GYM MANAGEMENT SYSTEM

Project Report

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Executive Summary

The Gym Management System (GMS) is designed to automate and streamline daily operations in a gym environment. It allows members to register, subscribe to weekly or monthly membership plans, and optionally add services such as diet plans, workout routines, and meal preparation guidance. For administrators, the system provides efficient management of user accounts, plans, services, and payments.

All data is stored in a secure, well-structured relational database, ensuring accuracy, reliability, and scalability. By automating subscription status updates, billing, and reporting, the GMS reduces manual workload, prevents errors, and enhances communication between gyms and their members. This results in improved customer experience and smoother operations for gym staff.

Design Analysis Process

Stakeholders and Their Needs

- **Gym Members:** Require storage of personal details, membership subscriptions, optional services, and payment history.

- **Administrators (Staff):** Require backend access to user accounts, plan/service configurations, subscription tracking, and financial reporting.

User Stories

Gym Members (Primary Users)

1. As a gym member, I want to subscribe to a membership plan and add optional services so that I can access gym facilities and reach my fitness goals.
2. As a gym member, I want to view my payment history and subscription details so that I can track my expenses and confirm my membership status.
3. As a gym member, I want to book or cancel fitness classes so that I can manage my schedule conveniently

Administrators (Gym Staff)

1. As an administrator, I want to manage user accounts by adding, editing, or deactivating them so that member information stays accurate and up to date.
2. As an administrator, I want to configure membership plans and optional services so that the gym can offer flexible options to members.
3. As an administrator, I want to generate reports on payments and subscriptions so that I can analyze revenue and monitor gym performance.
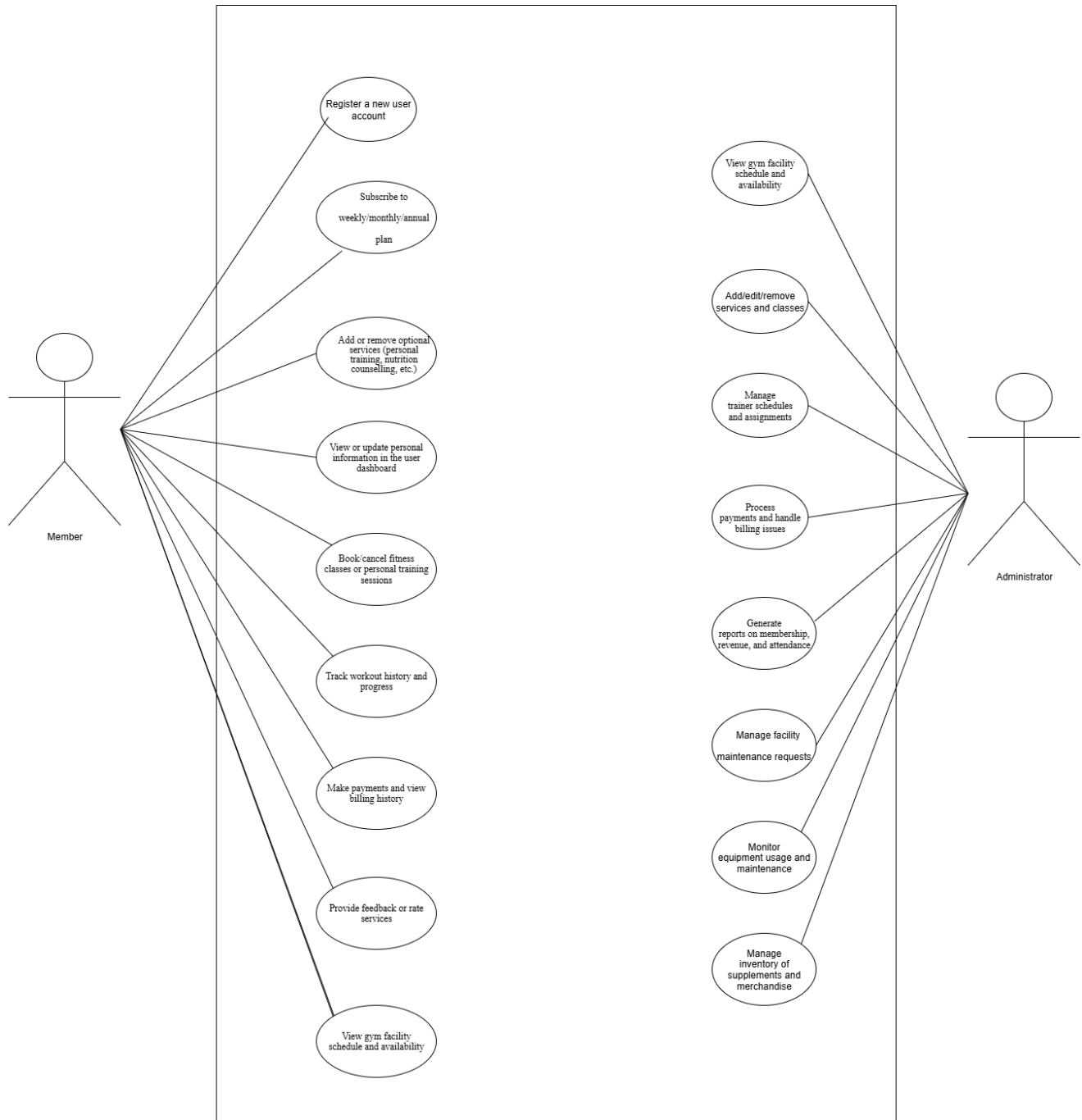
Use Cases & Diagram

Member Use Cases (Primary Users)

1. **Register a new user account** – A new user creates a personal account by entering details such as name, email, and password.
2. **Subscribe to weekly/monthly/annual plan** – A member chooses a subscription package (Normal or Premium) with defined validity periods.
3. **Add or remove optional services** – Members customize their subscriptions with add-ons such as personal training or nutrition counseling.
4. **View or update personal information in the user dashboard** – Members manage their personal profile and preferences.
5. **Book/cancel fitness classes or personal training sessions** – Members reserve or cancel slots for gym activities or personal coaching.
6. **Track workout history and progress** – Members view attendance, activity records, and progress logs stored in the system.
7. **Make payments and view billing history** – Members process subscription payments and check past transactions.
8. **Provide feedback or rate services** – Members share experiences and rate trainers, classes, or overall services.
9. **View gym facility schedule and availability** – Members check schedules for classes, trainers, and available gym facilities.

**Administrative Use Cases (Gym Staff / Administrators)**

1. **Add/edit/remove services and classes** – Administrators manage the available fitness services and optional packages.
2. **Manage trainer schedules and assignments** – Admins allocate trainers to classes or personal sessions.
3. **Process payments and handle billing issues** – Admins verify payments, resolve disputes, and manage financial records.
4. **Generate reports on membership, revenue, and attendance** – The system provides analytical reports for management decisions.
5. **Manage facility maintenance requests** – Admins log and track repair or maintenance issues related to equipment or infrastructure.
6. **Monitor equipment usage and maintenance** – Equipment records are updated for availability, usage hours, and repair status.
7. **Manage inventory of supplements and merchandise** – Admins keep track of gym merchandise (e.g., supplements, apparel) and manage sales.
8. **View gym facility schedule and availability** – Administrators ensure the timetable is accurate and facilities are optimally utilized.

Use case diagram with actors **Member** and **Administrator**.

Member use cases:
- Register a new user account
- Subscribe to weekly/monthly/annual plan
- Add or remove optional services (personal training, nutrition counselling, etc.)
- View or update personal information in the user dashboard
- Book/cancel fitness classes or personal training sessions
- Track workout history and progress
- Make payments and view billing history
- Provide feedback or rate services
- View gym facility schedule and availability

Administrator use cases:
- View gym facility schedule and availability
- Add/edit/remove services and classes
- Manage trainer schedules and assignments
- Process payments and handle billing issues
- Generate reports on membership, revenue, and attendance
- Manage facility maintenance requests
- Monitor equipment usage and maintenance
- Manage inventory of supplements and merchandise

Functional and Non-Functional Requirements

- *Functional:* Registration, authentication, subscription management, payment recording, service assignment.
- *Non-Functional:* Secure login, scalability for 500+ users, fast query response , high availability (99%).

Entity Relationship Diagram
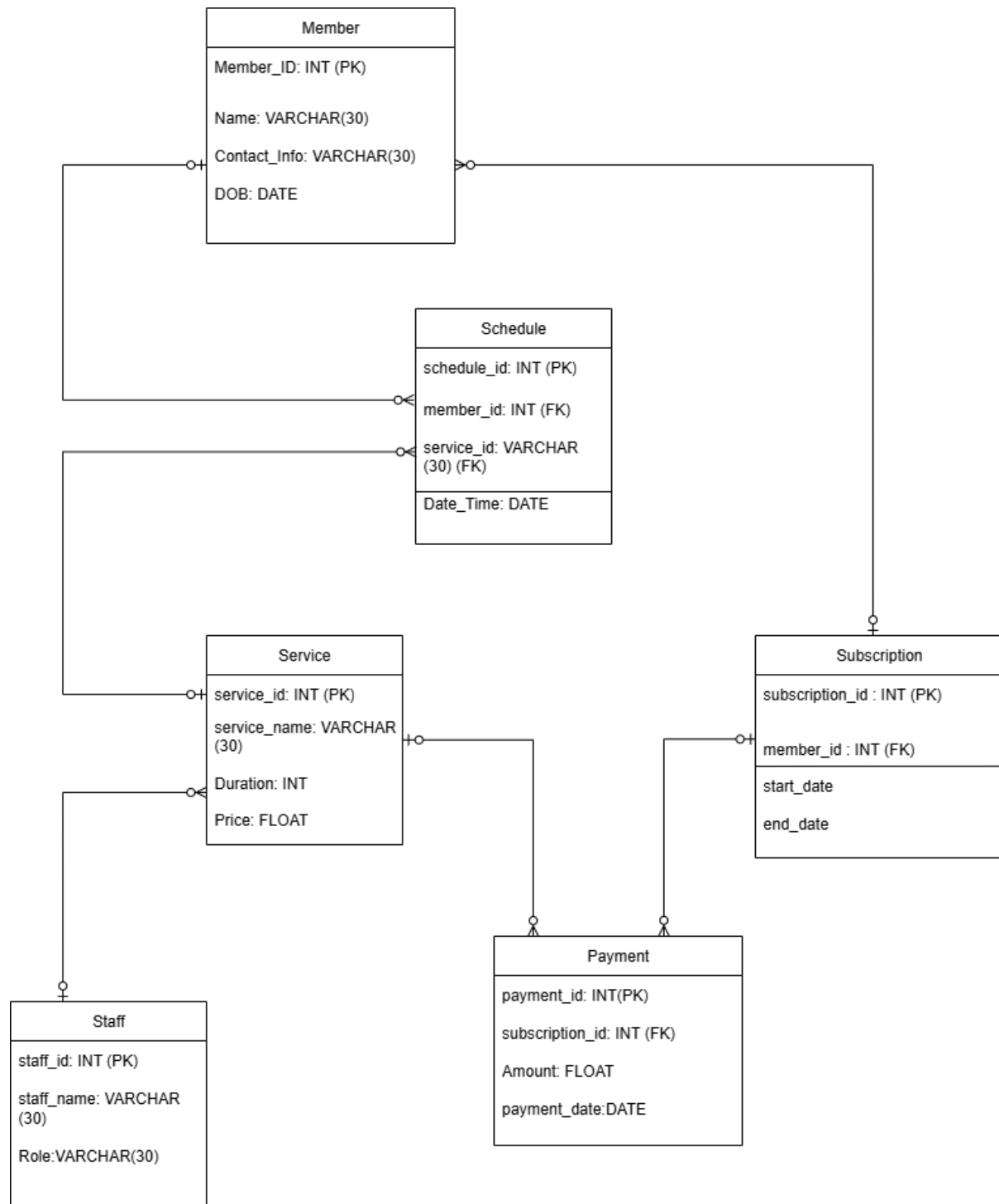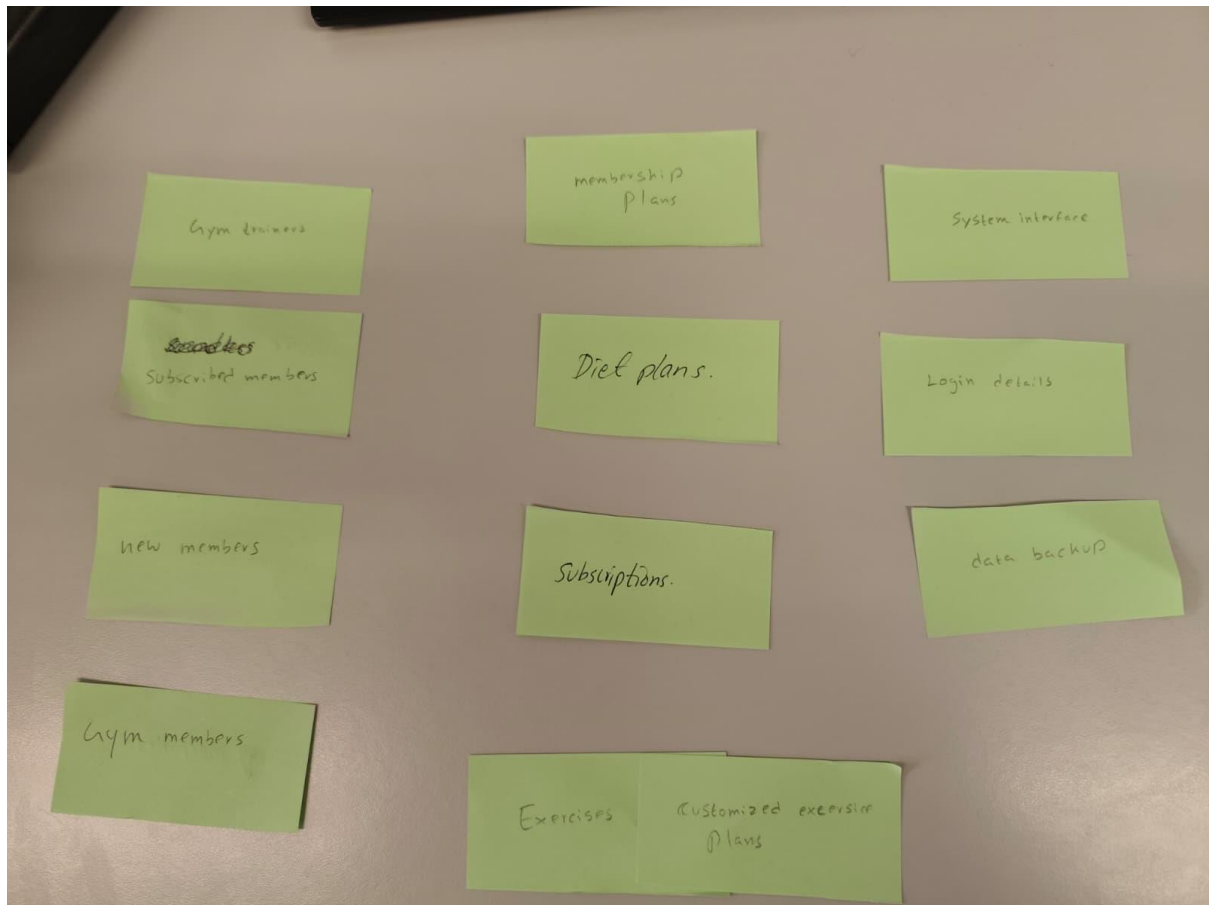
Brainstorming Events

Table Designs – Data Dictionary

Member Table

Field Name	Description	Data Type	Key Field	Constraints	Example
Member_ID	Unique identifier for each user	INT	Primary Key	Auto Increment, Not Null	101
Name	Full name of the user	VARCHAR(30)	–	Not Null	John Smith
Contact_Info	Phone number of the user	VARCHAR(30)	–	Unique, Not Null	+64-212345678
DOB	Date of birth	DATE	–	Nullable	1995-08-22

Schedule Table

Field Name	Description	Data Type	Key Field	Constraints	Example
schedule_id	Unique ID for schedule entry	INT	Primary Key	Auto Increment, Not Null	00586
member_id	Reference for the member assigned	INT	Foreign Key	Not Null	101
service_id	Reference for the service being scheduled	VARCHAR (30)	Foreign Key	Not Null	99965
Date_Time	Schedule date and time for service	DATE	–	Not Null	09/15/2025 17.30p.m

Subscription Table

Field Name	Description	Data Type	Key Field	Constraints	Example
subscription_id	Unique identifier for subscription	INT	Primary Key	Auto Increment, Not Null	201
member_id	Member who holds the subscription.	INT	Foreign Key	References User(User_ID), Not Null	101
start_date	Date subscription begins	DATE	–	Not Null	2025-01-01
end_date	Date subscription ends	DATE	–	Not Null	2025-01-07

Service Table

Field Name	Description	Data Type	Key Field	Constraints	Example
service_id	Unique identifier for service	INT	Primary Key	Auto Increment, Not Null	301
service_name	Name of optional service	VARCHAR(100)	–	Not Null	Personal Diet Plan
Duration	Duration of the service in minutes	INT	–	Not Null	45Mins
Price	Cost of the service	FLOAT	–	Not Null	$20.00

Payment   Table

Field Name	Description	Data Type	Key Field	Constraints	Example
payment_id	Unique ID for each payment	INT	Primary Key	Increment, Not Null	501
subscription_is	Subscription linked to payment	INT	Foreign Key	References Subscription(Subscription_ID), Not Null	201
Amount	Payment amount	FLOAT	–	Not Null	50.00
Payment_date	Date of payment	DATE	–	Not Null	2025-01-10

Staff   Table

Field Name	Description	Data Type	Key Field	Constraints	Example
Staff_id	Unique ID for each staff member	INT	Primary Key	Increment, Not Null	1000078
staff_name	Reference name identifier for staff members	VARCHAR (30)	_	Not Null	Jhonny Smith
Role	Position of the staff member	VARCHAR (30)	–	Not Null	Trainer

Contributions

- **Ayush Subedi: :** Summary, Use cases, Member & Schedule Table
- **Senuth Wickramasinghe:** ERD, User stories, Use case Diagram, Staff & Payment Table
- **Yogesh Gurung:** Functional & Non-Functional requirements, Service & Subscription Table