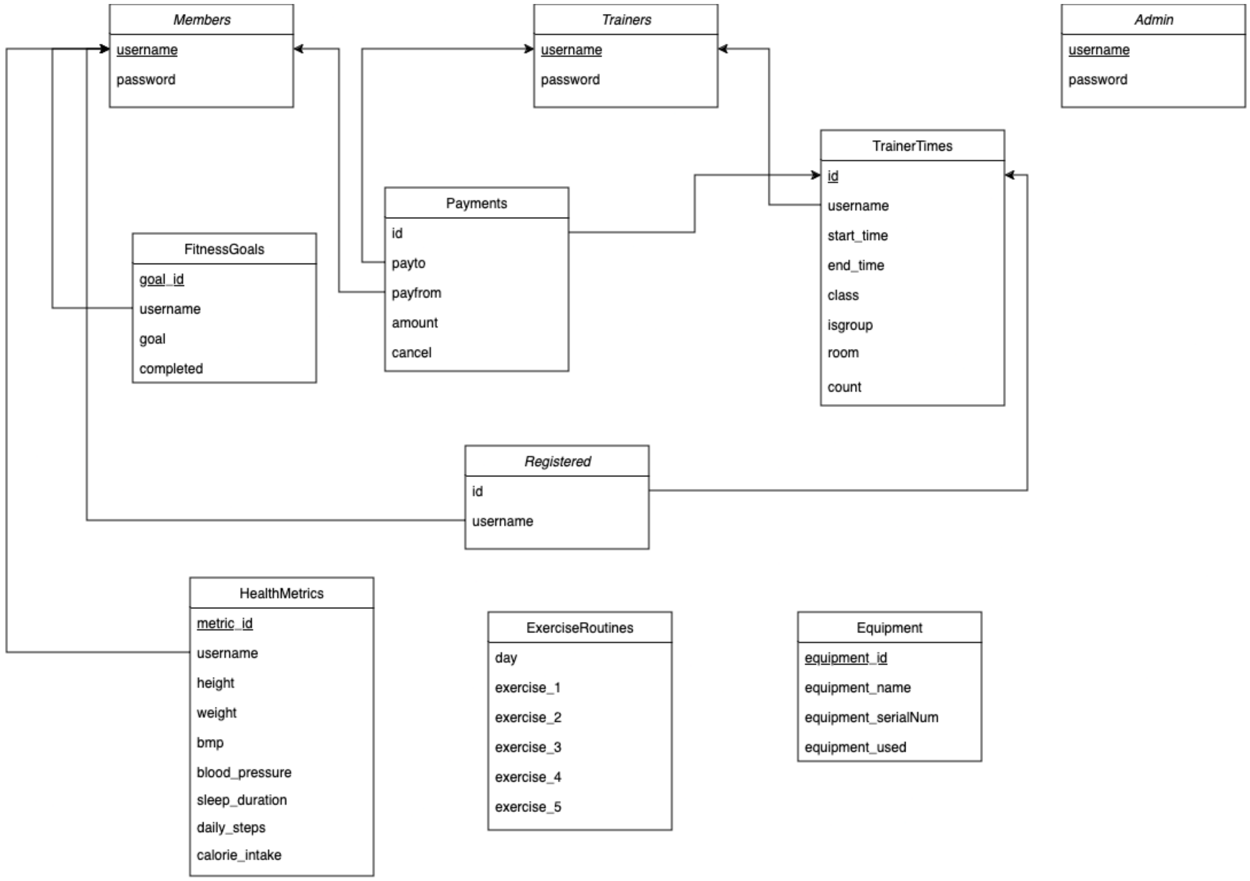
2.2 Reduction to Relational Schemas

Also in the GitHub repository inside the 'report' directory
https://github.com/IshanB7/health-and-fitness-club-management-system/tree/6d34e70991192feb042c0b219be07b7df42a3d5e/report

ER DIAGRAM



RELATIONAL DATABASE SCHEMA



Members
username
password

Trainers
username
password

Admin
username
password

TrainerTimes
id
username
start_time
end_time
class
isgroup
room
count

Payments
id
payto
payfrom
amount
cancel

FitnessGoals
goal_id
username
goal
completed

Registered
id
username

HealthMetrics
metric_id
username
height
weight
bmp
blood_pressure
sleep_duration
daily_steps
calorie_intake

ExerciseRoutines
day
exercise_1
exercise_2
exercise_3
exercise_4
exercise_5

Equipment
equipment_id
equipment_name
equipment_serialNum
equipment_used

2.3, 2.4 DDL AND DML FILE

Included in the GitHub Repository inside the ‘SQL’ directory.
https://github.com/IshanB7/health-and-fitness-club-management-system/tree/6d34e70991192feb042c0b219be07b7df42a3d5e/SQL

2.5 Implementation

A ReactJS web application with an Express backend that makes use of the pg module to query and interact with PostgreSQL.

2.6 Bonus Features

We used graphical user interface for all project functions, making separate webpages for each url on the website. Additionally, we also implemented user authorization, for example, trainers cannot access the room booking feature since that function is restricted to admin account types.

2.7 GitHub Repository

GitHub: https://github.com/IshanB7/health-and-fitness-club-management-system

YouTube: https://youtu.be/9kAmGVWbN0g