

JK Fitness Office: Web based Gym Management System

M.Nishanthan

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**A dissertation submitted for the Degree of Master of
Information Technology**

M.Nishanthan

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Declaration

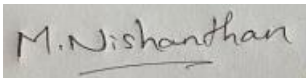
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Student Name: M.Nishanthan

Registration Number: 2019/MIT/065

Index Number: 19550652



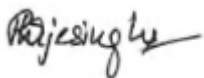
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This is to certify that this thesis is based on the work of Mr. M.Nishanthan, under my supervision. The thesis has been prepared according to the format stipulated and is of acceptable standard.

Certified by:

Supervisor Name: Mrs. C R Wijesinghe



Signature:

Date: 17/02/2023

Abstract

People have recently begun to become more concerned about their food and health, making going to the gym the logical option they seek. The Jaffna district's JK Fitness centers are the intended users of the system. The gym has all the equipments which are mostly up to date according to current fitness trends and also has other helpful products to give its clients a better service. As a result, the number of members would likely grow daily, leading the gym management to choose an IT solution to handle the rising traffic.

After determining the user needs by employing various data collection approaches to verify that the requirements were clear, development was carried out. Software was created and developed using an incremental and iterative development process based on the requirements.

The manual system now in use at the gym is intended to be replaced by the JK Fitness Office software. The system's goal is to give members quick access to the gym's resources while enhancing the management of the facility. The primary capabilities that were discovered were as follows: member administration, attendance management, payments and expense management, and report generating. It was possible to control access using the login and password. Additionally, user access levels were implemented to control the system's accessibility.

The system is capable of tracking members whose packages or memberships are about to expire and will immediately email them a membership reminder. The system can be highly customized, allowing the administrator to manage user access and how the system looks. The system was created as a web-based application, making it widely accessible.

Web Application will make use of

- .Net5 with Core framework, C# language, jQuery, JavaScript and CSS
- IDE – Microsoft Visual Studio
- Database – Microsoft SQL

Acknowledgement

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Additionally, I want to thank my supervisor, Mrs. C R Wijesinghe, who is the project's driving force, for all her support. She inspired me, supported me when things became tough, and helped me fix my mistakes so that the project was a success. Since I work full-time in the business sector, without the enormous encouragement and guidance, I would not have been able to complete the project. I also want to express my gratitude to the JK Fitness Group management for all their help in getting this done.

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Chapter 1 - Introduction

1.1 JK fitness center

JK Fitness is currently one of the well-known fitness centers with five fully operation branches spanning across Jaffna district, and they want to add another fitness branch to their network. Despite having five branches across the district, JK fitness still uses a manual record keeping system in all their branches. This includes managing day to functions and member data, keeping inventory of the equipment in the branches and other supplies etc. The paperwork required to manage and keep of this information is very time consuming and it takes a considerable amount of physical space in every branch to keep these documents and they keep piling up with time. Also, in an incident where they must look for a past record for an example, a past member who wants to re-join or paying a membership fee that's due, the staff members must look through the manual papers and files since there are not organized now in a systematic way. Additionally, buying resources like files, printers, cabinets, racks is costly if you consider all the branches together.

Associating any specific transaction with a certain context used to be quite challenging. Finding information requires manually looking through each document's files, which makes the search procedure exceedingly difficult. Currently, these manual processes have a negative impact on the company since they increase the burden required to access information, demand additional resources, and result in a loss of revenue for each branch. This is necessary since there is a lot of information that must be stored and kept private to run the business.

The gym's manually operated system was quite vulnerable to data loss. A few examples include destroying, misplacing, or gaining unauthorized access to registers. Consequently, this could have disastrous consequences on the business. Maintaining data and records of transaction occurrences is relatively costly. Searching for a specific data criteria in such a system takes a long time. To obtain the record, the accountable party must manually locate the appropriate register and position, which may take some time. Data redundancy is also a significant issue in this type of technology. Because redundancy refers to recurrence, data that is updated or modified in one location may not be updated or modified in another related location. This could result in inconsistent data processing, data integrity loss, and user confusion.

1.2 Motivation

Several major key factors can be used to break down the motivation for creating an automated gym management system:

- **Efficiency and Productivity:** Automating tasks such as member attendance, notify member about the expiration of package and membership , member payments and expenses along with accounts per gym can save gym staff a significant amount of time and allow them to focus on more important tasks such as member service and operations.
- **Improved member experience:** Automated systems can provide an enhanced member experience, such as by allowing members to reserve trainers and classes, and providing real-time information about the availability of classes and trainers.
- **Improved data management:** Automated systems can offer gym administrators and owners useful information and insights about member behavior, gym usage, and trends, which can be utilized to make strategic decisions about operations and marketing plans.
- **Cost savings:** Automating tasks such as membership payment and expenses and membership management can save gym staff time and reduce the need for manual data entry, which can ultimately lead to cost savings.
- **Increased revenue:** Automated systems can assist gyms in increasing revenue by managing billing, automating membership sign-ups, and providing targeted marketing campaigns to members.
- **Reduced administrative costs:** By streamlining procedures and removing the need for manual data entry, paper forms, and physical storage, automated solutions can also assist gyms in lowering administrative expenses.

Overall, the major goal of creating an automated gym management system is to raise a gym's production, efficiency, and profitability while also giving its staffs and members a better experience.

1.3 Objective

The objective of this project is to provide a cloud-based web application called 'JK Fitness Office' to support gym operations of each fitness branch of JK fitness. This desktop solution is designed to help the gym staff to manage members and memberships, administrative tasks, sales and marketing, scheduling, and billing. The administrative tasks are inclusive of recording members' attendance, payroll and expenditures, shop inventory maintenance, accounts management, pre-designed email template with advance booking the equipment, and trainers/staff according to the availability. Even users who are working alone will find the software's interactive, self-descriptive graphic user interface to be very convenient and comfortable.

This new software solution is expected to solve redundancy issues related to data management. The data edited from one specific data entry form will also reflect the changes to the other forms that are related. As a result, the likelihood of inconsistent data in our data storage has decreased. It involves a one-time investment to set up the necessary hardware and software, but once that is done, the managers won't have to worry about anything else. Additionally, it lessens the need on labor which was earlier a requirement with the manual system. Every data transactional form has effective search features that can be used by just inputting a specific keyword into the search field. This will guarantee that for that particular data the user is looking for, all of its records are easily visible in a matter of microseconds. Additionally, it is possible to update and delete data using a search function.

This new software solution can help JK fitness with managing all aspects of their business, retaining and engaging with members more effectively and most importantly – growing the business further. With the objective of implementing a web-based application for JK Fitness Office, it would help them to optimize and utilize the procedures of the organization in order to enhance their overall efficiency and profits. The suggested solution is very secure because it requires unique login credentials for each staff member and automatically validates logins. This application can support a business with multiple branches across a geographical area.

With this solution, the Staff can also communicate with the gym members via automated email. The application will send an auto-generated email to alert all members whose membership is due

to expire soon. The proposed web-based application is fully compatible with all latest versions of the browser along with being mobile responsive. This feature can also be used to communicate with the members on any promotions going on in particular branches such as membership discounts in a particular season. The promotional emails to the members can also be used to generate more lead to the social media accounts of JK fitness.

1.4 Scope

JK Fitness center, who currently uses manual methods in their day-to-day operations wants to migrate to a web based software solution with the expectation of increasing their day to day productivity and the reducing the overheads of maintaining a manual system together with growing their profits over the years after the implementation. With that the proposes software solution covers below functionalities.

1. Employee and payroll management
2. Administrative functions including membership management
3. Inventory Management
4. Account Management
5. Budget Management and Forecasting
6. Email Notification system for email marketing
7. Content Management System to feed legacy data
8. User Guide

With the introduction of this new system, JK fitness is hoping to completely get rid of their manual methods starting from one branch gradually growing to all their branches. The reason behind this is that they currently maintain a lot of data in the physical files and for each branch the data must me fed into the system using the content management system. This task should be done carefully and with someone who's trained on both the fitness center functions and the application thus the gradual transition will happen.

Once the application is deployed, a maintenance and aftercare period will be given since the transition to the system is gradual and once the system starts using real time data, issues may likely to arise. Also, the branch administrators are given the opportunity to contact the developers anytime for any technical related support despite providing a user guide as additional support.

Any extra change requests after the implementation will be considered as additional features and charged separately. These requirements will be carefully assessed against the currently proposed system and then will be discussed with the management of JK fitness.

System will have different user roles depending on the function such as the branch managers are given administrator roles which allows them to enroll new members but anything regarding HR/finance and other management activities will be handled by different users.

By implementing this new system JK fitness management hopes to grow their business further by adding more branches under their wings and this task will be made easier by letting go of their previous manual system which was tedious and taking a lot of time and resources.

1.5 Structure of the Thesis

Chapter 2: Background

Related to consumer needs and available market options, the project's relevance is justified. Here, the technologies utilized in the system are also detailed.

Chapter 3: Design

This chapter explains the methodologies for gathering information and developing new ideas.

Chapter 4: Implementation

This chapter describes the technologies that are employed in the creation and application of systems.

Chapter 5: Testing and Evaluation

This chapter describes the application of the theories and methods used in user evaluation. At the conclusion of this chapter, a conclusion and future projects are also stated.

Chapter 6: Conclusion

Final conclusion of the project and Thesis.

Chapter 7: References

The references section follows this chapter.

Chapter 2 - Background

2.1 Introduction

Although gym management software is widespread in other industrialized nations, Sri Lanka does not have a lot of it. The findings of the study demonstrate that even industry leaders like JK Fitness do not make use of appropriate software that satisfies their functional needs.

The JK Fitness application has the following salient features:

- Style and develop a user-friendly system for JK Fitness Group.
- Create a computerized system that is simple to use and effective.
- Create a precise and adaptable system that will eliminate data duplication.
- Save time & increase profit.
- Control the access and maintain security
- Provide security to data.
- Email marketing - By using the compassable email box in the gym management system for email marketing, it keeps clients engaged.

2.2 Functional Requirements

- Employee Management.
 - Register new employees
 - View Employees - All employees will be displayed with the basic data along with the options of Delete and Edit.
 - Edit View - Will help to edit the employee details.
 - Delete - It will delete the employee record from the system permanently.
- Login Authentication
 - Create user login – Members and Employees
 - The system will deliver the username and automatically created password to the email address provided during the initial employee or member registration.
 - The email will be the username of the login.
 - During the initial login to the application, the system will ask the user to

update the password.

- Non- active users cannot login to the system.
- User roles and permissions for Employees – the system will only have the admin and staff as the system roles and will modify the permission according to the role.
 - Admin – Can access all branches data
 - Staff – Can access only his/her working branch data
 - Temporary Staff – Can view only the Membership details.
- Forget Password - Active employees/members can receive the forget password email to reset their password.
- Staff can login to the system only during their working hours defined under employee details.
- Active members can login to the system anytime without the time restriction.
- Membership Management
 - Register new members
 - View membership
 - Staff - Records of membership will be shown based on the branch that the staff members are a part of.
 - Admin - By choosing a branch, all membership records will be displayed and can be filtered.
 - Memberships will be displayed in a table view with the basic data along with the options of Delete and Edit.
 - Edit View - Will help to edit the membership details.
 - Delete - It will delete the membership record from the system permanently
 - Attendance of Members - Membership attendance details
 - Manage Attendance – Can add/edit the attendance
- Provisional Members – They are not permanent members and will pay on a daily basis
 - Register new provisional members
 - Provisional members will be displayed in a table view with the basic data along with the options of Delete and Edit

- Edit View - Will help to edit the membership details.
 - Delete - It will delete the membership record from the system permanently
- Payments and Expenses Management
 - Membership Incomes
 - By using the membership ID, payment can be placed
 - Payment Options
 - Full Amount
 - Partial Amount – the member would need to pay the balance membership amount within 30 days, if failed then the membership package will be deactivated
 - Personal Trainings
 - Payment receipt will be sent via email
 - Internal Expenses
 - Advance payment for staff
 - Monthly Salary
- Manage Financial Accounts
 - Membership income, shop income, internal expenses and salaries will be reported for each month by using branch and year wise. Lastly, the total income will be displayed after deducting the expenses.
- Supplements Shop Management
 - Manage Sales/Order – It makes it easier for the business owner to monitor orders and sales based on the type of goods (apparel, beverages, or supplements) and by branch.
 - Manage Products
 - Manage Inventory
- Notification
 - Display membership renewal notification for the active members \leq months defined under settings
- Automatic Package/Membership Expiration Alerts
 - The system will track the members whose package or membership is due to expire

soon and will send them an alert through email automatically. The alert email will be sent 7 days, 3 days, and 24 hours before the expiration.

- MIS Reports
 - Annual and monthly reports will be generated for membership income, shop income, internal expenses, and salaries by using the financial accounts data.
- Compassable Email Box
 - Staff can send a customized email to any person or bulk of members on any occasion in a single process.
- Trainer Reservation
 - Members can reserve the trainer according to the availability through the application. The system will send an alert to the trainer booked by the member.
 - When the trainer acts on the request by a member, the system will send an alert to the member.
- Settings
 - Manage branches
 - Manage expense types
 - Manage membership types
 - Employees' salary details management
 - Roles and access rights
 - The accessibility and the permission of the rights for all the pages and functions can be managed according to the user types.

2.3 Non-Functional Requirements

Performance: Several people should be able to use the system simultaneously.

Reliability: Database updates should occur after transaction processing to avoid inconsistent data.

Availability: Because the project is being hosted on a remote server, the system will be more accessible and will experience less downtime.

Security: User ID and password security has been applied to member login. Along with being limited by user levels throughout the program, accessibility.

2.4 Data gathering techniques

On site observations

The daily operations of the gym were observed on a regular basis. Cash collection counters, registration procedures, work-out administration, machine maintenance, and record keeping were all important considerations.

Interviews

Interviews were conducted with members, trainers, and the administrator. Interview subjects were chosen at random at the branches, with the exception of administrators and trainers. After conducting interviews with various member kinds, it became apparent that the members' perspectives on the IT solution varied.

An in-person interview with the administrator proved difficult. Typically, interviews were conducted over the phone.

Documents and records

To gather requirements, the following documents were examined:

- Member registration form
- Cash book
- Attendance records
- Supplements and Accessories Shop
- New Promotions

Data retrieval was found to be both exceedingly time-consuming and incorrect. Additionally, it was possible to identify the data retrieval patterns from the aforementioned papers.

2.5 Review of Similar Systems

Below are some related systems currently available and considered as a base for the proposed gym management system JK Fitness Office.

Zoho Creator [1] provides gym software that simplifies the running of fitness clubs. It can organize training sessions, keep track of staff attendance, manage customer subscriptions and package deals, and process payments with ease. Fitness clubs of all sizes should be administered by the gym management software, which is designed to be simple to use.

FitnessForce [2] is a web-based gym management software that aids in the organization, automation, and, ultimately, the expansion of the gym/club industry. This CRM application utilizes the SAAS model. Regardless of whether you run a single gym or a chain of gyms, this web-based software makes it simple to manage all of your facilities from anywhere at any time. The features include appointment and class administration, lead management, client management, billing, access control, corporate membership, and report.

GymMaster [3] is simple to keep thorough records of members and their subscriptions, schedule courses and trainers, process, and track sales, and interact in bulk with the appropriate members at the appropriate time using the gym software. The Gym Master program can keep track of member data and assist in identifying members who require motivation to reach their fitness objectives. All sizes of clubs can fit in it. With a full booking system, point of sale, website connectivity, direct debit integration, a mobile app for trainers, and online booking for clients, this gym software is packed with features. It focuses on boosting your member management operations' efficiency while also giving you the resources you need to foster long-term business success and growth.

MindBody [4] is a system for managing gyms and clubs that allows fitness companies to control schedules, memberships, and amenities. Gym management systems enable the scheduling of lessons, the reservation of facilities, the management of financial records, and the storage of member information in a database. Gym and club management systems can be used by a variety of fitness-focused organizations and enterprises. Fitness centers, swimming pools, dance studios, aerobics studios, and park districts are examples of these. Systems for managing gyms and clubs can be integrated with other types of software to improve efficiency. Some examples of these integrations include billing software to manage payments and membership dues, transactional email tools to improve communication between members and management, and social media marketing tools to increase brand awareness.

Table 1 compromises a comparison of the main functionalities in the above-mentioned systems and with the proposed JK Fitness Office system.

	JK Fitness Office	Zoho Creator [1]	FitnessForce [2]	GymMaster [3]	MindBody [4]
Staff/ Admin Login	√	√	√	√	√
Add/ Update/ Remove Staffs	√	√	√	√	√
Register/ Update/ Remove Memberships	√	√	√	√	√
Membership Attendance Management	√	x	x	x	x
Manage Membership Payments & Dues	√	x	√	x	√
Gym/Staff Expenses & Salary Management	√	x	√	x	x
Payment gateway integration	x	x	√	x	√
Automatic Package/Membership Expiration Alerts to Members	√	x	x	x	x
Track Staff Attendance	x	√	x	x	x
Trainer and Equipment Reservation	√	√	√	√	√
Composable Email Box	√	x	x	x	x
Supplements Shop Management	√	x	x	x	x
Generate Annual/Monthly Financial Accounts	√	√	x	x	√
Mobile and Web accessibility	√	x	x	x	√

Table 2.1 Functionality Comparison

It was discovered that there weren't many packages available for automating gym management. All of these were commercial programs that were quite expensive to purchase.

Ex : FitnessForce[2], GymMaster[3]

Additionally, it was noted that the customer assistance for certain business software was insufficient. Similar systems have the drawback of being quite expensive. Below are the prices for the applications.

1. Fitness Force

The screenshot displays two pricing options for Fitness Force. The 'PROFESSIONAL' plan is marked as 'POPULAR' and costs \$89/month, billed annually. It is described as the 'Ideal choice for taking your Gym business to the next level.' The 'ULTIMATE' plan costs \$179/month, billed annually, and is described as the 'Best choice for multi-facility fitness centre.' Both plans feature a 'BUY NOW' button and an option to 'Book a Demo'.

Plan	Price	Billing	Description
PROFESSIONAL	\$89/mo	Billed Annually	Ideal choice for taking your Gym business to the next level.
ULTIMATE	\$179/mo	Billed Annually	Best choice for multi-facility fitness centre.

2. Gym Master

The screenshot shows four subscription tiers for Gym Master. A note at the top states 'Pay yearly and get a 10% discount on your subscription' and 'All Prices are Per location'. The tiers are: FOUNDATION (USD \$89 per month, 150 Current Members), ADVANCED (USD \$129 per month, 400 Current Members), PROFESSIONAL (USD \$189 per month, 1300 Current Members), and ENTERPRISE (USD \$ASK, Unlimited Current Members). Each tier includes a 'Book Demo' button.

Tier	Price	Current Members
FOUNDATION	USD \$89 per month	150
ADVANCED	USD \$129 per month	400
PROFESSIONAL	USD \$189 per month	1300
ENTERPRISE	USD \$ASK	Unlimited

In order to address the situation, neither a free version nor an open source solution could be discovered.

Due to the complexity of the software, the chosen client's skill level will make adaption challenging. Additionally, they don't offer sufficient functionality or simple configuration to match the current situation. Additionally, the majority of the time, the user interfaces and application usage are both highly unclear.

(All of these companies have only offered a video clip, and none have offered a downloadable demo version.)

Thus, it was determined that the software's ease of use, customer service, and level of mass customization have become its main issues.

Chapter 3 - Design

3.1 Design Technique

In order to improve stakeholder communication and product quality, object-oriented analysis and design (OOAD) was selected as the technical technique to manage the system development task. OOAD uses visual modeling throughout the development life cycle. The two technological approaches known as object-oriented design (OOD) and object-oriented analysis have been combined to create the OOAD (OOA). At the system development stage, object-oriented modeling has been identified as using the Unified Modelling Language (UML).

The diagrams listed below have been prepared during the system development stage:

- Use case diagrams
- ER diagram
- Sequence diagram
- Class diagram

3.2 Use case diagram

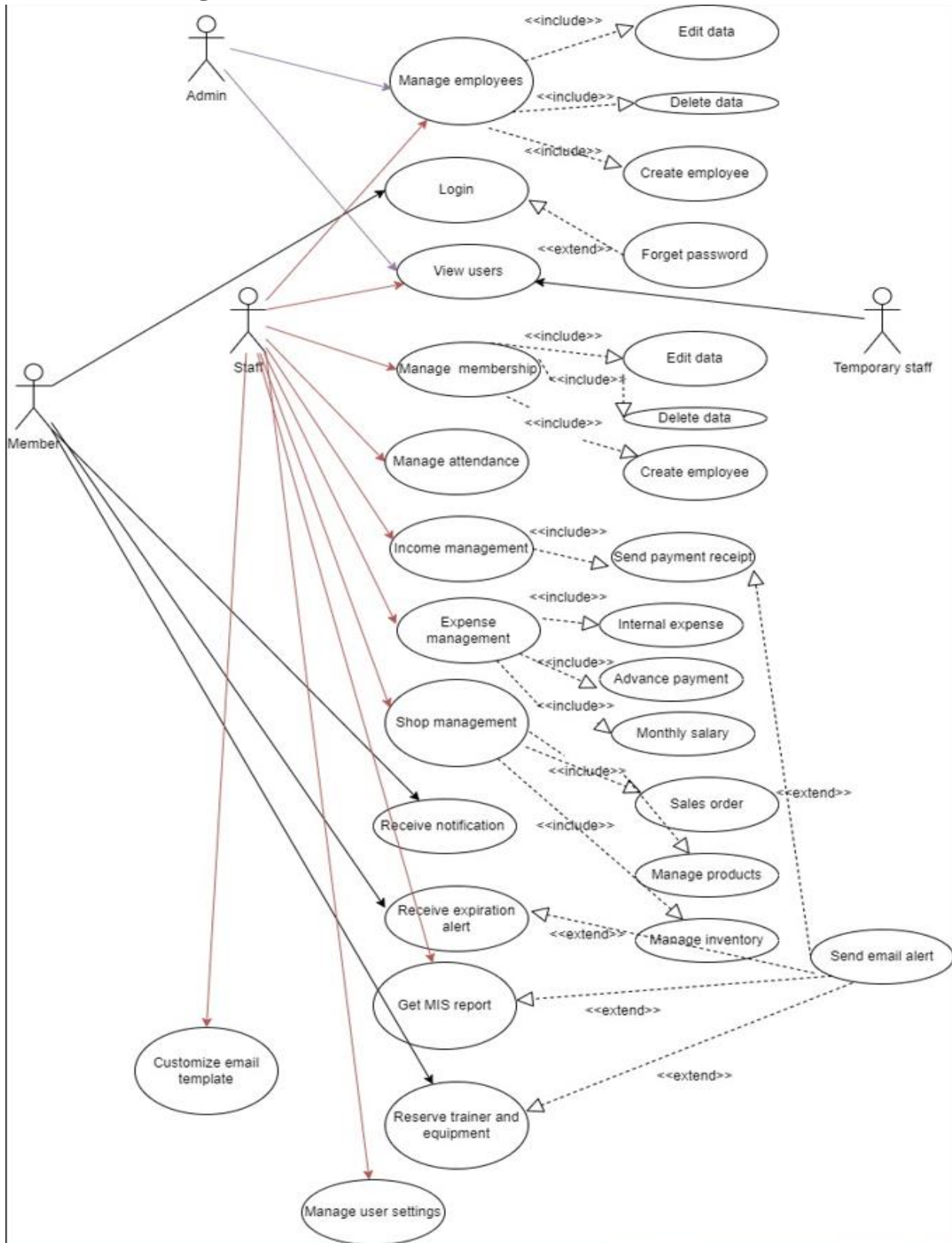


Figure 3.1: Use case diagram

According to the use-case model in figure 3.1, the system was created to manage six actors depending on their user roles. It is as follows:

- Admin
- Staff/Trainer
- Temporary Staff
- Member

The management users who will administer the system in accordance with the branch are the actors, such as Admin, Staff/Trainer, and Temporary Staff. The member will access the system from outside the gym as an external actor. In the system, the two primary user roles are Admin and Staff/Trainer. The admin has the ability to create user groups and levels; as a result, this actor is regarded as the system's primary actor. To make development and maintenance easier, the proposed system solution has been broken up into a few parts. These are the modules:

- User Management module
- Payment and Expenses module
- Settings module
- Gym Accounts module
- Report Management module

The table includes a comprehensive description of each module.

Module Name	Functionalities were Identified
User Management	<ul style="list-style-type: none"> • Employee Management • Member Management
Payment and Expenses	<ul style="list-style-type: none"> • Membership Payments • Salary Payments • Personal Trainings • Internal Expenses
Settings	<ul style="list-style-type: none"> • Branch Details • Expenses Types • Membership Packages • Salary Management • Roles and Access Rights
Gym Accounts	<ul style="list-style-type: none"> • Manage gym accounts
Report Management	<ul style="list-style-type: none"> • Generate Reports

The use case descriptions related to Figure 3 are displayed in the tables below.

Use case Name	Member registration
Use case ID	UC1
Priority	High
Participating actors	Member, staff/trainer
Description	Registration process of new member
Post condition	Add, update, delete member

Use case Name	Employee registration
Use case ID	UC2
Priority	High
Participating actors	Admin
Description	Registration process of a new staff or trainer
Post condition	Add, update, delete employee

Use case Name	Make payments
Use case ID	UC3
Priority	High
Participating actors	Staff/ trainer
Description	Payments collection
Post condition	Update payments

Use case Name	Login
Use case ID	UC4
Priority	High
Participating actors	Admin, Member, staff/trainer, Temporary staff
Description	Login to the system
Post condition	Redirect to the secure page according to the permission

Use case Name	Member Attendance
Use case ID	UC5
Priority	High
Participating actors	staff/trainer
Description	Attendance of the Members
Post condition	Add, update, delete member's attendance

3.3 ER Diagram

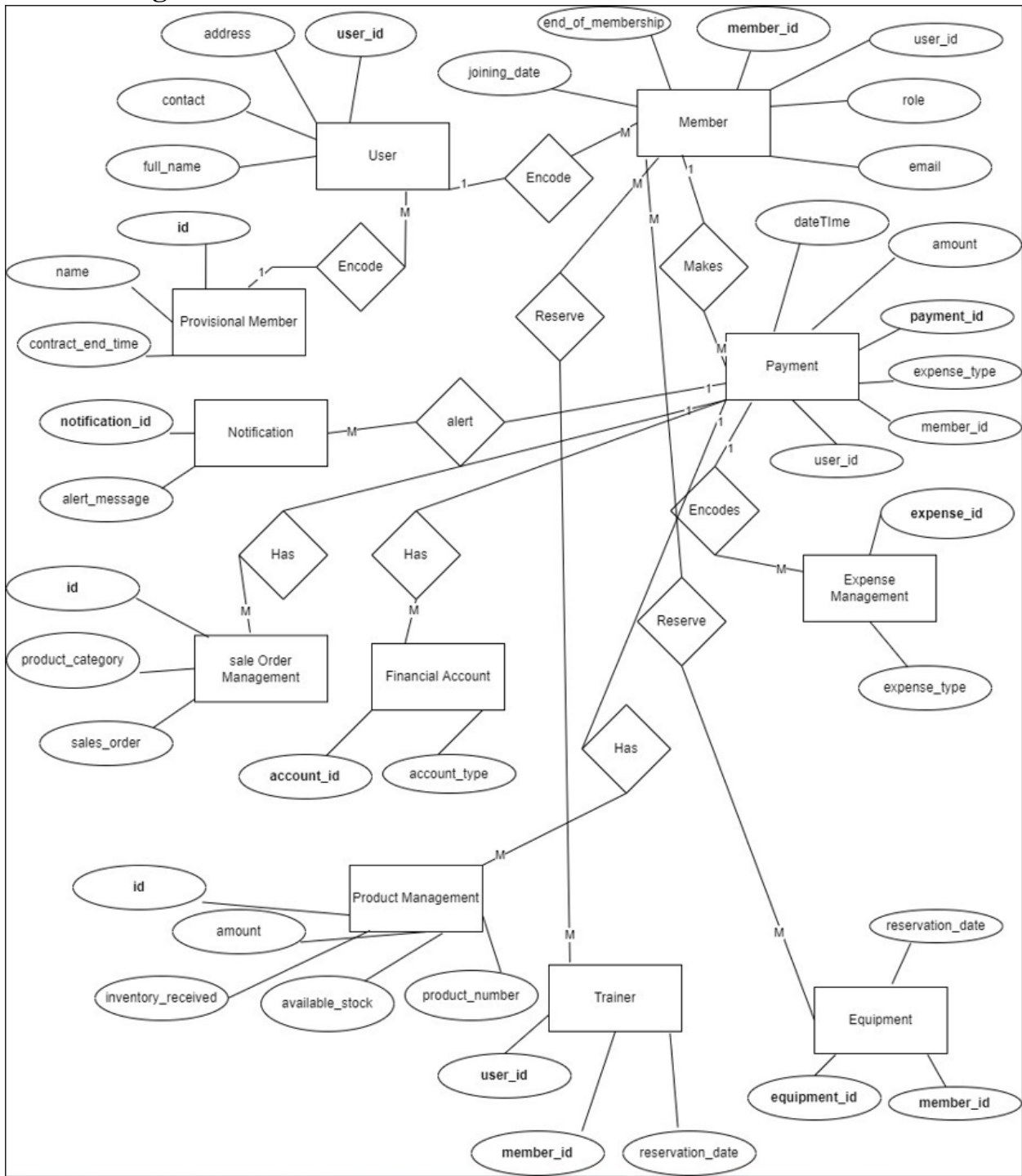


Figure 3.2: ER diagram

3.4 Sequence diagrams

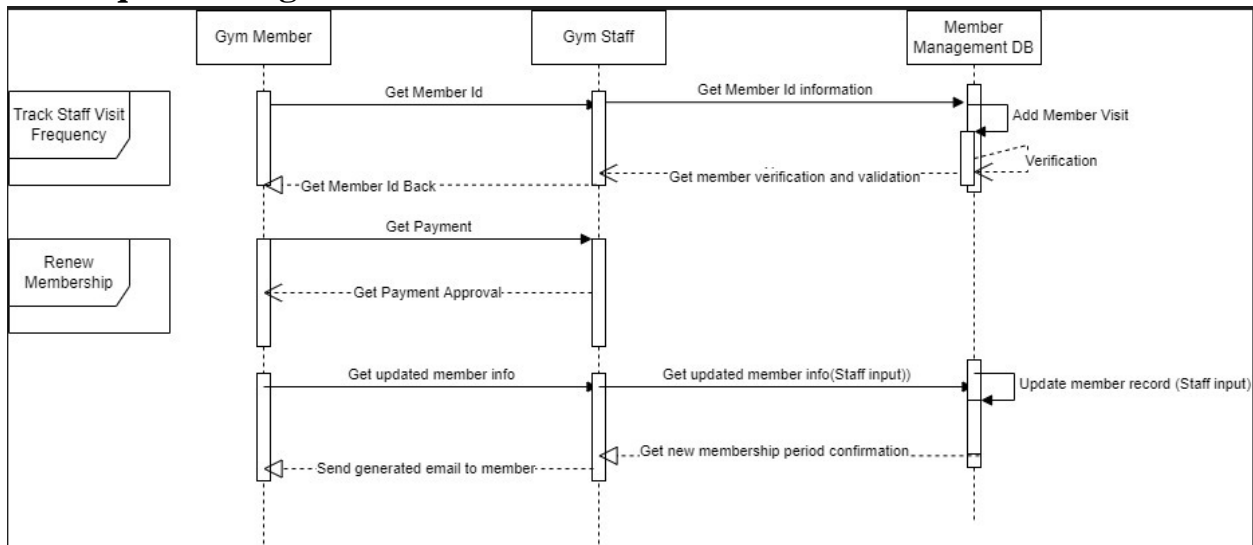


Figure 3.3: Member Management

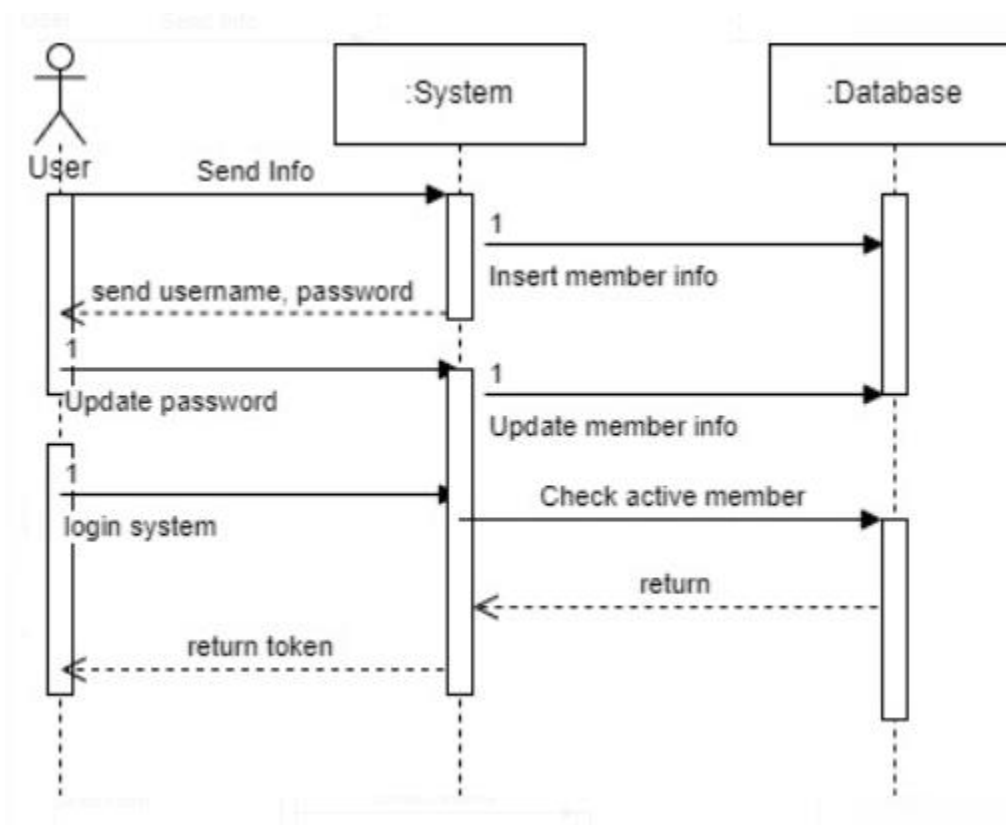


Figure 3.4: Staff and Member Login

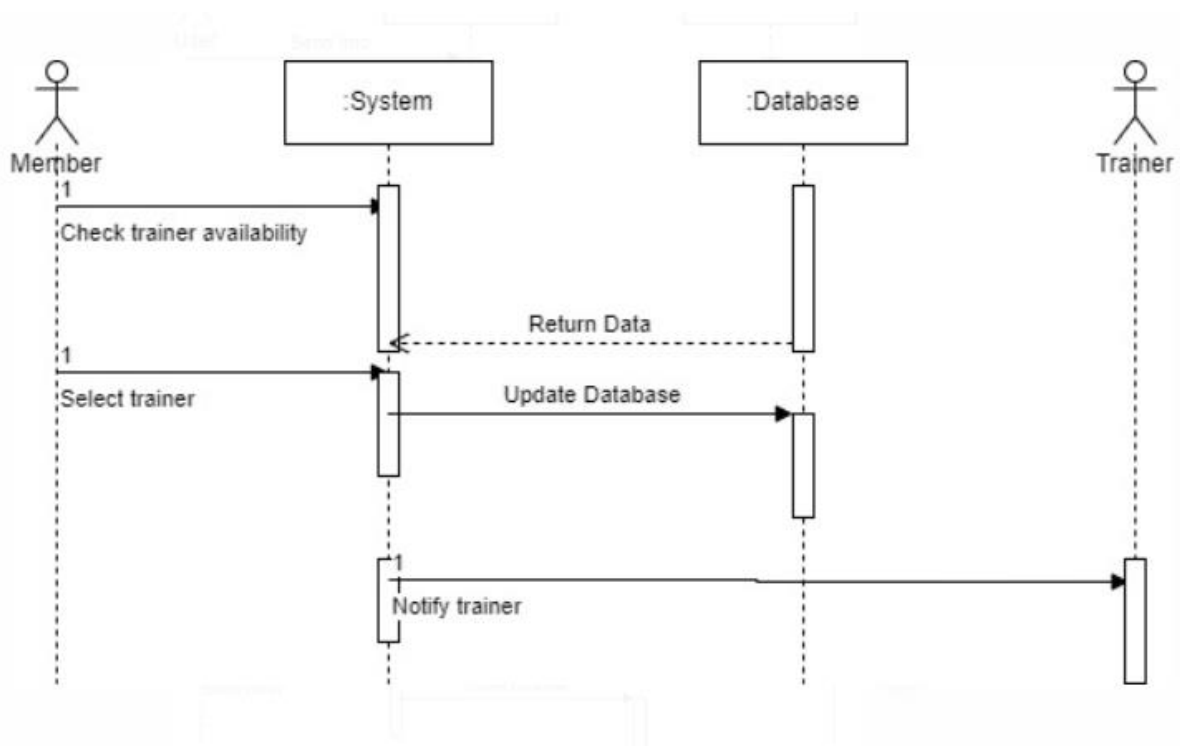


Figure 3.5: Trainer Reservation

3.5 Class diagram

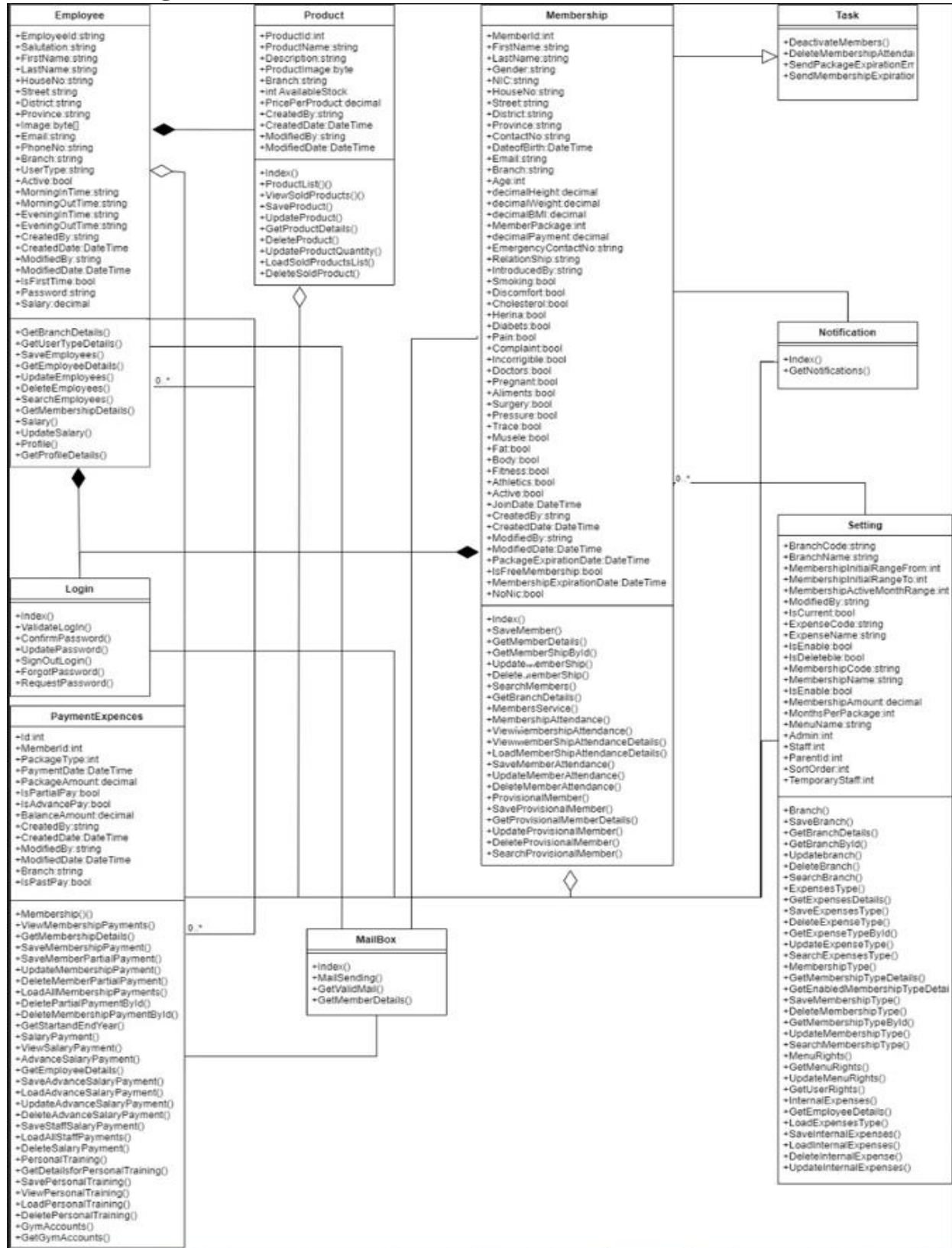


Figure 3.6: Class Diagram

3.6 Gym Management System Modules

Three user logins are present in the system:

- Member login
- Trainer/Staff login
- Admin login

In the system development process, these were also recognized as the fundamental modules.

Member login

With their username and password, all registered users can access the member login page. They can view their health indicators on a customized web page after logging in. In the member area, a schedule that must be adhered to will be shown. Members may update their information, weight, and other health indicators in their profiles.

Trainer/Staff login

Each user needs a unique username and password to access the trainer login. He or she may make new member accounts here. Additionally, instructors can record attendance in the system.

Trainers will also be able to track each member's payment information, attendance, and past payment history. They will be notified when a member's package or membership expires. They can assist with store maintenance and send members promotional emails

Admin login

Administrators can log in using their username and password. Apart from the functions of the trainers, the administrator has access to every component of the system. The administrator can carry out the upcoming responsibilities.

Monitoring roles

The administrator will see the following information:

- Information on the members' payments.
- He/she will have the capacity to see or produce reports.
- Reports on the upkeep of exercise equipment.
- Appoint trainers

- Assign members' schedules.
- Organize maintenance.

3.7 Iterative and incremental development

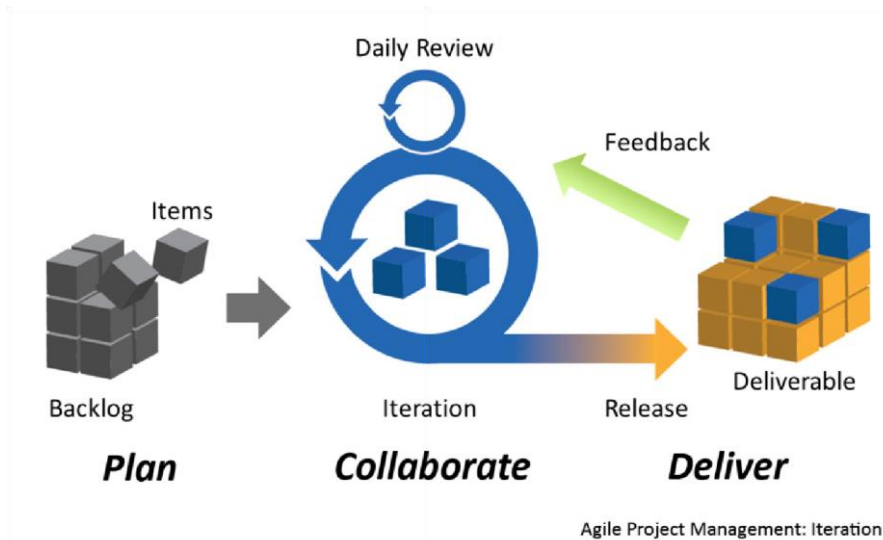
Iterative and incremental development refers to any combination of iterative design, iterative methodology, and incremental build model. The combination has a long history and has been widely recommended for large-scale development projects.

3.7.1 Overview

The underlying principle of this method is to build a system through repeated cycles (iterative) and in smaller, more manageable pieces at a time (incremental), allowing software engineers to profit from what was found during the building of earlier components or versions of the system. Essential process steps, whenever possible, begin with a crude implementation of a piece of the software requirements and incrementally update the developing versions until the full system is realized. Learning happens during both the system's construction and use. With each iteration, design modifications are done and new functional features are implemented.

The real procedure is composed of the initialization phase, the iteration phase, and the project control list. The initialization phase is when the system's framework is constructed. This initial implementation's goal is to create a product that the user will respond to. It must include a summary of the key components of the problem and offer a clear resolution that anyone can understand and apply. To guide the iteration process, all the tasks that must be accomplished are listed on a project control list. It includes new features that have recently been introduced and areas where the current solution needs to be improved. The analysis method results in regular updates to the control list.

Redesign at that stage or as a task added to the project control list provides implementation of iteration that is simple to use, comprehend, and modular. The degree of design complexity is not under the control of the iterative process. In a complex iterative project, a formal Software Design Document might be used, but in a simple iterative project, the code might be the main source of documentation for the system. Iterations are examined using user input as well as the available program analysis tools. This method includes looking at the structure, modularity, usability, dependability, efficiency, and goal-achievement. The project control list was modified taking the investigation's conclusions into account.



3.7.2 How the theories were applied

The system has been divided into three main modules, as was already described before, and they are listed below.

1. Admin Login
2. Trainer/Staff Login
3. Member Login

Each module was subsequently broken down into its individual subcomponents to complete the development. The admin login was the first step in development, and it was then divided into login, user assignment, charges administration, record, etc.

The remaining modules used the same methodology.

Modules were used to break up the development process. The development was carried out using an incremental and iterative development approach. Every module was therefore thoroughly tested, and user feedback for potential future improvements was gathered.

3.8 Main User Interfaces

Web interfaces provide communication between a user and a web application running on a web server. The appearance of the web is unique thanks to good interface design, which also simplifies and improves the comfort of the operations. It may fully display the location and site's components.

When creating the system interfaces, the following guidelines were followed:

- Clarity
- User-Centered Design
- Consistency
- A powerful visual hierarchy

The system's interfaces were created as the application was being developed. The list below includes some of these interfaces.

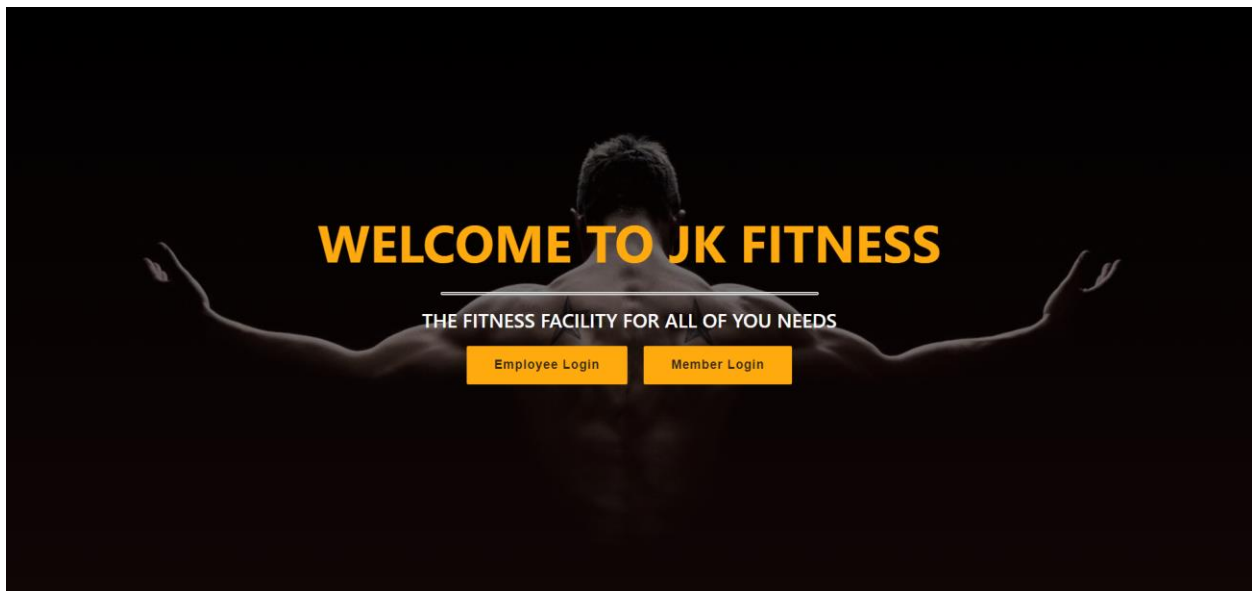


Figure 3.7: Welcome Page

The system's welcome page design is shown in the Login UI in the upper Figure. The login page for the user's chosen user type will be displayed when the user chooses their user type. A new employee view of the system can be created using the example below. The layout's left side is where the primary navigation buttons are located.

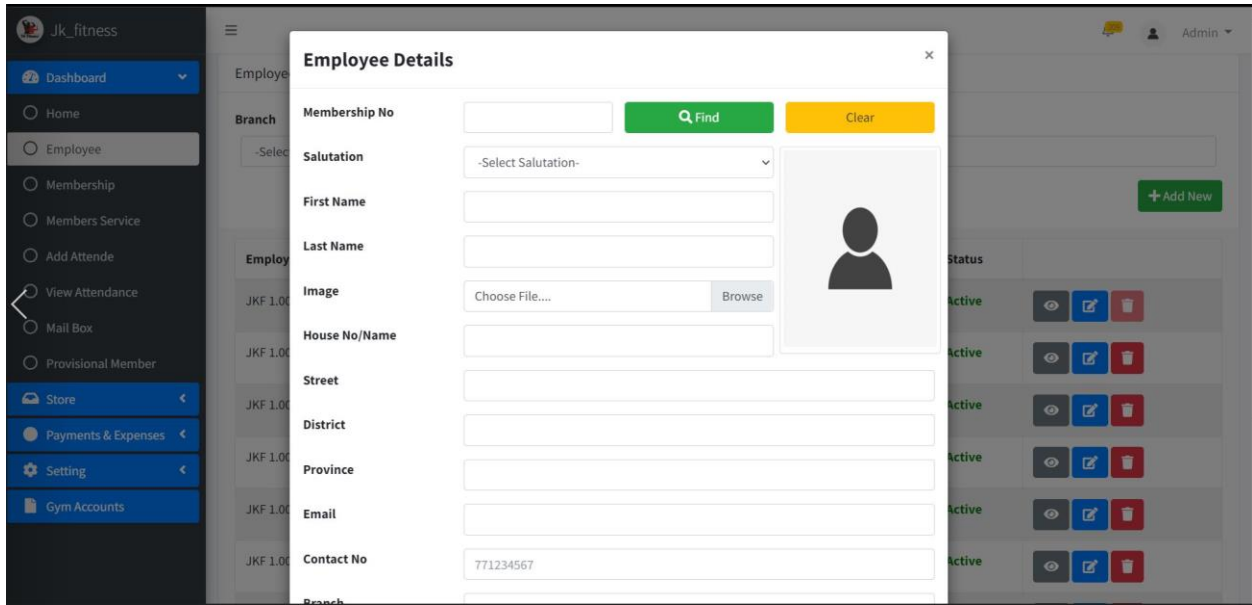


Figure 3.8: Employee Form

The UI below shows the application for a new member. Design and validation of mandatory field components are done in accordance with the requirements.

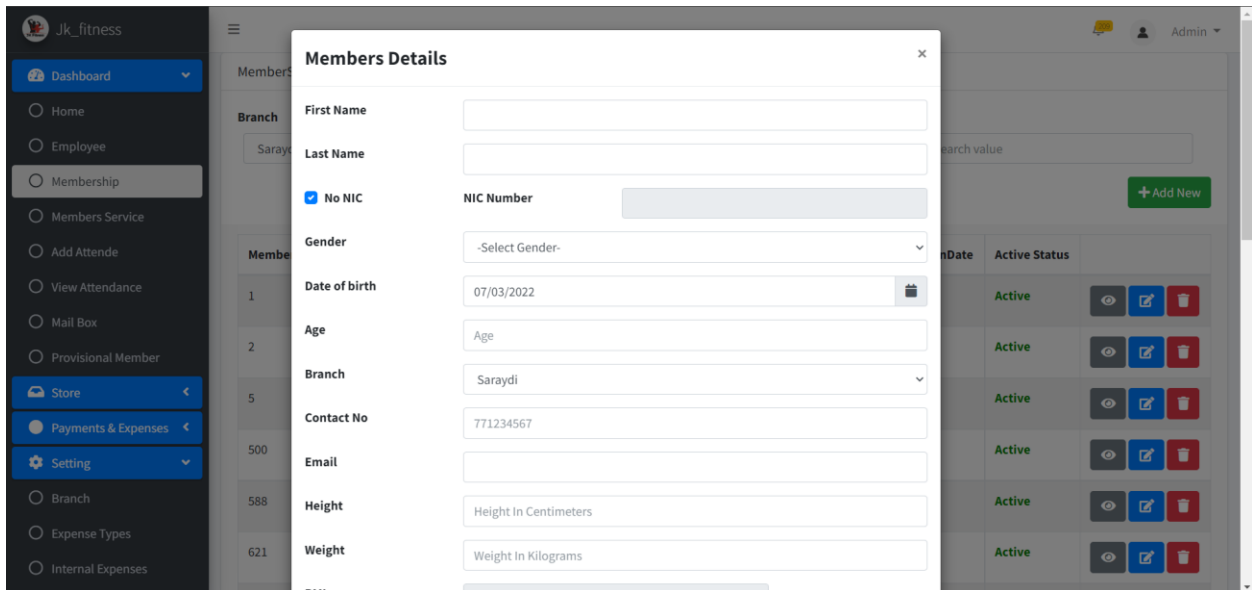


Figure 3.9: Membership Form

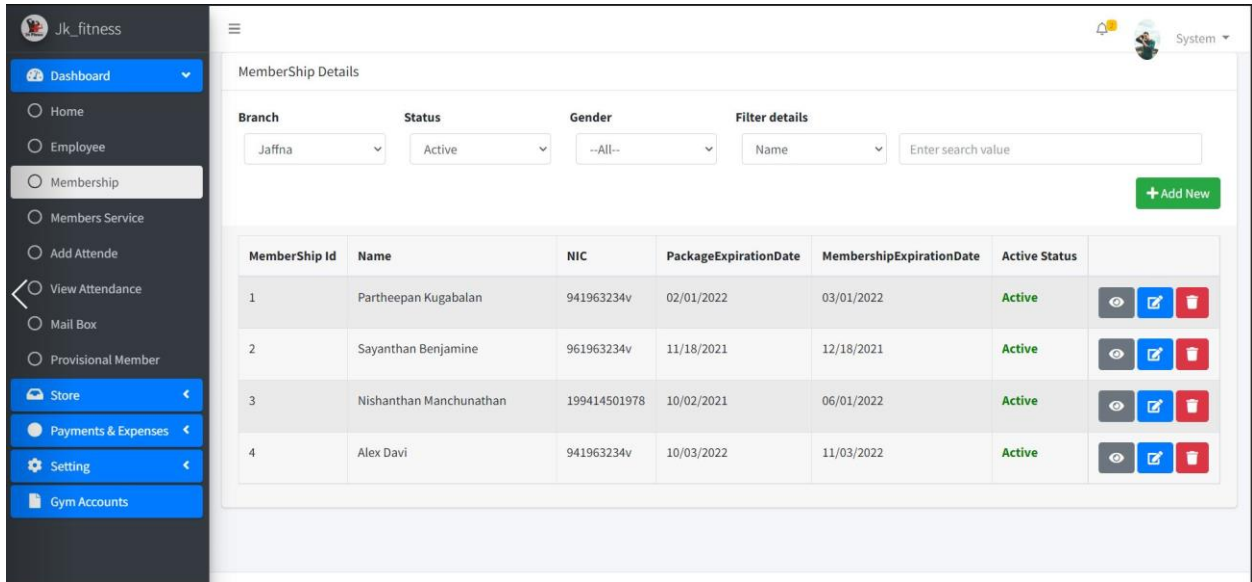


Figure 3.10: Members Details Page

The image above shows the UI for membership details. With the help of some sophisticated custom filters, the grid view makes it simple to filter the members.

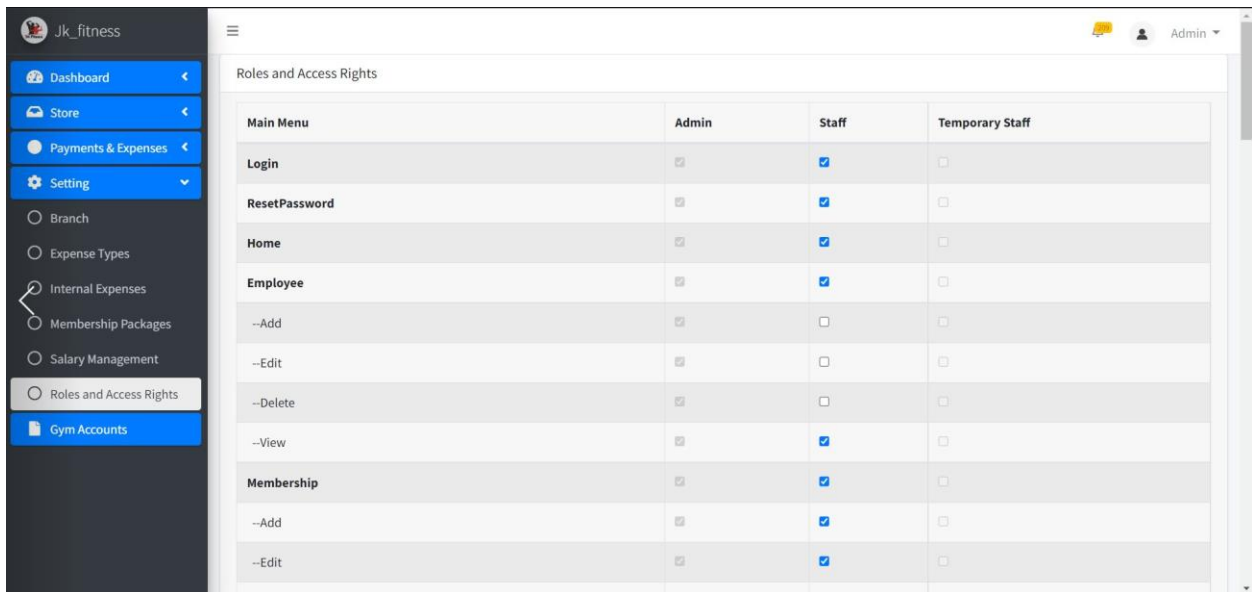


Figure 3.11: Roles and Access Rights Page

The roles and access rights UI are represented by the above figure. The accessibility and the permission of the rights for all the pages and functions, can be managed according to the user types by the admin of the system.

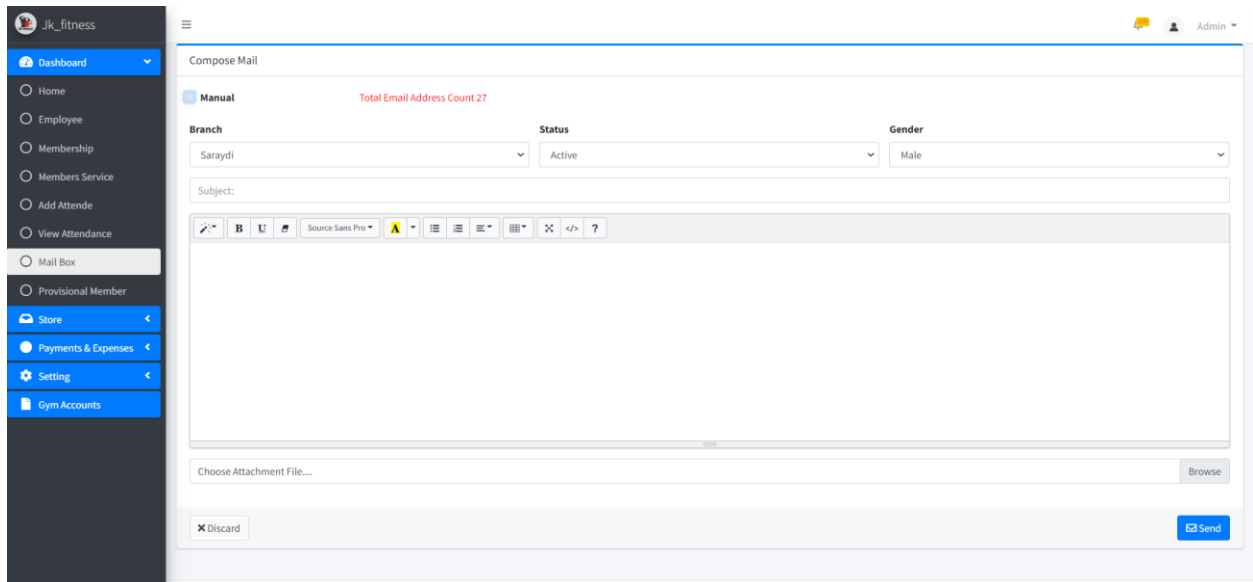


Figure 3.12: Compose Email Page

The above UI is the mailbox. Staff can send a customized email to any person or bulk of members on any occasion in a single process by branch and gender.

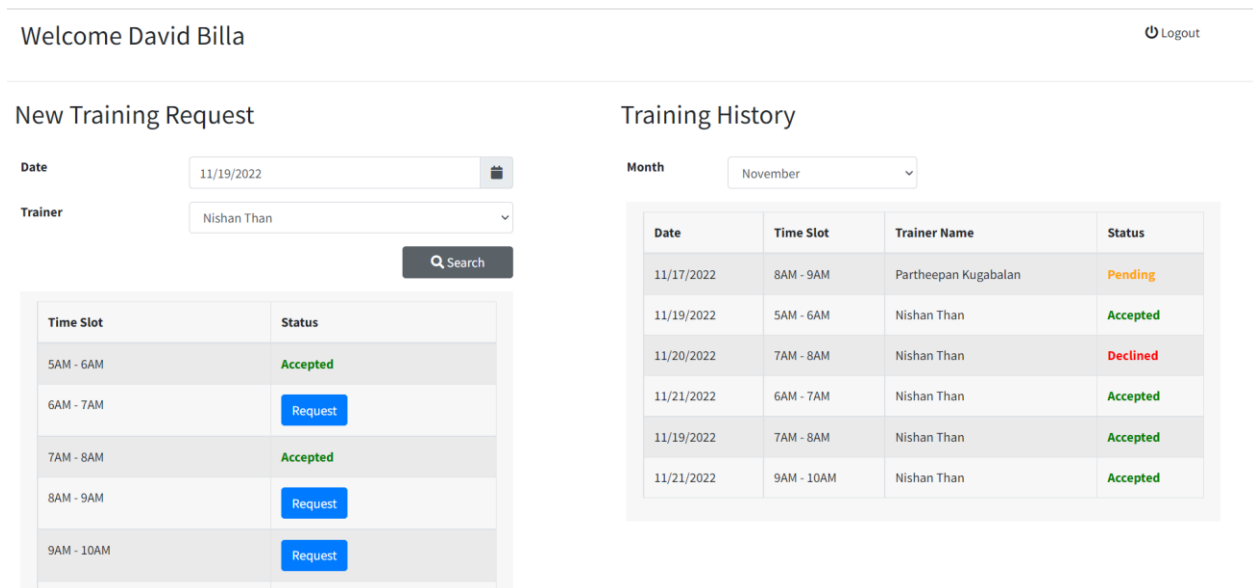


Figure 3.13: Member dashboard

The above UI is the member's dashboard where member can request a new training according to the preferred time slot and can view the history of the training by month.

Chapter 4 - Implementation

4.1 Software Architecture of the System

This system's development incorporates a three-tier architecture. The three logical and physical computer tiers that make up the well-known three-tier architecture are the presentation tier, or user interface, the application tier, where data is processed, and the data tier, where the application's associated data is stored and managed.

Because each tier functions on its own infrastructure, the three-tier architecture's fundamental benefit is that each tier may be constructed concurrently and upgraded or scaled as necessary without affecting the others.

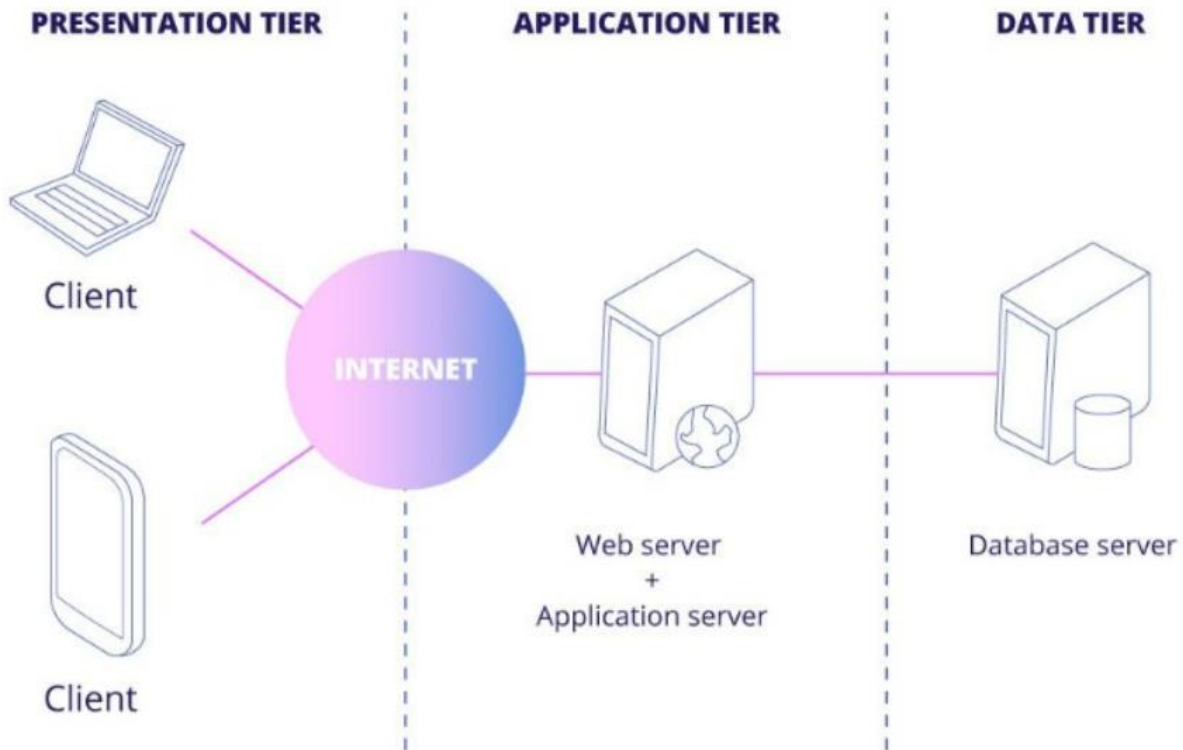


Figure 4.1: Three-tier Architecture

4.2 Software implementation process

Incremental development methodology will be adopted for the development of the project, where many of the modules are not inter-related so can be developed in isolation. The users can thus get an impression of these modules and give feedback that can be incorporated into the system making it more user-friendly and in line with the user requirements.

The proposed system will be created using a client-server architecture, also known as the three-tier MVC architectural pattern. To route user queries to a second-tier server machine, the browser employs the Hypertext Transfer Protocol (HTTP). The web employs the HTTP communication protocol. To fulfill the application's data needs, the second-tier web server calls the local database server.

A web-based application that is responsive to mobile devices will be used to implement the suggested approach. In the modern day, every widely used online browser—including Google Chrome, Microsoft Edge, Mozilla Firefox, and Safari—pushes out automatic updates whenever a new browser version becomes available. To support all of the new browser versions, a web application will be created.

Desktop	Mobile
Google Chrome (latest)	Google Chrome on Android
Microsoft Edge	Safari on iOS
Safari for Mac (latest)	Native Android browser
Mozilla Firefox (latest)	

The JK Fitness Office web-based application can be opened on a desktop computer, tablet, or smartphone and will support any device screen resolution.

4.3 Technologies used

The Implementation phase makes use of the following technologies:

.Net 5

A single, unified platform will replace the existing .Net Foundation, .Net Core, and Xamarin with the open-source, cross-platform.NET framework known as .NET 5. .NET 5 is a single platform with the most up-to-date APIs that you can use for all of your contemporary.NET applications. It is especially well suited for web development and is an effective tool for creating dynamic and interactive web pages.

MS SQL as the database management system (Version 2019)

One of the top three most widely used solutions worldwide is MS SQL. High-profile web properties like Microsoft, Accenture, Stack Overflow, and many more have turned to MS SQL as the main database of choice for web-based applications due to its demonstrated performance, dependability, and usability.

jQuery (Version 3.6.0)

jQuery is a fast, small, and feature-rich JavaScript library. Thanks to its easy-to-use API that works with a wide range of browsers, it substantially simplifies activities like navigating and manipulating HTML documents, handling events, making animations, and utilizing Ajax. The purpose of jQuery is to greatly simplify the use of JavaScript on webpages.

JavaScript (Version ES2015)

JavaScript is a dynamic programming language for computers. It is most frequently utilized as a part of web pages because of how client-side script can interact with users and build dynamic pages thanks to its implementations. It is an interpretable object-oriented programming language.

CSS

CSS is a straightforward method for adding style (such as fonts, colors, and spacing) to Web publications. CSS is mostly employed in the program to spruce up the web interface.

4.4 Application of theories in Implementation

Companies should gradually test the new system until it is prepared to go live once the design phase of any hardware or software implementation has been completed. A crucial part of any implementation process is frequently a pilot program, in which a small test group within the organization uses the system as part of a trial for a limited amount of time.

The following tasks were carried out over the course of the pilot project's approximately one-month duration. Separately created modules were made available for the end customers to utilize for a set amount of time, after which feedback was gathered to inform future improvements.

It was decided to implement a parallel run period for around a week. The automatic system and the manual system were both running concurrently at this time. Since there was only one staff allocated to the data input portion at the gym, it was a very complicated time for the end user. During peak times, when there will be more consumers, the problem will get worse.

Both peak and off-peak user feedback was received. The live system was put to the test against the manual system for correctness. To complete the product, the findings underwent critical analysis and were incorporated into the development cycle.

Chapter 5 - Testing & Evaluation

5.1 Introduction

To inform stakeholders of the quality of the good or service being evaluated, an investigation known as software testing is conducted. Software testing can be used to give an unbiased, independent evaluation of the product, enabling the company to recognize and appreciate the risks associated with employing software. Testing techniques may involve launching a program or application in order to find software bugs (errors or other problems) and make sure the software product is appropriate for use.

Running a software or system component under test involves evaluating one or more useful properties. The degree to which the component or system being assessed exhibits these characteristics is typical:

- Fulfills the criteria that influenced its design and development.
- Responds appropriately to all inputs.
- Functions are carried out in a timely manner.
- Is adequate to be used.
- Can be set up and used in the appropriate situation.
- Fulfills the broad goals that its stakeholders have set forth.

Since there are practically an infinite number of possible tests for even the most basic software components, all software testing uses some type of methodology to select tests that can be completed given the time and resources available. As a result, software testing frequently tries to run a program or application, albeit not always, in order to find software bugs (errors or other defects). Testing is a recurring process since, when a bug is fixed, it may also disclose deeper or even new bugs.

Users and/or sponsors can benefit from software testing by receiving neutral, unbiased information on the quality of the product and the risk of its failure.

Testing was done throughout the project at various phases to ensure that the software complies with the requirements specification.

5.2 Test Plan

An incremental and iterative development strategy was used to create software. Therefore, each module was rigorously tested for each iteration to assure the quality.

The tests listed below were carried out throughout the development phase.

5.2.1 Functional Testing

This kind of testing is centered on the requirements for the software that is being tested and is known as black-box testing. The application is put to the test by receiving input, and the results are then reviewed to make if they comply with the functionality it was designed for. To determine whether the system complies with the requirements set forth, functional testing of the software is performed on an integrated, complete system.

The process of functionally testing an application involves these five steps.

Steps	Description
I	Identifying the functions that the targeted application is designed to carry out.
II	The generation of test data using the application's requirements.
III	The output determined by the application's requirements and test data.
IV	Creating test scenarios and carrying out test cases.
V	The evaluation of actual and anticipated outcomes based on test cases that have been run.

The business will ensure that the highest requirements for software quality are upheld because an efficient testing procedure was employed throughout the development process.[5]

Unit Testing

The goal of unit testing is to isolate and show that each piece of software is accurate in terms of requirements and functionality.

Integration Testing

Integrating several application components and testing them to see if they function effectively together is the process of integration testing. There are two methods for performing integration tests: testing for integration from the top down and from the bottom up.

System Testing

System testing looks at the whole thing. Once all of its parts have been combined, the application is rigorously tested to make sure it satisfies the necessary standards for quality.

The following are some reasons why system testing is mandatory:

- In the first stage of the software development life cycle, called system testing, the entire application is tested.
- The application is rigorously tested to ensure that it meets the functional and technological requirements.
- The environment in which the application is tested is similar to the one in which it will be used in production.
- We can test, verify, and validate the application architecture as well as the business requirements through system testing.

Regression Testing

It is always feasible that a change made to one part of a software program will have an impact on other parts of the program. Regression testing is carried out to ensure that a corrected bug did not lead to a new violation of functionality or business rules. Regression testing's goal is to make sure that a modification, such a bug repair, won't lead to the discovery of yet another flaw in the application.

The following justifications support the importance of regression testing:

- Reduces the gaps in testing while testing an application that has undergone changes.

- Testing the new modifications to ensure that they had no impact on other application areas was necessary.
- Reduces dangers when application regression testing is done.
- Timelines are not compromised as test coverage is raised.
- Increases the rate of product marketing.

Acceptance Testing

Undoubtedly, this kind of examination is the most significant. This is because the Quality Assurance Team will assess if the application complies with the desired requirements and meets the client's needs. A collection of previously developed scenarios and test cases will be used by the QA team to test the application.

Additional conversations will be held about the proposal, and tests can be performed on it to ascertain its veracity and the driving forces behind the project's conception. In addition to minor spelling errors, aesthetic problems, and interface gaps, acceptance tests are made to find any program flaws that will result in system crashes or other major concerns.

By doing acceptance tests on an application, the testing team may foresee how it will function in real-world settings. In addition, embracing the system is subject to contractual and legal requirements.

Because every module has been used by users who have provided feedback, there is a high level of user acceptance before the final live system is made available to the end user.

Alpha Testing

Unit testing, integration testing, and system testing are all included in alpha testing. At this stage, the application will be scrutinized for the following factors:

- Spelling Mistakes
- Defective Links
- Uncertain Directions
- To test loading times and any latency issues, the application will be tested on devices with the lowest specifications.

Beta Testing

After alpha testing has been completed successfully, this test is conducted. A representative of the target market evaluates the application during beta testing. Pre-release testing is another name for beta testing. To give the program a "real-world" test and to give users a sneak peek at the next release, beta test software is typically made available online to a large audience. The audience will test the following throughout this stage:

- Installing and using the program will allow users to provide feedback to the project team.
- Grammatical mistakes, a muddled program flow, even crashes.
- Receiving comments so the project team may address any issues before making the product available to actual users.
- Your application's quality will increase as you find and address more problems that affect users.
- Customer satisfaction will rise when you deliver a better application to the wider public.

The gym's staff and members were chosen to participate in the Alpha testing, and afterward, feedback was gathered. This was done multiple times until the desired result was achieved.

Test Cases

At the implementation stage, test cases were developed in accordance with the defined test strategy. Divide main test modules into small parts to make testing easy and reduce the complexity of testing for the user, which is highly recommended for testing and provides better testing accuracy of the system. Testing small parts of the main modules helps the development team to do the relevant changes to the software. The following 5.1 to 5.7 tables specify some test cases.

Test Case ID: 1

Test Case Title: Login to Dashboard

Module Name: Login

Test Case Priority: High

Expected Result: Login to the application from the login window

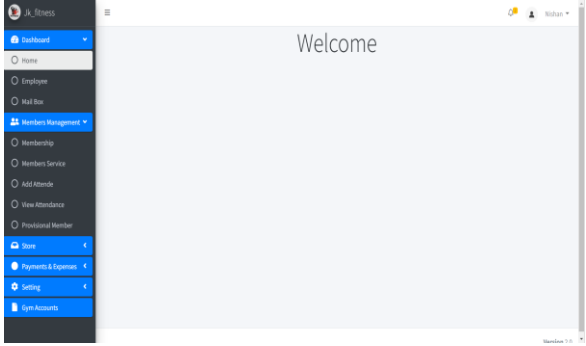
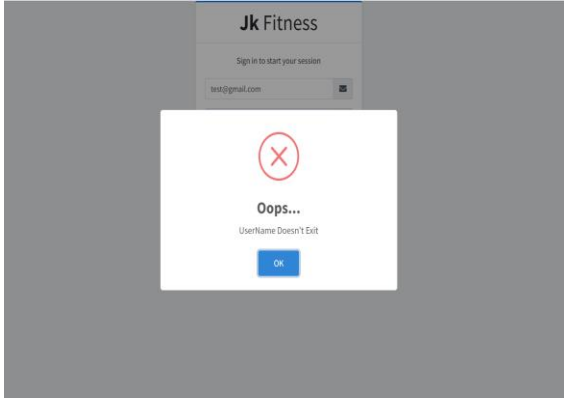
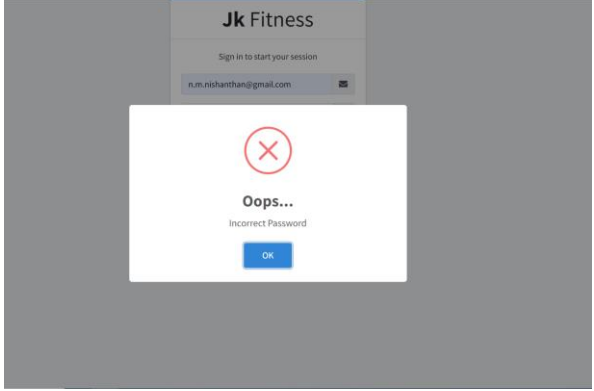
Step ID	Test Step	Test Data	Actual Result	Status
1	Open the application Enter valid username Enter valid password Click Login button	Username: n.m.nishan than@gmail .com Password: admin	Direct to Dashboard 	Pass
2	Open the application Enter invalid username Enter valid password Click Login button	Username: test@gmail .com Password: admin	Notify Invalid Username or Password 	Pass
3	Open the application Enter valid username Enter invalid password Click Login button	Username: n.m.nishan than@gmail .com Password: 1234	Notify Invalid Username or Password 	Pass

Table 5.1 Login to Dashboard

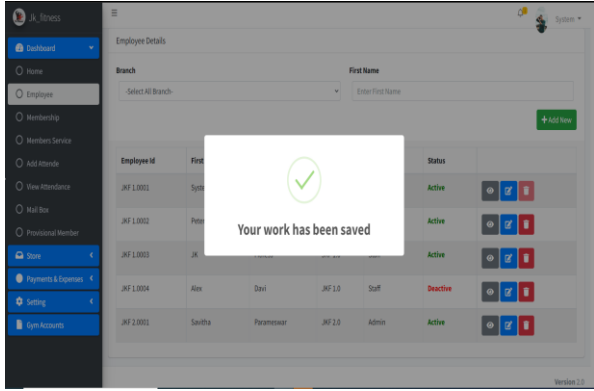
Test Case ID: 2

Test Case Title: Create Employee

Module Name: Employee

Test Case Priority: High

Expected Result: Successfully create a user and highlight the invalid fields when wrong data entered.

Step ID	Test Step	Test Data	Actual Result	Status
1	Go to Employee Window Click Add New Button Enter First & Last Name Enter valid Contact No Enter valid Email Select User Type and Branch Click Save Button	Nishanthan Manchunathan 0771001049 m.nishanth16@gmail.com Staff Jaffna	Display successful alert message 	Pass

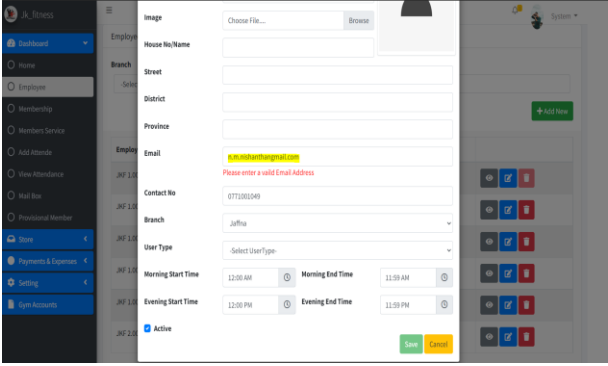
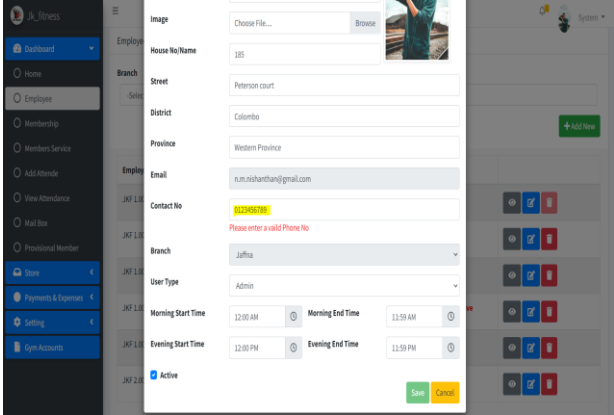
<p>2</p>	<p>Go to Employee Window Add New Button Enter invalid Email Enter First & Last Name Enter valid Contact No Select User Level Click Save Button</p>	<p>n.m.nishanthan@gmail.com</p> <p>Nishanthan Manchunathan</p> <p>0771001049</p> <p>Staff Jaffna</p>	<p>Highlight invalid email field</p> 	<p>Pass</p>
<p>3</p>	<p>Go to Employee Window Click Add New Enter First & Last Name Enter invalid Contact No Enter valid Email Select User Type and Branch Click Save Button</p>	<p>Nishanthan Manchunathan</p> <p>0123456789</p> <p>m.nishanth16@gmail.com</p> <p>Staff Jaffna</p>	<p>Highlight invalid contact no field</p> 	<p>Pass</p>

Table 5.2 Create Employee

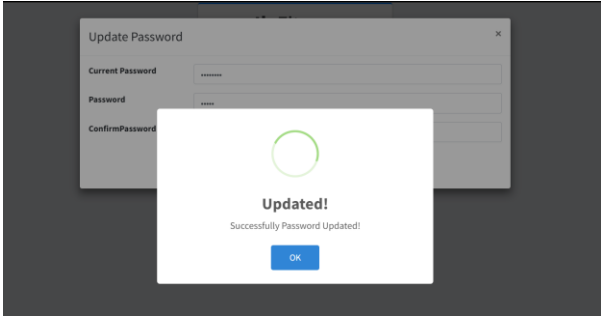
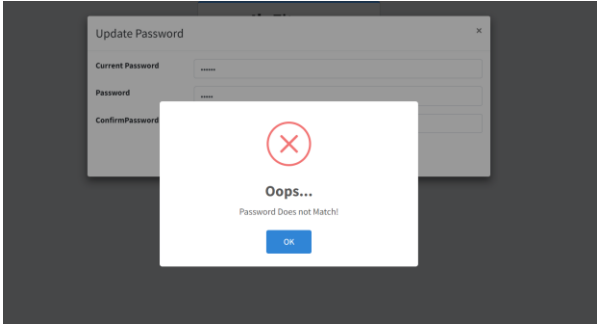
Test Case ID: 3

Test Case Title: Update user password

Module Name: Update Password

Test Case Priority: High

Expected Result: Successfully updated the password and redirect to the application from update password window.

Step ID	Test Step	Test Data	Actual Result	Status
1	Open the application Enter valid username Enter valid current and new password Click Login button	@?a\$8?jW admin admin	Display successful update alert message and redirect to Dashboard 	Pass
2	Open the application and redirect to Update password Enter invalid current password Enter new and confirm password Click update password button	123456 admin	Notify password does not match 	Pass

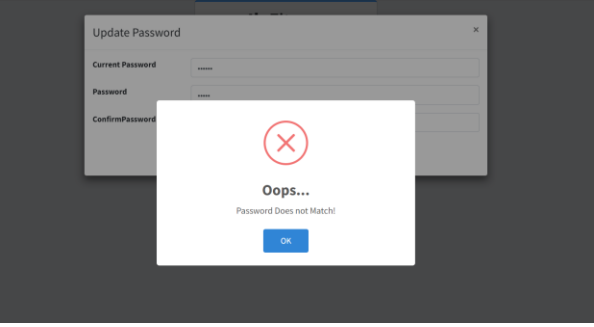
3	Open the application and redirect to Update password Enter valid current password Enter new and invalid confirm password Click update password button	@?a\$8?jW admin 123456	Notify password does not match 	Pass
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Table 5.3 Update User Password

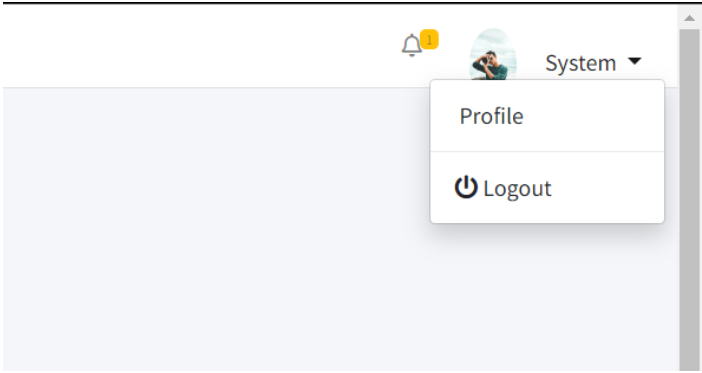
Test Case ID: 4

Test Case Title: Common Functions

Module Name: Common Functions

Test Case Priority: Medium

Expected Result: Satisfy the common system functionalities to run the system smoothly

Step ID	Test Step	Test Data	Actual Result	Status
1	Click Logout Button		Successfully Logout from the Application 	Pass


2	Click Account Button		<p>Successfully display the Account Details</p> 	Pass
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Table 5.4 Common Functions

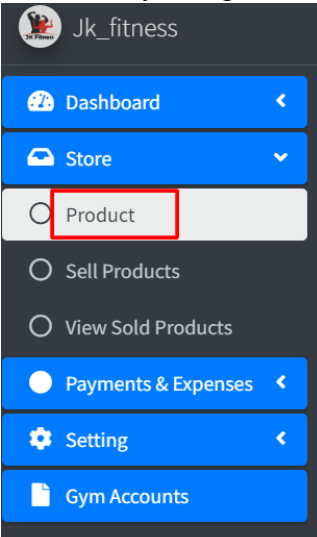
Test Case ID: 5

Test Case Title: Add a product

Module Name: Product

Test Case Priority: Medium

Expected Result: The user should be able to add products to the product area without difficulty

Step ID	Test Step	Test Data	Actual Result	Status
1	Click product navigation item		<p>successfully navigate to the product page</p> 	Pass

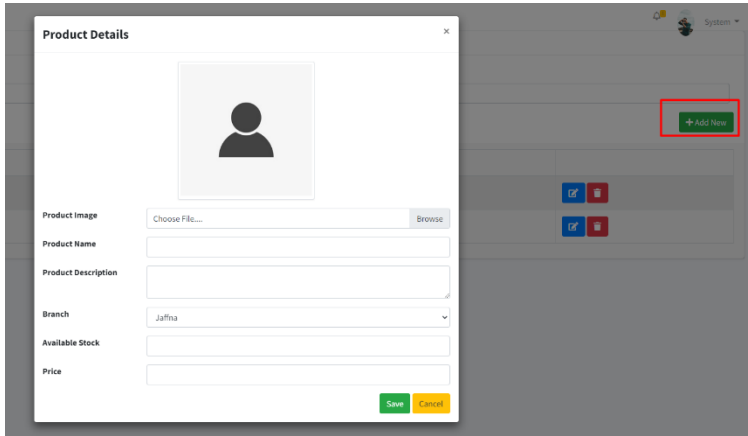
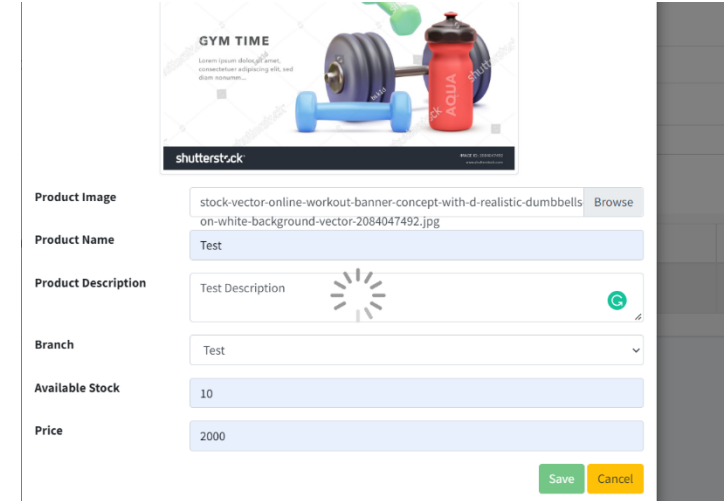
2	Click Add new button		<p>Successfully navigate to the product detail popup.</p> 	Pass
3	Add correct data to the relevant fields and click the submit button		<p>Product successfully added to the webstore</p> 	Pass

Table 5.5 Common Functions

Test Case ID: 6

Test Case Title: View sold product details

Module Name: View sold product

Test Case Priority: Medium

Expected Result: User should be able to successfully view the sold product details

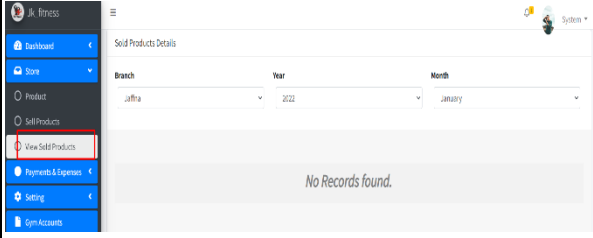
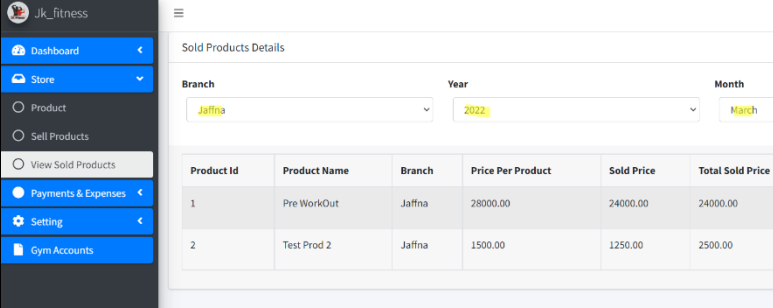
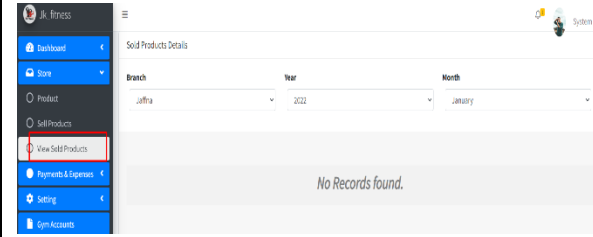
Step ID	Test Step	Test Data	Actual Result	Status																		
1	Click View sold products tab		User successfully navigate to the sold products details page 	Pass																		
2	Filter the sold product details according to the Branch, Year and Month	Branch: Jaffna Year: 2022 Month: March	Products successfully filtered and visible in the webstore  <table border="1"> <thead> <tr> <th>Product Id</th> <th>Product Name</th> <th>Branch</th> <th>Price Per Product</th> <th>Sold Price</th> <th>Total Sold Price</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Pre WorkOut</td> <td>Jaffna</td> <td>28000.00</td> <td>24000.00</td> <td>24000.00</td> </tr> <tr> <td>2</td> <td>Test Prod 2</td> <td>Jaffna</td> <td>1500.00</td> <td>1250.00</td> <td>2500.00</td> </tr> </tbody> </table>	Product Id	Product Name	Branch	Price Per Product	Sold Price	Total Sold Price	1	Pre WorkOut	Jaffna	28000.00	24000.00	24000.00	2	Test Prod 2	Jaffna	1500.00	1250.00	2500.00	Pass
Product Id	Product Name	Branch	Price Per Product	Sold Price	Total Sold Price																	
1	Pre WorkOut	Jaffna	28000.00	24000.00	24000.00																	
2	Test Prod 2	Jaffna	1500.00	1250.00	2500.00																	
3	Filter the sold product details according to the Branch, Year and Month	Branch: Jaffna Year: 2022 Month: January	If any of the products are not available for the filter fields system, display a page with empty records 	Pass																		

Table 5.6 Common Functions

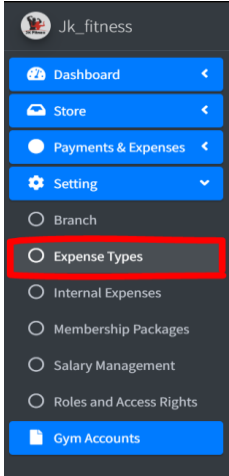
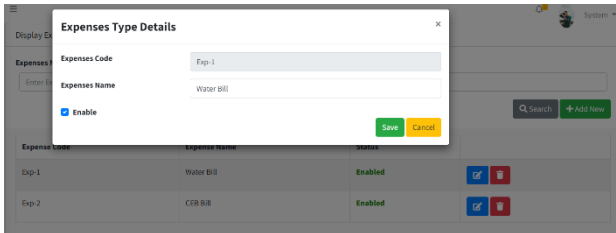
Test Case ID: 7

Test Case Title: Edit and delete existing expense type

Module Name: Expense Types

Test Case Priority: Medium

Expected Result: User should be able to successfully edit the existing expense type

Step ID	Test Step	Test Data	Actual Result	Status
1	Click setting tab and navigate to the expense type section		Successfully navigate to the Display expenses type details page 	Pass
2	Select an existing expense type and click edit button	Expense Code: Exp-1 Expense Name: water Bill Status: Enabled	Expenses Type Details popup appears, and user is able to edit the expenses name and the status successfully 	Pass

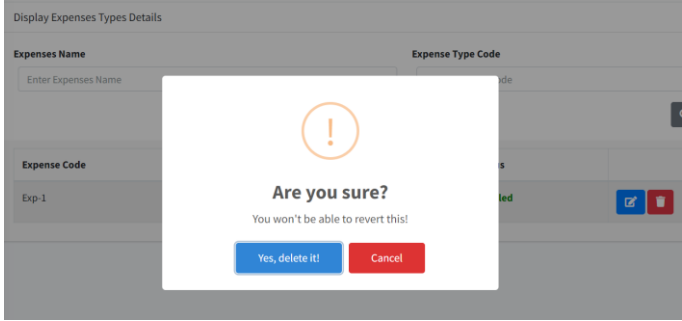
3	Select an existing expense type and click delete button	Expense Code: Exp-1 Expense Name: water Bill Status: Enabled	Delete popup appears, and user is able to delete the record by clicking the yes, 'delete it' button 	Pass
---	---	---	---	------

Table 5.7 Common Functions

5.2.2 Non-Functional Testing

Testing an application using its non-functional attributes is the focus of this section. Non-functional testing involves evaluating software based on significant but non-functional needs such as performance, security, and user interface. Below is a discussion of some of the significant and popular non-functional testing kinds.

Performance Testing

More often than not, it is utilized to locate performance or bottleneck problems rather than software flaws. There are numerous factors that can reduce a software's performance:

- Network delay
- Client-side processing
- Database transaction processing
- Load balancing between servers
- Data rendering

According to the following criteria, performance testing is one of the crucial and required testing types:

- Speed (i.e., Response Time, data rendering and accessing)
- Capacity
- Stability

- Scalability

The subtypes of performance testing, such as load testing and stress testing, can be either qualitative or quantitative.

Load Testing

By subjecting a software to its maximum load in terms of accessing and modifying vast amounts of input data, it is tested for behavior. Both regular and peak load situations are possible. This kind of testing determines the software's maximum capacity and its peak-use behavior.

Although load testing was conducted at the gym at busy times, no significant system delays or breakdowns could be identified.

Automated tools like Load Runner, AppLoader, IBM Rational Performance Tester, Apache JMeter, Silk Performer, Visual Studio Load Test, etc. are often used for load testing.

Virtual users (VUsers) are specified in the automated testing tool and the script is executed to validate the load testing for the product. Users may be added or removed concurrently or progressively, depending on the requirements.

Stress Testing

Software behavior is tested during stress tests, which simulate unusual situations. For instance, it can include removing certain resources or putting a load above the permitted load limit.

By overloading the system and consuming all of the resources utilized by the software, stress testing aims to find the software's weak point. To do this testing, many scenarios, including:

- Random network port shutdowns or restarts
- Database activation and deactivation
- Executing many tasks that use resources like CPU, memory, servers, etc.

Usability Testing

Usability testing, a black-box method, examines how users engage with and make use of the application in an effort to uncover any flaws or areas for development.

5.3 Evaluation of the System

The evaluation is done by comparing the manual gym system and the proposed new system. This will give more information about the gym to analyze how the gym growth changed with accurate data from the system. Compared to manual data maintenance, this system can maintain any amount of data in a dedicative database without any data loss. However, the results and the purpose of the system are more accurate.

Each user's suggested solution's overall Google Form input was compiled, and the feedback is summarized in the following graphs in figures 5.1 to 5.9. APPENDIX A contains the template for the user evaluation form.

User Type
17 responses

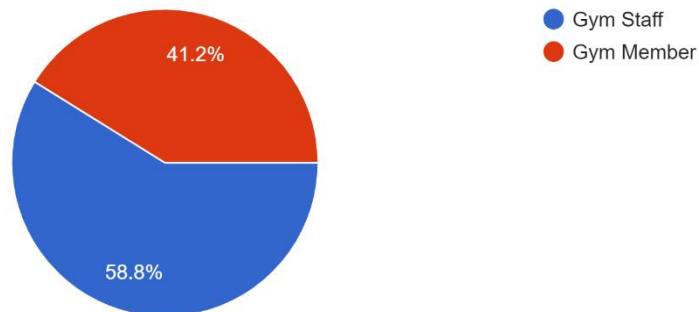


Figure 5.1 Designation Feedback Chart

This system is very useful for the organization.

17 responses

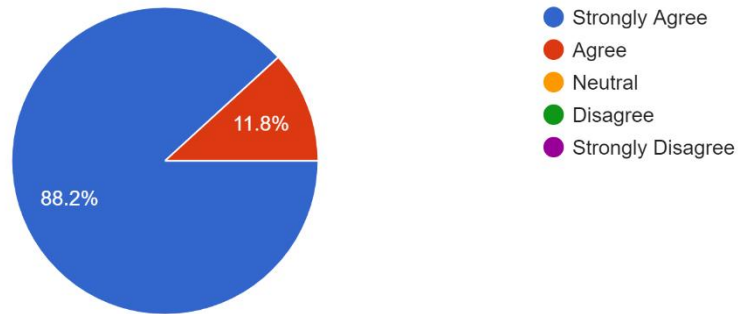


Figure 5.2 Question 1 Feedback Chart

An automating gym system is better than the manual process.

17 responses

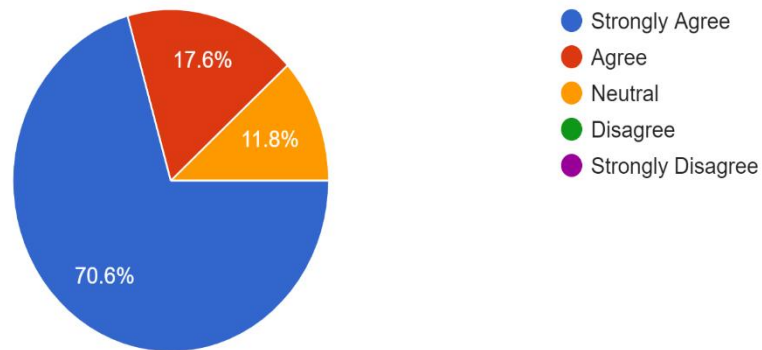


Figure 5.3 Question 2 Feedback Chart

This system provides better information and reports for the decision making process.

17 responses

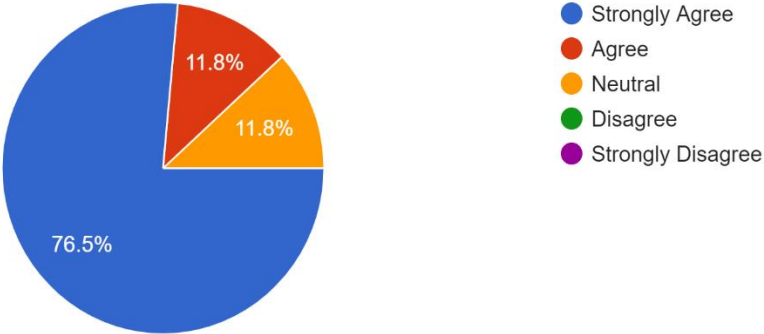


Figure 5.4 Question 3 Feedback Chart

User can easily navigate through the system.

17 responses

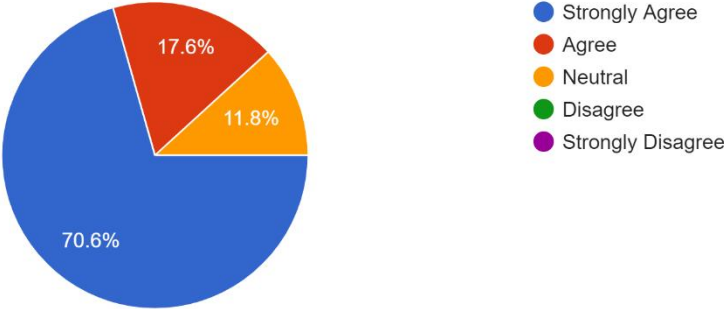


Figure 5.5 Question 4 Feedback Chart

The system provides better user interfaces for users to interact with the system easily.

17 responses

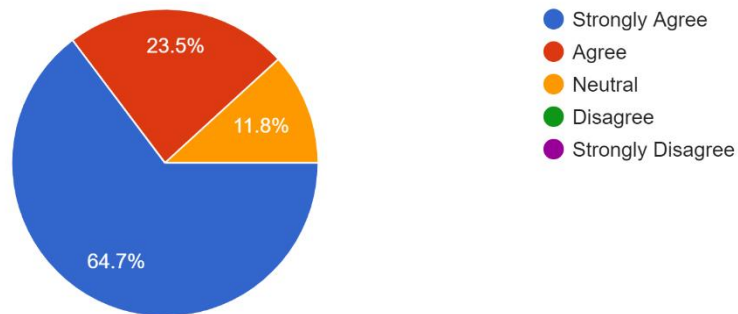


Figure 5.6 Question 5 Feedback Chart

All the functions which are provided by the system are easy to use and easy to understand.

17 responses

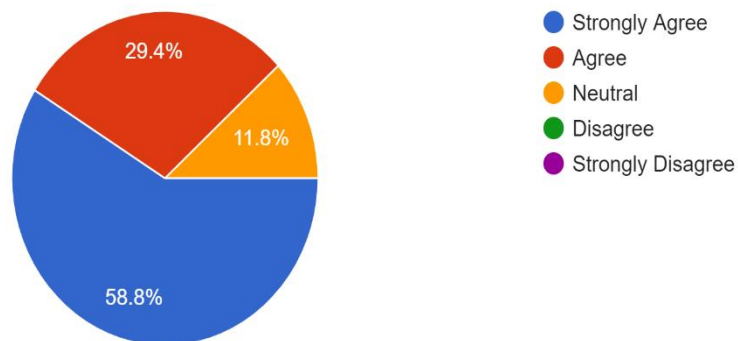


Figure 5.7 Question 6 Feedback Chart

I am satisfied with the content given by the system.

17 responses

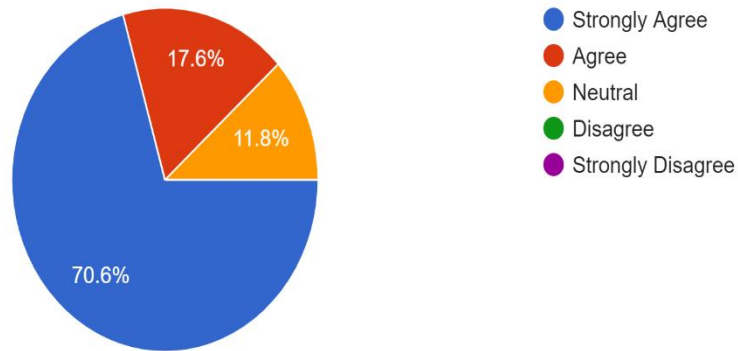


Figure 5.8 Question 7 Feedback Chart

This automated system will help make the job of staff much easier

17 responses

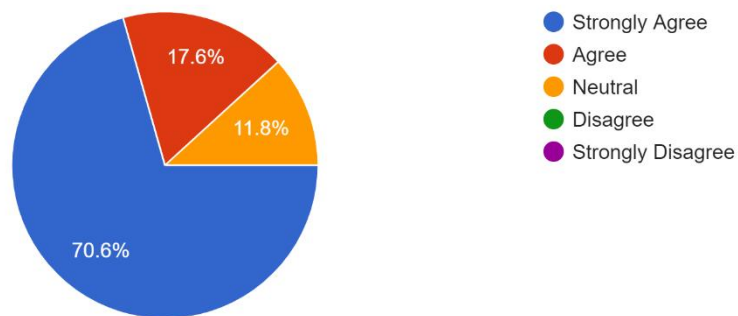


Figure 5.9 Question 8 Feedback Chart

Chapter 6 - Conclusion

6.1 Introduction

The targets that have been archived and the system's upcoming improvements are covered in this chapter. Additionally, it describes additional adjustments that can be made to enhance system functionality inside the rework operation workflow.

6.2 Conclusion

The necessary needs, as determined in the requirements analysis process, have been successfully created and developed into the "JK Fitness Office: Web based Gym Management System." As an illustration, the system's form level and field level validation both function incredibly well. The antiquated manual system had a number of problems. The current project was developed to meet the demands of the modern period.

6.3 Future Work

In a remarkably short period of time, the project was conceived, and every effort was made to ensure that it would be completed as effectively as possible. There are still certain places where our project may be strengthened. The following is a list of the upgrades that can be made and incorporated into the project. The project's implementation could be done more artistically. The database management and all maintenance modules can be updated by the administrator. It is possible to adopt additional safety measures. This system's versatility can be increased by incorporating a few extra components. Future considerations are illustrated in the list below:

- Members and trainer can communicate in real time through a chat feature, which allows inquiries to be asked at any time.
- Trainers and members have the option of a video conversation.
- Online payment process.
- Members can enter the gym with their membership card equipped with a barcode, and the attendance will be automatically marked in accordance with the entrance and exit.
- Fingerprint matching for entry into the gym.
- Equipment reservation, where member can reserve the equipment according to the availability through the application.

Reference

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APPENDIX A - USER EVALUATION FORM TEMPLATE

User Evaluation Form JK Fitness Office: Web based Gym Management System						
Date:		Name:			User Type:	
No.	Question	Strongly Agree	Agree	Neural	Disagree	Strongly Disagree
1	This system is very useful for the organization.					
2	An automating gym system is better than the manual process.					
3	This system provides better information and reports for the decision-making process.					
4	User can easily navigate through the system.					
5	The system provides better user interfaces for users to interact with the system easily.					
6	All the functions which are provided by the system are easy to use and easy to understand.					
7	I am satisfied with the content given by the system.					
8	This automated system will help make the job of staff much easier					

APPENDICES B – MIS Reports

B.1 Members

In this application, there are two category of member records available as follows ‘Regular Members’ and ‘Provisional Members’. Regular members can go with the payment selections and provisional members can go with the instant (need to have basis) payment. Based on the membership entry, gym management can track the attendance once the member accesses the gym services. The MIS report for members and provisional members will be printed as an Excel or PDF for usage. Figure B.1 shows the data which will be printed.

Id ↕	Full Name ↕	NIC ↕	ContactNo ↕	Member Package ↕	Package Amount ↕	Join Date ↕	Package Expiary ↕	Membership Expiary ↕
1001	nish test	94146197712	0123456789	annual	100.1	05/29/2021	08/03/2023	09/03/2023
1002	nish test	199414511997	0771001049	Monthly - New	2000	06/05/2021	12/08/2022	01/08/2023
1003	nish test	941451977v	0771001049	Half Year	80	06/05/2021	05/05/2023	06/05/2023
1004	nish tes	941451977v	0771001049	Monthly - New	2000	06/05/2021	12/09/2022	01/09/2023
1005	nish test	941461977v	0771001049	annual	100.1	12/31/2018	06/28/2022	07/28/2022
1006	test ss	941461977v	0771001049	Half Year	80	12/31/2019	05/09/2023	06/09/2023
1007	test test	941451977v	0771001049	Monthly	3000	04/01/2021	12/11/2021	01/11/2022

Figure B.1 Members Information

B.2 Sold Products

Under the products, there are gym equipment, supplements, workout accessories, etc. available. This can be purchased by gym members and external customers. Gym customers can go with the installment option by paying partial amounts. The MIS report for sold products will be printed as an Excel or PDF for usage. Figure B.2 shows the data which will be printed.

Product Id	Product Name	Branch	Price Per Product	Sold Price	Total Sold Price	Sold Date
13	Shaker	Saraydi	1000.00	1000.00	1000.00	06/17/2022
17	King mass	Saraydi	2000.00	2000.00	4000.00	06/17/2022
17	King mass	Saraydi	2000.00	2000.00	2000.00	06/19/2022
13	Shaker	Saraydi	1000.00	1000.00	1000.00	06/22/2022

Figure B.2 Sold Products Information

B.3 Membership Payments

Here it is customizable based on the member's requirements. If a user is registered as a member, they would be able to customize their payment by discussing with the gym management. The gym system is configured to check the payment validity and it will deactivate the membership account automatically if the member exceeds the payment due date. The MIS report for sold products will be printed as an Excel or PDF for usage. Figure B.3 shows the data which will be printed.

Member Id	Name	Package Type	Amount	Payment Date	Payment Status
0269	Pirasanth Asokan	Annually - 15K	3000	08/01/2022	Paid
3769	Sharalan Satheeswaran	Annually - 15K	15000	08/03/2022	Partially Paid
3644	Ithayarasa Thavarasa	Annually - 15K	10000	08/06/2022	Paid
554	Kirushnavel Vallipuram	Annually - 15K	3000	08/09/2022	Paid
3751	Gayathry Sivarajah	Quarterly -New	7000	08/16/2022	Paid
3744	Bavithran Sivanesan	Quarterly - 7k	3000	08/17/2022	Paid
3379	Subastikan S	Monthly 2K - A/L Offer	3000	08/17/2022	Paid
3755	Rajaparathy Rajenthiram	Half Yearly - 13k	7000	08/26/2022	Paid
3769	Sharalan Satheeswaran	Annually - 15K	15000	08/27/2022	Paid
3292	Thineswaran Selvanayakan	Monthly 2K - A/L Offer	1000	08/28/2022	Paid

Figure B.3 Members Payment Information

B.4 Financial Accounts

Membership income, shop income, internal expenses and salaries will be reported for each month according to the branch and year. And at last, total income will be displayed after deducting the expenses. The MIS report for sold products will be printed as a PDF for usage. Figure 1-4 shows the data which will be printed.

Membership Payments - Income														
Branch	Year	Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Branch Name														
Year														
Month														
Amount														
Total Income from Membership Payments: 100000.00														
Shop Sales Income - Income														
Branch														
Year														
Month														
Amount														
Total Income from Shop Sales Income: 100000.00														
Personal Trainers - Income														
Branch														
Year														
Month														
Amount														
Total Income from Personal Trainers: 100000.00														
Temporary Members - Income														
No Payments done for the selected year.														
Staff Salary Payment - Expenses														
No Payments done for the selected year.														
Internal Expenses - Expenses														
No Payments done for the selected year.														
Summary - Profit														
Total INCOME for the selected year = 300000.00														
Total EXPENSE for the selected year = 0.00														
Total PROFIT for the selected year = 300000.00														

Figure B.4 Annual Financial Accounts