COMP 3005 Final Project Report

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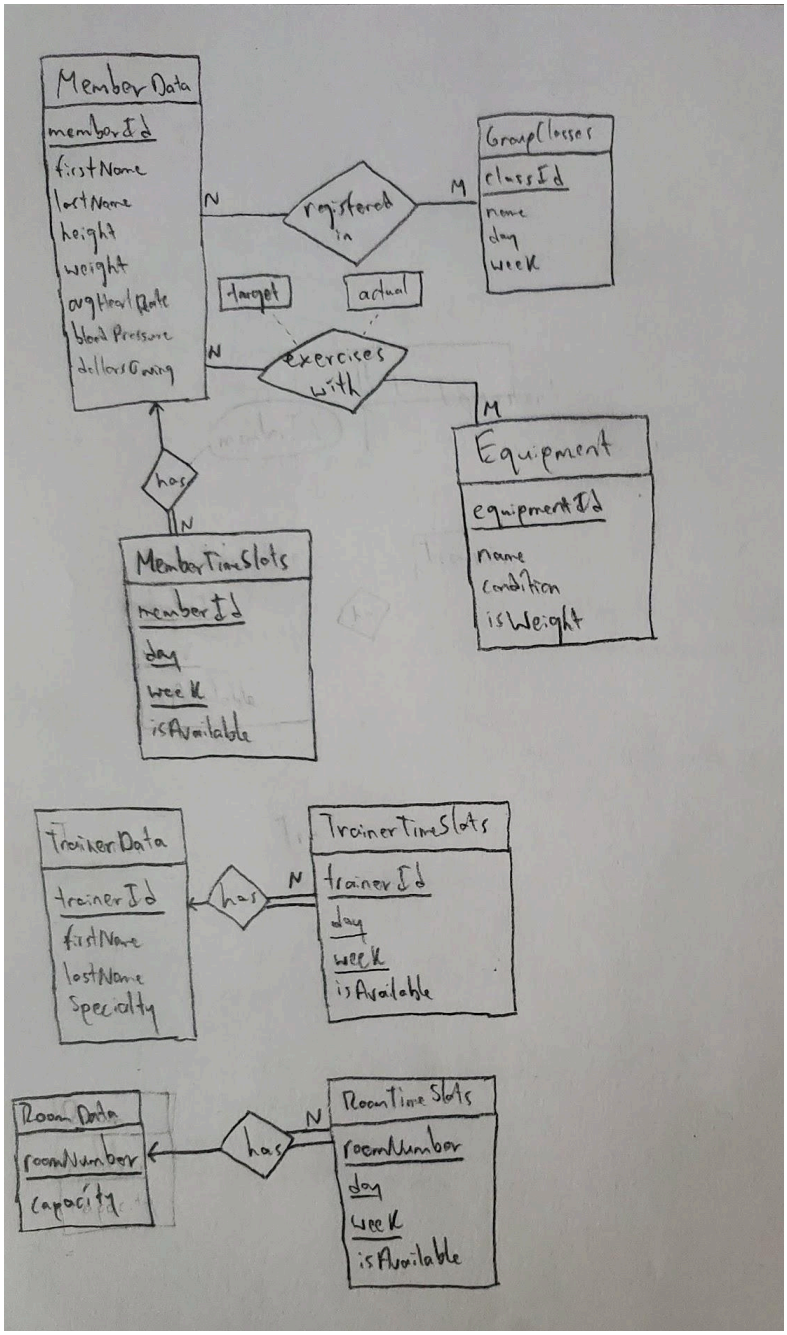
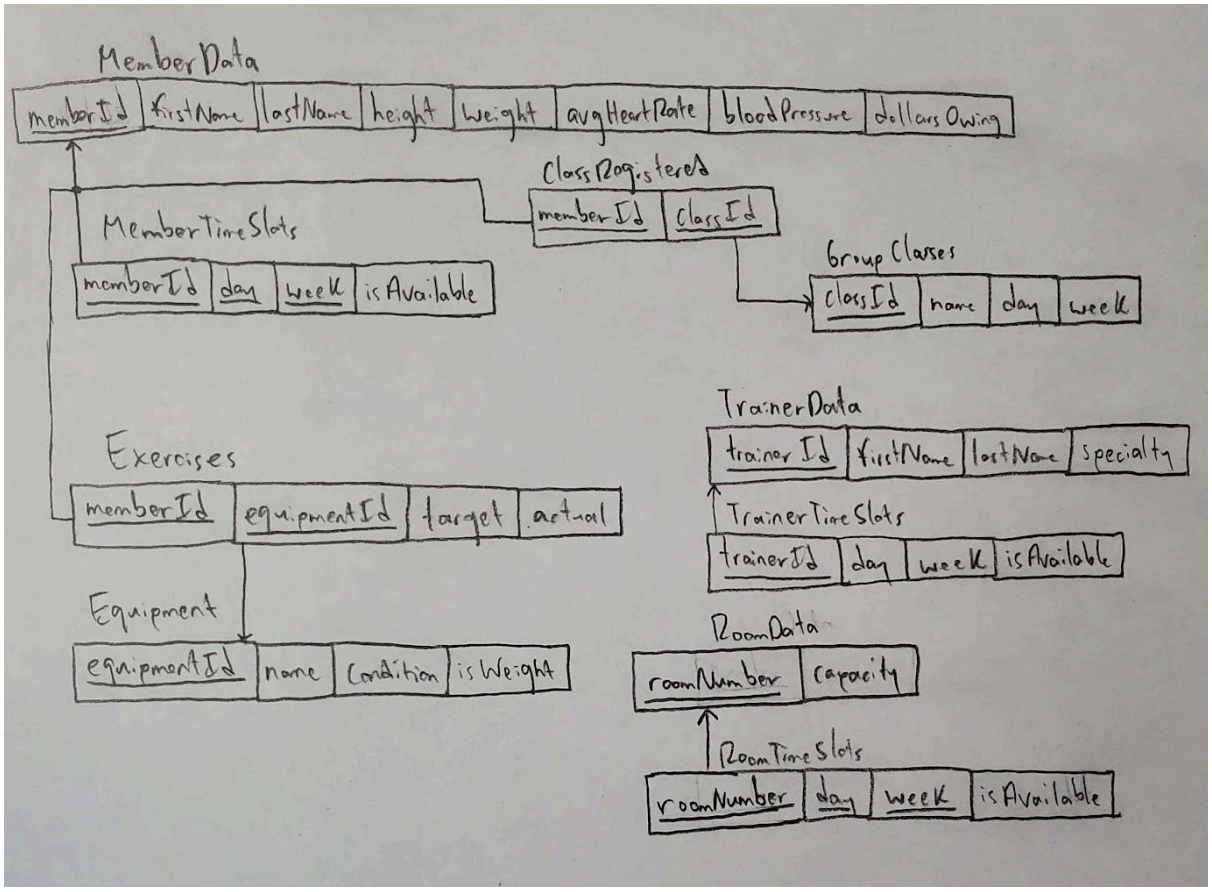
ER Model:

This ER design stores the member's profile in the MemberData table. The dashboard information has to do with the Equipment table and includes the member's target and actual time/weight for the equipment. The member, trainer and room schedules are stored in their own TimeSlots table, which keeps track of the time slots that they have free/booked. The amount each member owes is tracked in the MemberData table for each member.



Relational Database Schema:



DDL: DDL.sql can be found in SQL folder

```
CREATE TABLE MemberData (
        memberId SERIAL PRIMARY KEY,
   firstName VARCHAR(20) NOT NULL,
   lastName VARCHAR(20) NOT NULL,
   height NUMERIC,
        weight INT,
        avgHeartRate INT,
        bloodPressure INT,
        dollarsOwing INT
);

CREATE TABLE TrainerData (
        trainerId SERIAL PRIMARY KEY,
        firstName VARCHAR(20) NOT NULL,
        lastName VARCHAR(20) NOT NULL,
```

```
        specialty TEXT
);

CREATE TABLE RoomData (
        roomNumber SERIAL PRIMARY KEY,
        capacity INT
);

CREATE TABLE MemberTimeSlots (
        memberId INT,
        day INT,
        week INT,
        isAvailable BOOLEAN,
        PRIMARY KEY(memberId, day, week),
        FOREIGN KEY (memberId)
                REFERENCES MemberData(memberId)
);

CREATE TABLE TrainerTimeSlots (
        trainerId INT,
        day INT,
        week INT,
        isAvailable BOOLEAN,
        PRIMARY KEY(trainerId, day, week),
        FOREIGN KEY (trainerId)
                REFERENCES TrainerData(trainerId)
);

CREATE TABLE RoomTimeSlots (
        roomNumber INT,
        day INT,
        week INT,
        isAvailable BOOLEAN,
        PRIMARY KEY(roomNumber, day, week),
        FOREIGN KEY (roomNumber)
                REFERENCES RoomData(roomNumber)
);
```

```
CREATE TABLE Equipment (
        equipmentId SERIAL PRIMARY KEY,
        name VARCHAR(40) NOT NULL,
        condition VARCHAR(20) NOT NULL DEFAULT 'brand new',
        isWeight BOOLEAN
);

CREATE TABLE Exercises (
   memberId INT,
        equipmentId INT,
        target NUMERIC,
        actual NUMERIC,
        PRIMARY KEY (memberId, equipmentId),
        FOREIGN KEY (memberId)
                REFERENCES MemberData(memberId),
        FOREIGN KEY (equipmentId)
                REFERENCES Equipment(equipmentId)
);

CREATE TABLE GroupClasses (
   classId SERIAL PRIMARY KEY,
        name VARCHAR(40),
        day INT,
        week INT
);

CREATE TABLE ClassRegistered (
        memberId INT,
        classId INT,
        PRIMARY KEY (memberId, classId),
        FOREIGN KEY (memberId)
                REFERENCES MemberData(memberId),
        FOREIGN KEY (classId)
                REFERENCES GroupClasses(classId)
);
```

DML: DML.sql can be found in SQL folder

```
-- Inserting data into MemberData table
INSERT INTO MemberData (firstName, lastName, height, weight, avgHeartRate, bloodPressure, dollarsOwing)
VALUES
   ('John', 'Doe', 175.5, 70, 72, 120, 0),
   ('Jane', 'Smith', 160.2, 55, 65, 110, 25),
   ('Alice', 'Johnson', 180, 85, 80, 130, 10),
   ('Bob', 'Williams', 168.8, 75, 70, 125, 0);

-- Inserting data into TrainerData table
INSERT INTO TrainerData (firstName, lastName, specialty)
VALUES
   ('Michael', 'Brown', 'Weightlifting'),
   ('Emily', 'Davis', 'Boxing'),
   ('Chris', 'Wilson', 'Cardio'),
   ('Sarah', 'Martinez', 'Pilates');

-- Inserting data into RoomData table
INSERT INTO RoomData (capacity)
VALUES
   (20),
   (15),
   (30);

-- Inserting data into TrainerTimeSlots table
INSERT INTO TrainerTimeSlots (trainerId, day, week, isAvailable)
VALUES
   (1, 1, 1, true),
   (2, 2, 1, true),
   (3, 3, 1, true),
   (4, 4, 1, true);

-- Inserting data into RoomTimeSlots table
INSERT INTO RoomTimeSlots (roomNumber, day, week, isAvailable)
VALUES
   (1, 1, 1, true),
   (1, 2, 1, true),
   (1, 3, 1, true),
```

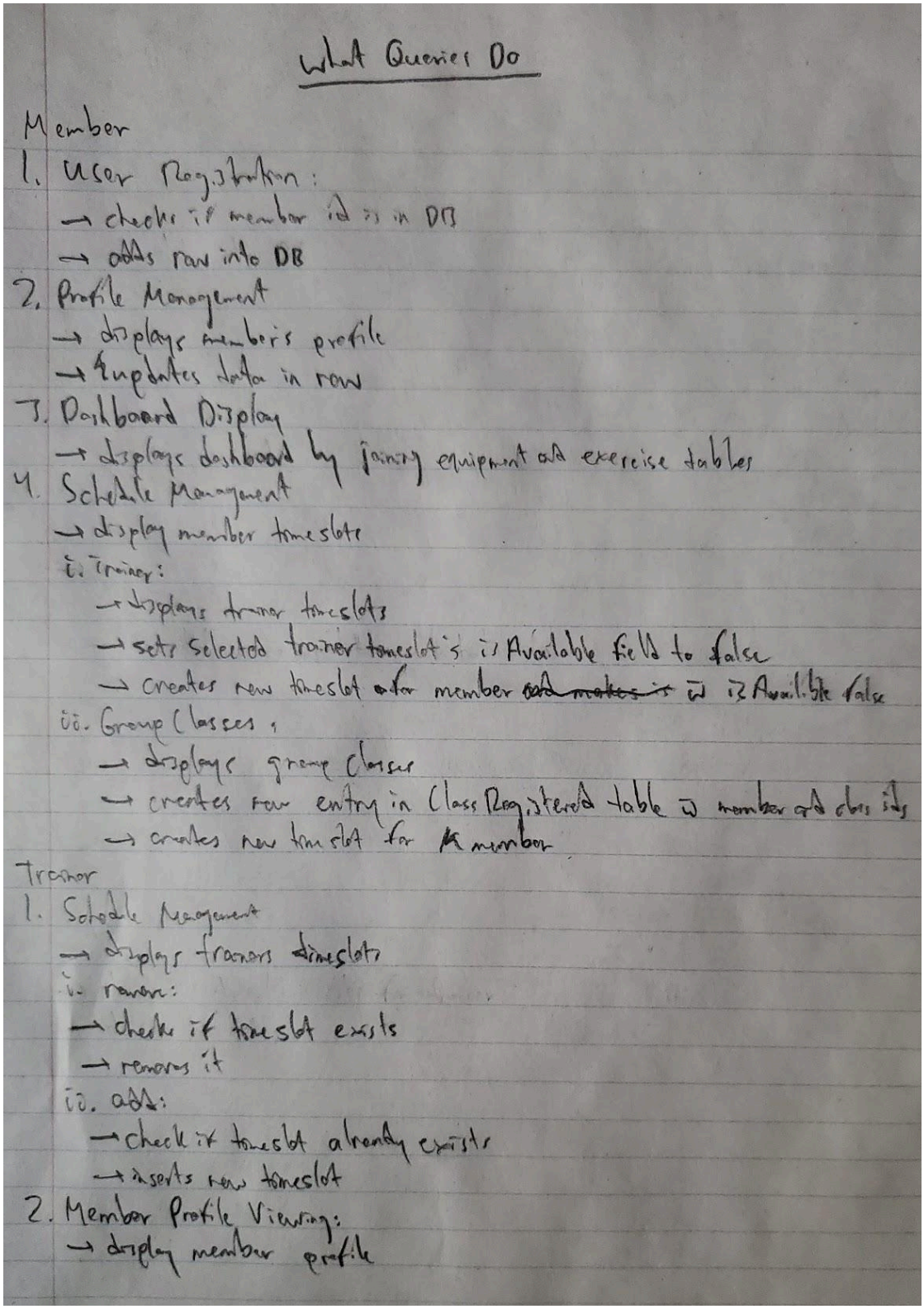
```
    (1, 4, 1, false),
    (1, 5, 1, true),
    (1, 6, 1, true),
    (1, 7, 1, true),
    (2, 2, 1, true),
    (3, 2, 1, true),
    (3, 3, 1, true),
    (3, 4, 1, true),
    (3, 5, 1, true);

-- Inserting data into Equipment table
INSERT INTO Equipment (name, condition, isWeight)
VALUES
    ('Treadmill', 'brand new', false),
    ('Bench Press', 'used', true),
    ('Chest Fly', 'brand new', true),
    ('Stationary Bike', 'brand new', false);

-- Inserting data into Exercises table
INSERT INTO Exercises (memberId, equipmentId, target, actual)
VALUES
    (1, 1, 30, 25),
    (2, 2, 100, 70),
    (3, 3, 75, 50),
    (4, 4, 25, 20);

-- Inserting data into GroupClasses table
INSERT INTO GroupClasses (name, day, week)
VALUES
    ('Boxing Class', 1, 1),
    ('Pilates Class', 2, 1),
    ('Zumba Class', 3, 1),
    ('Cardio Class', 4, 1);
```

Implementation:



What Queries Do

Member

1. User Registration:
   → checks if member id is in DB
   → adds row into DB
2. Profile Management
   → displays members profile
   → updates data in row
3. Dashboard Display
   → displays dashboard by joining equipment and exercise tables
4. Schedule Management
   → display member timeslots
   i. Trainer:
      → displays trainer timeslots
      → sets selected trainer timeslot's is Available field to false
      → creates new timeslot for member ~~and makes it~~ w is Available false
   ii. Group Classes:
      → displays group classes
      → creates row entry in Class Registered table w member and class ids
      → creates new timslot for member

Trainer

1. Schedule Management
   → displays trainers timeslots
   i. remove:
   → checks if timeslot exists
   → removes it
   ii. add:
   → check if timeslot already exists
   → inserts new timeslot
2. Member Profile Viewing:
   → display member profile

Administrator:

1. Room Booking Management:
   → display room numbers
   → display room timeslots
   → set room timesbot availibility
2. Monitor Equipment:
   → display equipment data
3. Class Schedule Updating:
   → display group class info.
   i. add:
      → add new class
   ii. remove:
      → delete entries from ClassRegistered table
      → delete class
   iii. update:
      → update class
      → delete entries from ClassRegistered table
4. Manage Billing:
   → display member data
   i. Process Payment:
      → get dollarsAward by member chosen
         → update dollarsAward of member
   ii. Add Money to Dollars Awards:
      → get dollarsAward by member chosen
      → update dollarsAward of member