COMP3005 FINAL PROJECT REPORT

Health and Fitness Club Management System

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Group 77

I. **Youtube Link:** https://youtu.be/Fi_Ho2gy33M

II. **Github Link**: https://github.com/dbkhanh/HealthAndFitnessClub/tree/main/backend

III. Conceptual Design:

1. Requirements:

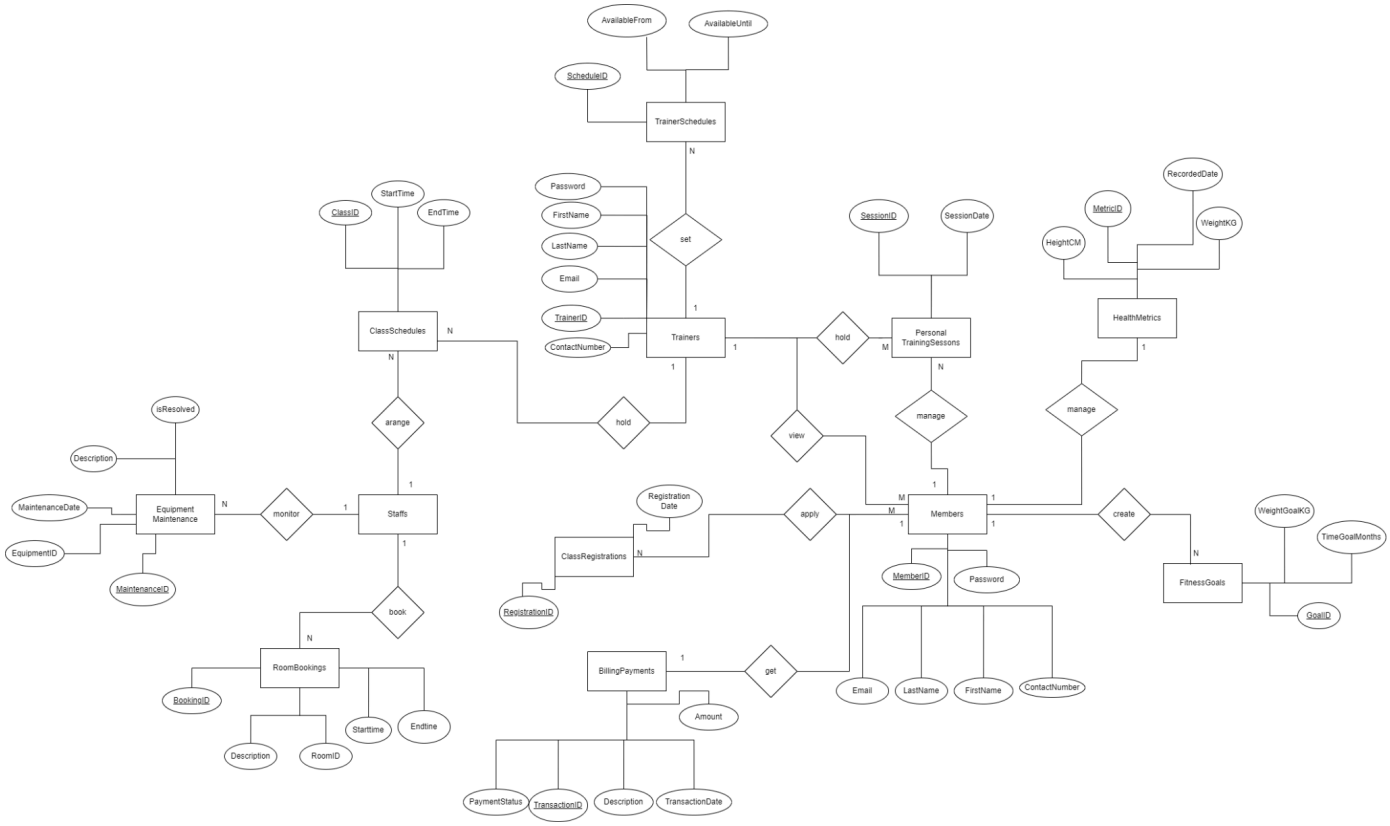
- **Members**: Members are the core users of the system, with the capability to:
    - Register for new accounts: Create a personal account with unique credentials.
    - Manage their profiles: Update personal information such as name, contact details, and password.
    - Manage fitness goals and health metrics: Set targets for weight and fitness and track progress over time. These personal health metrics and goals are central to the services provided by the club.
    - Dashboard display: View their fitness achievements and goals, as well as their personal training and class schedules.
    - Scheduling services: Book, reschedule, or cancel personal training sessions with trainers, as well as register for group fitness classes.
    - Payment management: Handle billing for services rendered, ensuring that payment is completed prior to accessing group classes or personal training sessions.
- **Trainers**: Trainers are responsible for:
    - Account management: Like members, trainers can register and update their personal profiles.
    - Scheduling: Define their availability for training sessions via TrainerSchedules, which members can view and book accordingly.
    - Member interaction: Access member profiles to tailor fitness programs.
- **Administrative Staff**: Administrative staff manage operational aspects of the club:
    - Account management: Set up and update their profiles.

- Room booking management: Manage the booking and scheduling of rooms within the club for various activities and classes.
- Class scheduling: Manage the scheduling of group fitness classes.
- Equipment maintenance: Log and keep track of the maintenance and repair of club equipment.
- Payment oversight: Monitor and manage membership payments and financial transactions related to club services.
- Operational oversight: Maintain a holistic view of the club's operations, including monitoring trainers, members, classes, room bookings, and equipment status.

2. Database schema:

- Members, Trainers, Staffs: Store personal details and account information of the various users of the system.
- TrainerSchedules, RoomBookings, ClassSchedules: Keep track of all scheduling information, including trainer availability, room bookings for classes or events, and the actual class schedules.
- ClassRegistrations: Manage which members have registered for specific classes.
- FitnessGoals, HealthMetrics: Record and track the fitness objectives of members along with their health data.
- PersonalTrainingSessions: Keep a log of all personal training sessions scheduled between members and trainers.
- EquipmentMaintenance: Monitor the status of equipment and any maintenance work required or completed.
- BillingPayments: Handle all billing and payment data, including recording transactions and their status.

3. ER - Diagram:



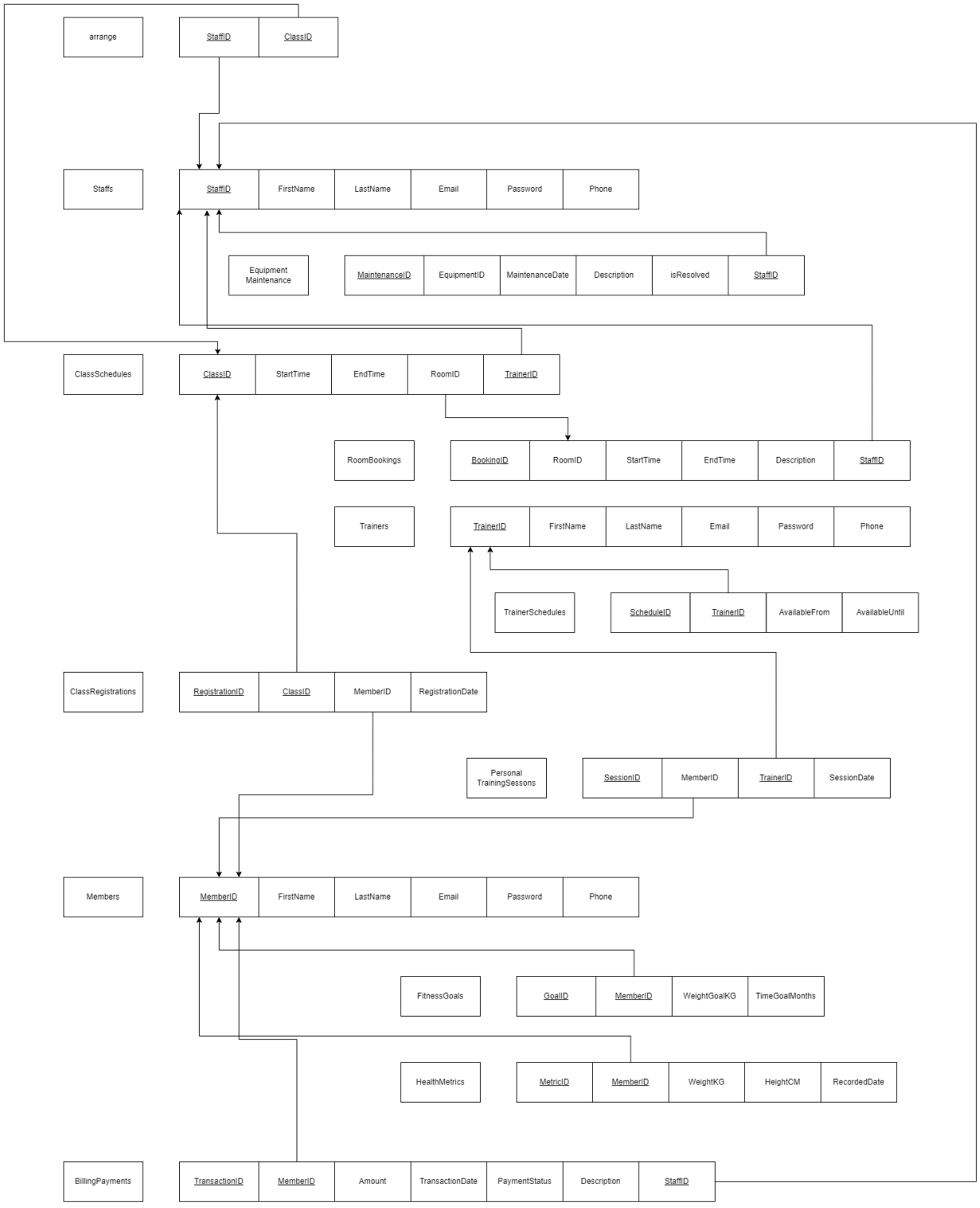
IV. Reduction to Relational Schema:

1. Database Structure:

- Members(MemberID, FirstName, LastName, Email, Password, ContactNumber)
- Trainers(TrainerID, FirstName, LastName, Email, Password, Phone)
- Staffs(StaffID, FirstName, LastName, Email, Password, Phone)
- TrainerSchedules(ScheduleID, TrainerID, AvailableFrom, AvailableUntil)
- RoomBookings(BookingID, RoomID, StartTime, EndTime, Description, StaffID)
- ClassSchedules(ClassID, StartTime, EndTime, RoomID, TrainerID)
- ClassRegistrations(RegistrationID, ClassID, MemberID, RegistrationDate)
- FitnessGoals(GoalID, MemberID, WeightGoalKG, TimeGoalMonths)
- HealthMetrics(MetricID, MemberID, WeightKG, HeightCM, RecordedDate)
- PersonalTrainingSessions(SessionID, MemberID, TrainerID, SessionDate)
- EquipmentMaintenance(MaintenanceID, EquipmentID, MaintenanceDate, Description, IsResolved, StaffID)

- BillingPayments(TransactionID, MemberID, Amount, TransactionDate, PaymentStatus, Description, StaffID)

2. Relational Schemas:



MemberID, TrainerID, StaffID, and similar ID fields serve as the unique keys in their respective tables. To link these tables and define the relationships between their data, foreign keys are utilized. These foreign keys correspond to the primary keys in other related tables. For instance, within the TrainerSchedules table, the TrainerID acts as a foreign key that points to the corresponding TrainerID in the Trainers table.

The junction tables, such as ClassRegistrations, link two entities with many-to-many relationships, i.e., Members and ClassSchedules, via MemberID and ClassID acting as foreign keys that connect to the primary keys of the Members and ClassSchedules tables, respectively.

These relational schemas form the foundation of the database design, enabling the structured storage, retrieval, and manipulation of data within the management system.