

Design a Gym and Connect It with a Mobile Application

Phase II

Senior Project (1)

A Project Prepared by:

Ammar Khattab

Ali Shareedh

Supervised by:

Dr. Eng. Fady Ibrahim

Eng. Tharaa Aslan

Faculty of Computer and Informatics Engineering

Department of Software and Information Systems Engineering

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SUPERVISOR CERTIFICATION

I certify that the preparation of this project entitled ……., prepared by …… , was made under my supervision at Faculty of Computer, Informatics and Communication Engineering in partial Fulfillment of the requirements for the Degree of Bachelors of Software and Information System Engineering.

Name: ……. Signature: ……. Date:

ABSTRACT

In these modern days people have become so much concerned about their health and diet; it is but obviously that they seek out for gym. The system is developed for Muscle Power Gym. Gym is equipped with all the modern machineries and other supportive items to provide a better service to its customers. So the numbers of members are tent to increase day by day and Gym Management has decided to go for an IT solution in order to handle the increased volumes.

Development was carried out after identifying the user requirements by using different data gathering technics to ensure clarity of the requirements.

Software is developed with the aim of replacing the current manual system which was using at the Gym. The system supposed to provide easy access of the resources of the gym to its members while empowering the management process of the gym. Following major functionalities such as member management, attendance management, charges management, maintenance management and reports generation were identified. Access control was achieved with the user name and password. User access levels were also implemented to control the accessibility of the system.

Conclusion:

The main focus of this project is to build a dedicated app for gym requirements and managing all the data without the hassle of the manual work. One of the important features of this app is the use of augmented reality to identify the equipment and display the exercises to be performed on this equipment.

The system has the capability of suggesting the best workout schedules that suit to the members while keeping the harm full workouts away depending on the members' physical condition.

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LIST OF ABBREVIATIONS

SRS	**Software Requirements Specification**
GUI	**Graphical User Interface**
UI	**User Interface**
CSS	**Cascading Style Sheet**
ERD	**Entity Relationship Diagram**
HTML	**Hypertext Mark-up Language**
JavaScript	**Scripting programming language**
MySQL	**Open source database**
PHP	**Server-side scripting language**
XAMPP	**X-OS, Apache, MySQL, PHP, and Perl**

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CHAPTER 1

INTRODUCTION

1.1 About GYM Management System [1-2-3-4-21]

Along with the development, the advancement of information technology is growing very rapidly and it can be seen from the increasing human dependency on the information technology and is also crucial, thus the quality of information must always be improved to the next level to benefit and have a considerable impact on the development of any institution or an agency for critical decision making. The outposts that once did not feel the technology can now enjoy the online information service technology. Information technology appears as a result of increasingly widespread globalization of organizational life, the rigors of business competition, increasing short life cycle of goods and services offered, as well as the increasing demands of consumer appetite for products and services offered. In anticipation of this, companies are looking for new ground by utilizing the technology. Technology is expected to become a facilitator and interpreter. Initially, the information technology used is only limited to the processing of data. With the development of information technology, almost all activities of the organization today has been penetrated by the application of information technology and automation. With the development of information technology today, individuals and organizations can work more quickly and accurately process data. That's why many companies, small and medium enterprises, private organizations, big multi-million companies and big organizations are beginning to switch from a manual system to a computerized system for various reasons and the goals to be achieved. A leader is required to think quickly and appropriately in decision-making so that the company can compete with other companies. With Computer based Information System can help individuals and organizations to solve their problem. However managing and keeping data up to date with information technology require commitment and skilled knowledge personals. Computer based information System are a very important asset in many organizations or companies all

over the world which effectively contribute to effective decision making for the betterment of those organizations.

Developing of Systems takes a long time of planning and analysis before it is literally developed. Development of an effective system is done through carefully following the regulations set by Major Software development organizations like Institute of Electrical and Electronic Engineers (IEEE) software.

In these modern days people have become so much concerned about their health and diet; it is but obviously that they seek out for gym. The system is developed for Muscle Power Gym. Gym is equipped with all the modern machineries and other supportive items to provide a better service to its customers. So the numbers of members are tent to increase day by day and Gym Management has decided to go for an IT solution in order to handle the increased volumes.

The project proposal was submitted as per the instructions and guidance of the Supervisor. Client was selected solely based on the type of the business to match with the desired software application.

“Muscle Power” is a well reputed gym located in Syria. Business is well established for about 10 years and carrying out the business in a professional manner. Also the trainers are well experienced in the field for many years, so the gym has been able to attract large number of members irrespective of age, social status or gender.

The main purpose to develop this project is to help the BDR GYM club Center to reduce their overload paperwork. BDR GYM club management System mainly consists of the following modules which are login Module, Trainer Module, notification Module, Payment Module, schedule Module, Report Module, and Logout Module.

Gym Management System is to provide a system which handles the information of the people coming into the gym and maintaining their health care. It takes care of all their health information. Data will be stored in the database. It also maintains the people’s health information, gym records. The System to be produced is on Gym Club Management System.

1.2 Existing System [1-2-7]

Existing system refers to the system that is being followed till now. Presently all the Functionalities are done manually.

Some of the Job functionalities in Manual system are depicted bellow.

- Registration of members and staff
- Mark attendance
- Payments
- Assigning supervisors
- Scheduling
- Record keeping
- Exercise machine maintenance.

1.3 Drawbacks of Existing System

A. Time consuming:

Due to manual process, existing system has become very time consuming and inaccurate.

Further lot of man power is used by the system.

B. Updating and Retrieval tasks are very tedious:

Since the records are kept at the registers, record keeping and retrieval have become more time consuming.

C. Highly error prone:

Identification and rectifying of errors is difficult

D. Easy Customer service is difficult:

This is due to high time consuming process and manual work

E. Lot of paper work results delays and errors:

Most of the records are entered in to registers. So data redundancy is common and records are not accurate.

1.4 Proposed System

To overcome the drawbacks and to make the system working more accurately with the increasing volumes of the business, management of the gym has decided to automate the processes. The management has found following areas as the key areas that to be automated with the new system.

1. Member registration

2. Payments by the members

3. Effective workout management

4. Exercise machine management and maintenance.

5. To help the organization to reduce the overload paperwork

6. To reduce the storage space problem of keeping the trainer records.

7. To update record quick and easily because all the system are computerized

8. Minimize the human mistake and error because do not need the manual record

9. Speed out the joining and leaving process for trainer

10. Reduce the administrative costs because we no need to hire more staffs.

11. Can maintain the trainer history easily.

12. Can save the printing and distributing paper based manuals.

13. Can avoid redundancy of data.

14. Administrator controls the entire system.

1.5 Merits of Proposed System

The system is very simple in design which allows everybody to use the system easily. Though it is simple, system is developed in a way that can handle all its intendant functionalities without exception.

Following are the basic facts that expects from the new system.

a. Security of data

b. Ensure data accuracy

c. Administrator controls the entire system

d. Minimize manual data entry

e. Higher efficiency

f. High effectiveness

g. User friendly and interactive

h. Retrieval and Updating tasks can be performed much faster and easier

1.6 Research Aims

The main goal of this research is to design and develop an authentic user friendly computer-based gym management system, that can manage an accurate effective membership registration processes for new and existing members and non-members, keeping records of daily attendance, financial records, data storing of members details and monthly report generation .

i. To develop a web-based system to replace the manual (paper-based) system used by the gym's management.

ii. To enable gym members to select, self-book and communicate directly to their personal trainers through the management system.

iii. To enable the gym management to add, edit, delete the membership details, gym details, trainer details, health product details, payment details and others.

iv. To generate the monthly usage and income report.

1.7 Research Objectives

- The main objective of the project is:
- To develop software that facilitates the data storage, data maintenance and its retrieval for the gym in an igneous way.
- To store the record of the customers, the staff that has the privileges to access, modify and delete any record and finally the service, gym provides to its customers.

- Also, only the staff has the privilege to access any database and make the required changes, if necessary.
- To develop easy-to-use software which handles the customer staff relationship in an effective manner.
- To develop a user friendly system that requires minimal user training.

1.8 Background [3-4-21]

Though, Gym Management software is common in other developed countries, it is not that common in Sri Lanka. The results of the research carried out shows that even the market leaders such as Power World Gyms do not use proper software that meets its functional requirements. Further it was observed that different software was used to specific functionality. So each system works independently without collaboration.

It was found that there were few packages for automation of Gym management. All these were commercial software and sold at very high price. Also observed that there was no sufficient customer support for those commercial applications.

Drawbacks of similar systems.

Extremely expensive**.**



Figure 1.1: Fitness Manager

That software is very complex, so adaptation will be difficult with the skill level of the selected client. Further they do not provide enough functionalities or not providing easy configuration to suit the present scenario. And most of the time the usage of the applications are not user friendly and the user interphases are also much confusing.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction [9-10-11-21]

In this chapter, we review the current health problem, physical fitness and activity among children and adolescences; we look into the definitions of health, physical activity, and the relationship between health and physical activity. World health is in transition. Increasing numbers of people practice a sedentary lifestyle and eat unhealthy diets - two habits that are responsible for the most chronic diseases in our world. Most children must go to school; a school-based intervention is a wise choice; so we also reviewed some school-based interventions. Since research method is a critical area in our study, we also review a brief history of fitness tests of youth, and the rationale, reliability and validity of FITNESSGRAM, which were used in our study. Finally, we review the research method for its effectiveness in assessing children's physical activity, obesity and the factors that could influence children' physical fitness such as physical activity levels, stage of maturation.

Based on epidemiological evidence, physical activity is recognized as being an important factor in preventing chronic disease (Warburton, Nichol & Bredin,

2006). Recommendations for the level of activity required to maintain good health in adults has been established in the UK for over a decade (DH, 1996), yet data from government surveys continue to show that these levels are achieved by only a minority of the adult population (ONS, 2008). The effects of a predominantly sedentary lifestyle are also believed to have an impact on mental wellbeing as evidence accumulates linking a lack of activity to negative mental health states such as depression, anxiety and stress (Netz, Wu, Becker, & Tenenbaum, 2005). The aims of this review are to assess the current levels and trends of physical activity in the UK and investigate the evidence linking activity to both the negative and positive aspects of mental health. The biochemical, physiological and psychological mechanisms

linking activity to wellbeing are also briefly considered. Finally, the concept and causes of happiness is explored and the possible relationship between physical activity and the feeling of happiness.

The difficulties faced by gym owners for management of the data of the customers because of the manual work can be tiresome. The suggestions already available are the use of database management system for this purpose. The database management system eases the headache of using pen and paper. In this paper they have used features like online payment, web cam integration and face recognition. The required SMS can be sent to the user by making use of APIs.

Augmented reality means the use of a device to place a virtual object into the world which can be viewed through the screen of the device. It combines virtual and actual objects into the real environment. Augmented Reality can be used for variety of applications in the actual world. It can be used for travel guide or windshield displays.

The main survey articles on augmented reality have categorized the key AR technologies and their difficulties. In 1997, Azuma identified sensing errors and registration as two significant issues. An accurate registration of virtual objects in the actual world requires an accurate tracking of the viewpoint and locations of the target objects. The development of an AR system can be attained with a computational framework like the ARToolkit. In 2010, Krevelen et al. introduced various types of user interface and interaction through their survey paper. The interest in, information management, dynamic scene generation, natural interfaces, and mobile portability information management has rapidly increased.

2.2 The difference between our website and others [24-25]

1. Obtaining Clients

A gym management system's user-friendly ability to market your business to maximize new members the acquisition is a critical aspect.

When employing a gym management system, one of your goals should be to acquire leads and convert them into paying customers. Triggers that notify you of where a potential client is in your sales funnel can be set up with the help of specially built

software. To keep people interested, you can utilize these triggers to establish automated communication, such as emails and other messaging.

The benefits of using a gym management system are that these chores take less time because everything is set up once and tweaked as your messaging progresses.

2. Customer Retention

A club management system is a terrific method to keep your existing members informed about what's going on at your club by offering a regular stream of information.

A gym management system aims to make interactions between you and your members more convenient and useful for both sides. You can utilize the software's features to keep members informed about club events, fitness challenges, member gratitude posts, new equipment, or member referral schemes — whatever suits your fancy!

3. Managing Reservations and Class Scheduling

You can quickly arrange classes, time slots, and other events for your fitness facility using a club management system.

Another benefit of a gym management system is that it may be linked to a client-facing app that allows members to book their timeslots and courses based on their preferred instructor or workout..

4. E-mail Promotion

In-built email marketing is a particularly useful gym management system function.

From infrequent top-of-funnel communication to more detailed bottom-of-funnel outreach, there are several methods to divide up your email marketing plan. To keep your clientele interested, clubs can use email marketing to send automatic nurture flows, generate monthly newsletters, or create updates as needed.

5. Controlling the Billing Process

Payments, invoices, contracts, billing, cancellations, and other administrative responsibilities are all part of running a fitness club. Traditionally, managing many accounts would necessitate a large workforce.

One of the benefits of using a gym management system is that you may obtain a financial summary of your club on your internet platform.

6. Cost-cutting Using Information

Selling memberships is one way to make sure your club is profitable, but cost-cutting is another approach to keep track of your funds. It's critical to have a gym management system feature that allows you to see where you're losing money.

7. Support for Decision-Making

Guidance in making business decisions is one of the benefits of a gym management system. This is related to cost savings since you may utilize software data to make informed decisions and carry them out immediately within the software's features.

This ensures that everything you do is based on fact rather than just a "gut feeling". You'll also be able to discuss your findings with the rest of the team, brainstorm ideas, and develop reports and records to ensure that everything is done correctly.

2.3 The Best GYM Management System in 2023

3ZenPlanner:

Gym management software lets you track membership, schedule classes, monitor inventory for gym merchandise, and market to new members.

PushPress:

Best software for a gym membership with a wide range of free features.

MindBody:

Best gym management program for fitness centers' customer service teams.

TeamUp:

Best overall gym management software and a great option for gyms or studios that service many families or groups

Table 1.2: Our Website Vs. Others

Features	**3ZenPlanner**	**PushPress**	**MindBody**	**TeamUp**	**Our Website**
Quality and accuracy	✓	✓	✓	✓	✓
Accessibility	✓	✓	✓	✓	✓
Ease of use	✓		✓	✓	✓
Security	✓	✓	✓	✓	✓
Included features		✓	✓		✓
Free plan		✓			✓
Email / SMS campaigns		✓	✓		✓
Weekly/monthly/ yearly billing			✓		✓
Low cost				✓	✓
Discount					✓
Connect with mobile app	✓	✓	✓	✓	✓
Tools to market	✓	✓	✓		✓
Point of sale & inventory		✓			✓
Blog					✓

2.4 Why is using a gym management software necessary? [16-18]

- It helps optimize studio operations:

Simply put, club management software helps a studio operate more efficiently. While spreadsheets work when starting the business, eventually the administrative workload becomes too much. Gym management software helps automate routine tasks like data

entry, member check-ins, schedule management, and membership renewals. By streamlining the day-to-day operations at the studio, staff now have more time, focus, and energy to devote to other areas of the business.

- It helps increase member satisfaction:

One of the most important benefits of fitness software is that they can help increase member retention. Assuming clients enjoy the workouts and the sense of community at your studio, if the software is user friendly when they're scheduling from a mobile app or on their computer, then they'll continue to come back.

Where software can hurt a business is when their members have difficulty using it on their own. If it isn't intuitive to purchase and schedule, or there is too much technology friction, then they'll be forced to call in and have a staff member deal with it. Eventually, they'll just look to take their business somewhere else.

- It helps make better business decisions:

A third reason why club management software is important is they help owners and operators make quicker and more informed decisions. With real-time data and insightful analytics, studios can gain more insights on things like membership performance over time, track retail sales, view outstanding balances, and visualize business KPIs over time.

Since the payments platform is integrated with the business software, each transaction adds more data points and gives a more clear view of the overall state of the business. It also eliminates the need to export data from various sources to put in a spreadsheet and run calculations.

2.5 Conclusion

The system also capable of notifying the delayed payments and pending services of exercise machines. High level of customization is embedded in to the system where administrator can control the access and appearance of the system. System is developed as a web based application, so the accessibility is high around the world.

CHAPTER 3

METHODOLOGY

3.1 Introduction [1-2-26-27]

This chapter describes the adopted methodology throughout the project the chapter will describe the methodology phases that we will use to accomplish the project and the phases that this methodology consist, then the reasons of choosing spiral methodology will be listed, after that, each phase of spiral methodology will be described. Finally, it represents the requirement engineering methodology followed in the project.

3.1.1 Agile [1-2]

The primary methodology used to implement the project is the agile methodology. The Agile methodology is chosen because it allows for any changes made from time to time as well as being more flexible than other methodology.

Plan

This phase is covered to determine the possible plan to achieve the objective of the project. This phase will also include requirement and analysis phase where the requirement gathering is conducted to obtain information for the system. All of the possible requirements is gathered using various techniques such as from observation, interviews and literature reviews.

Design

In design phase, the layout of the proposed system is designed. The system designs will also include the designs of wireframe, architecture and database.

Develop

The system will be developed by referring to the main system requirement and with the application of HTML and PHP. Each of the webpage will act as a single unit which will be integrated later at the testing phase.

Test

The testing phase is the phase where all of the webpages developed will be integrated as a single system and is tested for its usability. This phase is executed with aims to ensure that the developed system has meet all the system requirements stated previously.

Release

Once the testing phases is done, the developed system will be release and given to the intended organization, the MN Fitness Gym.

Feedback

The developed system will be reviewed by MN Fitness Gym and will be revised based on users' feedback.

3.1.2 Spiral [1-2]

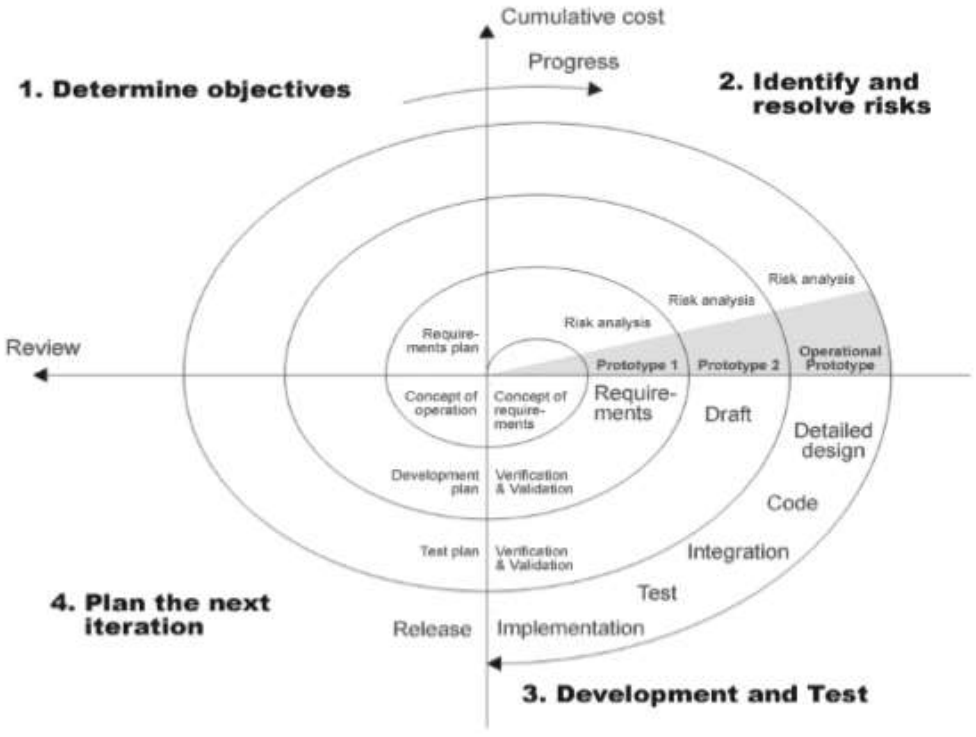


Figure 3.1: Spiral Methodology

Spiral development is a family of software development processes characterized by repeatedly iterating a set of elemental development processes and managing risk so it is actively being reduced.

Advantages of Spiral Model

• Additional functionality or changes can be done at a later stage.

• Cost estimation becomes easy as the prototype building is done in small fragments.

• Continuous or repeated development helps in risk management.

• Development is fast and features are added in a systematic way.

• There is always a space for feedback.

3.1.3 Iterative and incremental development [26-27]

Iterative and Incremental development is any combination of both iterative design or iterative method and incremental build model for software development. The combination is of long standing and has been widely suggested for large development efforts.

The basic idea behind this method is to develop a system through repeated cycles (iterative) and in smaller portions at a time (incremental), allowing software developers to take advantage of what was learned during development of earlier parts or versions of the system. Learning comes from both the development and use of the system, where possible key steps in the process start with a simple implementation of a subset of the software requirements and iteratively enhance the evolving versions until the full system is implemented. At each iteration, design modifications are made and new functional capabilities are added.

CHAPTER 4

FEASIBILITY STUDY

4.1 Introduction

Feasibility study is made to see if the project on completion will serve the purpose of the organization for the amount of work, effort and the time that spend on it. Feasibility study lets the developer foresee the future of the project and the usefulness. A feasibility study of a system proposal is according to its workability, which is the impact on the organization, ability to meet their user needs and effective use of resources. Thus when a new application is proposed it normally goes through a feasibility study .The document provide the feasibility of the project that is being designed and lists various areas that were considered very carefully during the feasibility study of this project such as Technical, Economic and Operational feasibilities. The following are its features:

Technical feasibility

The system must be evaluated from the technical point of view first. The assessment of this feasibility must be based on an outline design of the system requirement in the terms of input, output, programs and procedures. Having identified an outline system, the investigation must go on to suggest the type of equipment, required method developing the system, of running the system once it has been designed.

- Technical Gyms raised during the investigation are:

 does the existing technology sufficient for the suggested one?

 Can the system expand if developed?

The project should be developed such that the necessary functions and performance are achieved within the constraints. The project is developed within latest technology. Through the technology may become obsolete after some period of time, due to the fact that never version of same software supports older versions, the system may still be used. So there are minimal constraints involved with this project. The system has been developed using PHP the project is technically feasible for development.

Economic feasibility

The developing system must be justified by cost and benefit. Criteria to ensure that effort is concentrated on project, which will give best, return at the earliest. One of the factors, which affect the development of a new system, is the cost it would require.

- ❖ The following are some of the important financial questions asked during preliminary investigation:

- The costs conduct a full system investigation.
- The cost of the hardware and software.
- The benefits in the form of reduced costs or fewer costly errors.

Since the system is developed as part of project work, there is no manual cost to spend for the proposed system. Also all the resources are already available, it give an indication of the system is economically possible for development.

Operational feasibility

The designed system was used by the different users since they have computer skills and it will improve their efficiency at work.

Legal feasibility

This evaluation examines whether any aspects of the system can go against legal requirements.

4.2 Conclusion

The purpose of this study was to conduct a feasibility study on gym management system deployment. A feasibility study of a system proposal is according to its workability, which is the impact on the organization, ability to meet their user needs and effective use of resources.

CHAPTER 5

WORK PLAN

5.1 General Plan

Table 1.5 General Plan

Phases	Days	Start_day	End_day	Description	Supervised by
1. Planning	**5**	**21/2/2023**	**28/2/2023**	The selection and determination of the title of the project developed, determine the objectives, scope, expected results and statement of the problem.	**Ammar Khattab** **Ali Shareedh**
2. Requirements' Analysis	**6**	**28/2/2023**	**5/3/2023**	The literature is also analyzed to compare the existing system with similar systems. In addition, an analysis of the hardware and software requirements as well as the programming language used is also performed.	**Ammar Khattab** **Ali Shareedh**

3. Design	**64**	**5/3/2023**	**7/5/2023**	The activity involved is a process in which the design of the system is made. The purpose of this phase is to translate the functions in the requirement specification to software components, which then produces a system that meets the quality requirements in the most effective approach. Interface and database design are available to describe entities, attributes and relationships between entities of the system.	**Ammar Khattab** **Ali Shareedh**

4. Implementation	**45**	**9/5/2023**	**22/6/2023**	All software, hardware and application program are utilized to convert or translate the design sketched in the form of program code by using the hardware and software requirements that have been clarified.	**Ammar Khattab** **Ali Shareedh**

5. Testing	**20**	**23/6/2023**	**2/7/2023**	The proposed system where a user must test to ensure the system is free of error and can function according to user requirements. This phase involves testing the primary functions of the customer and administrator side.	**Ammar Khattab** **Ali Shareedh**

5.2 Actual Plan:

Table 2.5 Actual plan

Phases	Days	Start_day	End_day	Description	Supervised by
1. Planning	**5**	**21/2/2023**	**28/2/2023**	The selection and determination of the title of the project developed, determine the objectives, scope, expected results and statement of the problem.	**Ammar Khattab** **Ali Shareedh**

2. Requirements' Analysis	**6**	**28/2/2023**	**5/3/2023**	The literature is also analyzed to compare the existing system with similar systems. Also an analysis of the hardware and software requirements as well as the programming language used is also performed.	**Ammar Khattab** **Ali Shareedh**

3. Design	**60**	**5/3/2023**	**15/5/2023**	The activity involved is a process in which the design of the system is made. The purpose of this phase is to translate the functions in the requirement specification to software components, which then produces a system that meets the quality requirements in the most effective approach. Interface and database design are available to describe entities.	**Ammar Khattab** **Ali Shareedh**

4. Implementation	**60**	**5/3/2023**	**15/5/2023**	All software, hardware and application program are utilized to convert or translate the design sketched in the form of program code by using the hardware and software requirements that have been clarified.	**Ammar Khattab** **Ali Shareedh**
5. Testing	**15**	**15/5/2023**	**30/5/2023**	The proposed system where a user must test to ensure the system is free of error and can function according to user requirements. This phase involves testing the primary functions of the customer and administrator side.	**Ammar Khattab** **Ali Shareedh**

5.3 Programming Languages

It is important for the user to understand how this application works and knowing the technologies that are used to implement this project.

In this project, PHP was chosen as a server-side programming language and MySQL was selected as a backend database. HTML, CSS, JavaScript, and XAMPP Server were used for the client-side work.

CHAPTER 6

SOFTWARE DEVELOPMENT PHASES

6.1 PLANNING [13]

Among the activities involved in this phase is the selection and determination of the title of the project developed, determine the objectives, scope, expected results and statement of the problem, and software requirements specification. Opinion questionnaire is also conducted with some of the customers about medical consultation system. From Opinion questionnaire, the objectives and scope of the project are identified. All the activities involved in the project development process is structured and designed in accordance with the scheduling and planning phase.

6.1.1 Software Requirements Specification

Requirements analysis is sometimes the primary part of large-scale computer code development project. It's undertaken once a practicability study has been performed to outline the precise prices and edges of software. The aim of this part is to spot and document the precise necessities for the system. The client, the developer, a promoting organization or any combination of the 3 might perform such study. In cases wherever the necessities don't seem to be clear. The necessities at this stage square measure in end-user terms.

6.1.1.1 Functional Requirements:

In software engineering and systems engineering useful demand defines a perform of a system or its element. Useful necessities are chiefly calculations, technical details, knowledge manipulation and process and alternative specific practicality that outline what a system is meant to accomplish. In our project there also are some essential useful necessities

1. Recording income

FR-1	Recording Income
Description	There are many income source of gym system network. All these things have to record on the database.
Stakeholders	GMS members, Trainer, Admin,SuperAdmin

2. Recording Expense

FR-2	Recording Expense
Description	Like Income, they have many field to expense money, such as they have programme, for arranging this programme they will expense in decoration, crest to give their members and etc. All this things should have to record.
Stakeholders	GMS members, Trainer, gym related members, Admin

3. Membership Fee

FR-3	Membership Fee
Description	All the members of GYM have a monthly fee. This subscription fee has a specific amount on the members' task wise. Members can give one or more membership fees altogether at a time.
Stakeholders	GMS members, Trainer, gym related members, Admin

4. Summary of income & expense

FR-4	Summary of income & expense
Description	Admin can see total amount and they will get an alert if the income amount is less then expense amount.
Stakeholders	Super Admin, Admin, Trainer

5. Member Registration

FR-5	**Member Registration**
Description	They can add new members in their organization. To be a member, member has to be a police.
Stakeholders	New GMS members, Trainer

6. Member List

FR-6	**Member List**
Description	Should have a field to see all members of GYM.
Stakeholders	GYM members

7. Adding Category

FR-7	**Adding Category**
Description	There will be some category which will be predefined. If the category will exist trainer can add it.
Stakeholders	trainer

8. Equipment Registration

FR-8	**Equipment Registration**
Description	There will be some equipment which will be predefined. If the category will exist trainer can add it.
Stakeholders	Trainer, Admin

9. Edit Option

FR-9	**Edit Option**

Description	In the time of inserting the data trainer or admin can make mistake on typing, so there should have an option for correction the mistake.
Stakeholders	GYM members, Trainer person.

10. printing option

FR-10	**printing option**
Description	If the members of GYM want to print the detail and summary then they will be able to print.
Stakeholders	GYM members, Trainer.

A) Trainer module

- The system will allow viewing the particular trainer detail by using the search criteria that are provided which is trainer ID, or trainer name in the trainer detail form.
- The system will allow viewing all the trainer details.
- The system will allow to add trainer detail
- The system will allow editing the trainer information.
- The system will allow canceling trainer information when the trainer resign or expired.

B) Report module

- The system will allow admin to view the monthly, weekly, and daily report.
- Admin need to select the month that he or she wants to view report. For trainer report, admin needs to select the month and trainer type when he or she wants to view the report.
- The system will allow generating report.

C) Login module

- The system will allow the Users to log into the system with their own account. After login in the system, the system will access relevant data to user based on their username and password.

- The login module also allows the user to change to password for the security purpose.

D) Account module

- The system will allow the Administrators to create account for users
- The system will allow the administrator to delete account of users
- The system will allow the administrator to activate users account
- The system will allow the administrator to deactivate user account

E) Equipment module

- The system will allow the service provider to add equipment details.
- The system will allow the service provider to edit equipment details.
- The system will allow the service provider to delete equipment details.
- The system will allow the service provider to view equipment details.
- The system will allow the trainer to view equipment details.
- The system will allow member to view equipment details.
- The system will allow the gym admin to view equipment details.

G) Schedule module

- The system will allow the gym trainer to add schedule or detail exercises of the trainer
- The system will allow the gym trainer to edit schedule or detail exercises of the trainer
- The system will allow the gym trainer to delete schedule or detail exercises of the trainer
- The system will allow the gym trainer to view schedule or detail exercises of the trainer

H) Plan/membership type module

- The system will allow the admin to add new plan details the plan details consists membership ID, membership name , days , and Rates .
- The system will allow the admin to edit plan details.
- The system will allow the admin to delete plan details.
- The system will allow the admin to view plan details.

I) Payment module

- The system will allow the admin to add trainer payment
- The system will allow the admin to edit trainer payment
- The system will allow the admin to delete trainer payment
- The system will allow the admin to view trainer payment
- The system will allow the member to make their owns payment
- The system will allow the Trainer and member to view their owns balance

J) Notification module

- The system will allow the admin to view ending membership details
- The system will allow the admin to view unpaid trainer details

K) Log module

- The system will allow the Administrator to manage user log
- The system will allow the Administrator to manage activity log

L) Logout module

- The system will allow the User of the system to logged out of the system

6.1.1.2 Non-Functional Requirements:

In systems engineering and needs engineering, a non-functional demand could be a demand that specifies criteria which will be wont to decide the operation of a system, instead of specific behaviors. They're contrasted with useful needs that outline specific behavior or functions. Here we have a tendency to putt down some non-functional activities in line with our project.

- ***Dependability***

This project some non-functional activities this project conjointly depends with another fact prefer to understand the app content you've got to web association conjointly desires a robot phone to attach into the apps.

- ***Maintainability***

This app user friendly and in step with our project it's a decent UI therefore users area unit extremely affected regarding this app. In maintain this app user ought to sign on and later each specific matter can apprize the user. User will simply maintain it.

- ***Security***

The software system wants a sturdy security mechanism in situ so unauthorized user don't seem to be allowed access to elements of the system. All users of the system should be unambiguously known. This might be done by employing a user name and associated positive identification theme that may demonstrate and authorize the user access to the system and, if applicable, grant the user access to restricted or controlled elements of the system. So as to watch all past access to the system, all tries to access the system should be logged.

- ***Reliability***

All content and alternative info during this app are collected from status people who concerning pillar of Islam and work about pillar of Islam. Deliver info concerning pilgrim's journey to assist alternative. Therefore our content and guide line are secure for user. Thereon regard we will simply say this project maintain a powerful dependability.

- ***Usability***

Good UI, User friendly, Step by Step information make this application useable and user friendly.

- ***Availability***

The System should be available 99% of the time.

- ***Performance***

System should be able handle multiple users at a time using any of the web browsers.

- ***Portability***

Yes this system is portable and we can switch the servers very easily.

- ***Browser Compatibility***

The project being web based required compatibility with at least the popular web browsers. Microsoft Windows XP and above, Linux and Macintosh being the current popular operating system and Microsoft Internet Explorer, Mozilla Firefox, Opera, Safari and Google Chrome being the currently popular web browser.

6.1.2 Data Collection [5-20-22]

In order to specify the user requirements, below are the suitable data collection techniques that we will use to carry out a proper systems study.

A) Questionnaires :

A questionnaire consists of a set of questions for submission to a number of persons or respondents in order to gather specific data about a given phenomenon or subject.

- **The results of the questionnaire:**

1. What is your job?

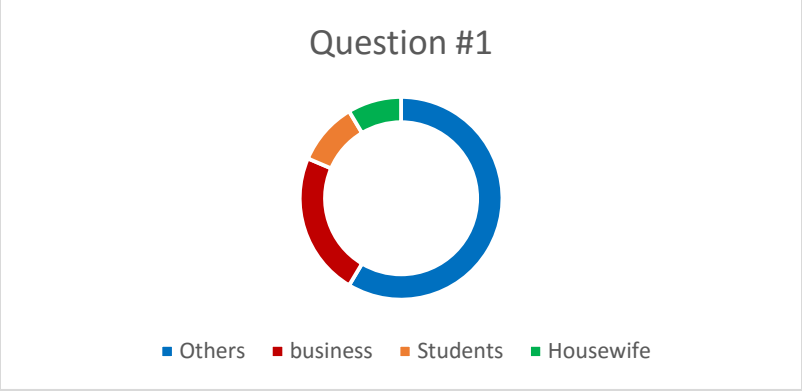


Figure 6.1: Response to question 1

2. Gender:

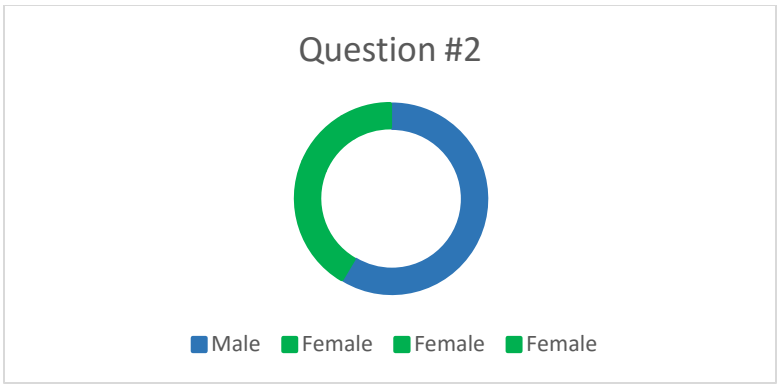


Figure 6.2: Response to question 2

3. Age

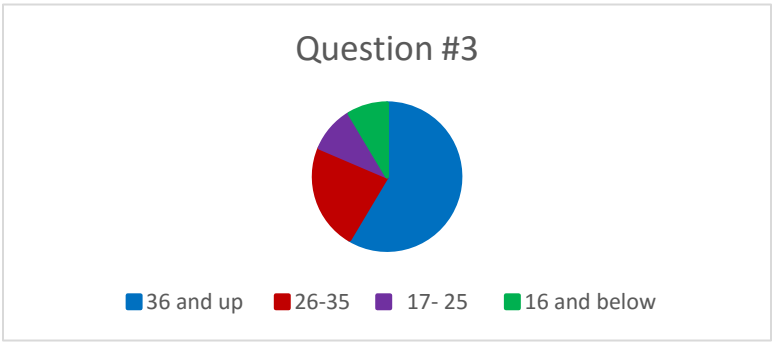


Figure 6.3: Response to question 3

4. Household Income::

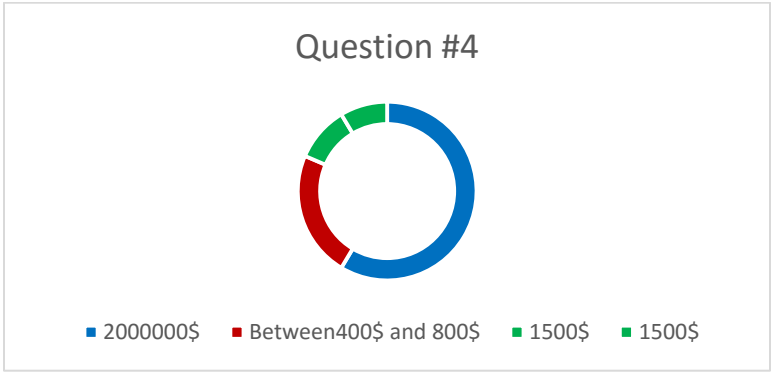


Figure 6.4: Response to question 4

5. What is your general health like?

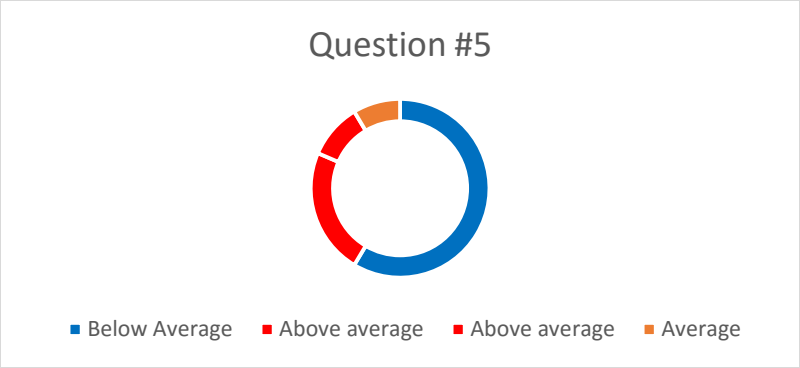


Figure 6.5: Response to question 5

6. Do you go to gym?



Figure 6.6: Response to question 6

7. Why do you go to the gym?

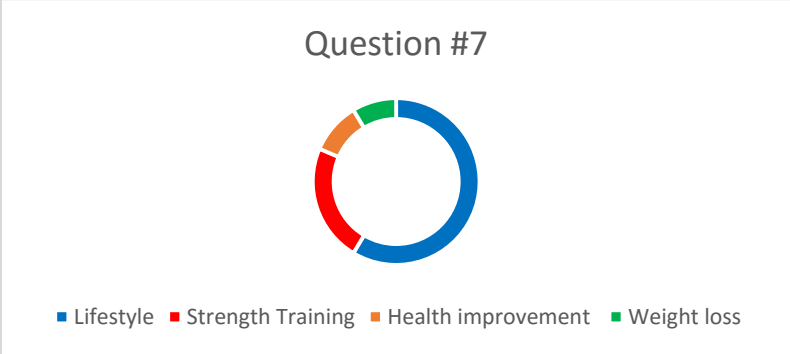


Figure 6.7: Response to question 7

8. How often do you go to the gym?

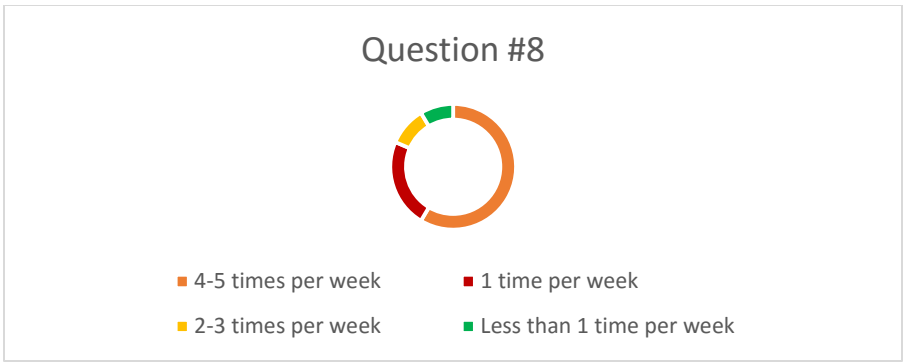


Figure 6.8: Response to question 8

9. What time do you normally prefer to attend the gym?

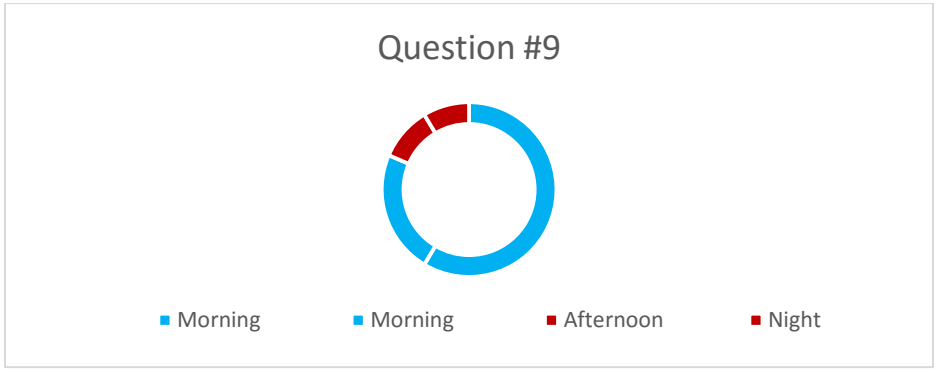


Figure 6.9: Response to question 9

10. How did you hear about our Gym?

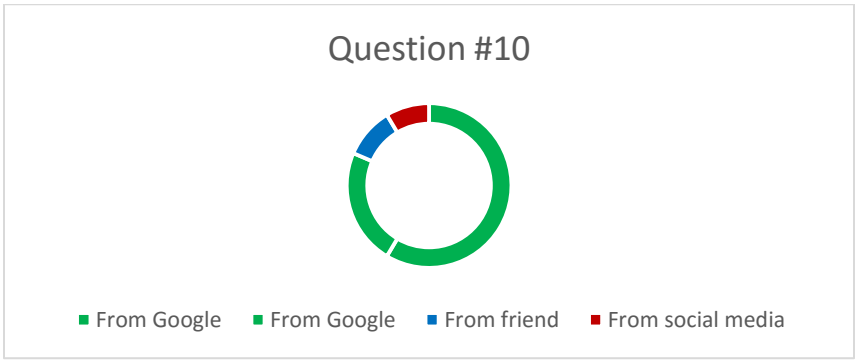


Figure 6.10: Response to question 10

11. What do you prefer?

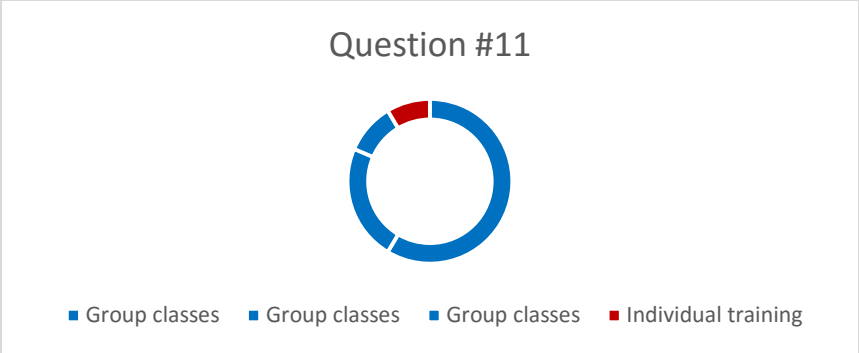


Figure 6.11: Response to question 11

12. In relation to other gym systems you have been a part of, how is our customer service?



Figure 6.12: Response to question 12

13. I recommend using the site?

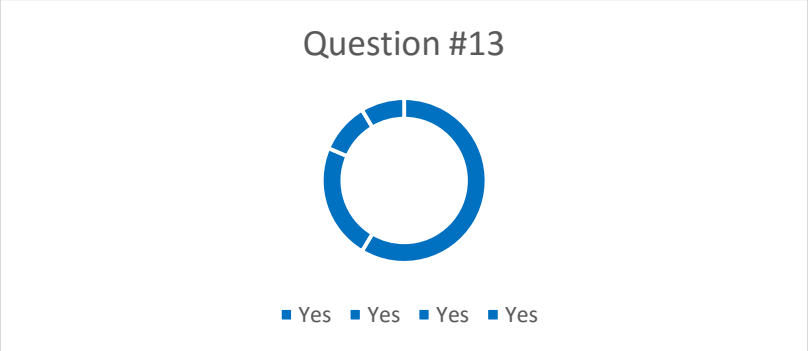


Figure 6.113: Response to question 13

6.2 REQUIREMENTS' ANALYSIS

Requirement analysis is a software engineering technique that is composed of the various tasks that determine the needs or conditions that are to be met for a new or altered product, taking into consideration the possible conflicting requirements of the various users.

6.2.1 Diagrams:

6.2.1.1 Use Case Diagram

To explain the better view and functionalities of the system, use case diagrams are

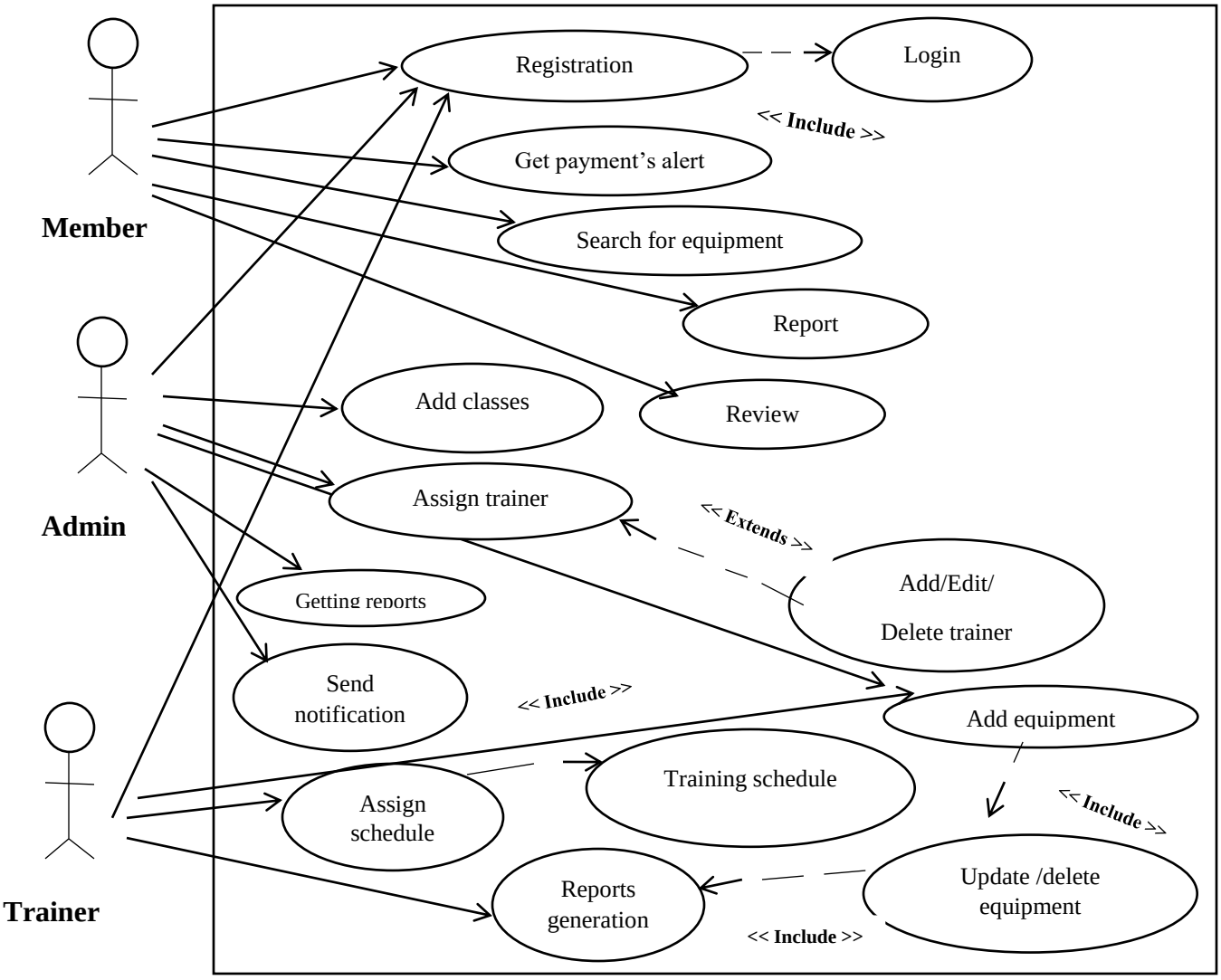


Figure 6.14: Use Case D

Table 1.6: Member registration

Use-Case 1:	**Member registration**
Primary-actor:	Member, admin, trainer, service provider
Description:	Registration process of new member
Precondition:	Valid password and valid email address.
Basic use-case flow:	For the registration process, needs to give some information by filling the form. Some of the required information includes the following: First name Last name
Main scenario:	Member, supervisor, or trainer will go onto the sign-up button either from the main page or from the drop-down menu. After clicking the sign-up button, a registration form will appear, where the user must give his personal information i.e. name, gender, email address, etc. After giving the required information user will submit the form. If all the fields are filled including the valid email address and password, the user will be registered onto the system. In case of any missing entry or invalid format of an email or password, the error occurs onto the page.
Exception:	Expired/invalid password or email address.

Table 2.6: Login

Use-case 2:	**Login**
Primary actor:	Member, admin, trainer, service provider
Description:	The user must have to provide his username and password.
Precondition:	The user must have a valid username and password.
Basic use-case flow:	A valid username with a password must be entered by the user.
Main scenario:	To be able to get into the system, the user needs to enter his username and password either from the main page or from the drop-down menu from the top of the page. After clicking onto the login button,

	authentication request will be forwarded to the system.
Exception:	Wrong/invalid entered username or password.

Table 3.6: Add trainer

Use case name	Add Trainer
Use case ID	**UC-3**
Description	This use case is to allow the User to add trainer or new user.
Actor	**admin**
Pre- condition:	User should be login in to the system to add trainer
Basic course of action	1. User selects add trainer link 2. System display add new trainer form 3. The user enters the details of the trainer 4. The user click add trainer button 5. System will verify the data that the actor enters 6. System add trainer successfully and updates the database 7. Use case ends
Post- condition	The new Trainer of the system is added successfully
Alternative course of action	**A1 step S3**: If one of the data entered by User is invalid data, system will display invalid data message.

Table 4.6: edit trainer

Use case name	Edit Trainer
Use case ID	**UC-4**
Description	This use case is to allow the User to edit trainer information.
Actor	**Admin**
Pre- condition:	User should be login in to the system to edit trainer
Basic course of action	1. User selects edit trainer link 2. System display edit trainer form with a particular trainer detail 3. The user edit some details of the trainer 4. The user click edit trainer button 5. System will verify the data that the User enters 6. System edit trainer successfully and updates the database 7. Use case ends
Post- condition	The Trainer information is edited successfully
Alternative course of action	**A1 step S3**: If one of the data entered by User is invalid data, system will display invalid data message.

Table 5.6: Add Classes

Use-case 3:	**Add classes**
Primary-actor:	Admin
Description:	Add classes for members and staffs
Precondition:	This use-case has no exception.
Basic use-case flow:	The admin should add classes for members and staffs.
Main scenario:	The admin should add classes for members and staffs. Also he can manage these classes by adding the period for traning
Exception:	No exception for this use-case.

Table 6.6: Assign trainer

Use-case 4:	**Assign trainer**
Primary-actor:	Admin
Description:	Trainer allocation by the administration for specific member
Precondition:	The user must be login and Update trainer records
Basic use-case flow:	The user hits the button for taking assignment.
Main scenario:	Trainer allocation by the administration for specific member
Exception:	This use-case has no exception.

Table 7.6: Assign schedules

Use-case 5:	**Assign schedules**
Primary-actor:	supervisor, trainer
Description:	Create, update work out for members
Precondition:	Add, update or delete records in schedule management he user must be signed in.
Basic use-case flow:	The user will click on the button create/update.
Main scenario:	The user will click on the button create/update/delete to assign schedules.
Exception:	No exception for this use-case.

Table 8.6: Provide service

Use-case 6:	**Provide service**
Primary-actor:	External service providers
Description:	Keeping the service records
Precondition:	The user must be signed in, and then he can Update records.
Basic use-case flow:	The user can keep service records.
Main scenario:	The user can provide and keep service records.
Exception:	No exception for this use-case.

Table 9.6: Membership overview

Use case name	Membership overview
Use case ID	**UC-9**
Description	This use case is to allow the Manager to view overview of membership details.
Actor	**Admin**
Pre- condition:	Manager should be login in to the system to view overview of membership details.
Basic course of action	1. Manager selects membership overview link 2. System display membership overview form 3. The Manager enter the ranges of dates or months that need to overview details 4. System will display number of trainers, amounts of incomes payed from trainers in that ranges that the manager enters 5. Use case ends
Post- condition	The membership overview is displayed successfully
Alternative course of action	**A1 step S3**: If the manager enters invalid date ranges the system prompt out invalid date range.

Table 10.6: View report

Use case name	View Report
Use case ID	**UC-10**
Description	This use case is to allow the User to view the Report in graphical representation
Actor	**Admin**
Pre- condition:	User should be login in to the system to view report
Basic course of action	1. User selects View report link 2. System display View report form 3. The User select the particular report type 4. System Prompt to enter required fields 5. Manager fill the field and click view 6. System displayed report in pie chart 7. Use case ends
Post- condition	The report detail is displayed successfully
Alternative course of action	**A1 step S3**: If the manager not select the report type and click view the system prompt to manager please select message

Table 11.6: Add equipment

Use case name	Add equipment
Use case ID	**UC-11**
Description	This use case is to allow the User to add equipment.
Actor	**Admin, Staff**
Pre- condition:	User should be login in to the system to add equipment details
Basic course of action	1. User selects add equipment link 2. System display add equipment form to User 3. The User enters the details of the equipment 4. The User click add new equipment button 5. System will verify the data that the User enters 6. System add equipment successfully and updates the database 7. Use case ends
Post- condition	The new equipment is added successfully
Alternative course of action	**A1 step S3**: If one of the data entered by User is invalid data, system will display invalid data message.

6.2.1.2 Sequence Diagram

A sequence diagrams models the flow of logic within a system in a visual manner, enabling to document and validate logic, and are commonly used for both analysis and design purposes. Sequence diagrams are the most popular UML artifact for dynamic modeling, which focuses on identifying the behavior within your system.

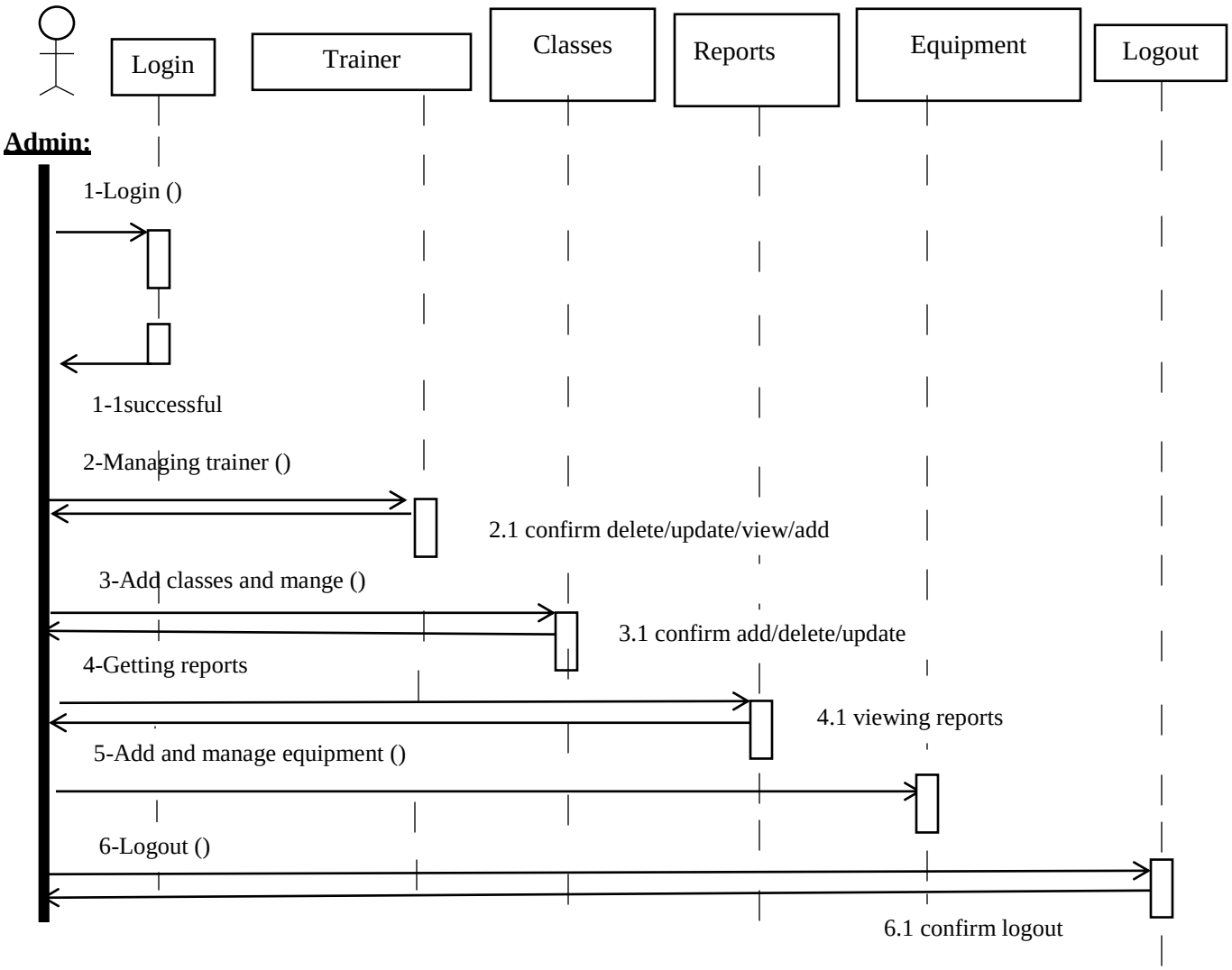


Figure 6.15: Sequence for Admin

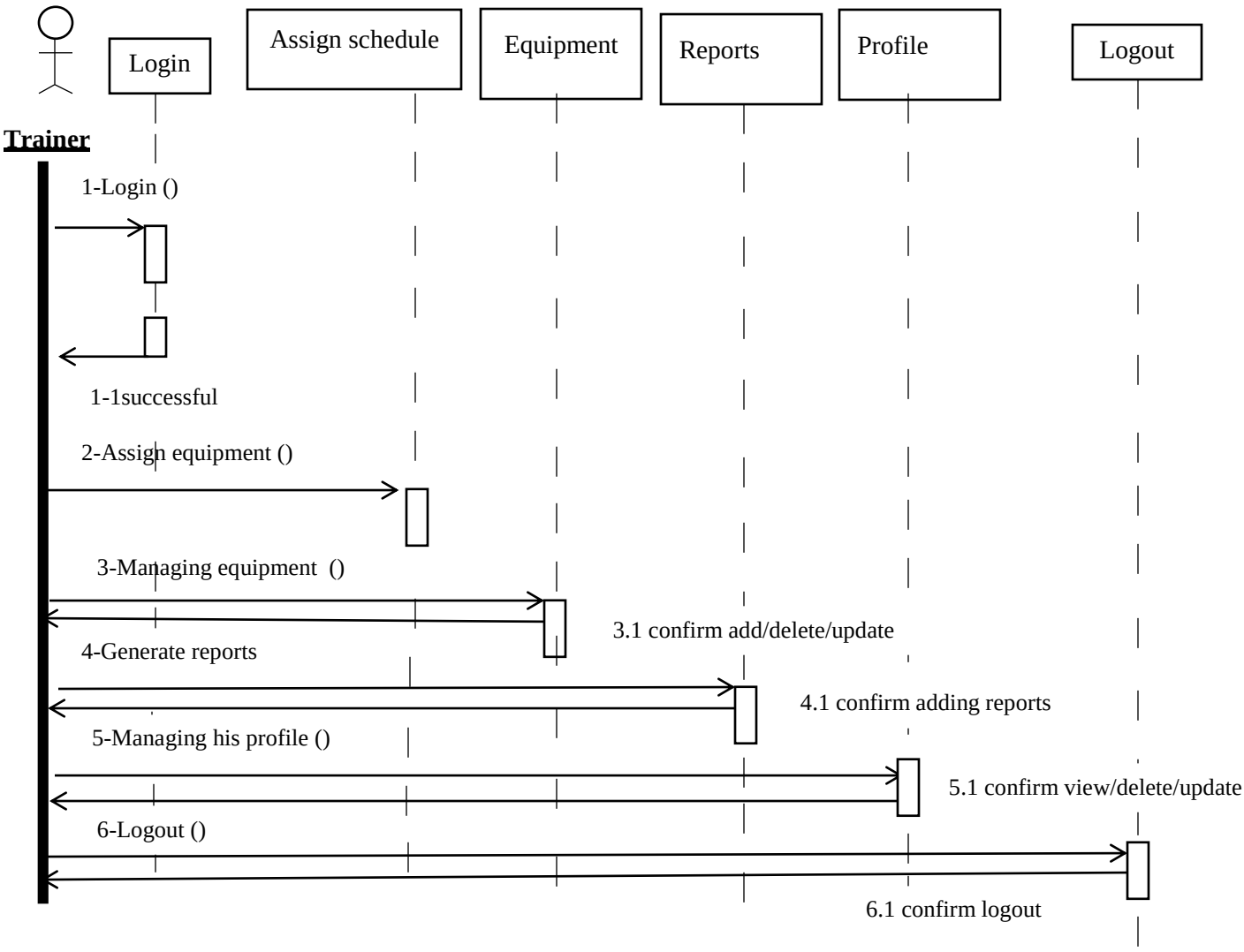


Figure 6.16: Sequence D for Trainer

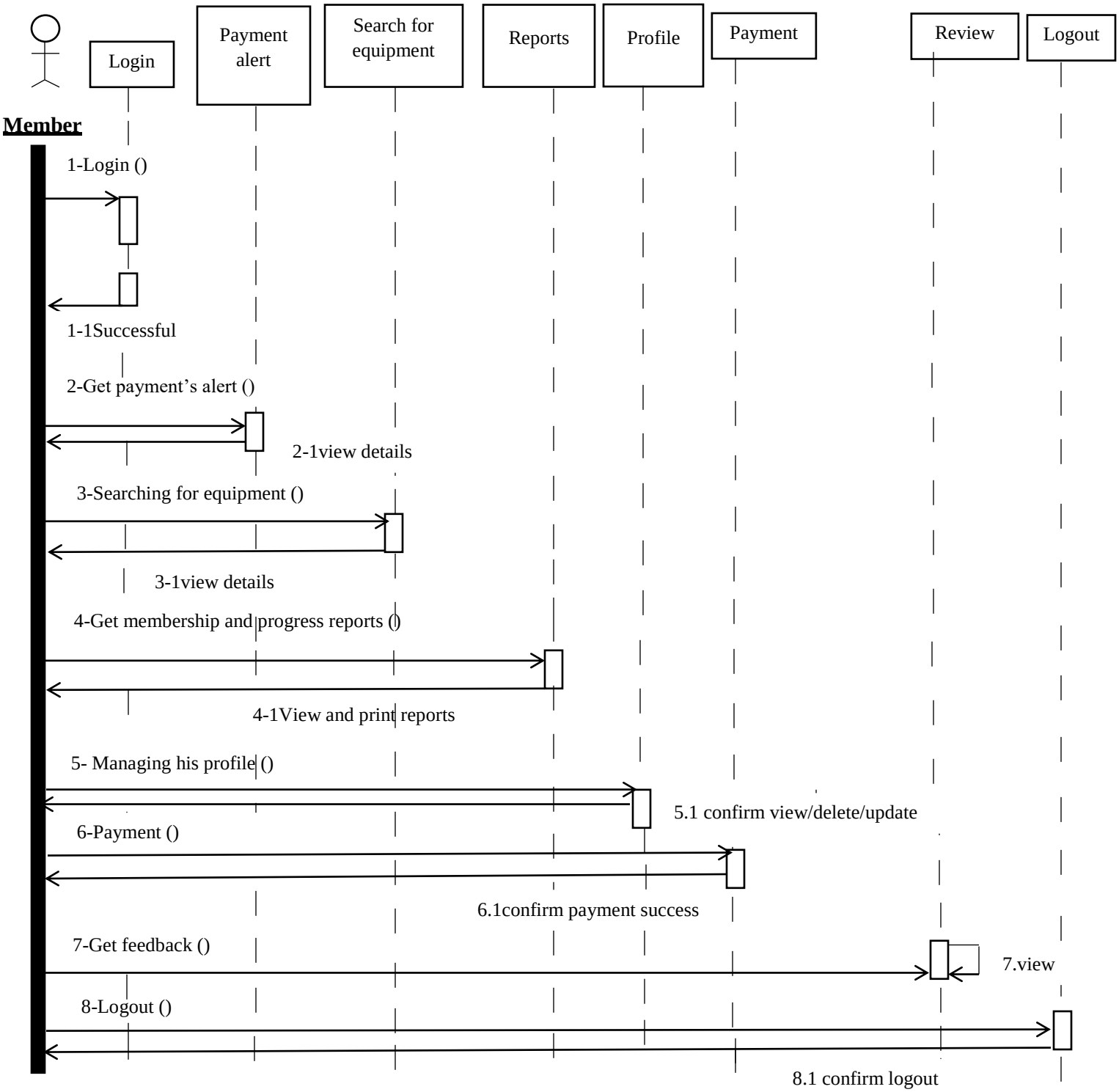


Figure 6.17: Sequence D for Member

6.2.1.3 Activity Diagram

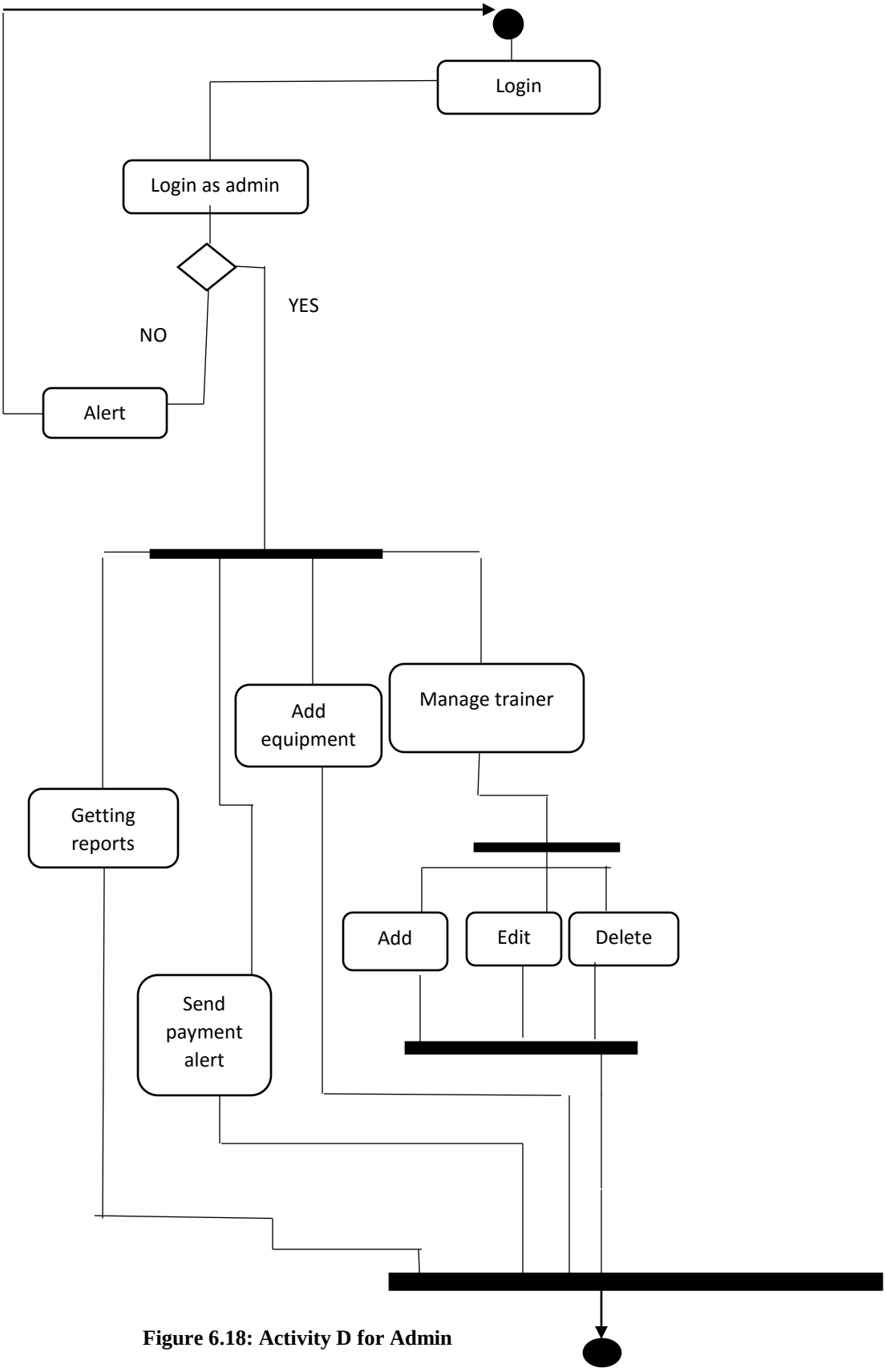


Figure 6.18: Activity D for Admin

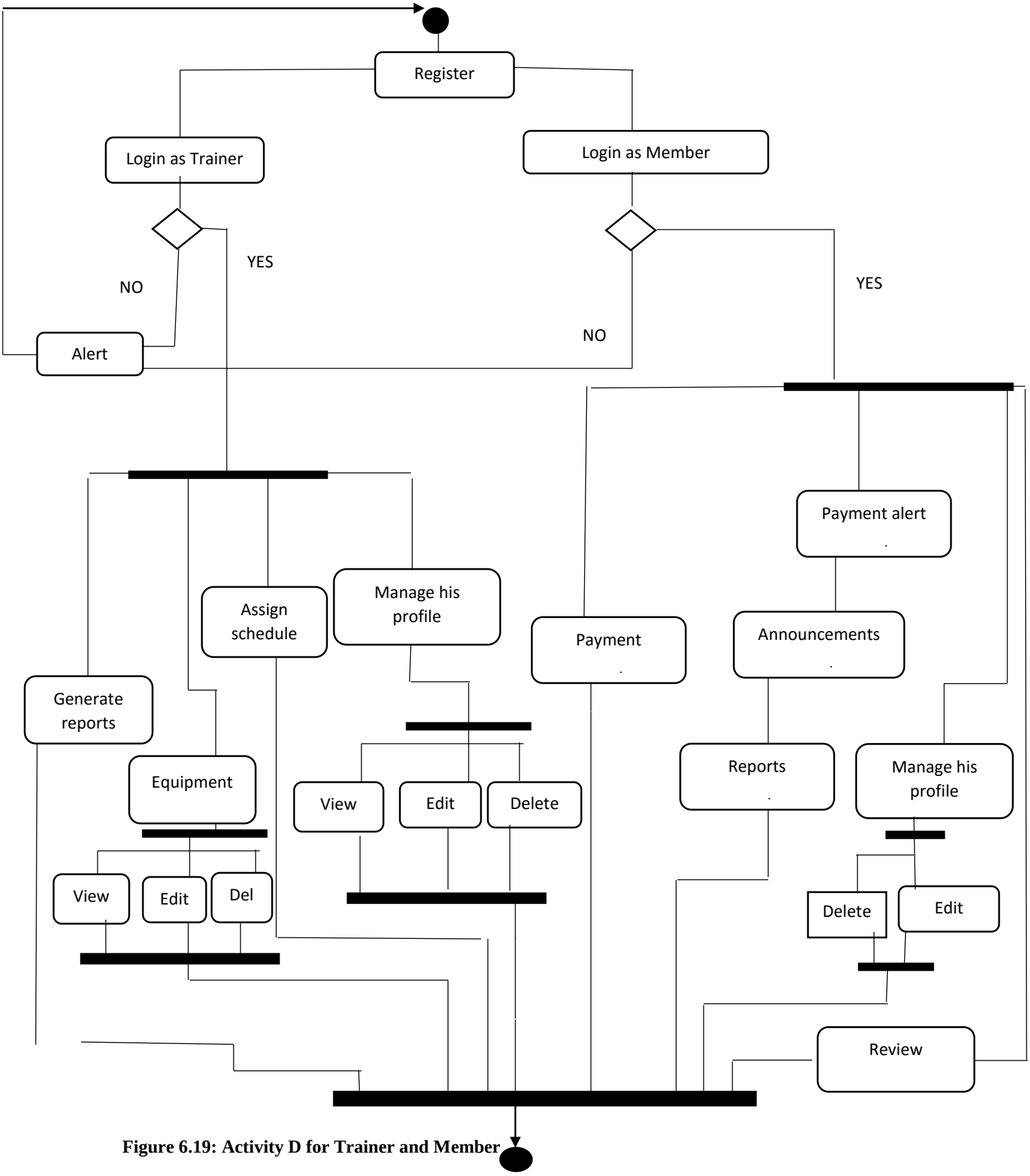


Figure 6.19: Activity D for Trainer and Member

6.3 DESIGNING

System design is the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. After specifying all requirements extreme design relies on test driven development.

6.3.1 Class Diagram

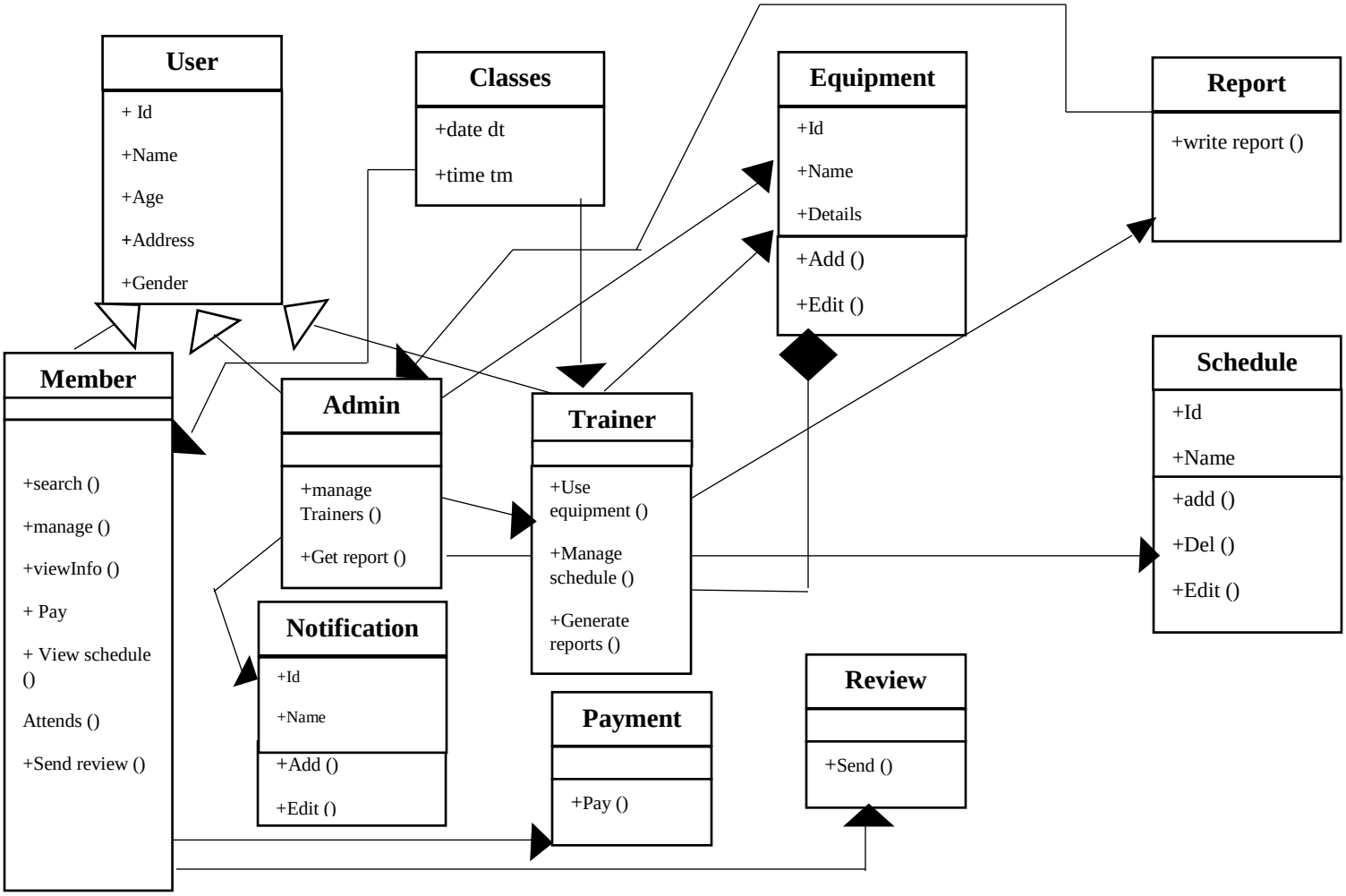


Figure 6.20: Class D

6.3.2 Entity Relationship Diagram

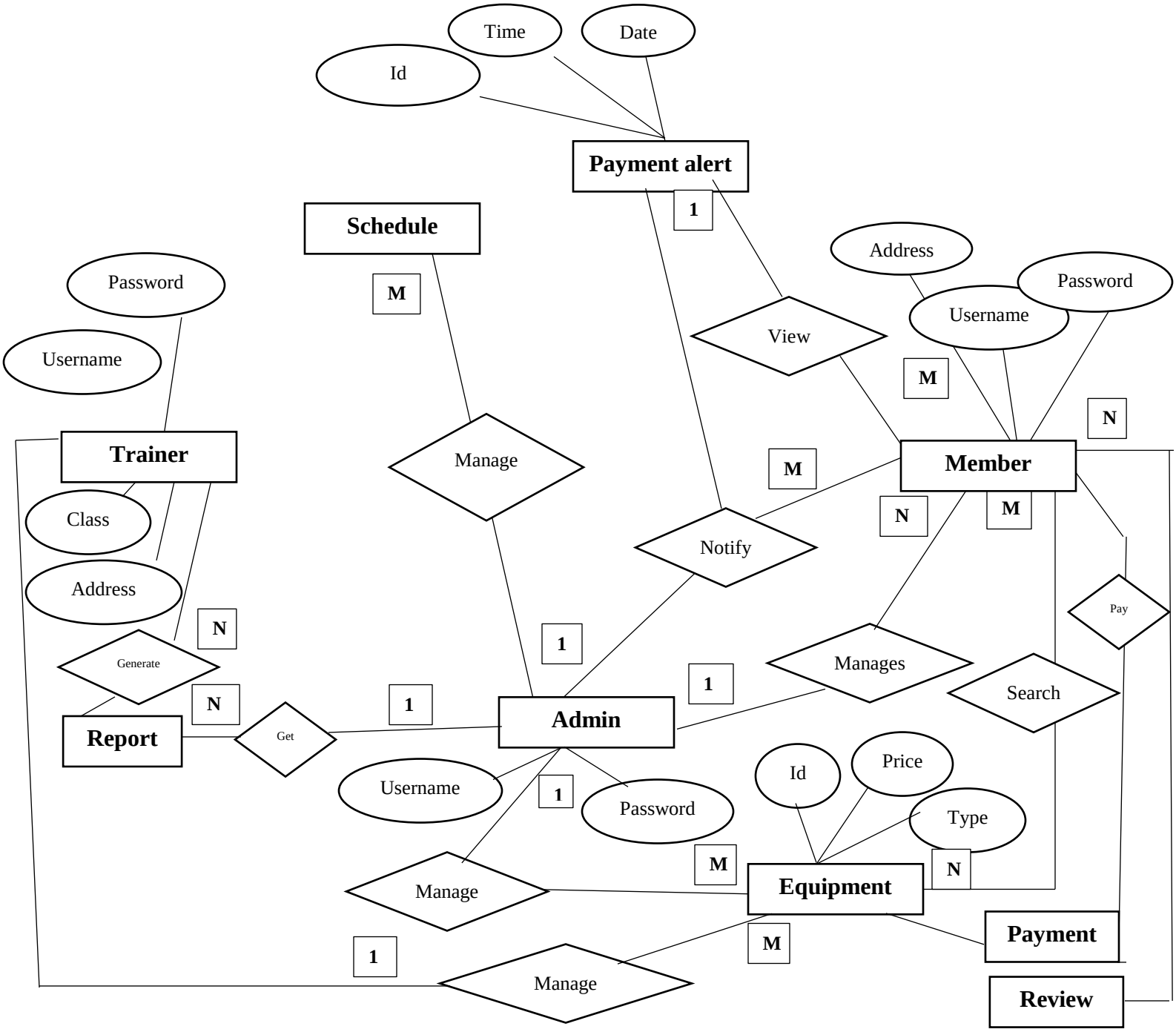


Figure 6.21: Entity relationship D

6.3.3 User Interface Design (UI design)

User Interface (UI) Design focuses on anticipating what users might need to do and ensuring that the interface has elements that are easy to access, understand, and use to facilitate those actions. We have designed basic user interfaces for the system and we try to describe the pages and summarize some of the links and buttons after the interfaces using table format. In this system users will communicate with it through the following user interfaces.

Home Page:

In this interface, there is login button for users to login, about the website, what courses is available, pricing for every course, and contact us.



Figure 6.22: Home Page

Login:

In this interface, the users can enter username and password to enter to the system.



Figure 6.23: Login

Admin Interfaces

Dashboard:

In this interface, there are active member, registered member, total earning, announcements, available equipment, and active trainer information.

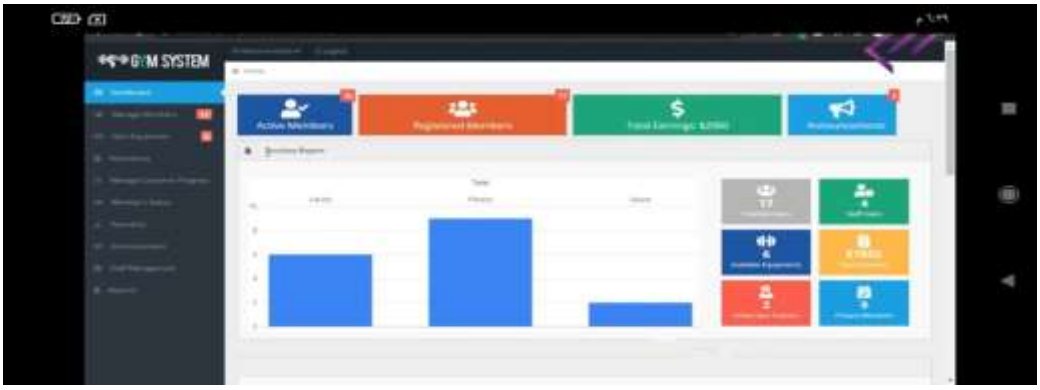


Figure 6.24: Dashboard

List All Members:

This interface views information about registered members list.

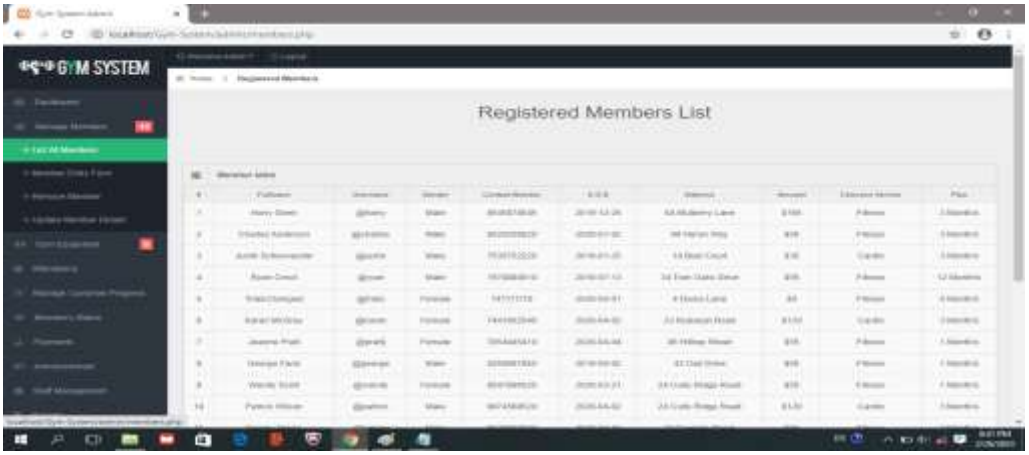


Figure 6.25: List All Members

Member Entry Form:

In this interface, the admin must fill the member information in the form.

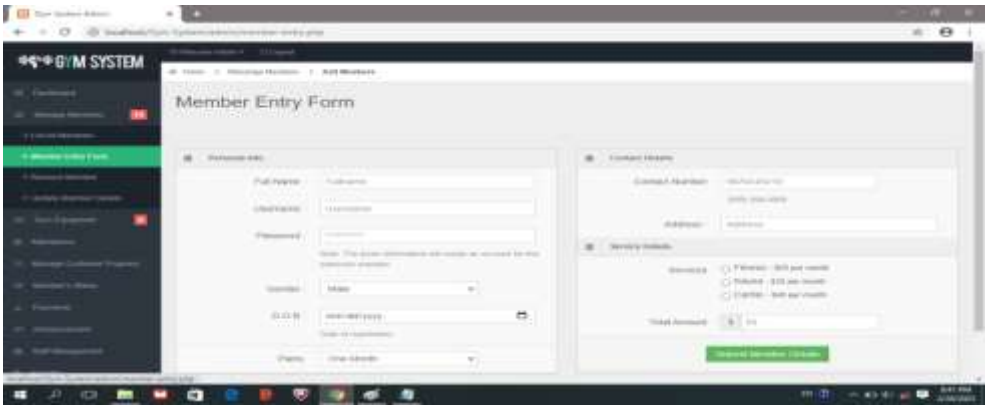


Figure 6.26: Member Entry Form

Manage Members:

In this interface, the admin can edit or delete a specific member.



Figure 6.27: Manage Members

Gym Equipment List:

In this interface, the admin can view equipment's details.

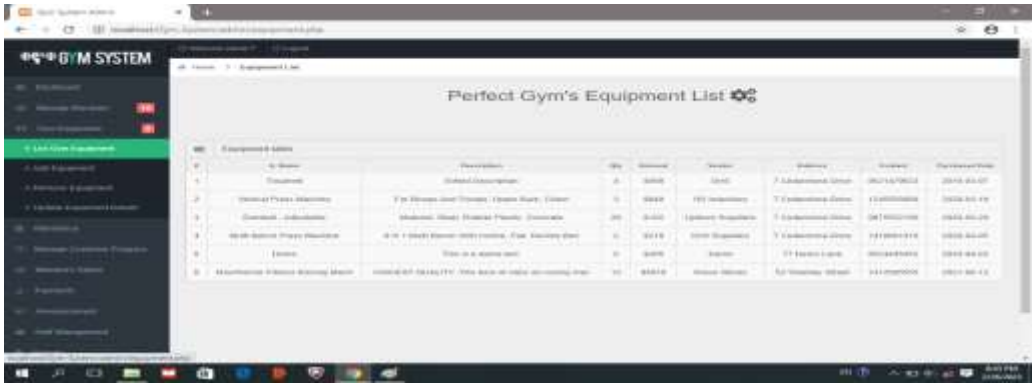


Figure 6.28: Gym Equipment List

Equipment Entry Form:

In this interface, the admin must add new equipment information for members.

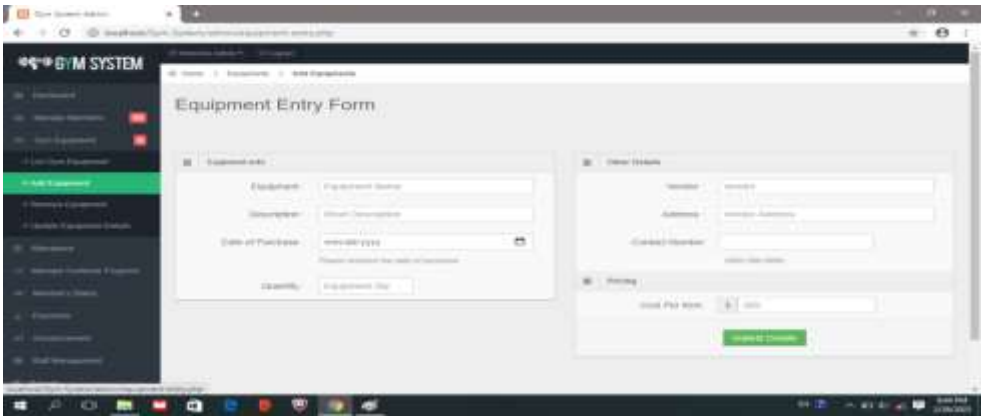


Figure 6.29: Equipment Entry Form

Manage Equipment:

In this interface, the admin can edit or remove specific equipment.

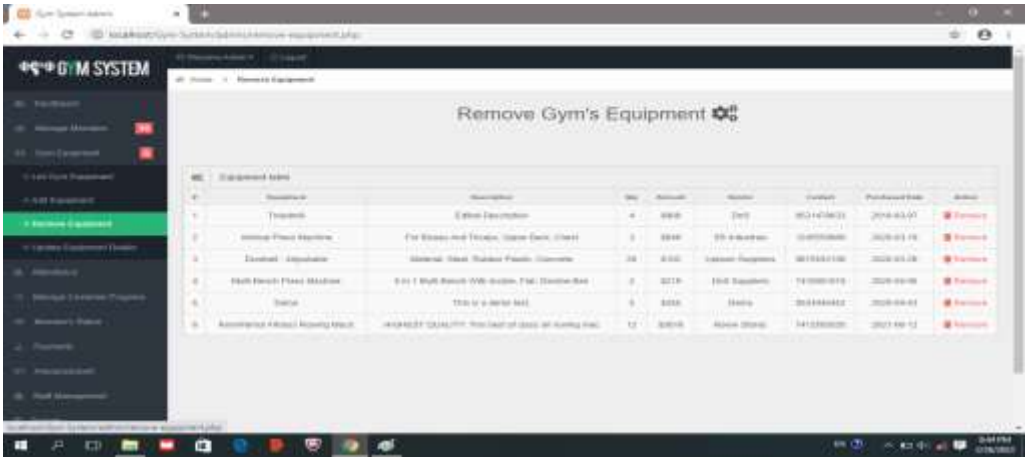


Figure 6.30: Manage Equipment

Attendance List:

In this interface, the admin can check in/ out for attendance members.

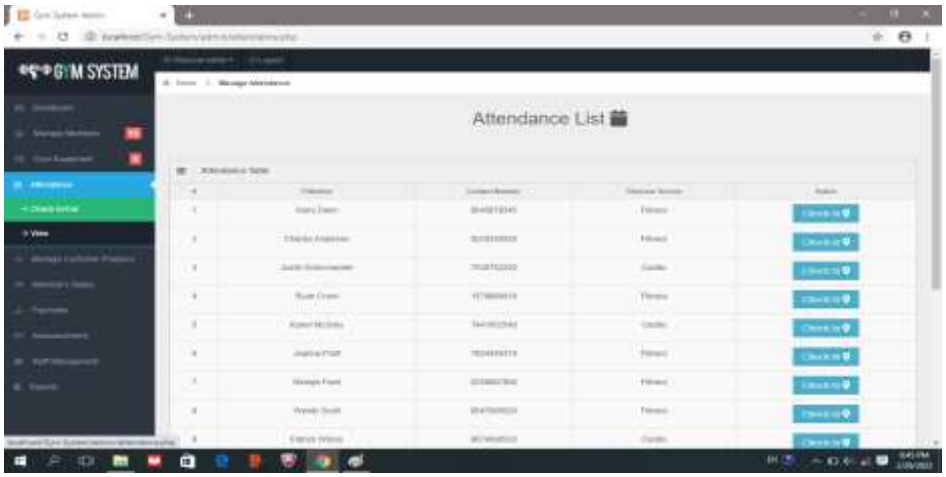


Figure 6.31: Attendance Member

Update Customer's Progress:

In this interface, the admin can update the plan for specific customer; by add the initial weight, current weight, body type, and current body type.

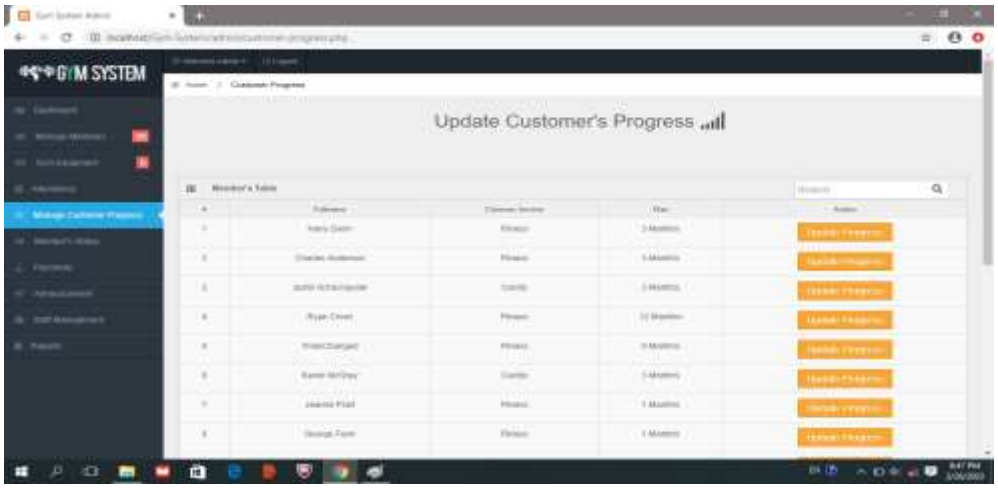


Figure 6.32: Update Customer's Progress

Member's Status:

In this interface, the admin can view the status for members if the member is active or expired.

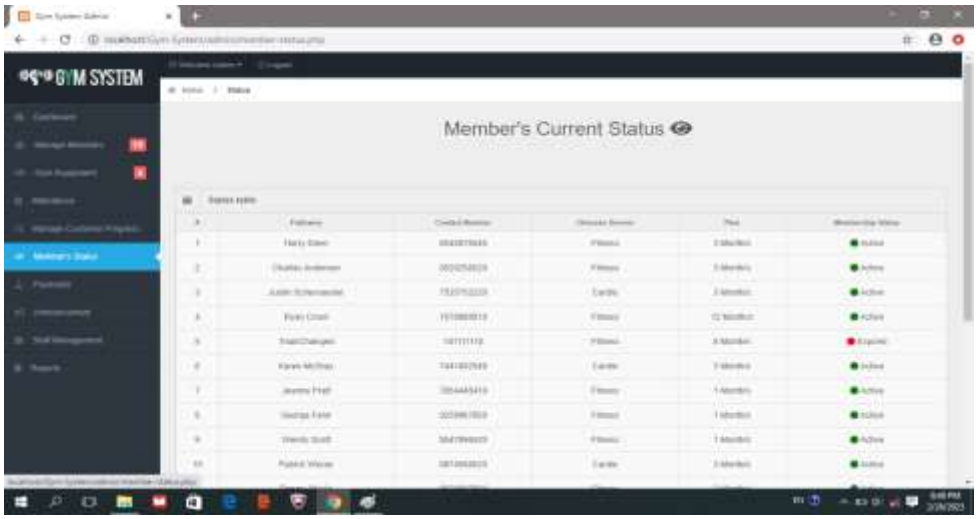


Figure 6.33: Member's Status

Registered Member's Payment:

In this interface, the admin can view whether the registered member pay or not and can alert the member for pay if he/she did not pay.

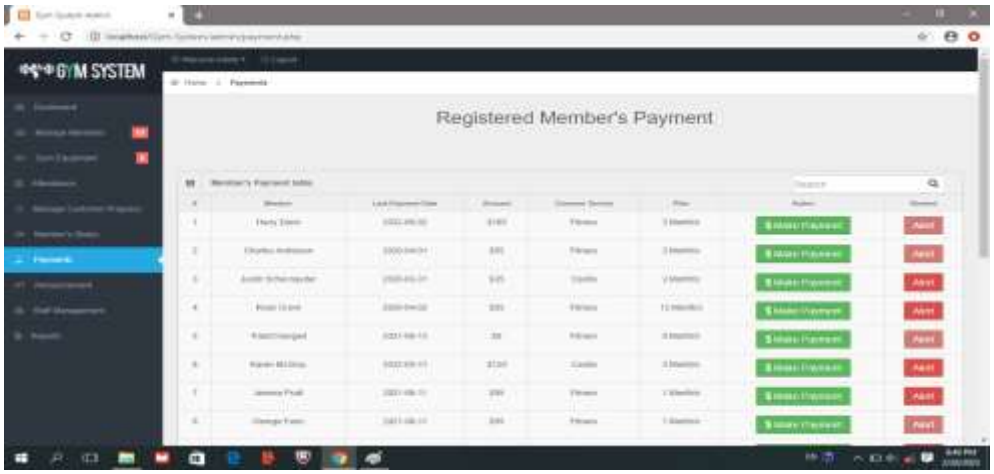


Figure 6.34: Registered Member's Payment

Announcement:

In this interface, the admin can make new announcement and publish it.

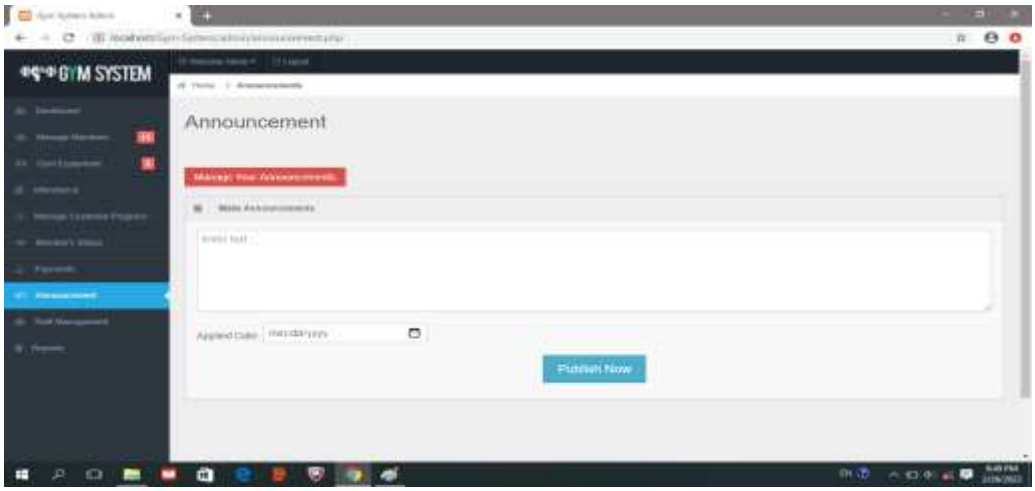


Figure 6.35: Announcement

Trainer Management:

In this interface, the admin can add new gym's staff and manage his/her.

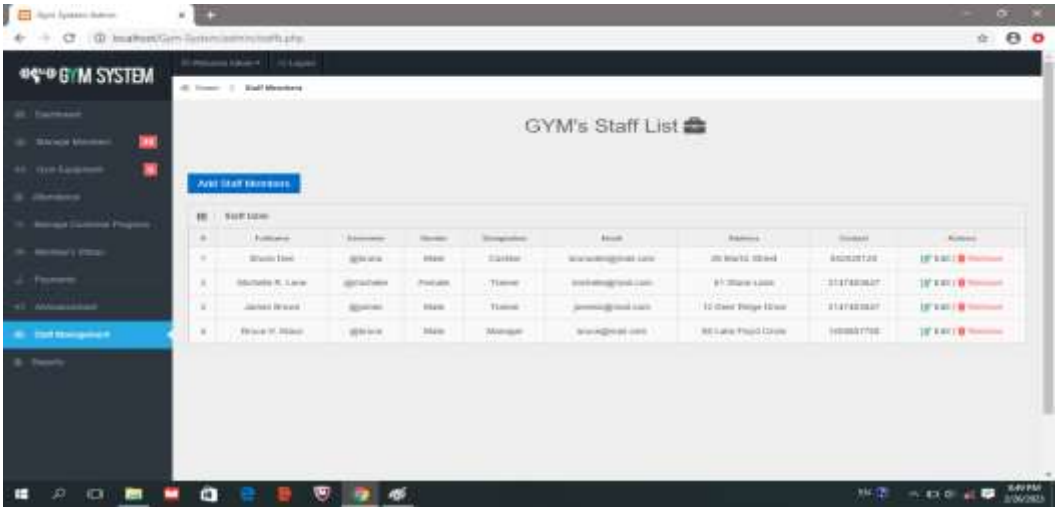


Figure 6.36: Trainer Management

Reports:

In this interface, we have earning and expenses reports. Also member's reports.

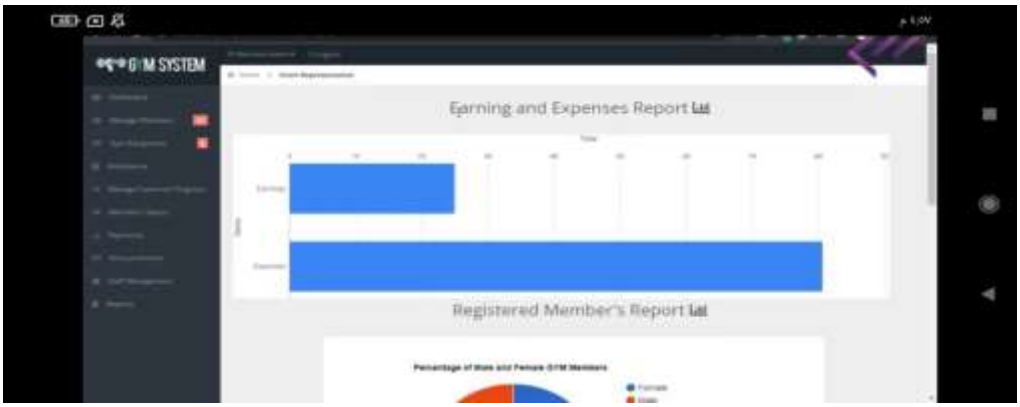


Figure 6.37: Earning and Expenses Reports



Figure 6.38: Member Reports

Member-Trainer:

In this interface, the admin can view the trainer for each customer and which class the customer select.

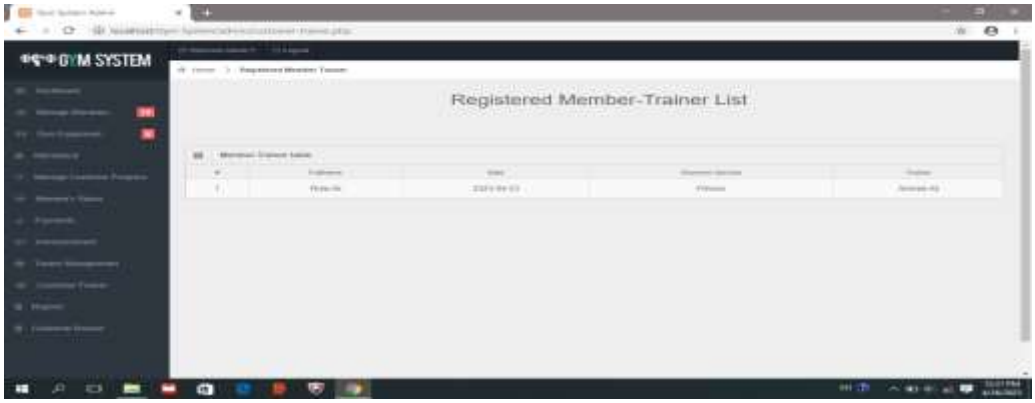


Figure 6.39: Member - Trainer

Member's Review:

Here the admin will know what review the customer sent.

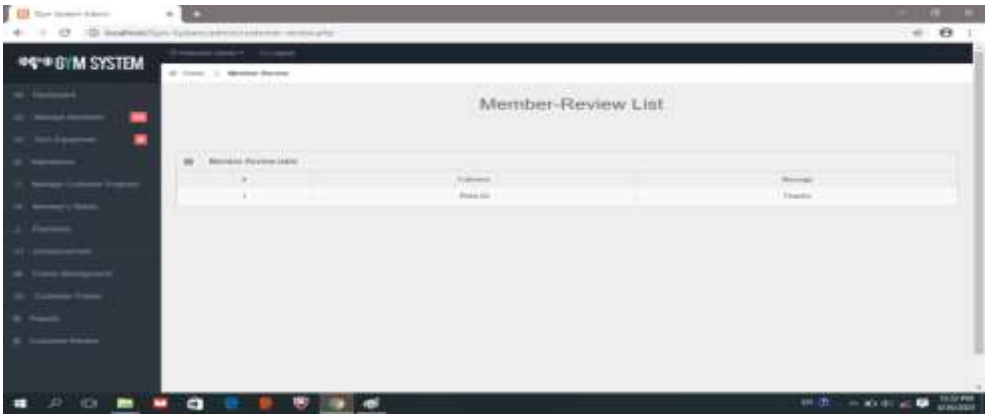


Figure 6.40: Member's review

Trainer Interfaces

Dashboard:

In this interface, the staff knows the number of equipment, active trainers, and total earnings.

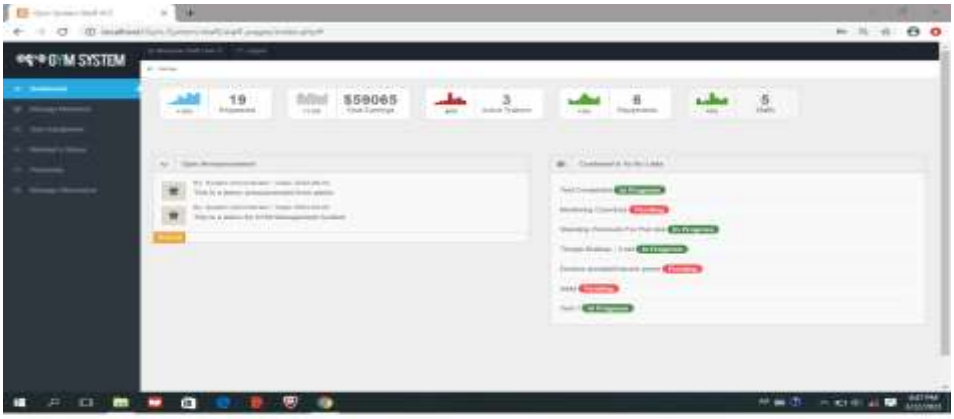


Figure 6.41: Trainer -Dashboard

List All Members:

This interface views information about registered members list.

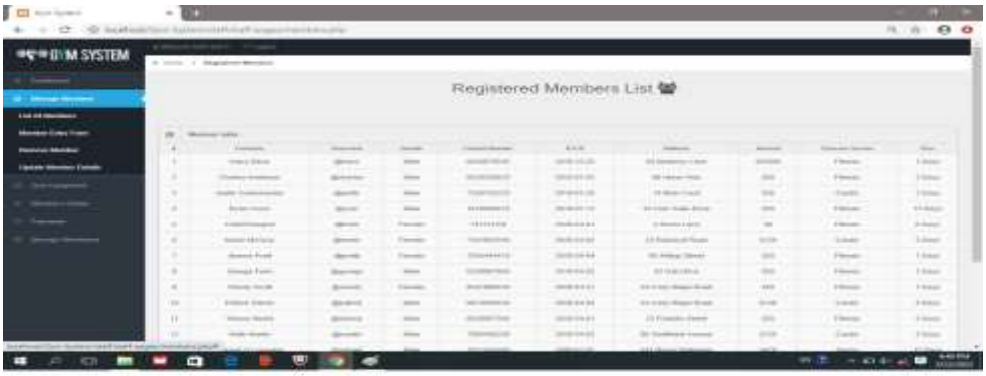


Figure 6.42: Trainer - List All Members

Member Entry Form:

In this interface, the staff must fill the member information in the form.

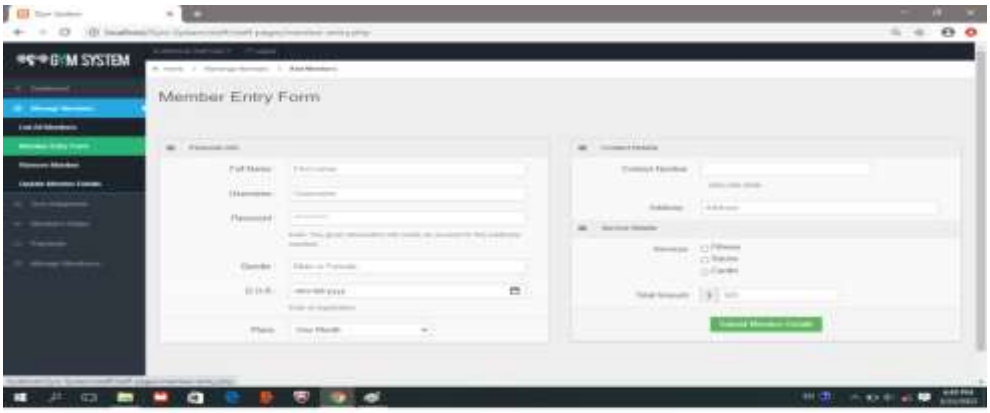


Figure 6.43: Trainer - Member Entry Form

Manage Members:

In this interface, the staff can edit or delete a specific member.

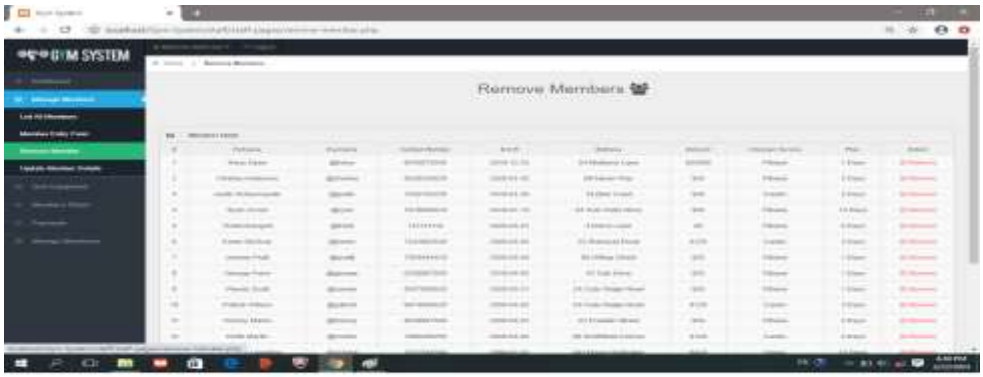


Figure 6.44: Trainer - Manage Members

Gym Equipment List:

In this interface, the staff can view equipment's details.

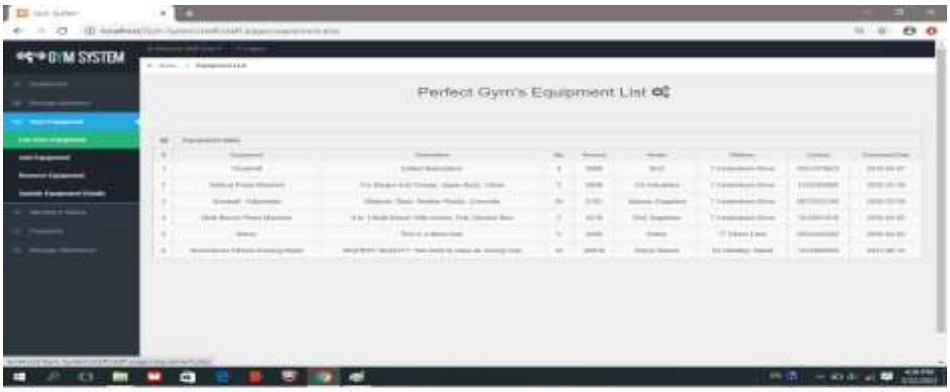


Figure 6.45: Trainer - Gym Equipment List

Equipment Entry Form:

In this interface, the staff must add new equipment information for members.

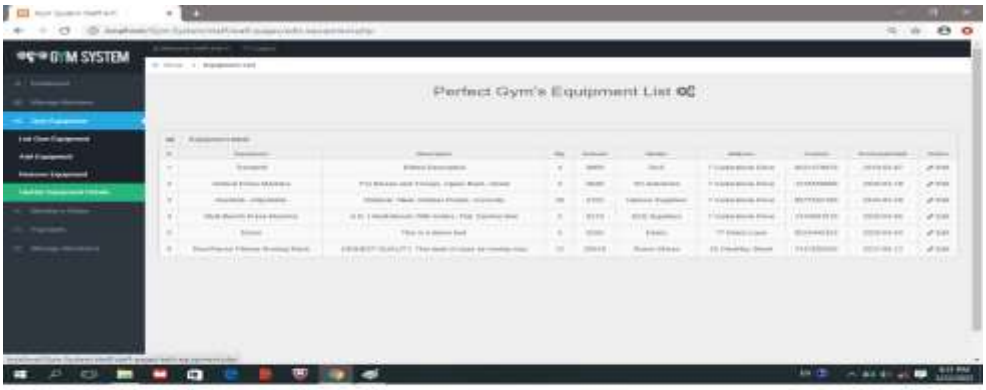


Figure 6.46: Trainer - Equipment Entry Form

Manage Equipment:

In this interface, the staff can edit or remove specific equipment.

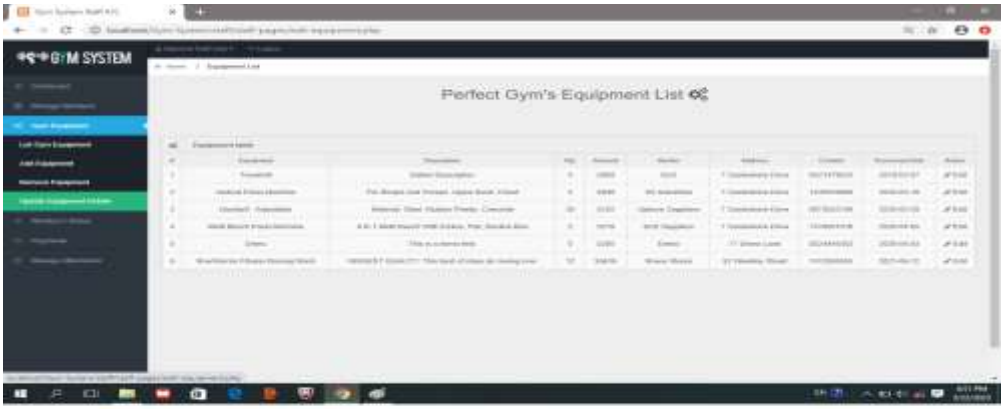


Figure 6.47: Trainer - Manage Equipment

Member's Status:

In this interface, the staff can view the status for members if the member is active or expired.

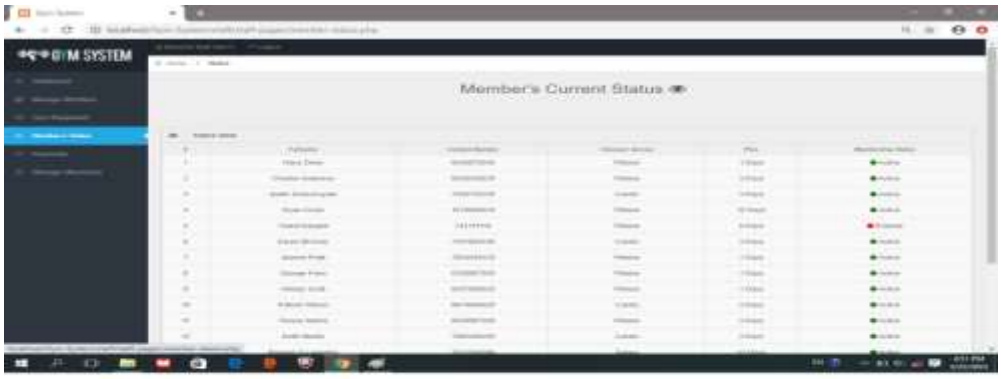


Figure 6.48: Trainer - Member's Status

Attendance List:

In this interface, the staff can check in/ out for attendance members.

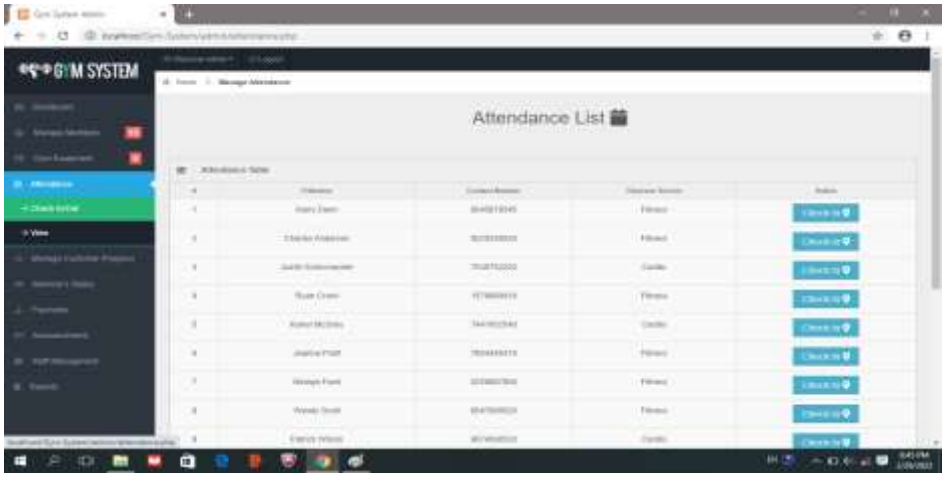


Figure 6.49: Trainer - Attendance Member

My Members:

Here the trainer can view his/her members and contact with each one by chat.

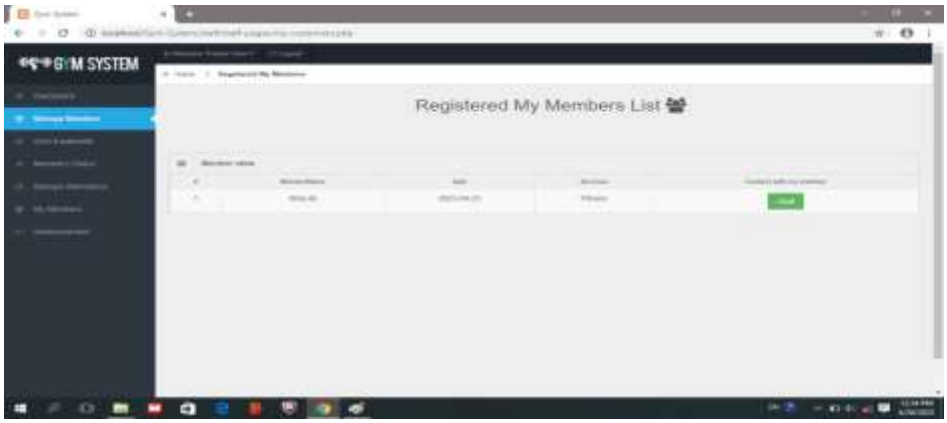


Figure 6.50: Trainer – My Members

Member Interfaces

Dashboard:

In this interface the member can see his/her to do list and announcements.

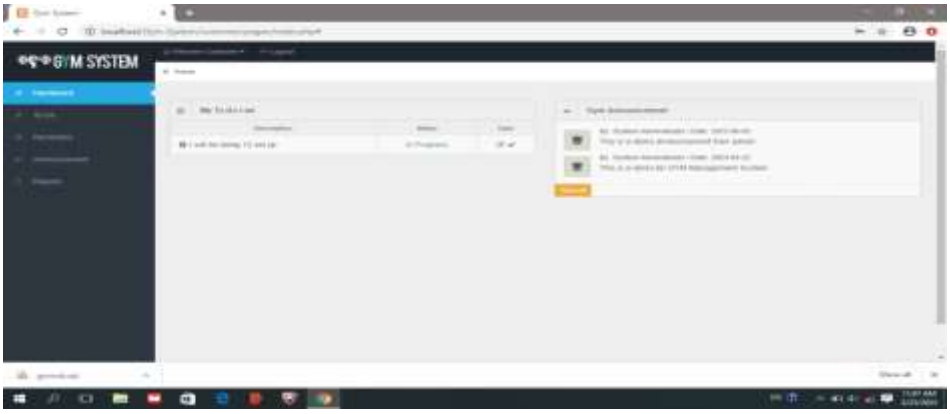


Figure 6.51: Member - Dashboard

To-Do List:

In this interface the member can add his/her to-do list and manage it.

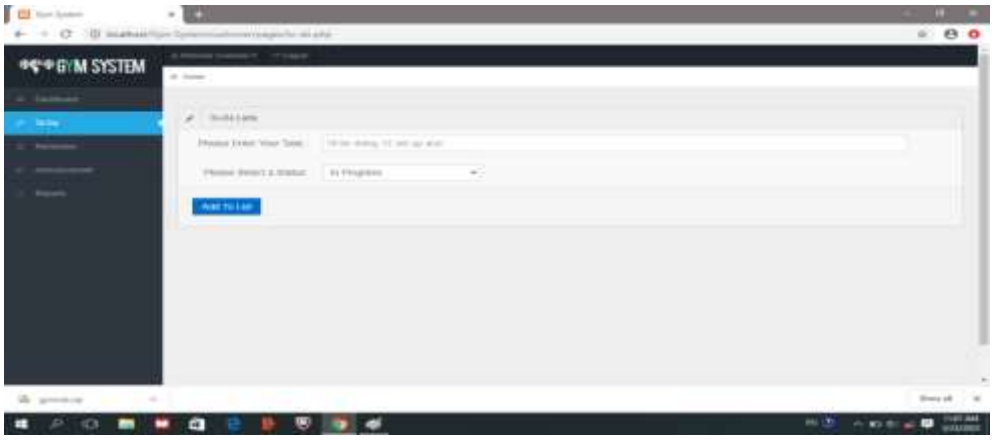


Figure 6.52: Member – To Do List

Reminders:

Here the member can view any alerts about payments and if the membership expired.

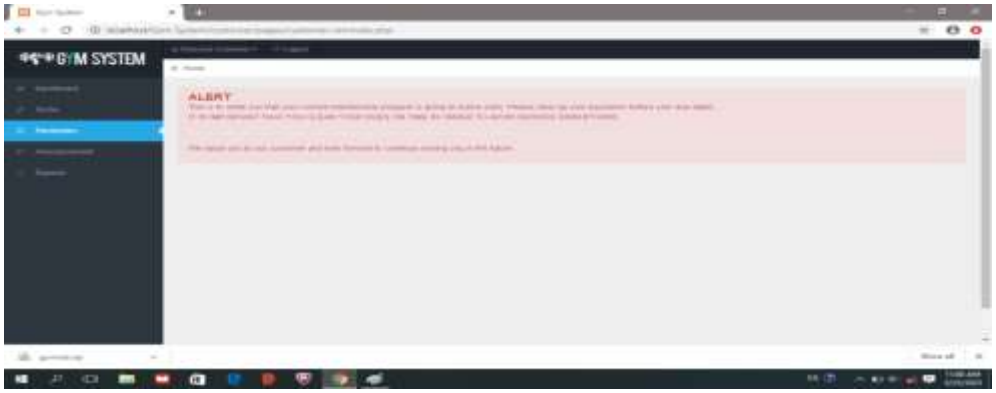


Figure 6.53: Member – Reminders

Announcements:

In this interface the member can view the announcements that the admin or staff has written.



Figure 6.54: Member – Announcements

Reports:

In this interface the member can know the details of his/her membership.

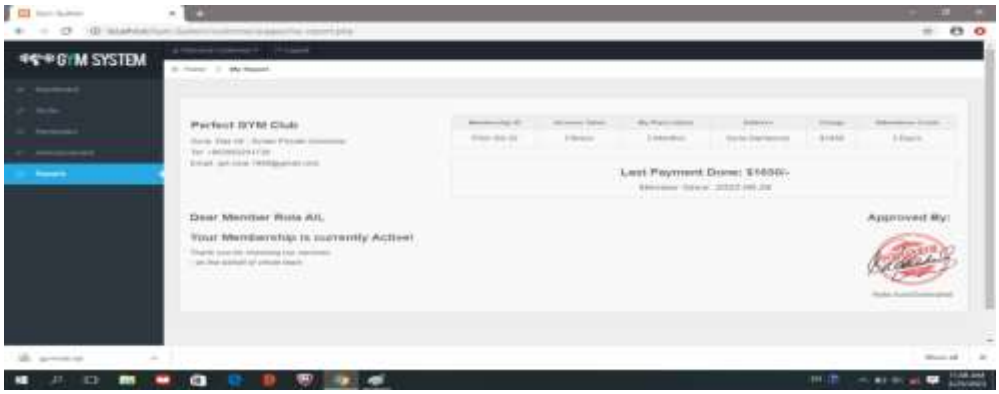


Figure 6.55: Member – Reports

Select Trainer:

Here the customer can select which trainer he/she wants, the appropriate date, and the class he/she wants to attend.

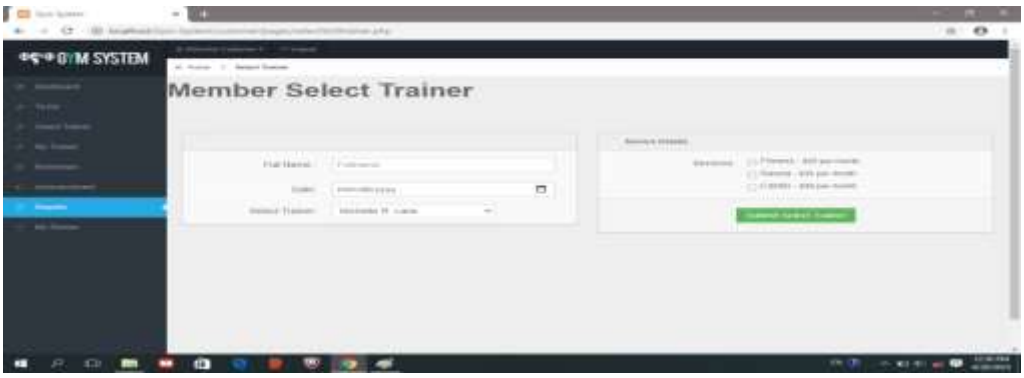


Figure 6.56: Member – Select Trainer

My Trainer:

Here the customer will view the trainer and date which he/she selected and the customer can contact with his/her trainer.

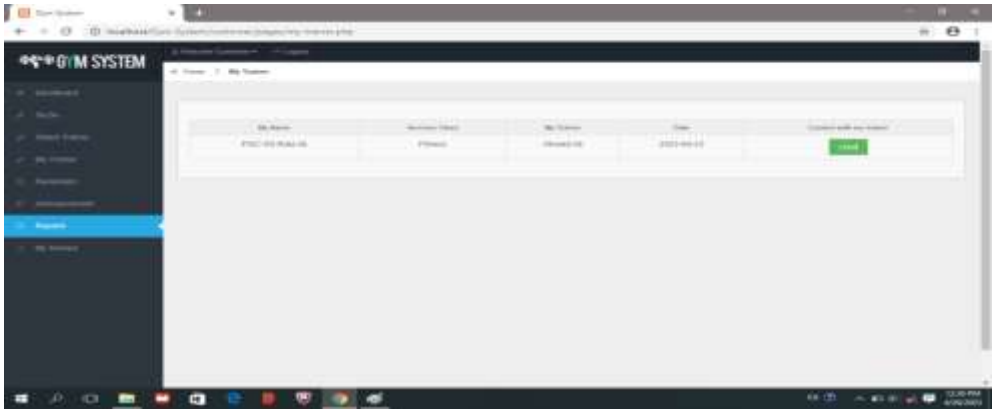


Figure 6.57: Member – My Trainer

My Review:

Here the customer should write his/her review about the application and services and sends it.

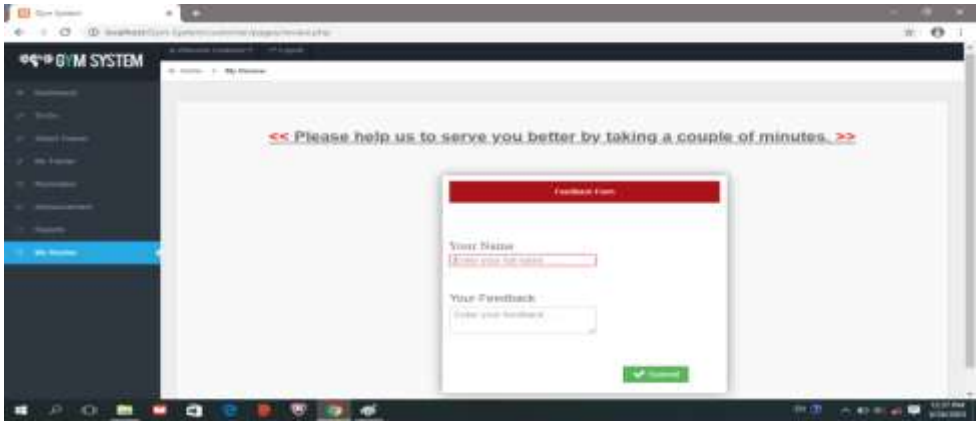


Figure 6.58: Member – My Review

6.4 Implementation

Following technologies are used in the Implementation phase.

PHP at the back end: (PHP Version 7.0.9)

PHP (recursive acronym for PHP: Hypertext Preprocessor) is a widely-used open source general purpose scripting language that is especially suited for web development and can be embedded into HTML.PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages.

Apache server as the web server (Version Apache/2.4.23)

Apache is the most commonly used Web server on Linux systems. Web servers are used to serve Web pages requested by client computers. Clients typically request and view Web pages using Web browser applications such as Firefox, Opera, Chrome, or Internet Explorer.

MySQL as the database management system (Version 4.5.1)

MySQL is the world's most popular open source database. With its proven performance, reliability and ease-of-use, MySQL has become the leading database choice for web-based applications, used by high profile web properties including Facebook, Twitter, YouTube, Yahoo! and many more.

CSS

Cascading Style Sheets (CSS) is a simple mechanism for adding style (e.g., fonts, colors and spacing) to Web documents. In the application CSS is mainly used in adding style to web interface.

Above mentioned technologies were adapted in the project due to following reasons

PHP, Apache, MYSQL is an open source platform. Therefore cost of purchasing software is minimal. XAMPP was used as the framework.

A good benefit of using PHP is that it can interact with many different database languages including MySQL. Both PHP and MySQL are compatible with an Apache

server which is also free to license. PHP can also run on Windows, Linux and Unix servers.

PHP also has very good online documentation with a good framework of functions in place. This makes the language relatively easy to learn and very well supported online. There are countless forums and tutorials on various PHP methods and problems so it is usually very easy to find help if you need it.

Adobe Dreamweaver CS6 was used as the editor during the development.

6.5 EVALUATION and TESTING

Testing can be defined as a process of analyzing a software item to find the differences between existing and required conditions (that is defects/errors/bugs) and to evaluate the features of the software item. So we think about the necessity of our system testing. There are various types and methods of testing. According to the structure of our system we have decided to complete 2 methods of testing. One of them are 'Black Box testing' and another is 'White Box testing'. In addition to these two testing, there also are other testing.

Implement White Box testing

Contrary to black-box testing, software is viewed as a white-box, or glass-box in white-box testing, because the structure and flow of the software underneath check area unit visible to the tester. Testing plans area unit created in step with the main points of the package implementation, like programing language, logic, and styles. Check cases area unit derived from the program structure. White-box testing is additionally referred to as glass-box testing, logic driven testing or design-based testing. There are unit several techniques on the market in white-box testing, as a result of the matter of intractableness is alleviated by specific information and a spotlight on the structure of the package underneath check. The intention of exhausting some facet of the package remains sturdy in white-box testing, and a few degree of exhaustion will be achieved, like execution every line of code a minimum of once (statement coverage), traverse each branch statements (branch coverage), or coverage.

- ❒ During the White Box testing both we and some user got some problems. Some of them are following:

a. Some ending statement was missing

b. Sometime product picture was not uploading

c. Sometime the product was not publishing

- ✓ After finding such types of error we have solved that error successfully. For solving those errors, we had to work coding part.

Implement Black Box testing

The black-box approach is a testing process in which test data are derived from the specified functional requirements without regard to the final program structure. It is also termed data ruled, input/output driven or requirements-based testing. Because only the functionality of the software module is of anxiety, black-box testing also mainly refers to functional testing - a testing method emphasized on executing the functions and examination of their input and output data. The tester treats the software down test as a black box -- only the inputs, outputs and specification are visible, and the functionality is determined by observing the outputs to corresponding inputs. In testing, different inputs are exercised and the outputs are compared against specification to validate the correctness. All test cases are derived from the specification. No implementation details of the code are considered.

Functional Testing

This is a type of black-box testing that is based on the specifications of the software that is to be tested. The application is tested by providing input and then the results are examined that need to conform to the functionality it was intended for. Functional testing of software is conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements.

There are five steps that are involved while testing an application for functionality

Table 12.6 Functionality Testing

Steps	Description
I	The determination of the functionality that the intended application is meant to perform.
II	The creation of test data based on the specifications of the application.
III	The output based on the test data and the specifications of the application.
IV	The writing of test scenarios and the execution of test cases.
V	The comparison of actual and expected results based on the executed test cases.

Unit Testing

The goal of unit testing is to isolate each part of the program and show that individual parts are correct in terms of requirements and functionality.

Integration Testing

Integration testing is defined as the testing of combined parts of an application to determine if they function correctly. Integration testing can be done in two ways: Bottom-up integration testing and Top-down integration testing.

System Testing

System testing tests the system as a whole. Once all the components are integrated, the application as a whole is tested rigorously to see that it meets the specified Quality Standards.

System testing is important because of the following reasons:

• System testing is the first step in the Software Development Life Cycle, where the application is tested as a whole.

• The application is tested thoroughly to verify that it meets the functional and technical specifications.

• The application is tested in an environment that is very close to the production environment where the application will be deployed.

• System testing enables us to test, verify, and validate both the business requirements as well as the application architecture.

Regression Testing

Whenever a change in a software application is made, it is quite possible that other areas within the application have been affected by this change. Regression testing is performed to verify that a fixed bug hasn't resulted in another functionality or business rule violation. The intent of regression testing is to ensure that a change, such as a bug fix should not result in another fault being uncovered in the application.

Regression testing is important because of the following reasons:

• Minimize the gaps in testing when an application with changes made has to be tested.

• Testing the new changes to verify that the changes made did not affect any other area of the application.

• Mitigates risks when regression testing is performed on the application.

• Test coverage is increased without compromising timelines.

• Increase speed to market the product.

Acceptance Testing

This is arguably the most important type of testing, as it is conducted by the Quality Assurance Team who will gauge whether the application meets the intended specifications and satisfies the client's requirement. The QA team will have a set of pre-written scenarios and test cases that will be used to test the application.

More ideas will be shared about the application and more tests can be performed on it to gauge its accuracy and the reasons why the project was initiated. Acceptance tests are not only intended to point out simple spelling mistakes, cosmetic errors, or interface gaps, but also to point out any bugs in the application that will result in system crashes or major errors in the application.

By performing acceptance tests on an application, the testing team will deduce how the application will perform in production. There are also legal and contractual requirements for acceptance of the system.

Acceptance by the user is high because each module has been experienced by the users and they have given their feedback the final live system to the end user.

Non-Functional Testing

This section is based upon testing an application from its non-functional attributes. Nonfunctional testing involves testing software from the requirements which are nonfunctional in nature but important such as performance, security, user interface, etc.

Performance Testing:

It is mostly used to identify any bottlenecks or performance issues rather than finding bugs in software. There are different causes that contribute in lowering the performance of software:

• Network delay

• Client-side processing

• Database transaction processing

• Load balancing between servers

• Data rendering

Performance testing is considered as one of the important and mandatory testing type in terms of the following aspects:

• Speed (i.e. Response Time, data rendering and accessing)

• Capacity

• Stability

• Scalability

Performance testing can be either qualitative or quantitative and can be divided into different sub-types such as Load and Stress testing.

Load Testing:

It is a process of testing the behavior of a software by applying maximum load in terms of software accessing and manipulating large input data. It can be done at both normal and peak load conditions. This type of testing identifies the maximum capacity of software and its behavior at peak time.

Load testing was done at the peak hours at the gym, though could not figure out any significant delays or failures in the system.

Stress Testing:

Stress testing includes testing the behavior of a software under abnormal conditions. For example, it may include taking away some resources or applying a load beyond the actual load limit.

The aim of stress testing is to test the software by applying the load to the system and taking over the resources used by the software to identify the breaking point. This testing was performed by testing different scenarios such as:

• Shutdown or restart of network ports randomly

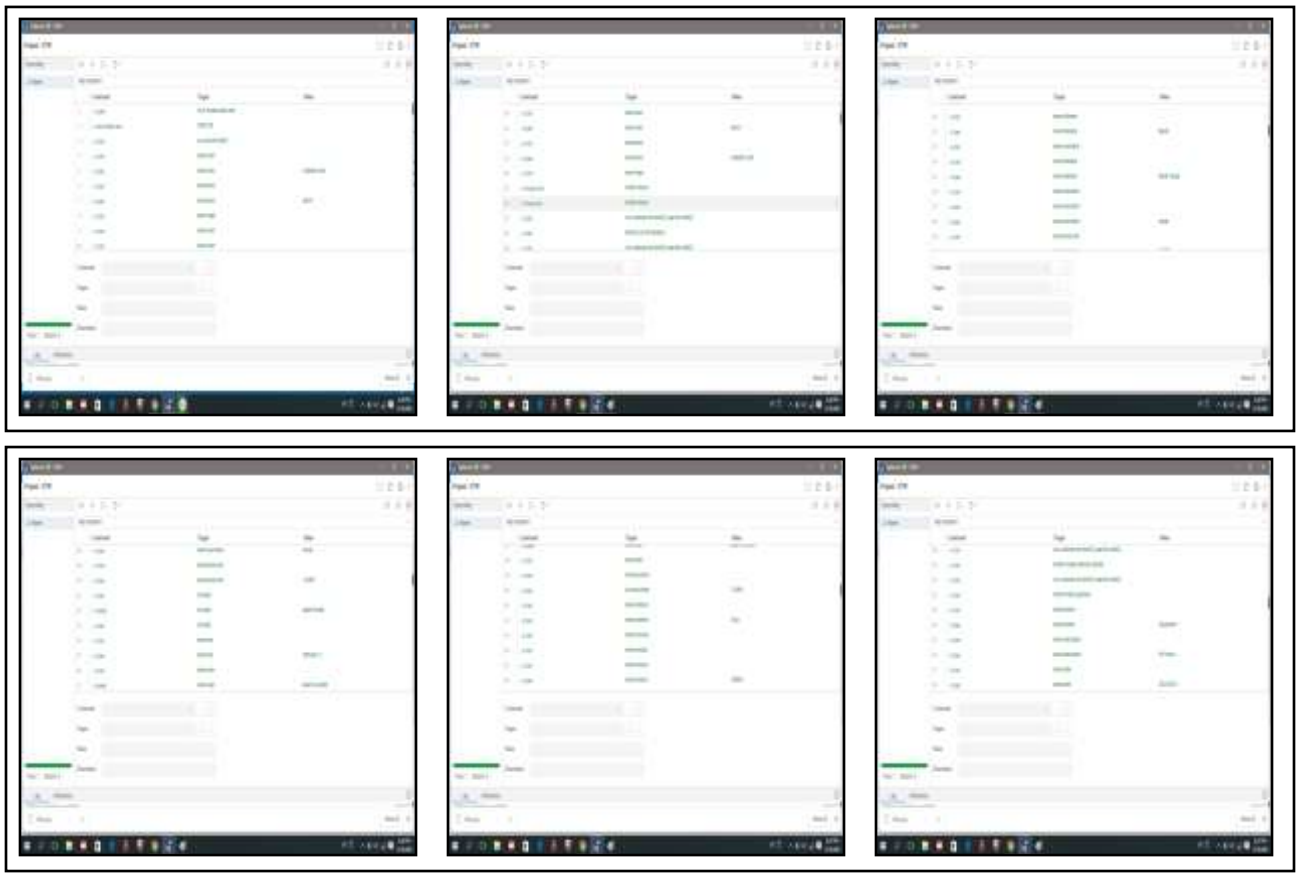
• Turning the database on or off

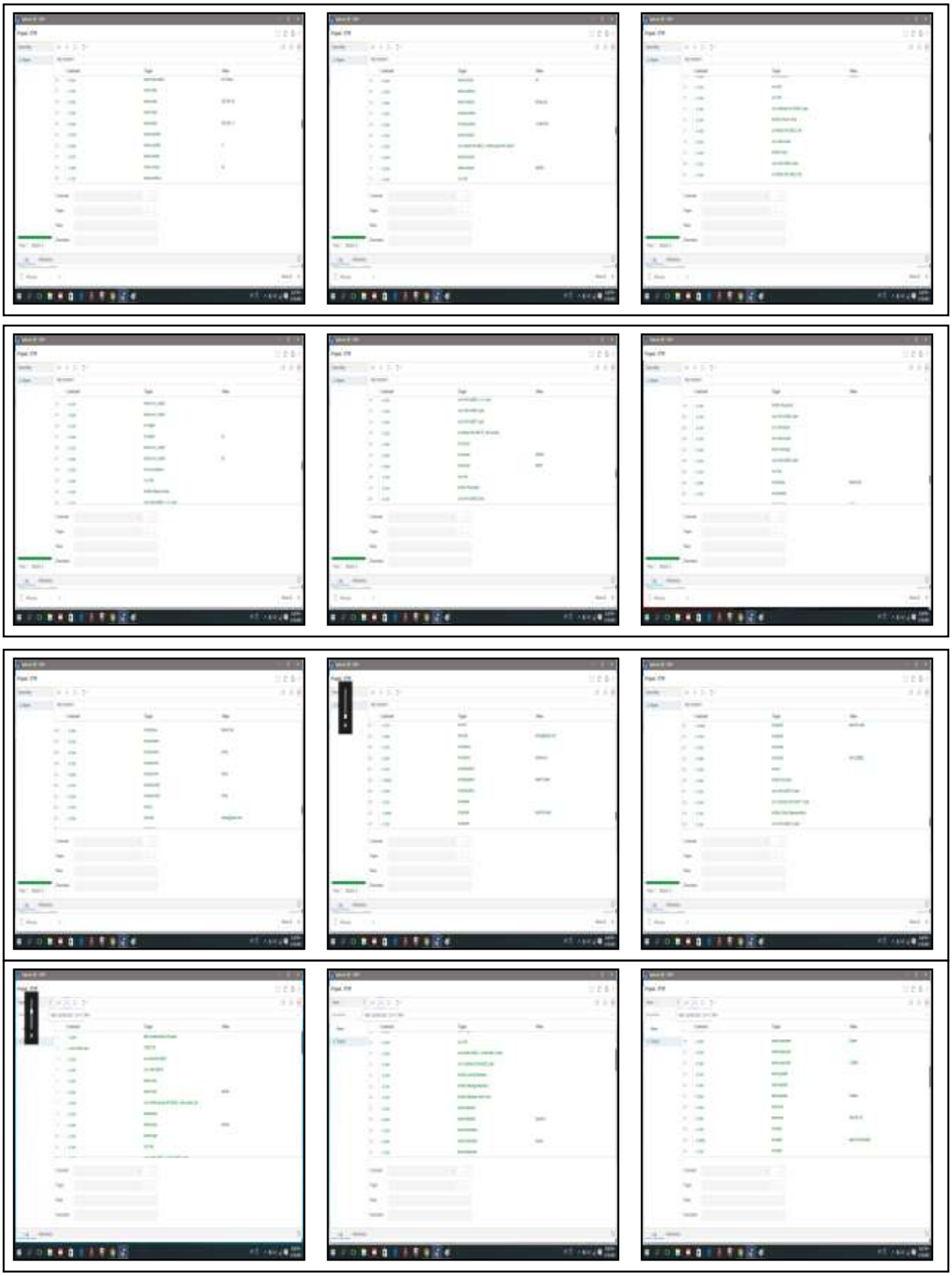
• Running different processes that consume resources such as CPU, memory, server, etc.

Usability Testing

Usability testing is a black-box technique and is used to identify any error(s) and improvements in the software by observing the users through their usage and operation.

Testings' Implementation











CONCLUSION AND FUTURE WORKS

Introduction

This chapter summarizes the discussion about the project and shows the future work. At the end, it gives a conclusion for the project with Results has been reached and provides some important recommendations for the system developer in the future. The new system has been deployed with so much care that it is develop with the minimum number of errors and at the same time efficient and less time consuming.

The main focus of this project is to build a dedicated app for gym requirements and managing all the data without the hassle of the manual work. One of the important features of this app is the use of augmented reality to identify the equipment and display the exercises to be performed on this equipment

The “Gym management system” is successfully designed and developed to fulfilling the necessary requirements, as identified in the requirements analysis phase, such as the system is very much user friendly, form level validation and field level validation are performing very efficiently. The old manual system was suffering from a series of drawbacks. The present project has been developed to meet the aspirations indicated in the modern age.

Future Works

The project has been developed in a very short period of time and all efforts have been taken so that this project is very efficient in its execution there still exists some scope of improvement in our project. The following lists some of the enhancement that can be added incorporate into the project. Application of the project can be done more attractively. Database management and all maintenance module can be updated which helps the administrator. More security measures can be taken. There are also few features which can be integrated with this system to make it more flexible. Below list shows the future points to be consider:

• Real-time Chat option for members and trainer, so that members can directly enquiry theirs trainer on any time through the Chat

•Video conversation option for trainers and members.

• Online payment

• Barcode generation for membership card and using this, members can take entry to Gym.

•Finger print matching for taking entry to gym.

Suggestions

As the gym management system will be used by many types of users, it is necessary to make further maintenance on the system to cater for any security flaws and other system errors. Feedbacks from the cashier will also be used to evaluate and make any changes to the system by the developers. In addition to that, in the near future it is suggested that a member ID card could be issued to members so the system can be more effective and manageable.

Conclusion

Based on this research thesis entitled “Gym Management System”, which was developed and had solved the problems that were identified in the current system as follows:

1. The development of gym management system hopefully could solve the problem of member registration by performing the procedure online which is more efficient and less expensive.

2. The development of gym management system could also solve the problem of membership renewal by renewing membership dates faster and searching process is done more effectively.

3. The development of gym management system hopefully could solve the problem of non-member transaction by payment records be done quickly and reduce errors.

4. The development of gym management system could solve the problem of Attendance by recording date and exact time of every gym user automatically from the time of entry to the time of exit.

5. The development of gym management system hopefully could solve the problem of financial reports by generating proof of output produced per period in the form of a report from the processing of transactions that can facilitate the process of checking the income of member registration, membership renewal and non-member transactions.

QUESTIONNAIRE TO ESTIMATE GYM MANAGEMENT SYSTEM

This questionnaire aims to know your point of view and your impression of using the Gym management system or any similar site. We are super excited that you are joining our Gym management system. We would like to know how you came to us and what we can do to help you live a healthier lifestyle. Please take a couple of minutes to answer a few questions

- **We asked the following questions:**

1. What is your job? _____ .
2. Gender : ☐ Male ☐ Female
3. Age

☐ 16 and below ☐ 17- 25 ☐ 26-35 ☐ 36-49 ☐ 50-65 ☐ 66 and up

4. Household Income: _____
5. What is your general health like:

☐ Above average

☐ Average

☐ Below average

6. Do you go to gym?
   - ○ Yes
   - ○ No
7. Why do you go to the gym?
   - ○ Lifestyle
   - ○ Rehabilitation
   - ○ Strength Training
   - ○ Weight loss
   - ○ Health improvement
   - ○ Social environment
8. How often do you go to the gym?

- ○ Less than 1 time per week
- ○ 1 time per week
- ○ 2-3 times per week
- ○ 4-5 times per week
- ○ 6+ times per week

9. What time do you normally prefer to attend the gym?

- ○ Morning
- ○ Afternoon
- ○ Night

10. How did you hear about our Gym?

- ○ From friend
- ○ From Google
- ○ From social media

11. What is your top reason for joining us today; please write your reason(s) below?

_____

_____

12. Do you have any specific fitness goals for this year? If so, please list them.

_____

_____

_____

13. Who was you gym provider before us? Why did you decide to leave them?

_____

_____

14. What do you prefer?

- ○ Group classes

- ○ Individual training

15. In relation to other gym systems you have been a part of, how is our customer service?

- ○ Good
- ○ Very Good
- ○ Excellent

16. I recommend using the site?

- ○ Yes
- ○ No

17. Please add any thought you may have.

18. Please add any comments you think are appropriate.

REFERENCES

1. Jecoberth Waigaemo Kendiga.2017. Gym Management System of Taurama Fitness Centre. Faculty of Computer Science and Engineering Computer University Indonesia. 140.13.009.
2. Nur Farzana Binti Roslan. 2019. Gym Management System for Mn Fitness Gym. Faculty Universiti Malaysia Sarawak. P[1-5].
3. Md Muktadir Rahman, Md Basirat. 2021. Gym Management System. Faculty of Science & Information Technology. Daffodil International University. Dhaka, Bangladesh.
4. P.K.ShanmuGapriya, Mr.S.Rajkumar, Mr.N.Selvanathan. A Web Based Smart Fitness Management System. Department of IT, Sona College of Technology. January 2018.
5. Zhao, F., Liu, M., Wan, G., et al.: Survey on the overweight, obesity status and lifestyle among public servants in Beijing city. Chin. J. Health Educ. 27(2), 87–90 (2011).
6. Wen, Z., Wang, M.: Health quality is the foundation of the public servants' comprehensive and harmonious development. Chin. Public Adm. (10), 25– 27 (2008).
7. Ma, J., Li, S., He, X.: Survey on health promoting lifestyle of white collars and counter measures. Chin. Gen. Pract. 14(3), 788–790 2011.
8. Xiong, Y., Zhang, Y., Chen, X., et al.: Design and application of management and analysis system of diving training data. Sport Sci. 24(10), 41–42 (2004).
9. Iman Khaghani Far, Svetlana Nikitina, Marcos Báez, Ekaterina Taran, Fabio Casa ti. Fitness Applications for Home-based Training. University of Trento, Italy. 25 October 2017.
10. Müller, A. M., & Khoo, S. (2014). Non-face-to-face physical activity intervention s in older adults: a systematic review. Int J Behav Nutr Phys Act , 11 (1), 35.
11. Chase, J. A. D. (2013). Physical activity interventions among older adults: a litera ture review. Research and theory for nursing practice , 27 (1), 53-80.
12. Aalbers, T., Baars, M. A. E., & Rikkert, M. O. (2011). Characteristics of effective Internet-mediated interventions to change lifestyle in people aged 50 and older: a systematic review. Ageing research reviews , 10 (4), 487-497.
13. Afthinos, Y., Theodorakis, N. D. and Nassis, P. (2005). Customers' expectations of service in Greek fitness centers: Gender, age, type of sport center, and motivation differences. Managing Service Quality, Vol. 15 No. 3, 245-258.
14. Chang, K. and Chelladurai, P. (2003). System-Based Quality Dimensions in Fitness Services: Development of the Scale of Quality, The Service Industries Journal, 23: 5, 65-83.
15. Chelladurai, P., Scott, F. L. and Haywood-Farmer, J. (1987). Dimensions of fitness services development of a model. Journal of Sport Management, 1, 159-172.

16. Kim, D., and Kim, S. Y. (1995). QUESC: An Instrument for Assessing the Service Quality of Sport Centers in Korea. Journal of Sport Management, 9, 208-220.
17. Lagrosen, S. and Lagrosen, Y. (2007). Exploring service quality in the health and fitness industry. Managing Service Quality, Vol. 17 No. 1, 41-53.
18. Rial, A., Rial, J., Varela, J. and Real, E. (2008). An application of importance-performance analysis (IPA) to the management of sport centres. Managing Leisure, 13:3-4, 179-188.
19. Rust, R. T. and Oliver, R. L. (1994). Service Quality: Insights and Managerial Implications from the Frontier. In Rust, R. T. and Oliver, R. L. (Eds.), Service Quality: New Directions in Theory and Practice (pp.1-19). Thousand Oaks, CA: Sage Publications.
20. Kasliwal Mahima1, Raundal Pooja, Wagh Niyati, G.M. Lodha. 2019. Survey Paper on Gym Management System. Department of Computer Technology, SNJB's Shri SHHJB Polytechnic College, Chandwad, Maharashtra, India.
21. Ahmed, M., & Nayeem, J. (2016). A Project Paper on Smart Gym Management System (Doctoral dissertation, East West University). Mahima, K., Pooja, R., Niyati, W., & Lodha, G. M. (2019). Survey Paper on Gym Management System. Journal of Advancement in Software Engineering and Testing, 2(3).
22. Alturki, R., & Gay, V. (2019). Augmented and virtual reality in mobile fitness applications: a survey. Applications of Intelligent Technologies in Healthcare, 67-75.
23. Bana Handaga, S. T. (2016). Guiding Training in Gym Application for Beginner Based on Android Mobile (Doctoral dissertation, Universitas Muhammadiyah Surakarta).
24. "Fitness-manager," [Online]. Available: http://www.fitness-manager.net/buy. 01/06/2017.
25. "Gym master software" [Online]. Available: https://www.gymmastersoftware.com/. 03/06/2017.
26. I.a.I.Development. [Online]. Available: https://www.techopedia.com/definition/25895/iterative-and-incremental-development. 05/07/2017.
27. W. Pedia. [Online]. Available: https://en.wikipedia.org/wiki/Iterative_and_incremental_development. 01.03.2017.