GYM MANAGEMENT SYSTEM

Project of Software Engineering

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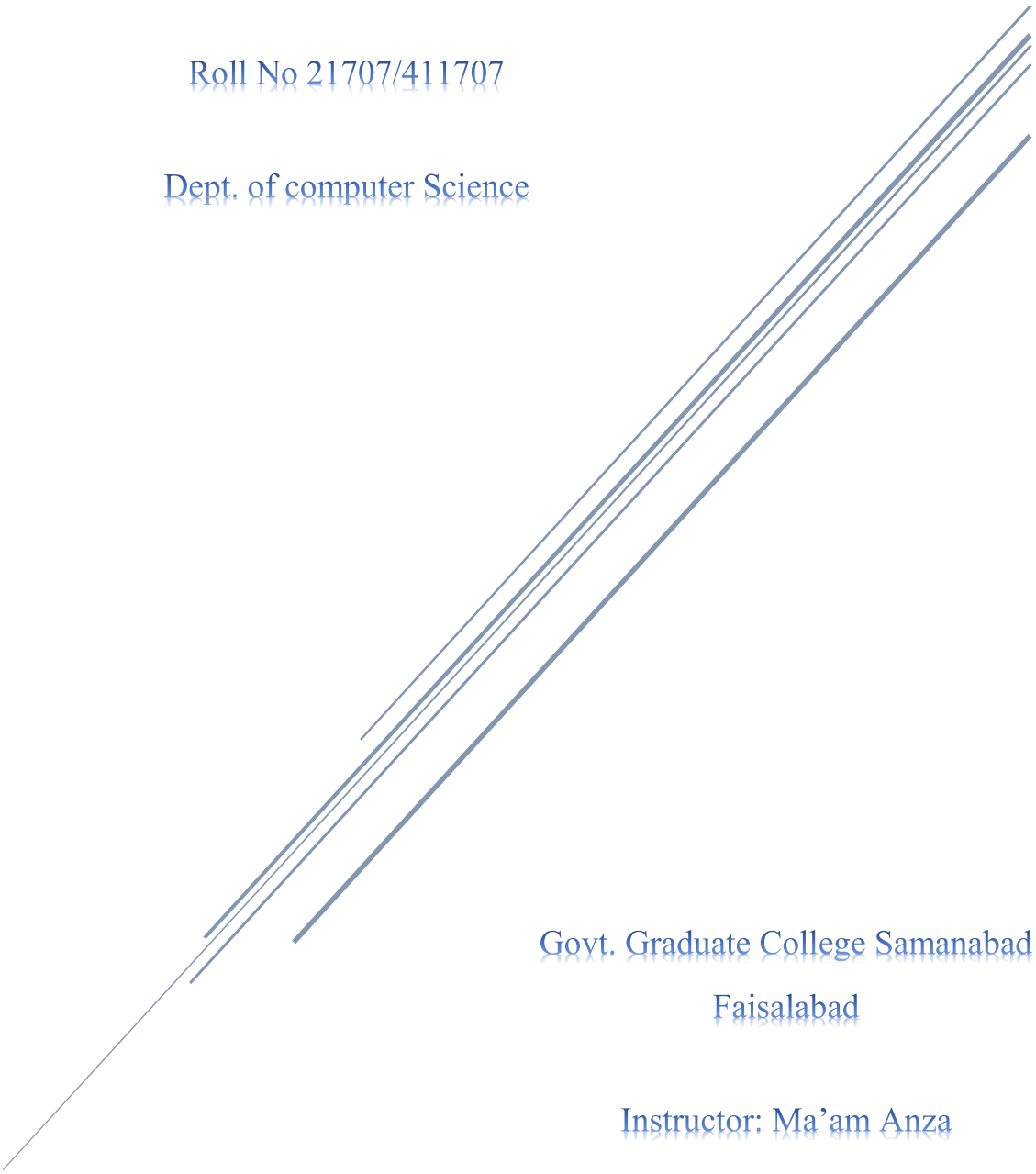

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Gym Management System

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Gym Management System

Introduction

The purpose or objective of this system is to digitalize and create an automated system. The system will perform the task like adding the new member to the gym, Removing the member or keeping the payments records and other stuff required in managing the gym properly. The present scenario in the gyms is that the records are kept by writing in a file on paper. Every management task is done manually.

This creates a system unreliable and confusing to keep the correct track of the records. The maintenance of a system like this is hardly required until it needs to change any part of the system. The information about the various things contained in the system are like members, trainers, the equipment can get by just a few clicks unlike the paper documents required the serious reading for such information.

It helps in creating the various batch according to their preference or if they want a particular trainer. It made it easy to generate the reports of various operations performed in the gym are like paying the fee it can be stored and later evaluated and get the list of members who did not pay the fee. It also helps the users in reducing the carbon footprint as the amount of paper used in the company reduces.

This also helps in keeping the standard width of the management system as if there is a case where the administration involves more than one person to manage the gym. This system does not only limit itself to the administration and but also helps the members of the gym. The members can have options like attendance and fee payment change batch request etc.

This will improve the transparency between the members which is always a good quality in the system. It will also give a layer of security to the administration and the users that only authorized users can access by their credentials.

Data flow Diagram

Zero Level Data Flow Diagram

This is the Zero Level DFD of Gym Management System, where we have elaborated the high level process of Gym Management. And its basic overview of the whole management system.

Process Flow Gym Management System

- Managing all the Gym
- Managing all the Gym Shift
- Managing all the Gym Facility
- Managing all the Gym Packages
- Managing all the Gym Trainer
- Managing all the Payment
- Managing all Branches

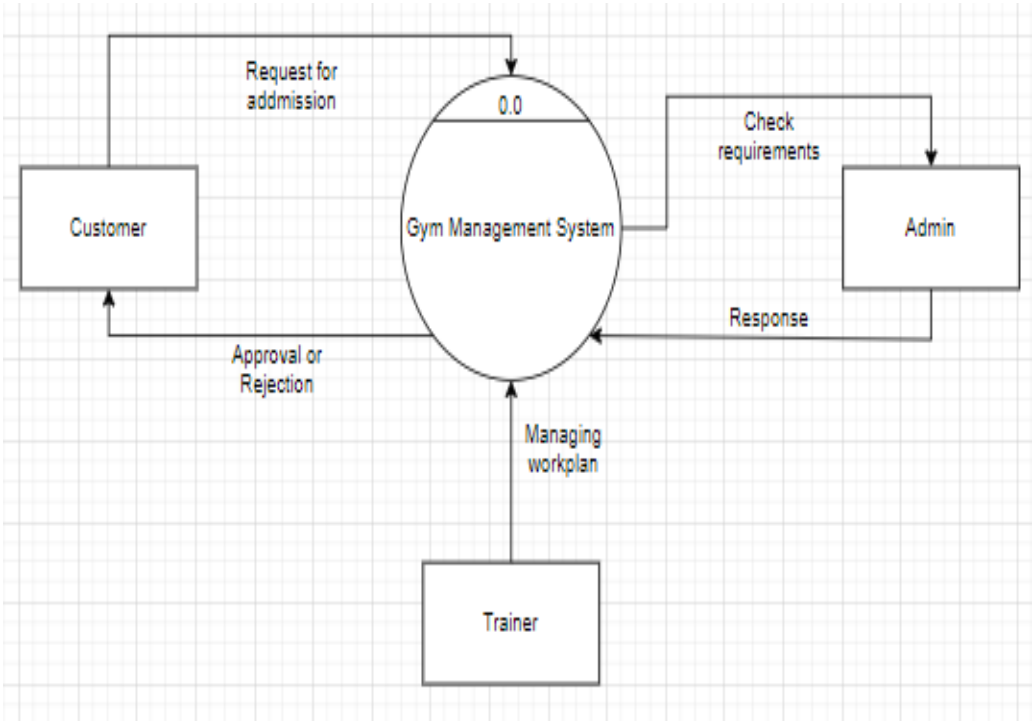

Fig 1: Zero Level of Gym Management System

First Level Data Flow Diagram

First level DFD of Gym Management System shows how the system is divided into sub systems(processes). Each of which deals with one or more data flows to or from an external agent, and which provides together all of functionality of the Gym Management system.

Output of First Level DFD

- Processing Gym records and generate report of all Gym
- Processing Gym Shift records and generate report of all Gym Shift
- Processing Gym Facility records and generate report of all Gym Facility
- Processing Packages records and generate report of all Packages
- Processing Trainer records and generate report of all Trainer
- Processing Payment records and generate report of all Payment
- Processing Branch records and generate report of all Branch

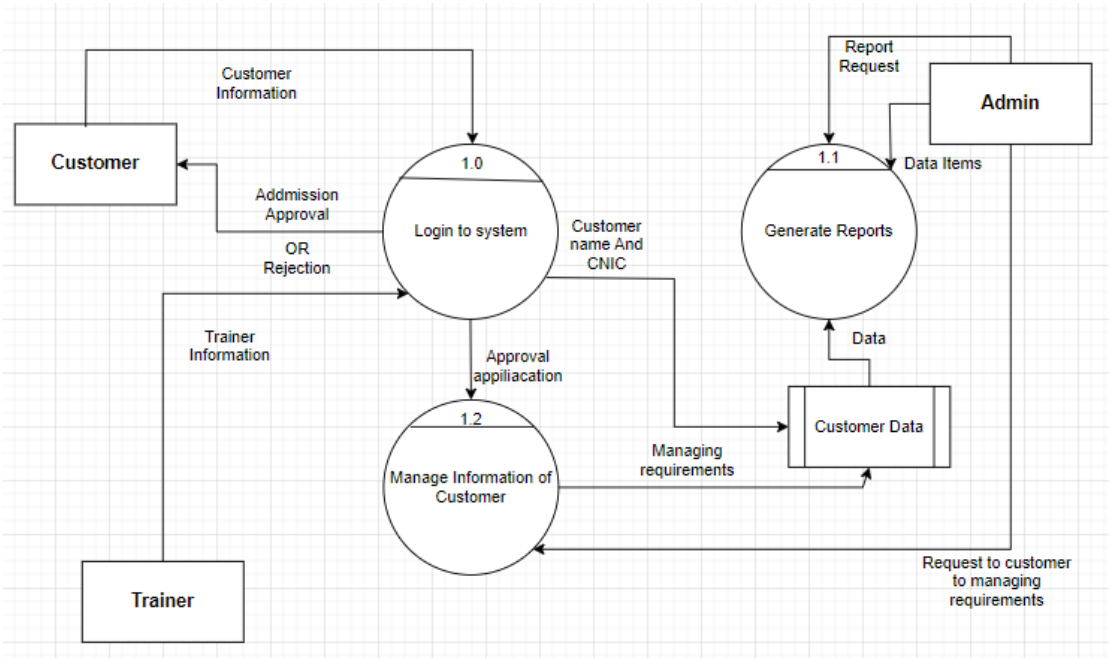

Fig 2: DFD First Level

Functional and Non Functional Requirements

Functional Requirements

The Functional requirements of Gym Management System are follow as:

- Members

- Employees
- Machines
- Diet of members
- Manage Transactions

Non Functional Requirements

The Non Functional requirements of Gym Management System are follow as:

- Performance
- Usability
- Scalability
- Maintainability
- Responsiveness

Use Case Model of Gym Management System

A use case diagram is a type of behavioral diagram defined by and created from a use case analysis. Use case diagrams are used to identify the primary elements and processes that make up a system and show how these elements interact. In addition, use case diagrams can be used to identify potential system risks

List of Actors in GYM Management System

There are three number of Actors in Gym Management System are follow as:

- Admin
- Customer
- Trainer

Use Cases

List of Use Cases are follow as:

- Member Info
- Trainer Info
- Workout Plan

- ❖ Payment
- ❖ User Management
- ❖ Ads Management
- ❖ Database Management

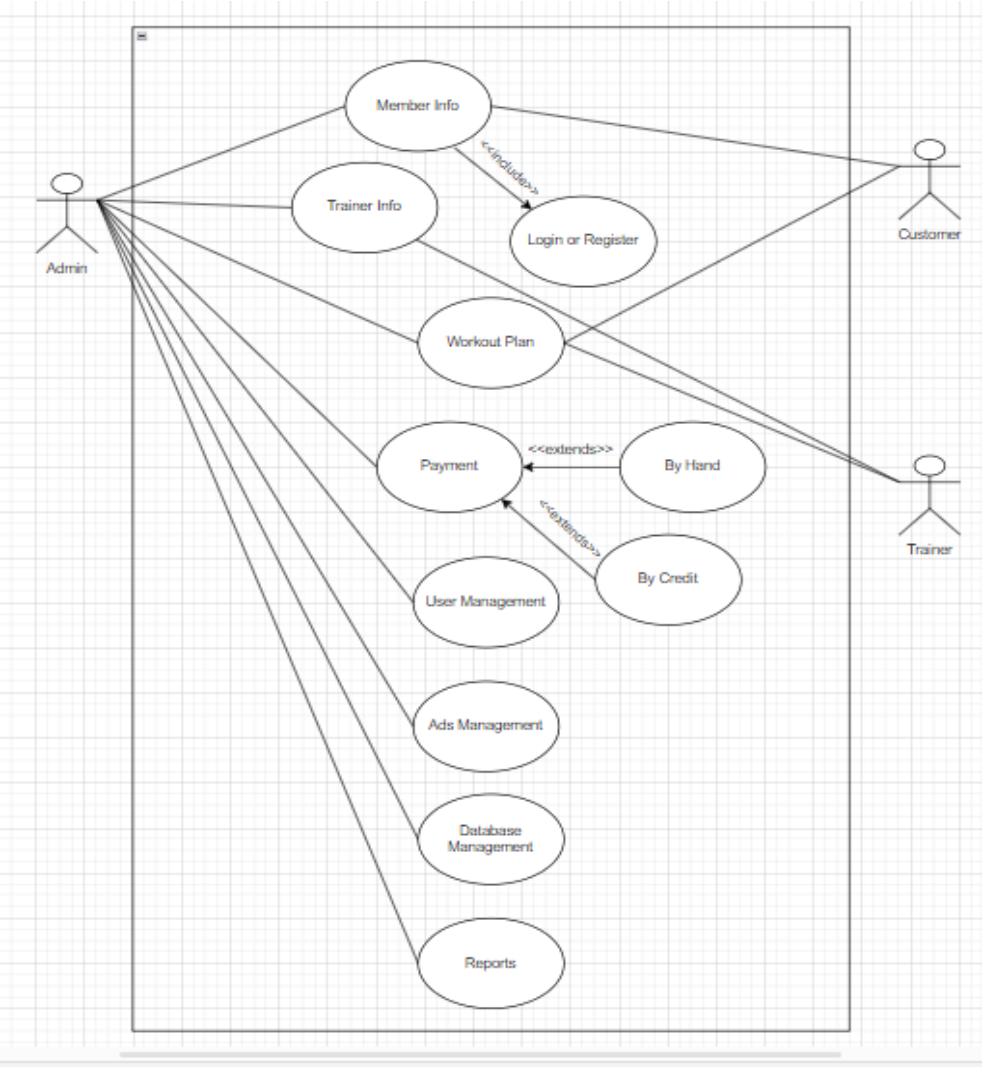

Fig 3: Use Case Diagram

The customer can access the Member Info, Workout Plan and Payment module. The Gym Trainer can access Instructor Info and Workout plan module while the Admin can access the entire core modules of the system.

SRS of Gym Management System

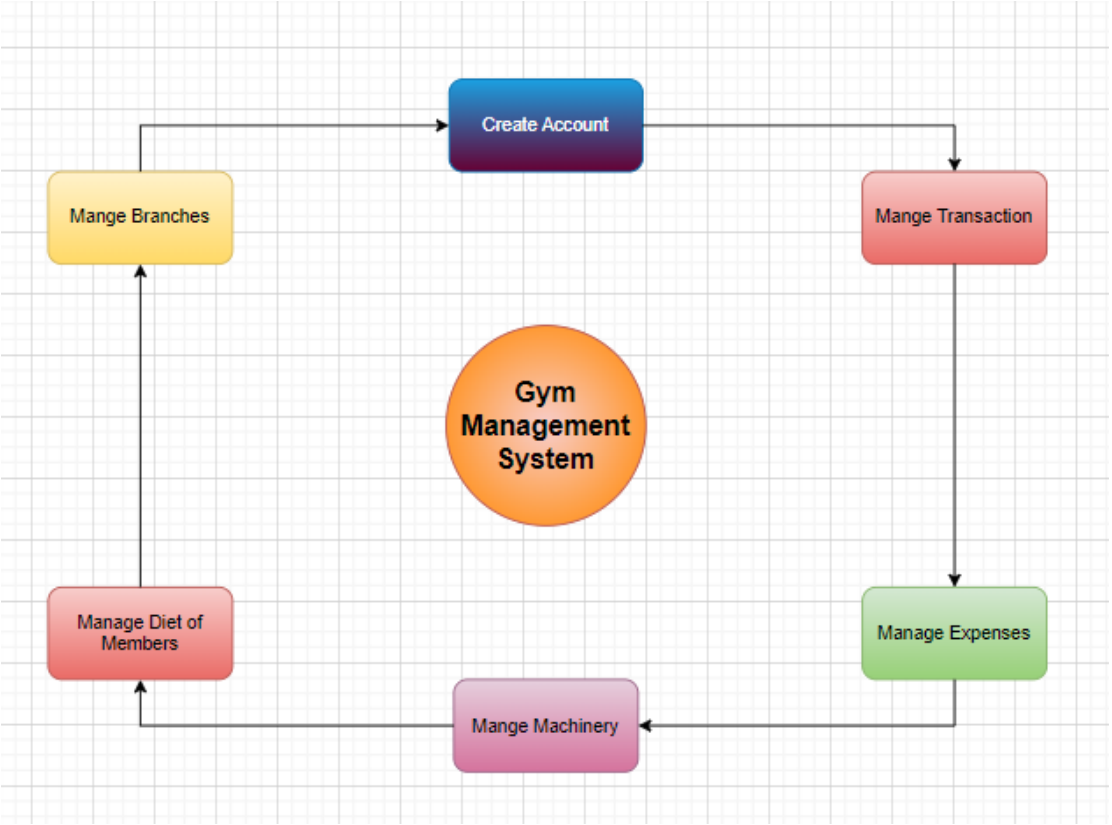

Fig 4: SRS of GYM Management System

Create Account

The system should provide the user with an easy to use GUI to facilitate their creating an account.

The system shall ask for an email address and password.

The system shall notify the user if incorrect characters are used in the email or password fields.

The system should notify the user if their email has already been used.

Manage Transaction

Admin will able to manage (Add delete update view) transactions of members by using just a unique ID. The system will clearly update the status of members.

Manage Expenses

The system can manage daily, weekly, monthly expenses of Fitness with its module named MANAGE EXPENSE that contains all the possible expenses of the system.

Manage Machinery

The system will be able to have a complete record of the purchased machinery in the gym along with prices as well. The system will able to update/view Delete records of machinery.

Manage Diet Plan

The gym management system should allow trainers to create personalized diet plans for individual members based on their fitness goals, body type, medical conditions, and dietary preferences.

The system should have a comprehensive database of foods and their nutritional information, including calories, macronutrients (protein, carbohydrates, fats), and micronutrients (vitamins and minerals).

Manage Branches

The system should have a centralized dashboard where administrators can access information and perform actions related to each branch, such as adding new branches, updating branch details, and monitoring branch-specific data.

ER Diagram of Gym Management System

Entities:

- Admin
- Login
- Payment
- User
- Trainer

Relationships: Admin has a one-to-one relationship with Login (Each admin has one login account).

Payment has a many-to-one relationship with User (Many payments can be associated with one user).

User has a one-to-many relationship with Payment (One user can have multiple payments).

User has a many-to-many relationship with Trainer (A user can have multiple trainers, and a trainer can have multiple clients).

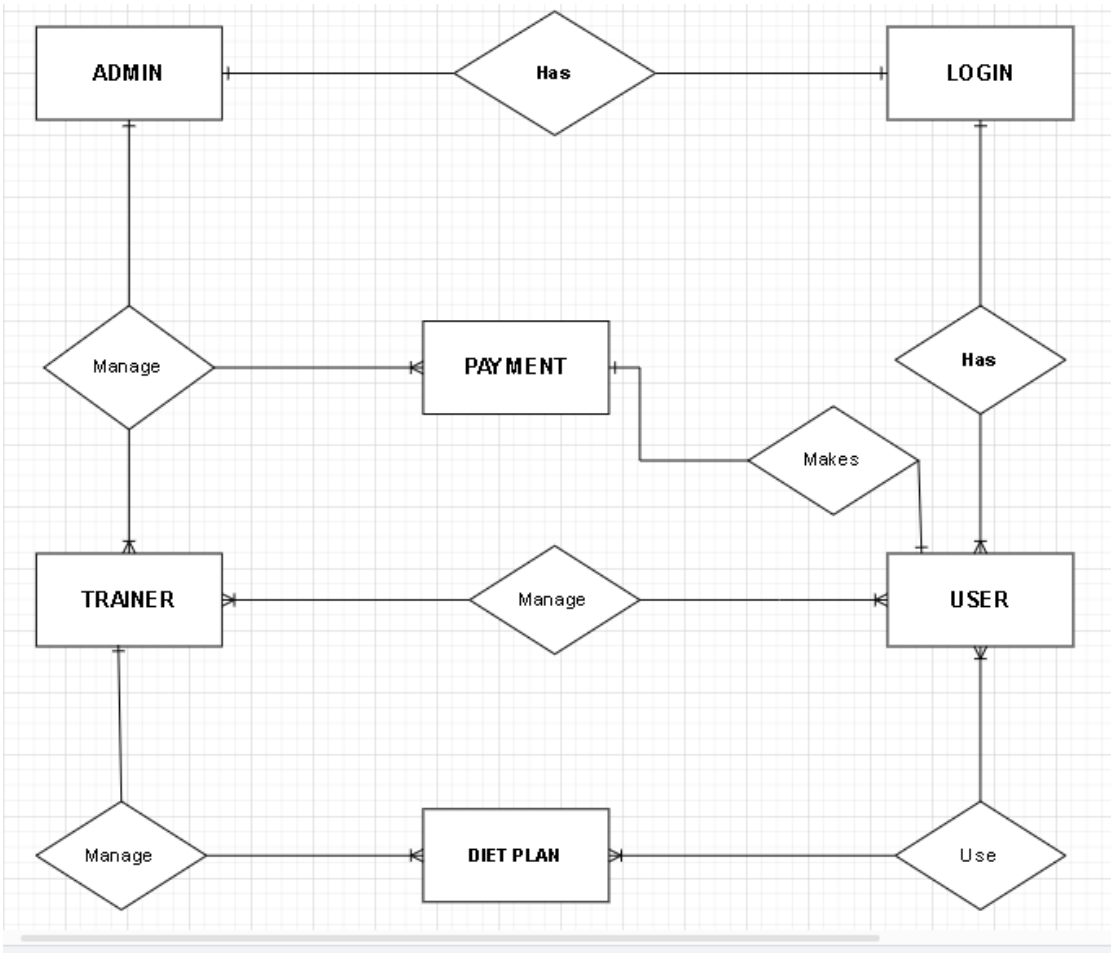

Fig 4:ER Diagram of Gym Management System

Class Diagram of GYM Management System

A Class Diagram for a Gym Management System represents the essential classes and their relationships within the system. Here's a description of the classes you mentioned:

1.Bill Class

- Description: The "Bill" class represents the invoices or bills generated for gym members for services rendered, such as membership fees, training plans, and packages.

- Attributes:

  - BillID: Unique identifier for each bill.

  - BillDate: Date when the bill is generated.

  - TotalAmount: The total amount due for the bill.

- Methods:

  - CalculateTotal(): A method to calculate the total amount based on the services included in the bill.

2.Package Class

- Description: The "Package" class represents the various packages or services offered by the gym, such as monthly packages, yearly packages, or customized packages.

- Attributes:

  - PackageID: Unique identifier for each package.

  - Name: Name of the package.

  - Description: A brief description of the package.

  - Price: The cost of the package.

- Methods:

  - GetPackageDetails(): A method to retrieve the details of a specific package.

3. Membership Class - Description: The "Membership" class represents the membership details of each gym member, including their personal information and the package they have subscribed to.

- Attributes:

  - MemberID: Unique identifier for each member.

  - FirstName: Member's first name.

  - LastName: Member's last name.

- Email: Member's email address.

- Phone: Member's contact number.

- StartDate: Date when the membership starts.

- EndDate: Date when the membership ends.

- Methods:

- RenewMembership(): A method to renew the membership for a member.

4.Entity History Class

- Description: The "Entity History" class may not be a core class but could be used to maintain a historical record of changes to key entities in the system, such as memberships or packages.

- Attributes:

- EntityID: Identifier for the entity being tracked.

- ChangeDate: Date and time of the change.

- Action: Description of the action taken (e.g., created, updated, deleted).

- Methods:

- LogChange(): A method to log changes made to entities.

5.Training Plan Class - Description: The "Training Plan" class represents the various workout plans or training programs offered by the gym, which members can choose based on their fitness goals.

- Attributes:

- PlanID: Unique identifier for each training plan.

- Name: Name of the training plan.

- Description: A brief description of the training plan.

- Duration: Duration of the plan (e.g., weeks or months).

- Price: The cost of the training plan.

- Methods:

  - GetPlanDetails(): A method to retrieve the details of a specific training plan.

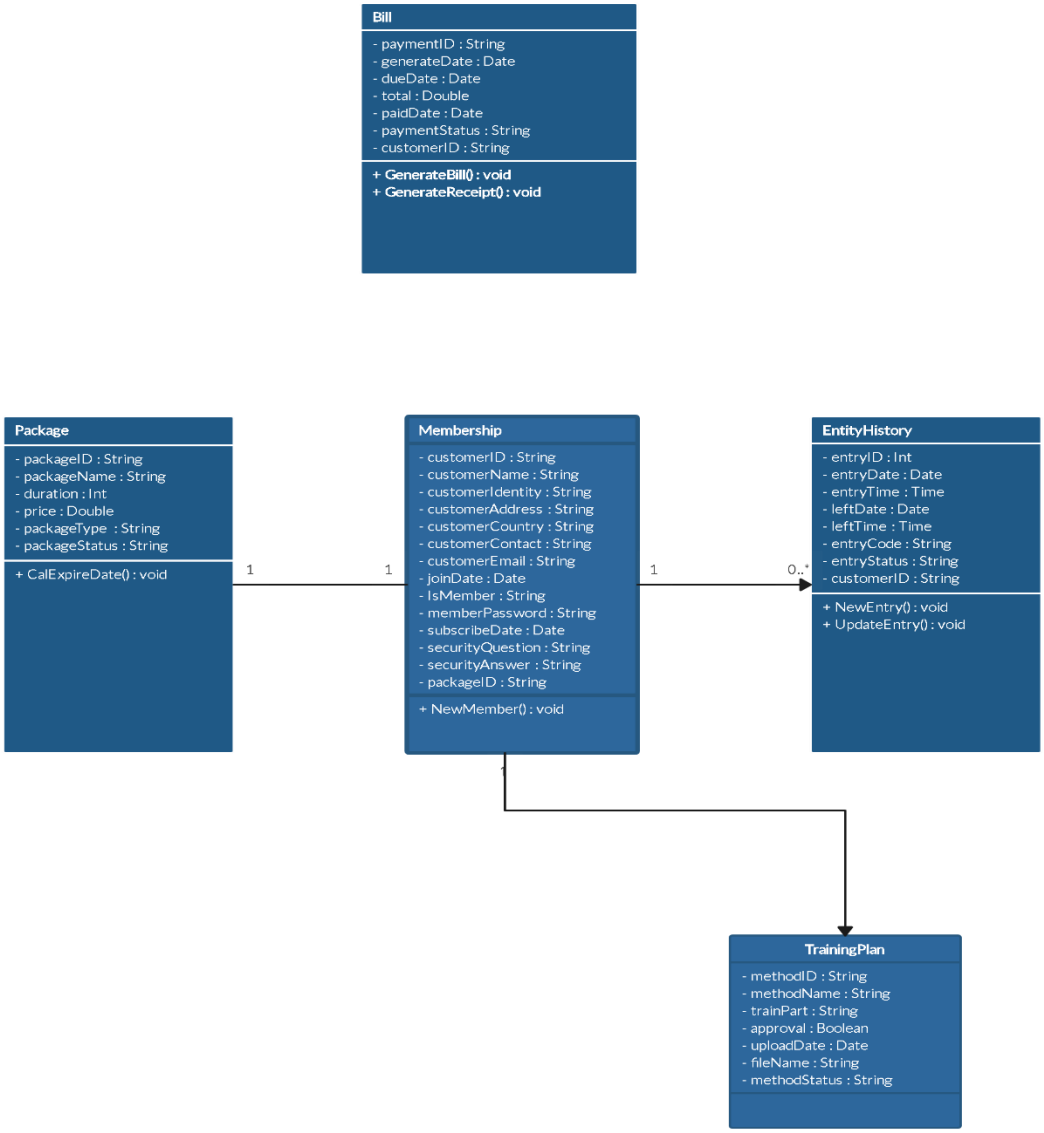

Fig: 5 Class Diagram of Gym Management System

Sequence Diagram of GYM Management System

Participants/Objects:

1. Gym: Represents the Gym object.

2. Trainer: Represents the Trainer object.

3. Gym Shift: Represents the Gym Shift object.

4. Packages: Represents the Packages object.

5. Branches: Represents the Branches object.

Description:

1. Initialization:

- The system initializes by creating instances of the Gym, Trainer, Gym Shift, Packages, and Branches objects.

2. User Registration:

- A user interacts with the system to register as a member.

- The Gym object receives the registration request.

- The Gym object communicates with the Branches object to check for the nearest branch.

- The Branches object provides information about the nearest branch.

- The Gym object creates a member account for the user and adds them to the branch.

3. Trainer Assignment:

- The user decides to hire a personal trainer.

- The Gym object communicates with the Trainer object to find an available trainer.

- The Trainer object checks their availability.

- If available, the Trainer object is assigned to the member.

4. Package Selection:

- The user selects a membership package.

- The Gym object communicates with the Packages object to retrieve package details.

- The Packages object provides information about available packages.

- The Gym object assigns the selected package to the member.

5. Schedule Gym Shift:

- The member schedules their gym sessions.

- The Gym object communicates with the Gym Shift object to check for available slots.

- The Gym Shift object checks for available slots in the gym schedule.

- If available, the Gym Shift object schedules the member's sessions.

6. Member Interactions:

- The member interacts with the system to book sessions, cancel sessions, or inquire about their membership.

- These interactions trigger communication between the member and the Gym, Trainer, Gym Shift, or Packages objects as needed.

7. End of Interaction:

- The interactions continue as long as the member is using the system.

- When the member logs out or completes their interactions, the sequence ends.

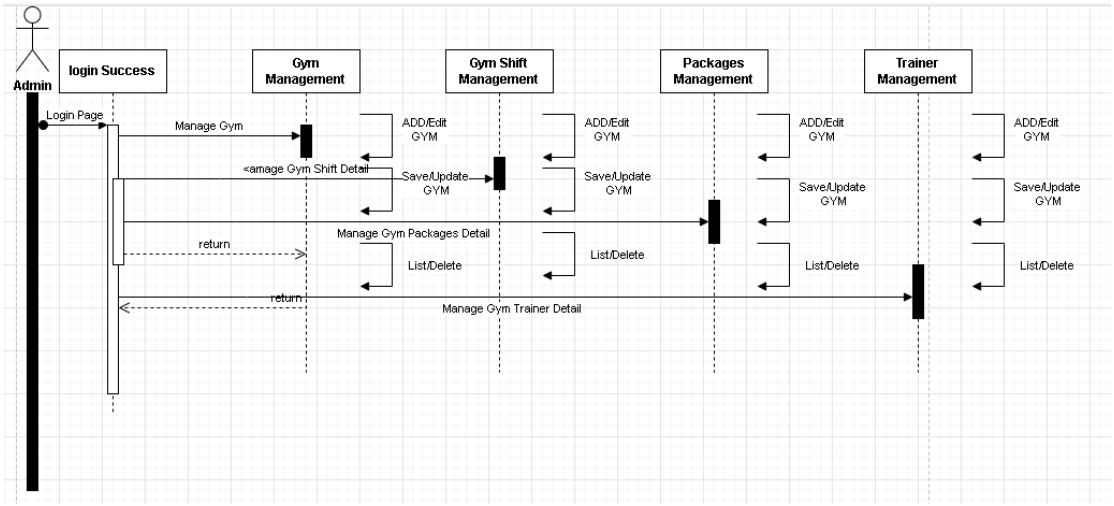

Fig :6 Sequence Diagram of Gym Management System

WBS Diagram of Gym Management System

Project Initiation

- Define Project Scope
- Set Objectives and Goals
- Identify Stakeholders
- Create Project Plan

Requirement Analysis

- Gather User Requirements
- Define Functional Requirements
- Define Non-functional Requirements

System Design

- Design User Interface
- Database Design
- Architectural Design
- Security Design

Development

- Front-end Development
- Back-end Development
- Database Implementation
- User Authentication System

Testing

- Unit Testing
- Integration Testing
- System Testing

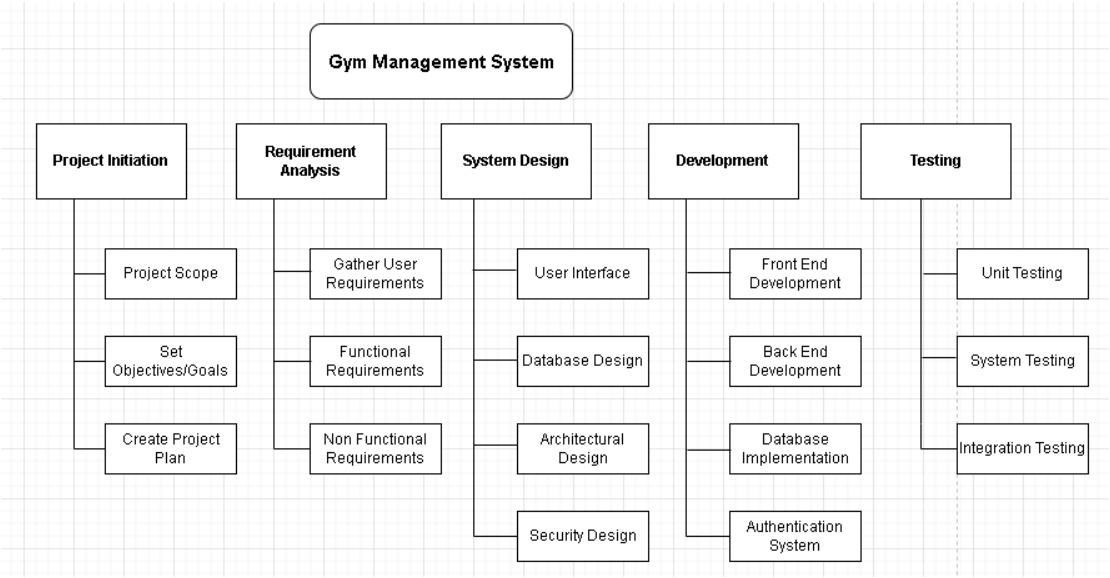

Fig :7 WBS Diagram of Gym Management System