SmartGym: A Web-Based Fitness Program Management and Membership Tracking System for Vinathletics Fitness Gym

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ABSTRACT

The increasing demand for efficient gym management has highlighted the need for digital solutions that improve administrative processes and enhance member experience. Traditional methods of managing memberships, workout programs, and fitness records are often time-consuming, prone to errors, and difficult to maintain. To address these challenges, this study developed **SmartGym: A Web-Based Fitness Program Management and Membership Tracking System**, a web-based application designed to simplify gym operations through digital automation.

The system enables gym administrators to manage member registration, membership records, workout programs, attendance, and fitness progress in a centralized platform. It also provides trainers with tools to create and monitor customized workout plans while allowing members to view their assigned programs and track their fitness progress. By integrating these features, the system reduces manual record-keeping, improves data accuracy, and enhances communication between gym staff and members.

PROBLEM AND ITS BACKGROUND

Background of the Study

Staying healthy and fit has become more important in today's busy lifestyle. Many people join gyms and fitness centers to follow exercise programs and reach their fitness goals. However, managing workout programs and keeping track of members is often a challenge. Manual systems, such as paper records or simple spreadsheets, can lead to problems like lost files, inaccurate data, and delays in updating information.

With the help of technology, these problems can be solved more efficiently. A web-based system allows both gym administrators and members to access information inside the gym only using the internet. For administrators, it makes it easier to manage membership records, attendance, and workout schedules in an organized way. For members, it provides a clear view of their fitness plans, attendance history, and overall progress, which helps them stay motivated and consistent.

This study focuses on creating a Web-Based Fitness Program Management and Membership Tracking System. The system aims to provide a reliable platform for organizing membership data, managing workout programs, and tracking progress. By using this system, gyms and fitness centers can improve their services, reduce errors in management, and encourage members to stay active in their fitness journey.

Statement of the Problem

General Problem

Gym and fitness centers, particularly Vinathletics Fitness Gym, experience operational inefficiencies due to the continued use of manual and fragmented systems for managing memberships, workout programs, attendance, and communication. These limitations result in inaccurate records, delayed processes, and reduced service

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quality. There is a need for a centralized and web-based system that can effectively address and resolve these operational challenges.

Specific Problems

This study seeks to address the following specific problems and provide system-based solutions:

- **How can inaccurate and inefficient record-keeping of membership and attendance be resolved?**
  Manual recording of member information and attendance often leads to data loss, duplication, and human error. The proposed SmartGym system aims to resolve this by providing a centralized and automated database for accurate and secure record management.

- **How can the absence of a centralized platform for monitoring workout programs and member progress be addressed?**
  Many gyms lack a unified system for tracking workout routines and fitness progress. SmartGym addresses this problem by offering a web-based platform where trainers can manage programs and members can monitor their progress in real time.

- **How can delays and errors in data processing be minimized?**
  Manual data entry and updates cause delays and inconsistencies in reporting.

The SmartGym system resolves this issue by automating data storage, updates, and retrieval, ensuring timely and accurate information.

- **How can communication between trainers and members be improved?**
  Limited communication tools result in missed updates on schedules and workout plans. SmartGym addresses this by providing an accessible online system that enables efficient sharing of workout programs, schedules, and progress-related information.

These challenges reduce operational efficiency, affect record accuracy, and limit effective communication between trainers and members. Without a modern, web-based system, fitness centers may struggle to deliver organized and reliable services that meet the needs of both staff and members.

Objectives of the Study

General Objective

To develop a web-based fitness program management and membership tracking system that improves operational efficiency, record accuracy, and service quality of Vinathletics Fitness Gym by automating gym processes and providing accessible digital tools for administrators, trainers, and members.

Specific Objectives

Specifically, this study aims to:

- **To design and implement a centralized system** that allows gym administrators to efficiently manage membership records and attendance through an automated and secure database.

- **To provide trainers with a workout program management tool** that enables them to create, update, assign, and monitor customized workout programs for gym members through the web-based platform.

- **To enable gym members to track their fitness progress and attendance** by allowing them to view their assigned workout programs, attendance history, and recorded progress indicators through a personalized online dashboard.

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- **To minimize errors and delays in gym operations** by automating data entry, storage, and real-time updates of membership, attendance, and workout information.

- **To enhance communication between trainers and members** by providing a centralized online platform where workout programs, schedules, and progress-related information can be easily accessed and monitored.

Significance of the Study

This study is significant as it addresses key challenges faced by gym and fitness center operators in managing membership data and workout programs. By developing a Web-Based Fitness Program Management and Membership Tracking System, this research aims to streamline administrative processes, reduce errors.

- For gym administrators, the system will provide an efficient and reliable platform to manage membership records, attendance, and workout schedules. It will reduce the manual workload and prevent data loss, errors, and delays. For trainers, it will offer a tool to customize and monitor workout programs, enabling better tracking of members' fitness progress.

- For gym members, the system will provide easy access to their fitness data, including attendance history, workout plans, and performance progress. This will help keep members motivated and engaged, ultimately improving retention rates.

- The researchers and developers, the study contributes to knowledge in the field responsible for the systematic planning, development, and evaluation of the Web-Based Fitness Program Management and Membership Tracking System. Their role includes conducting a comprehensive analysis of the existing challenges in gym operations, designing the system architecture, and developing the functional modules aligned with the needs of administrators, trainers, and members.

Furthermore, this study contributes to the growing body of research on the role of technology in enhancing fitness management and improving operational efficiency in fitness-related businesses.

Scope and Delimitation

Scope of the Study

This study focuses on the design, development, implementation, and evaluation of **SmartGym: A Web-Based Fitness Program Management and Membership Tracking System** for **Vinathletics Fitness Gym**. The system is developed to digitalize and streamline gym operations by providing a centralized, web-accessible platform for administrators, trainers, and gym members.

Specifically, the scope of the system includes the following functionalities:

Membership Management

The system allows gym administrators to register members, update personal profiles, assign membership plans, and manage account status. All membership information is stored in a centralized database to ensure accuracy, consistency, and easy retrieval.

Attendance Tracking

SmartGym provides an automated attendance tracking feature where member check-ins are recorded digitally and time-stamped. This reduces manual logging errors and allows administrators and trainers to monitor attendance history in real time.

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Workout Program Management

Trainers are provided with a web-based workout program management tool that enables them to create, update, and assign customized workout programs to members. These programs may include exercise routines, difficulty levels, and duration, which are stored and managed within the system.

Fitness Progress Monitoring

The system allows members to track their fitness progress through a personalized dashboard. Members can view their assigned workout programs, attendance records, and progress indicators recorded by trainers, enabling them to monitor consistency and improvement over time.

User Access and Roles

The system supports role-based access, distinguishing between administrators, trainers, and members. Each user role has specific permissions and system features relevant to their responsibilities.

System Evaluation

The usability, effectiveness, and acceptability of the system will be evaluated through surveys conducted among the gym owner, staff/trainers, and selected gym members.

Overall, the scope of the study emphasizes improving operational efficiency, reducing errors in record management, enhancing communication, and providing accessible fitness-related information through a web-based platform.

Delimitation of the Study

While the SmartGym system provides essential tools for fitness program and membership management, the study is subject to the following limitations:

1. **Limited System Features**
   The system does not include online payment processing, billing automation, or financial transaction management. Membership payments are handled outside the system.

2. **No Advanced Biometric or Sensor Integration**
   The system does not integrate biometric devices, wearable fitness trackers, or IoT-based exercise monitoring systems. Fitness progress tracking is limited to data recorded within the system.

3. **Web-Based Access Only**
   SmartGym is developed as a web-based application and does not include a dedicated mobile application, although it may be accessed through mobile web browsers.

4. **Single-Gym Implementation**
   The study is limited to Vinathletics Fitness Gym and does not cover multi-branch or franchise-level gym management.

5. **User Dependency on Internet Connectivity**
   Since the system is web-based, its functionality depends on stable internet access, and offline features are not supported.

6. **Context Limitation**
   The system is designed specifically for gym and fitness center operations and is not intended for other types of fitness-related or health institutions.

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7. **Restricted Local Access**
   The application is accessible only within the gym's local network and requires connection to the gym's Wi-Fi for use.

Definition of Terms

Attendance Tracking – The method of recording and monitoring a member's visits to the gym, typically for the purpose of ensuring regular participation and accountability.

Membership Management – The process of tracking and managing information about gym members, including registration, payments, and attendance records.

Progress Tracking – The process of monitoring a member's fitness improvements, such as strength, endurance, weight loss, or other health-related metrics.

System Usability – A measure of how effectively and efficiently users can perform tasks within the system, typically evaluated through user feedback and testing.

User Interface (UI) – The design and layout of a software system that allows users (e.g., gym administrators, trainers, and members) to interact with the system.

Web-Based System – A software application that is accessed and used over the internet, requiring no installation on users' devices other than a web browser.

Workout Programs – Exercise plans designed by trainers to help gym members meet their fitness goals. These may include specific exercises, sets, repetitions, and rest periods.

Related Literature

Recent studies indicate a growing emphasis on the digitalization of gym operations, fitness tracking, and membership systems to improve efficiency and service quality.

Foreign Literature

Hussain et al. (2025) explain that the Q-Fitness Gym System (QFGS) is a web-based management platform designed to improve the operational efficiency of fitness centers through automation and system integration. The platform centralizes key functions such as member registration, class scheduling, staff and instructor management, and secure payment processing. Developed using the Agile methodology, the system supports iterative development, adaptability, and continuous improvement based on user feedback. Its architecture follows a three-tier design, ensuring scalability and enhanced data security through the use of a MySQL relational database. The system underwent comprehensive testing, including unit, integration, and user acceptance testing, to verify its functionality, usability, and reliability.

The implementation of QFGS resulted in significant improvements in administrative productivity, efficient resource utilization, and increased member satisfaction by minimizing manual processes and delivering a user-friendly digital experience. Overall, the system provides an innovative solution for modern gym management, supporting the transition from traditional operations to smart digital systems.

Nishanthan et al. (2023) explain that people have recently become more concerned about their food and health, making going to the gym a logical choice. The JK Fitness centers in the Jaffna district are the intended users of the system. The gym is equipped with up-to-date equipment aligned with current fitness trends and offers additional products to enhance client services. As membership is expected to grow daily, gym management opted for an IT solution to handle increasing demand.

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After identifying user needs through various data collection methods to ensure clear requirements, the system was developed using an incremental and iterative approach. The JK Fitness Office software is designed to replace the existing manual system and aims to provide members with quick access to gym resources while improving overall facility management. The system's primary features include member management, attendance tracking, payment and expense management, and report generation. Access control is implemented through login credentials and user-level permissions.

Additionally, the system can track memberships nearing expiration and automatically send email reminders. It is highly customizable, allowing administrators to manage both user access and system appearance. The system was developed as a web-based application for broader accessibility, utilizing .NET 5 Core framework, C# programming language, jQuery, JavaScript, and CSS, with Microsoft Visual Studio as the IDE and Microsoft SQL as the database.

Thapa et al. (2021) explain that websites play a major role in today's digital world, as they provide accessible information about a particular business to users. Having a website is an essential tool for every business. For this reason, an online system in the form of a website was developed for gym owners, allowing customers to access information about the gym and register themselves. Traditionally, managers or staff maintain records using paper or logbooks, which leads to redundancy and a higher chance of errors. Updating records also requires repeated changes across multiple files. The gym website, which includes a Gym Management System, eliminates many of these limitations of the existing manual system.

It improves efficiency and effectiveness through automation, accuracy, a user-friendly interface, better information availability, enhanced communication, easier maintenance, and cost reduction. The system introduces new features along with essential functionalities, such as receiving client details, allowing data entry by administrators or receptionists, searching client or trainer information by ID or name, and deleting records of clients and trainers.

Villanueva et al. (2025) developed the Olympic Fitness Gym Management System with Integrated QR Code Technology. They noted the increasing trend of individuals joining fitness clubs to improve their health and physical appearance. Despite being a well-known gym in Tacloban City, Olympics Fitness Gym still relies on manual processes for monitoring and data management.

To address these limitations, the proposed system integrates QR Code technology to automate key operations such as recording sales, generating reports, and monitoring customer attendance and subscriptions, thereby improving efficiency and effectiveness. The study employed a descriptive research method, utilizing interviews, observations, and questionnaires. The key informants included the gym owner and two staff members.

Findings revealed that the existing manual system is inefficient and time-consuming, particularly in areas such as attendance and subscription monitoring, data and backup security, and record management. To address these issues, the researchers implemented a QR Code-based solution to enhance attendance tracking and membership subscription monitoring. The study recommends automating manual processes through the implementation of a management system with integrated QR Code technology to improve efficiency in attendance tracking, sales monitoring, and overall data management.

Zhao et al. (2023) They explained that with the rapid development of China's economy, more people are actively participating in fitness activities and joining gyms. To adapt to this growing demand and the evolving social market, a comprehensive gym management system has become essential for both operators and users.

The system was designed to provide practical application value by managing various types of data and information generated in daily gym operations, while also assisting users in their tasks. The system adopts a Browser/Server (B/S) architecture, utilizing JSP to handle client requests and dynamically generate web pages for the front-end interface. A MySQL database is used to design data tables for data storage, and the development environment is supported by the Eclipse IDE.

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Local Literature

Abilar et al. (2023) explain that many individuals in today's society have limited knowledge regarding physical fitness, proper nutrition, and the benefits of maintaining a healthy lifestyle. In response to this gap in awareness, the researchers developed a game-based application designed to educate users and improve their understanding of fitness concepts. The primary purpose of the application is to introduce users to various fitness routines and allow them to explore different physical exercises.

Through this approach, the system aims to increase familiarity with exercise activities while also highlighting the benefits of regular physical activity in daily life. The project serves as a proactive initiative to address the lack of fitness knowledge and encourage healthier lifestyles among users. During development, the researchers considered key issues such as user engagement and retention, user understanding of the application's features, limited available guidance from similar game applications, and improvements to gameplay flow.

The evaluation of the application was based on selected sub-characteristics of the ISO 25010 standard, appropriate for assessing gaming systems. Results showed that Functional Suitability obtained a weighted mean of 3.94, Performance Efficiency and Usability both scored 3.81, Security scored 3.56, and Portability scored 3.82. Additionally, using the Weka software and Naive Bayes classification, the confusion matrix revealed 90% correctly classified instances and 10% incorrectly classified instances, indicating that the application's algorithm is highly accurate

Bulaclac et al. (2025) developed and evaluated the *King's Way Cashless Payment and Product Monitoring System with QR Technology*, specifically designed for the fitness industry. The study aimed to enhance operational efficiency, improve transaction security, and provide a seamless experience for gym members and administrators through digital transformation. The system's innovation lies in its integration of QR-based payment transactions with automated membership and product monitoring features within a unified platform, a combination that is not yet widely implemented in small and medium-sized fitness enterprises.

The study also highlighted the growing importance of digital payment technologies, as cashless transactions have become essential in modern business operations. The fitness industry, which involves frequent financial transactions and dynamic membership management, continues to face challenges due to inefficiencies in manual payment systems. These limitations further emphasize the need for automated and secure digital solutions to improve overall operational performance and user experience.

Cabauatan et al. (2021) conducted a study using a quasi-experimental non-equivalent pre-test and post-test design to determine the effectiveness of mobile fitness applications and gym-based exercises in improving the health-related fitness performance of first-year college students at Carlos Hilado Memorial State College during the A.Y. 2019–2020. The study involved two groups: an experimental group of ten students who were exposed to mobile application-based exercises, and a control group of ten students who participated in gym-based exercises.

The Philippine Physical Fitness Test was used as the standardized tool to assess students' physical fitness performance. Statistical analyses, including the t-test for dependent samples, Wilcoxon test, and Mann-Whitney U test, were used to determine differences in pre-test and post-test results, as well as differences in mean gain scores between the two groups. The findings revealed that mobile fitness application exercises are as effective as traditional gym exercises in improving students' health-related fitness performance levels.

Cauilan et al. (2023) explain that exercise provides numerous health benefits, including increased energy, reduced risk of health problems, and the release of endorphins. Fitness gyms are considered one of the most effective environments for physical activity due to their wide range of equipment and well-trained staff. To ensure high-quality service, gyms require an organized management system that can efficiently store and manage records related to members, employees, inventory, and billing. Such a system supports customers in performing proper exercise routines while also improving the productivity and efficiency of business operations. In this project, the proponents designed and developed the *Strong Tower Management System* to address inefficiencies

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in the gym's manual processes. The proposed system provides a more efficient approach to managing services, inventory, workout programs, and membership plans. The development of the system was guided by the Rapid Application Development (RAD) methodology. The *Strong Tower Management System with Health Monitoring Progress* is a web-based application that integrates multiple application programming interfaces (APIs).

It was developed using Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), JavaScript, and PHP, with MySQL used as the database management system. The implementation required various resources, including hardware, software, and human resources, as well as a web server for deployment and access. The system's usability was evaluated using the System Usability Metric for Usability (SUMI), focusing on efficiency, affect, helpfulness, control, and learnability. The results of the usability testing showed that the system met the expectations and requirements of the Strong Tower Fitness Gym owner, confirming that it is usable and effective.

Sabado et al. (2025) developed a web-based gym member monitoring system that uses predictive analytics and decision tree algorithms to improve gym operations and management. The system integrates QR code attendance tracking, automated payments, and data analysis to enhance efficiency and decision-making. It applies algorithms such as Linear Regression, Logistic Regression, Random Forest, and K-Means Clustering to predict trends, classify members, and support personalized programs. Developed using Agile methodology and evaluated through ISO 25010 standards, the system showed excellent performance in reliability, efficiency, and security. The study concludes that the system effectively transforms manual processes into an automated and intelligent platform for gym management.

Related Studies

Foreign Studies

Internationally, numerous studies have examined the use of digital technologies in fitness systems, particularly focusing on mobile applications, user engagement, and system effectiveness.

A study by Springer Nature (2023), titled "A Systematic Review of Intention to Use Fitness Apps," analyzed multiple research works published between 2020 and 2023. The study concluded that the adoption of fitness applications has increased significantly due to rising health awareness and advancements in digital technology. It emphasized that ease of use and perceived usefulness are key factors influencing user adoption.

In another study published in 2022, "Factors Affecting Users' Stickiness of Fitness Apps," researchers examined the elements that contribute to long-term usage of fitness applications. The findings revealed that user engagement, social interaction, and personalization features play a crucial role in retaining users and improving their overall experience.

Furthermore, a 2021 study titled "Influence of Fitness Apps on Sports Habits and Satisfaction" found that fitness applications positively impact users' exercise habits and satisfaction levels. The study concluded that digital fitness tools can effectively motivate individuals to maintain consistent physical activity.

A more recent study in 2024, "A Virtual Gym in Your Pocket: An Augmented Reality Exercise Application," explored the use of augmented reality in fitness systems. The results indicated that immersive technologies enhance user motivation and provide a more engaging workout experience, suggesting future directions for fitness system development.

Lastly, a 2024 study on "Security Analysis of Top-Ranked mHealth Fitness Apps" highlighted potential security vulnerabilities in widely used fitness applications. The research emphasized the importance of implementing secure system architectures to protect user data and maintain trust in digital health platforms.

Local Studies

Recent studies in the Philippines have explored the development of gym management and fitness monitoring systems to improve operational efficiency and user experience.

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A study conducted in 2025 titled "Revolutionizing Gym Management: A QR-Enabled Cashless System for Smarter Payments and Tracking" developed a system that integrates QR-based attendance monitoring and cashless payment solutions. The researchers found that automation significantly improved transaction efficiency and reduced manual errors in gym operations. This study demonstrates the effectiveness of integrating modern technologies into traditional gym management processes.

Similarly, another study in 2025, "Fit Track: A Gym Member Monitoring System with Predictive Analytics," introduced a system designed to monitor gym members' activities and predict user engagement using data analytics. The findings revealed that predictive features can assist gym administrators in decision-making and enhance member retention by identifying usage patterns.

Despite these developments, there remains a limited number of published local studies specifically focused on comprehensive gym management systems. Most existing works are institutional or unpublished capstone projects, indicating a gap in accessible research within the Philippine context. This limitation highlights the importance and relevance of the present study in contributing to localized system development for fitness centers.

Synthesis

The reviewed studies, both local and foreign, demonstrate the growing role of technology in improving fitness management systems. Local studies emphasize system automation and monitoring within gym environments, while foreign studies focus more on user engagement, advanced technologies, and security. However, the limited availability of comprehensive local research highlights a gap that the present study aims to address by developing a web-based gym management system tailored to a specific fitness center.

Methods Of Research And Procedures

Research Methodology

This study employs a **Descriptive–Quantitative Research Method** to evaluate the acceptability of the implemented **SmartGym: A Web-Based Fitness Program Management and Membership Tracking System** at Vinathletics Fitness Gym. The quantitative approach is used to collect numerical data and statistically analyze the perceptions of users regarding the system's performance in terms of accuracy, reliability, and user satisfaction.

The descriptive method is applied to describe the respondents' assessments of the SmartGym system based on measurable indicators gathered through a structured questionnaire.

Research Design

The study follows a **Descriptive–Quantitative Survey Design**. This design is appropriate as it allows the researchers to quantitatively measure the level of system acceptability based on the actual experiences of users who interacted with the implemented SmartGym system.

Data are collected through a survey questionnaire adapted from existing system acceptability studies and analyzed using statistical tools to describe the overall evaluation of the system.

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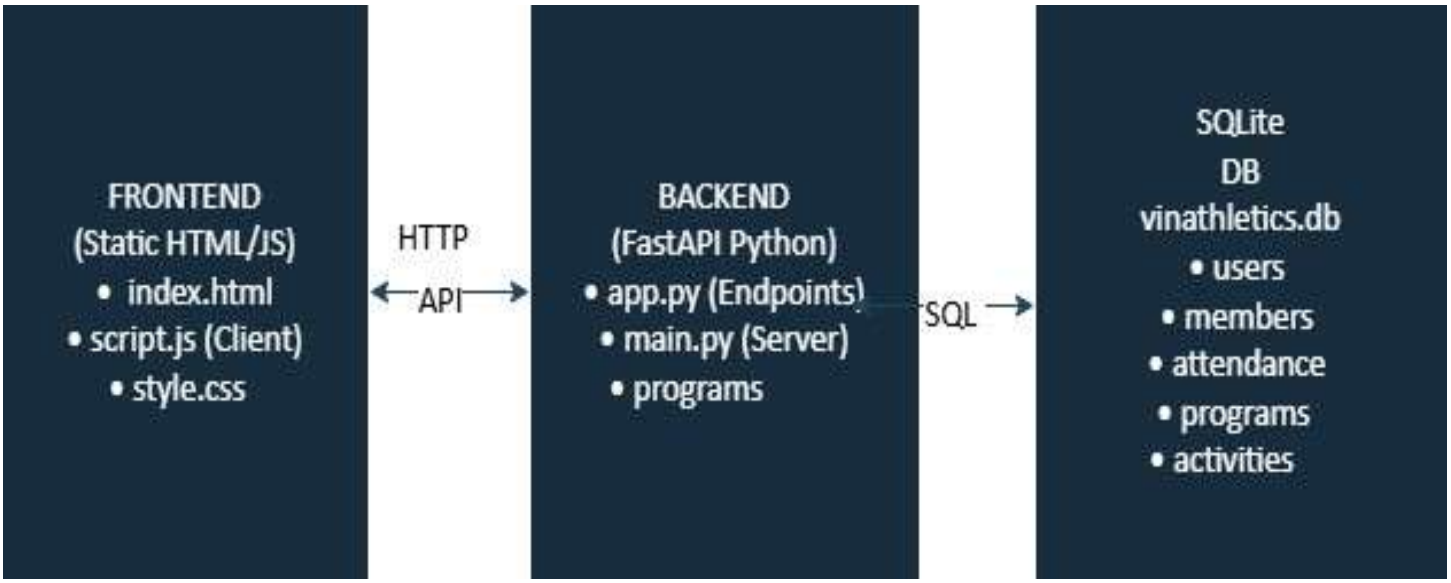
System Architecture



The system follows a Three-Tier Architecture, ensuring a separation of concerns between the user interface, data processing, and data storage.

Presentation Layer (Client-Side): The user interface is developed using HTML5 and CSS3 for structure and styling.

The system uses custom CSS variables to manage dynamic themes like Dark and Light mode. Vanilla JavaScript serves as the engine for the Single Page Application (SPA), allowing dynamic view switching without page reloads.

Application Layer (Server-Side): The core logic is powered by Python using the FastAPI framework. This layer processes HTTP requests, handles authentication, and manages business rules, such as preventing duplicate attendance entries.

Data Layer (Database): Data is stored in SQLite, a serverless relational database engine. The system uses SQLAlchemy ORM to map Python classes to database tables, ensuring efficient data retrieval.

Data Modeling

To support the gym's operations, the database schema was designed with four primary entities.

Users: Stores system access credentials, distinguishing between "Admin/Staffs" and "Member" roles.

Members: Contains profile information, membership plans (Basic, Premium, Elite), and account status.

Programs: Stores workout routines created by trainers, including difficulty levels and duration.

Attendance: Logs daily check-ins, linking specific users to time-stamped records.

Data Gathering

The data gathering phase outlines the respondents, the instrument, and

The procedure used in the study.

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Respondents of the Study

The respondents of the study consist of the following users of Vinathletics Fitness Gym:

- Gym Owner – approximately 1 respondents
- Gym Trainers/Staff – approximately 4 respondents
- Gym Members – approximately 45 respondents

The respondents are selected using **purposive sampling**, as they are the primary users who directly interact with the SmartGym system and are therefore capable of providing valid and relevant feedback regarding its acceptability.

Research Instrument

The primary data-gathering instrument is a **survey questionnaire adapted from existing system acceptability studies**. The questionnaire is designed to evaluate the SmartGym system based on the following criteria:

- **Accuracy** – the correctness and consistency of data such as membership records, attendance logs, and workout information
- **Reliability** – the system's ability to perform consistently without errors or failures
- **User Satisfaction** – the level of satisfaction of users in terms of ease of use, accessibility, and overall experience

The questionnaire uses a **5-Point Likert Scale**, interpreted as follows:

5 – Strongly Agree
4 – Agree
3 – Neutral
2 – Disagree
1 – Strongly Disagree

Data Gathering Procedure

The data gathering process is conducted in three stages:

1. **System Implementation**
   The SmartGym system is fully implemented and deployed for actual use at Vinathletics Fitness Gym.

2. **System Orientation and Usage**
   Respondents are oriented on the system's features and allowed to use the SmartGym system, including membership management, attendance tracking, workout program viewing, and progress monitoring.

3. **Survey Distribution and Collection**
   After system usage, the adapted questionnaire is distributed to the selected respondents. Completed questionnaires are collected and prepared for statistical analysis.

Statistical Treatment of Data

To analyze the data gathered from the respondents, the following statistical tools are used:

1. **Frequency and Percentage Distribution**
   This is used to describe the profile of the respondents in terms of role (Owner, Trainer/Staff, Member).

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2. **Weighted Mean**
   This is used to determine the level of acceptability of the SmartGym system in terms of accuracy, reliability, and user satisfaction.

The formula used is:

WM = Σfx / N

Where:
WM = Weighted Mean
Σfx = Sum of the products of frequency and weight
N = Total number of respondents

The computed weighted mean is interpreted using the 5-point Likert scale.

3. Likert Scale Interpretation To interpret the computed weighted mean, the following scale will be used:

Range	Weight	Verbal Interpretation
4.20 – 5.00	5	Strongly Agree (The feature is highly necessary/beneficial)
3.40 – 4.19	4	Agree (The feature is necessary/beneficial)
2.60 – 3.39	3	Neutral (Undecided)
1.80 – 2.59	2	Disagree (The feature is not necessary)
1.00 – 1.79	1	Strongly Disagree (The feature is highly unnecessary)

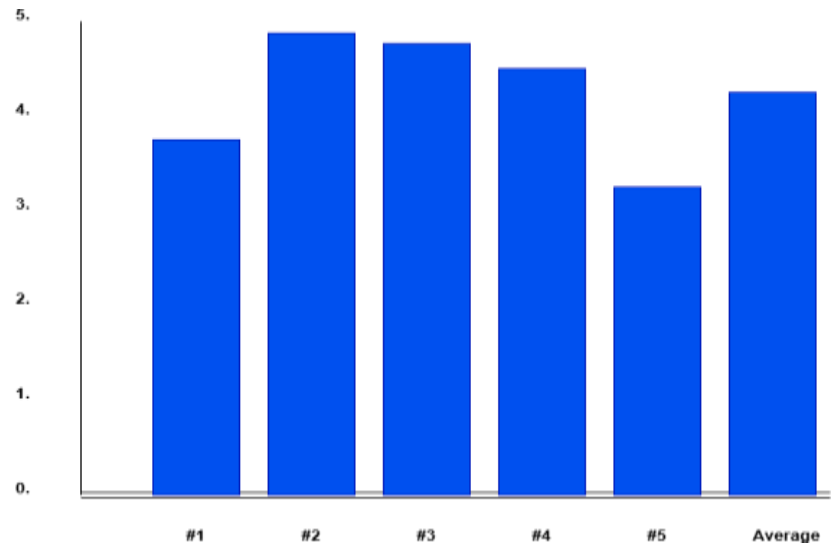
SUMMARY OF FINDINGS, CONCLUSSIONS AND RECOMMENDATIONS

Summary of Findings

This chapter presents the findings based on the data gathered using the **Descriptive–Quantitative Survey Design** described in Chapter III. The responses were analyzed using the **Weighted Mean (WM = Σfx / N)** and interpreted using the approved 5-Point Likert Scale.

The respondents consisted of **fifty (50) participants**, including the gym owner, trainers/staff, and gym members of Vinathletics Fitness Gym, selected through purposive sampling. These respondents directly interacted with the SmartGym system and were therefore capable of providing valid and reliable evaluations regarding its acceptability.

Accuracy



The overall weighted mean for **Accuracy** is computed as follows:

(3.7 + 4.8 + 4.7 + 4.5 + 3.2) / 5 = **4.18**

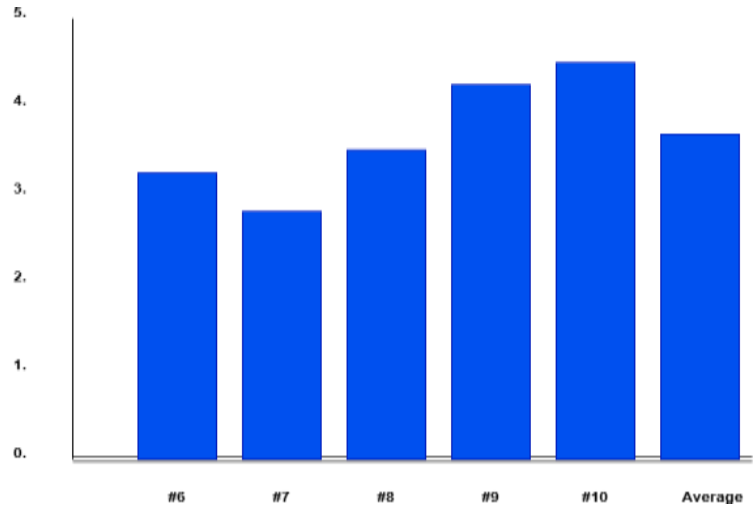
Interpretation: *Agree* (The feature is necessary/beneficial)

Findings:

- Respondents strongly agreed that attendance records are correct (WM = 4.8).
- Workout programs shown in the system match trainer assignments (WM = 4.7).
- System updates are reflected correctly and immediately (WM = 4.5).
- Member information is generally stored accurately (WM = 3.7).
- The system moderately minimizes errors compared to manual recording (WM = 3.2).

This indicates that SmartGym performs well in terms of correctness, consistency, and reliability of stored and displayed data.

Reliability



The overall weighted mean for **Reliability** is:

(3.2 + 2.8 + 3.5 + 4.2 + 4.5) / 5 = **3.64**

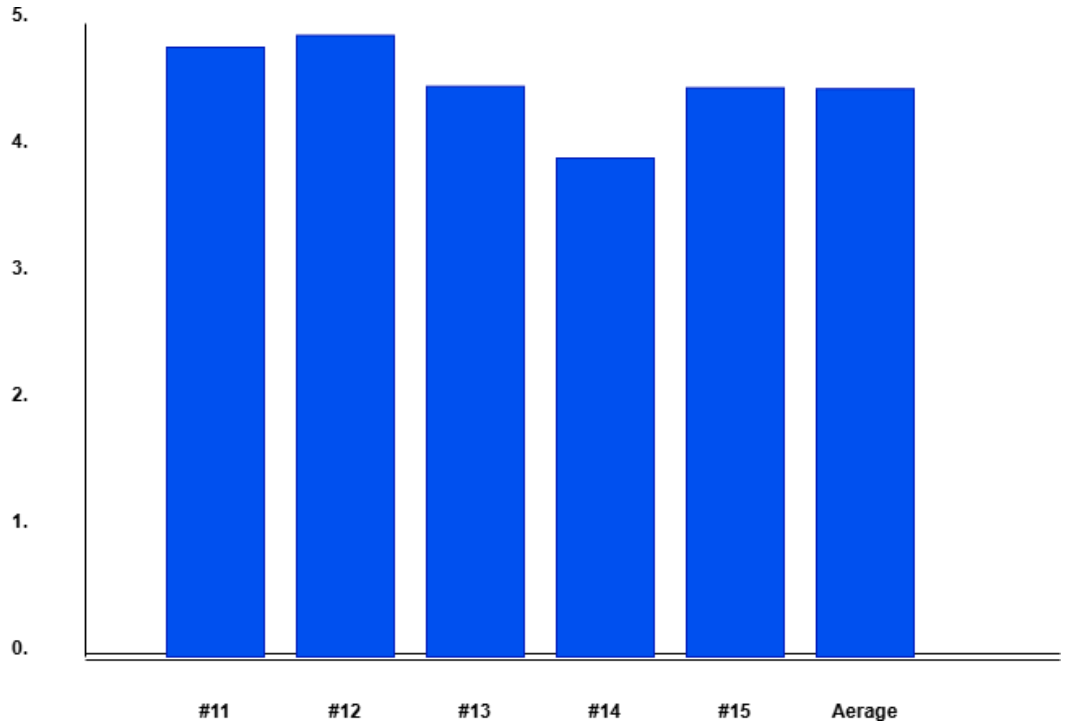
Interpretation: *Agree* (The feature is necessary/beneficial)

Findings:

- The system provides dependable support for daily gym operations (WM = 4.5).
- Data stored in the system remains secure and consistent (WM = 4.2).
- The system performs tasks with minimal crashes (WM = 3.5).
- System functionality during regular use received moderate agreement (WM = 3.2).
- Accessibility whenever needed received the lowest rating (WM = 2.8 – Neutral).

The results show that SmartGym is generally reliable; however, improvements in accessibility and performance stability are recommended.

User Satisfaction



The overall weighted mean for **User Satisfaction** is:

(4.8 + 4.9 + 4.5 + 3.8 + 4.5) / 5 = **4.50**

Interpretation: *Strongly Agree* (The feature is highly necessary/beneficial)

Findings:

- The system interface is clear and user-friendly (WM = 4.9).
- The system is easy to use and understand (WM = 4.8).
- The system helps users perform tasks more efficiently (WM = 4.5).

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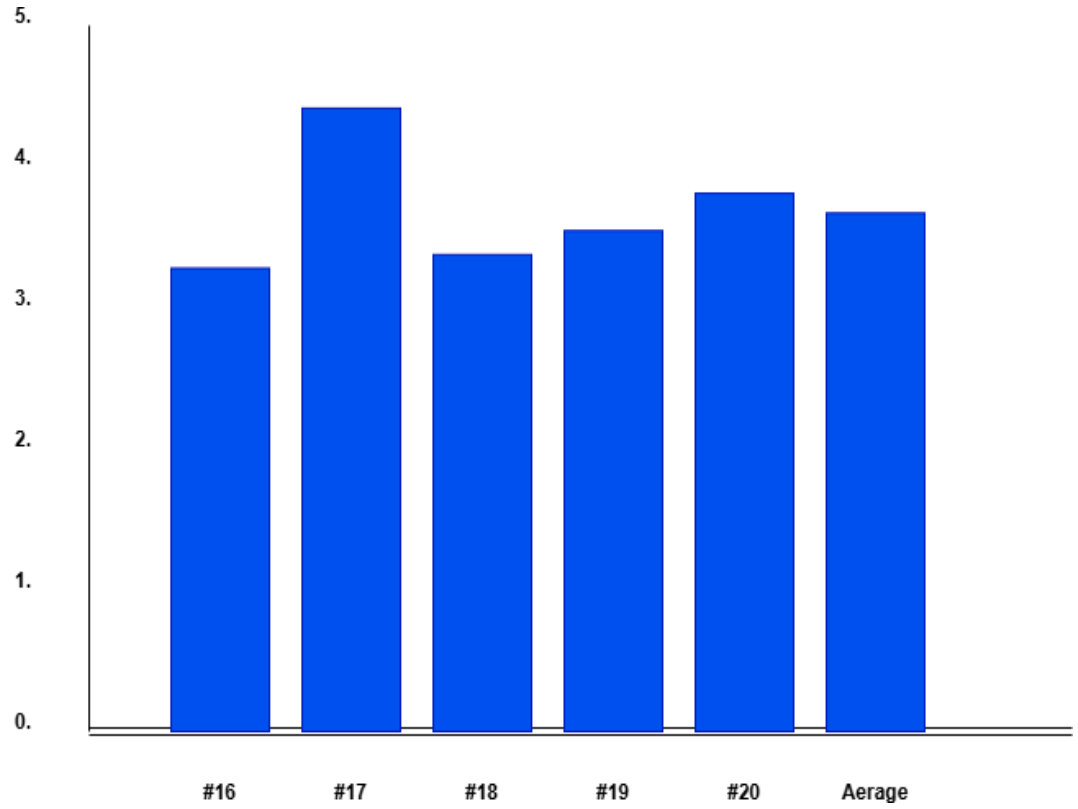
- Users are satisfied overall with the SmartGym system (WM = 4.5).
- The system improves overall gym management (WM = 3.8).

This indicates that SmartGym achieved a high level of acceptance in terms of usability, clarity, and overall user experience among the 40 respondents.

Overall System Acceptability



The overall weighted mean for **System Acceptability** is:

(3.2 + 4.4 + 3.3 + 3.5 + 3.8) / 5 = **3.64**

Interpretation: *Agree* (The system is acceptable and beneficial)

Findings:

- The system improves efficiency of gym management processes (WM = 4.4).
- Users would recommend continued system use (WM = 3.8).
- Users are moderately satisfied with overall performance (WM = 3.5).
- The system enhances service quality (WM = 3.3).
- Integration into current gym operations received moderate agreement (WM = 3.2).

The findings show that SmartGym is generally acceptable for full implementation, although further system enhancements can strengthen integration and service quality.

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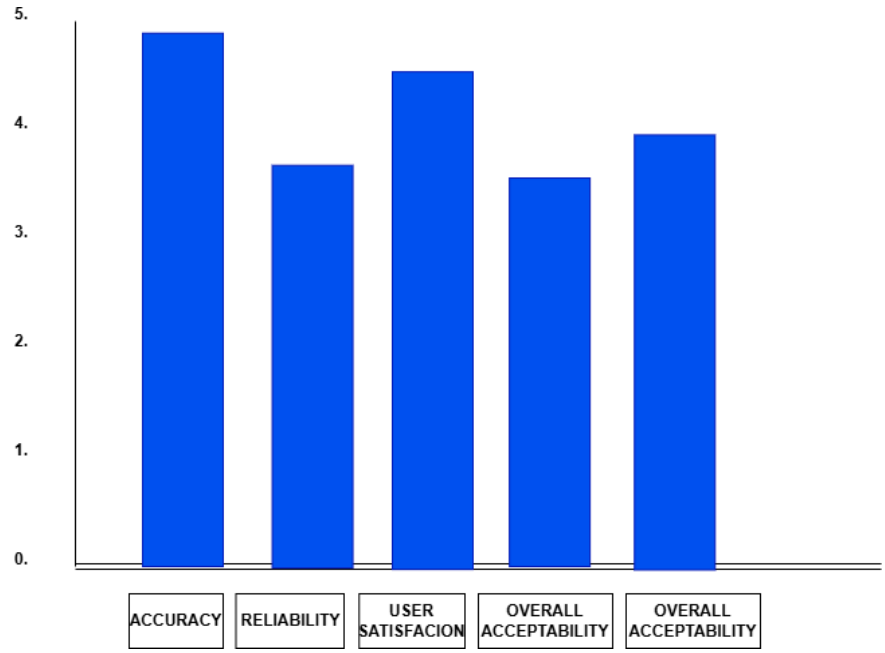
Overall Grand Mean



To determine the general level of acceptability:

Accuracy = 4.18
Reliability = 3.64
User Satisfaction = 4.50
Overall Acceptability = 3.64

Grand Mean = (4.18 + 3.64 + 4.50 + 3.64) / 4 = **3.99**

Final Interpretation: *Agree*

This means that based on the evaluation of **40 respondents**, the SmartGym system is considered **acceptable, beneficial, and suitable for gym operations**.

CONCLUSIONS

Based on the findings of the study, the following conclusions are drawn:

1. The SmartGym system effectively improves the accuracy of membership, attendance, and workout program records compared to manual processes.

2. The system demonstrates satisfactory reliability in supporting daily gym operations; however, improvements in accessibility and performance stability are necessary.

3. The system achieved a high level of user satisfaction, particularly in ease of use and interface design, as reflected by the “Strongly Agree” rating.

4. With a computed grand mean of 3.99 (Agree), the SmartGym system is acceptable for integration into Vinathletics Fitness Gym operations.

5. The Descriptive–Quantitative evaluation conducted among 50 participants confirms that SmartGym meets its objectives of enhancing operational efficiency, improving record accuracy, and supporting gym management processes.

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RECOMMENDATIONS

Based on the conclusions of the study, the following recommendations are proposed:

1. Improve System Accessibility
Enhance hosting infrastructure and internet optimization to ensure 24/7 access and minimize downtime.

2. Strengthen System Performance
Optimize the backend system and database queries to improve speed and reduce potential crashes.

3. Integrate Additional Features
Future enhancements may include:

- Online payment and billing integration
- SMS or email notification system
- Dedicated mobile application version
- Advanced data analytics and reporting tools

4. Conduct Regular System Maintenance
Periodic updates, monitoring, and security audits should be implemented to maintain system reliability and protect stored data.

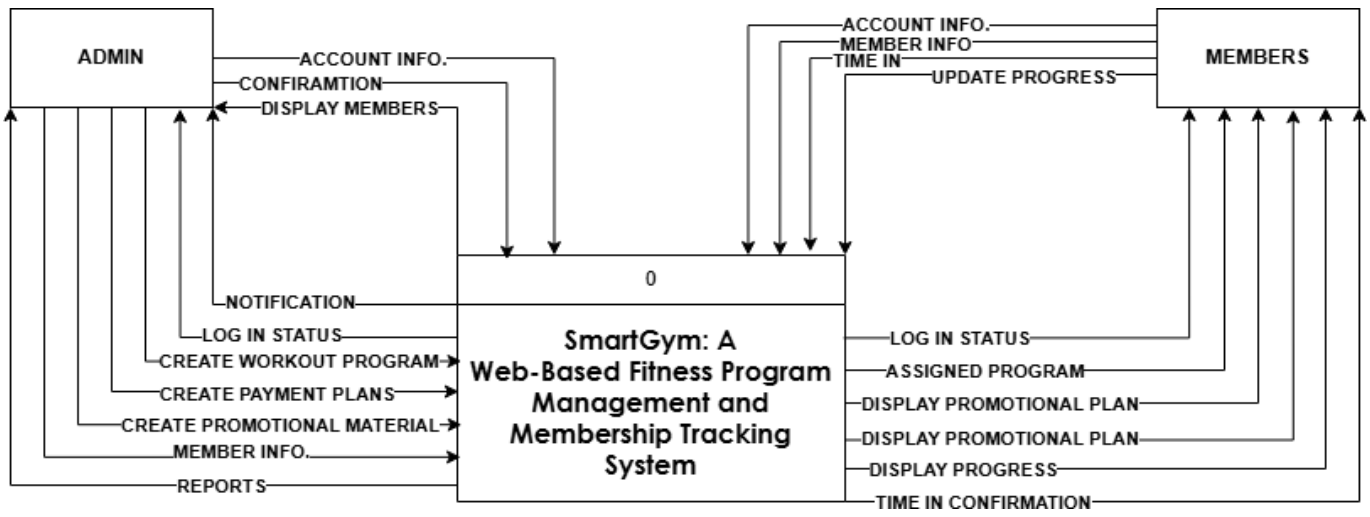
5. Expand Research Scope
Future studies may evaluate the system across multiple gym branches or incorporate biometric and IoT-based tracking technologies.

6. Continuous System Evaluation
It is recommended that follow-up surveys be conducted annually to continuously assess system performance and user satisfaction.

Overall, the SmartGym: Web-Based Fitness Program Management and Membership Tracking System has been evaluated by 50 respondents and has proven to be an acceptable and beneficial technological solution for improving the operational efficiency of Vinathletics Fitness Gym.

APPENDICES

CONTEXT DIAGRAM LVL 0



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Explanation of the Level 0 Data Flow Diagram

The Level 0 Data Flow Diagram (DFD), also known as the Context Diagram, presents the overall view of the SmartGym: Web-Based Fitness Program Management and Membership Tracking System. It illustrates the interaction between the system and its external entities while showing the primary data flowing into and out of the system.

The diagram represents the SmartGym system as a single major process labeled "0", emphasizing the system as one unified application. The two primary external entities interacting with the system are the Admin and the Members.

External Entities

Admin

The Admin is responsible for managing and monitoring the overall operations of the SmartGym system. The administrator interacts with the system by sending and receiving important information related to gym management.

Data Sent by Admin:

- Account Information
- Create Workout Program
- Create Promotional Material
- Create Payment Plan
- Member Information Requests

Data Received by Admin:

- Confirmation
- Display Members
- Notifications
- Login Status
- Reports

The administrator uses these functions to manage members, monitor activities, create programs and promotions, and oversee gym operations.

Members

The Members are the regular users of the system who access features related to attendance, workout programs, and fitness tracking.

Data Sent by Members:

- Account Information
- Member Information

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- Time In
- Update Progress

Data Received by Members:

- Login Status
- Assigned Program
- Display Promotional Plan
- Display Payment Plan
- Display Progress
- Time In Confirmation

Members interact with the system to access workout programs, track progress, view promotions, and record attendance.

Central Process: SmartGym System

The SmartGym: A Web-Based Fitness Program Management and Membership Tracking System serves as the central process that handles all system operations and data processing. The system receives data from both administrators and members, processes the information, stores records in the database, and returns the appropriate outputs.

The system is responsible for:

- User authentication
- Membership management
- Attendance tracking
- Workout program management
- Promotion and payment plan handling
- Fitness progress monitoring
- Notification and reporting services

The central process ensures that all system functionalities are integrated into one organized platform.

Overall Summary

The Level 0 Data Flow Diagram demonstrates how administrators and members interact with the SmartGym system through various inputs and outputs. It highlights the system's role in managing workout programs, attendance, membership information, promotional materials, and fitness tracking.

By presenting the system as a single process, the diagram provides a clear and simplified overview of the SmartGym system's overall functionality and establishes the foundation for understanding the detailed internal processes shown in the succeeding DFD levels.

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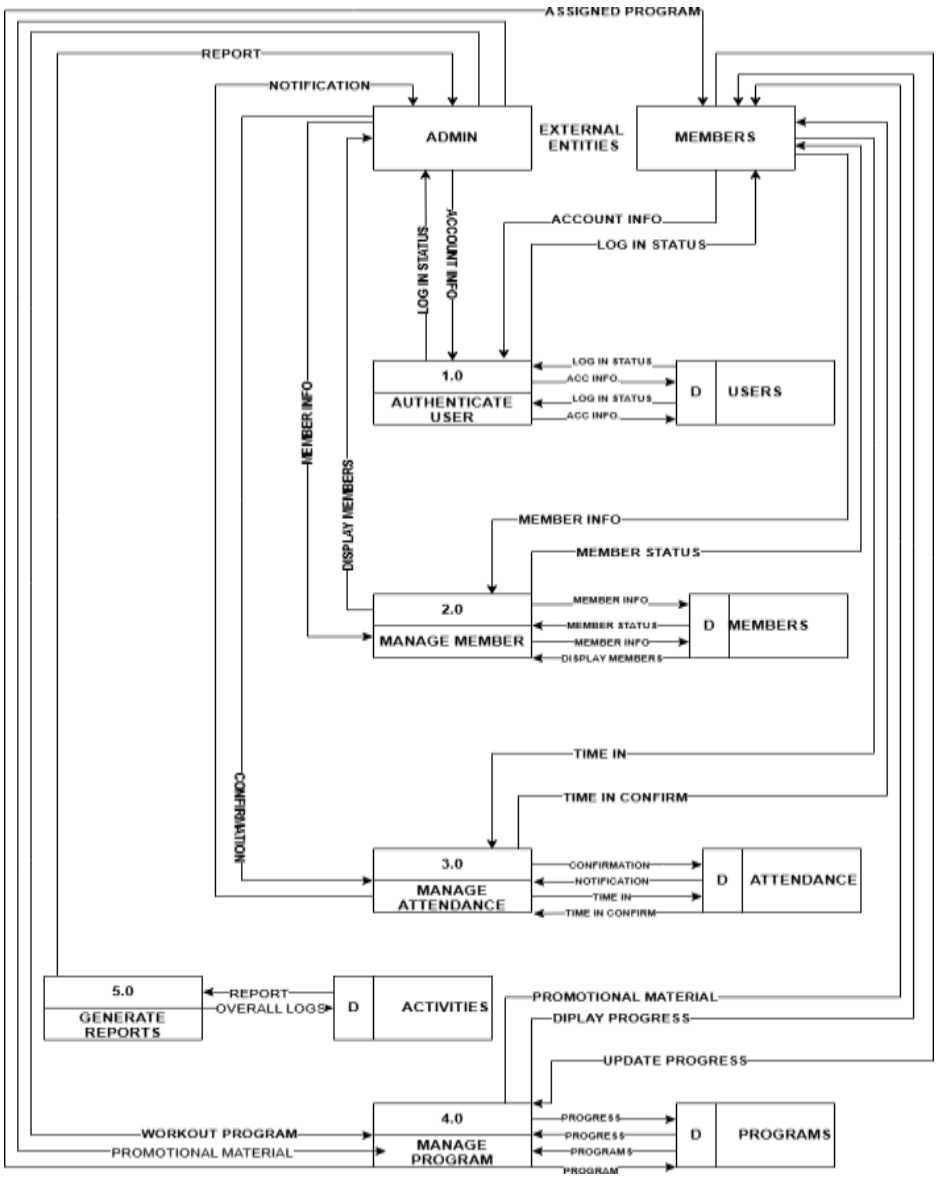
Main Data Flow Diagram Level 1



The Level 1 Data Flow Diagram (DFD) of the SmartGym: Web-Based Fitness Program Management and Membership Tracking System presents a detailed breakdown of the major processes within the system. It illustrates how data flows between external entities, processes, and databases to support the gym's daily operations. The diagram expands the system into more specific subprocesses, particularly for attendance handling and program management.

The system primarily involves two external entities: the Admin and the Members. These entities interact with various system processes such as authentication, membership management, attendance management, program management, and report generation.

Authenticate User

The Authenticate User process handles user login and account verification. Both administrators and members submit account information and login credentials to the system. The process validates the entered credentials using the Users database.

If the credentials are correct, the system returns the login status and grants access to the appropriate dashboard based on the user's role. This process ensures secure authentication and controlled access to system functionalities.

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Data Flow:

- Account Info → Authenticate User
- Login Status → Admin / Members
- Account Info ↔ Users Database

Manage Member

The Manage Member process is responsible for handling member-related information. Administrators can add, update, archive, and monitor member accounts. The process communicates with the Members database to retrieve and store member records.

Members can also access and update some of their information depending on system permissions.

Data Flow:

- Member Info → Manage Member
- Display Members → Admin
- Member Status ↔ Members Database

This process ensures organized management of gym members and membership information.

Manage Attendance

The Manage Attendance process manages member attendance and check-in requests. This process is divided into several detailed subprocesses:

Attendance Database Interaction

The Manage Attendance process continuously communicates with the Attendance database to:

- Store attendance records
- Retrieve attendance history
- Update attendance confirmations
- Save logs and status information

Data Flow:

- Attendance Status
- Logs
- Confirmation
- Time In Confirm

This process ensures accurate attendance monitoring and secure validation procedures.

Manage Program

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The Manage Program process handles workout programs, payment plans, promotions, and member progress tracking. Administrators can create workout programs and promotional materials, while members can view assigned programs and monitor progress.

The process interacts with the Programs database and is further divided into two subprocesses:

Program Database Interaction

The Manage Program process exchanges information with the Programs database to:

- Store workout programs
- Retrieve assigned programs
- Track member progress
- Update program status

Data Flow:

- Program
- Programs
- Progress
- Update Progress

Members can view:

- Assigned programs
- Promotional plans
- Payment plans
- Progress records

This process supports personalized fitness management within the system.

Generate Reports

The Generate Reports process produces system-generated reports and activity summaries for administrators. It retrieves information from the Activities database and compiles reports related to:

- Attendance
- Membership
- Activities
- Overall system usage

Data Flow:

- Overall Logs → Generate Reports

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- Report → Admin

This process helps administrators monitor gym operations and make informed decisions.

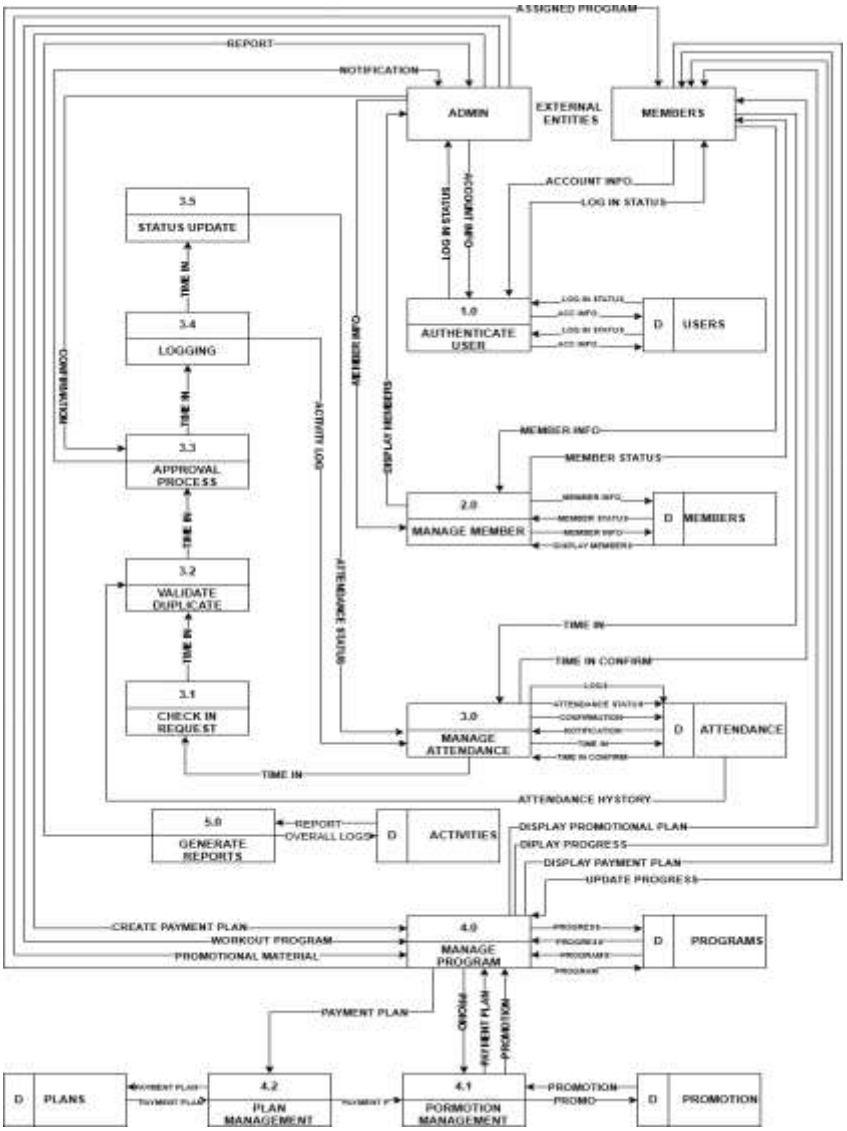
Database Components

The Level 2 DFD includes several data stores:

Data Store	Purpose
Users	Stores account credentials
Members	Stores member records
Attendance	Stores attendance history
Programs	Stores workout programs
Plans	Stores payment plans
Promotion	Stores promotional offers
Activities	Stores system logs and activities

These databases ensure centralized storage and organized management of system information.

Level 2 DFD further explodes Process 3.0 Admin Management Dashboard from Level 1 into sub-processes.



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Detailed Explanation (Level 2)

Overview

The Level 2 Data Flow Diagram provides a detailed breakdown of the Attendance Processing System, which is the core function of SmartGym. It shows how a check-in request moves step-by-step from the member to the admin and back to the system.

Sub-Processes Explanation

Check-In Request

Members submit a check-in request to access the gym. The system records the time-in request and forwards it for validation.

Data Flow:

Time In → Check-In Request

Validate Duplicate

The system verifies whether the member already has an attendance record for the current session or day. This prevents duplicate attendance entries.

Data Flow:

Time In → Validate Duplicate

If no duplicate exists, the process proceeds to approval.

Approval Process

The administrator reviews the attendance request and decides whether to approve or reject it. Notifications and confirmations are generated during this process.

Data Flow:

- Confirmation → Approval Process
- Notification → Admin

Logging

Once approved, the attendance activity is recorded into the system logs for monitoring and auditing purposes.

Data Flow:

Activity Log → Logging

Status Update

The system updates the member attendance status after successful logging and confirmation.

Data Flow:

Attendance Status → Status Update

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Promotion Management

The Promotion Management subprocess handles promotional offers, discounts, and promotional campaigns. The process stores and retrieves promotional information from the Promotion database.

Functions:

- Create promotions
- Update promotional offers
- Manage discounts
- Monitor promo validity

Data Flow:

- Promo → Promotion Management
- Promotion ↔ Promotion Database

Plan Management

The Plan Management subprocess handles gym payment plans and membership subscriptions. It communicates with the Plans database to store and retrieve plan details.

Functions:

- Create payment plans
- Manage pricing
- Configure membership durations
- Update plan status

Data Flow:

- Payment Plan → Plan Management
- Payment Plan ↔ Plans Database

Program Database Interaction

The Manage Program process exchanges information with the Programs database to:

- Store workout programs
- Retrieve assigned programs
- Track member progress
- Update program status

Data Flow:

- Program

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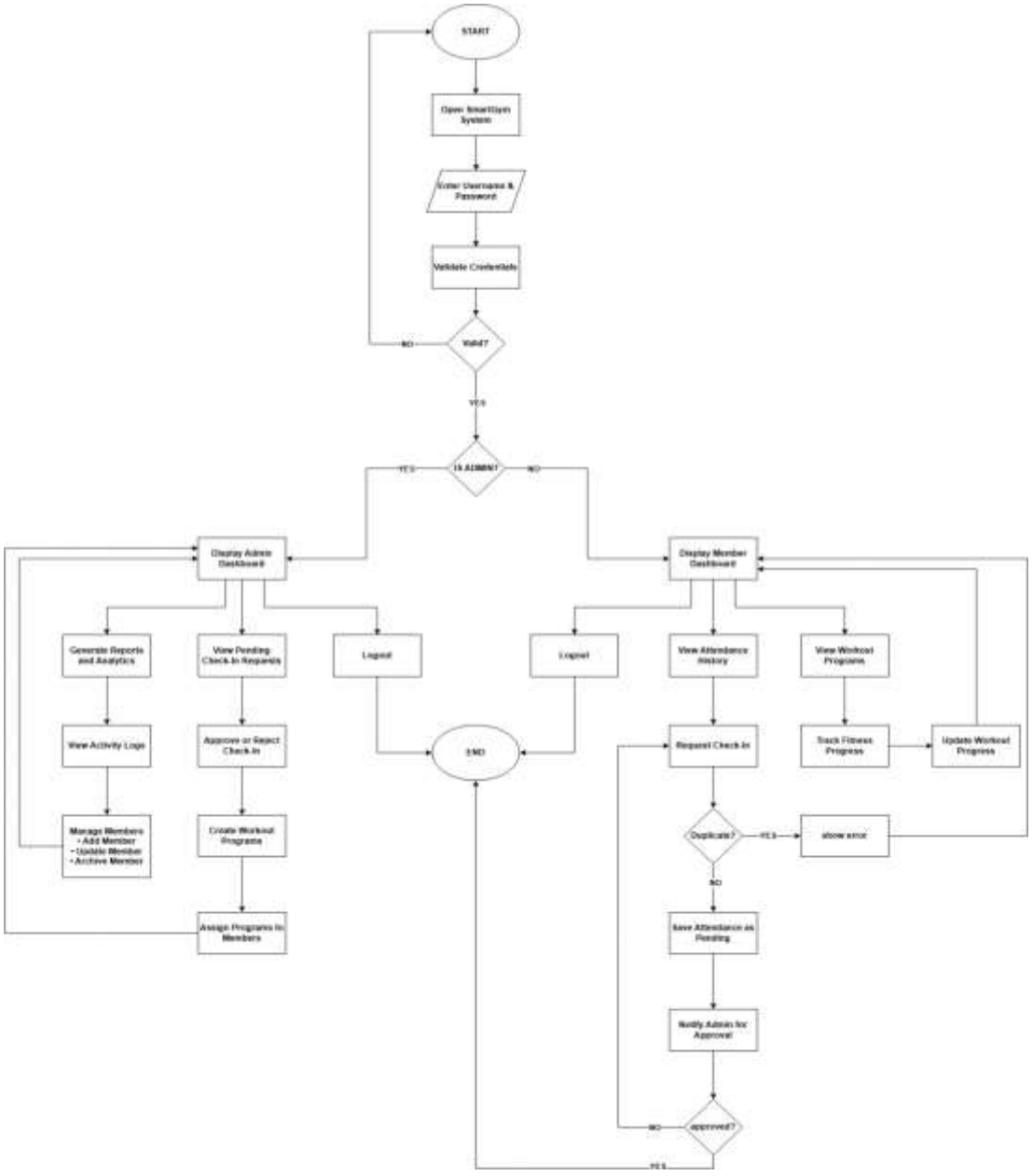
- Programs
- Progress
- Update Progress

Members can view:

- Assigned programs
- Promotional plans
- Payment plans
- Progress records

This process supports personalized fitness management within the system.

System Flow Chart



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Explanation of the Overall System Flowchart

The overall system flowchart illustrates the complete operational flow of the SmartGym: Web-Based Fitness Program Management and Membership Tracking System. It demonstrates how users interact with the system, how data is processed, and how different modules function together to support gym operations.The process begins when the user opens the SmartGym system and enters their username and password. The system validates the login credentials to ensure secure access. If the credentials are valid, the system identifies the role of the user, whether Administrator or Member, and redirects them to their corresponding dashboard.

For the Administrator flow, the administrator gains access to management functions such as member management, attendance approval, workout program management, report generation, and activity monitoring. The administrator can add, update, or archive members, review pending attendance requests, approve or reject check-ins, create workout programs, assign programs to members, generate reports, and monitor activity logs. These processes help maintain organized records and ensure efficient gym management.

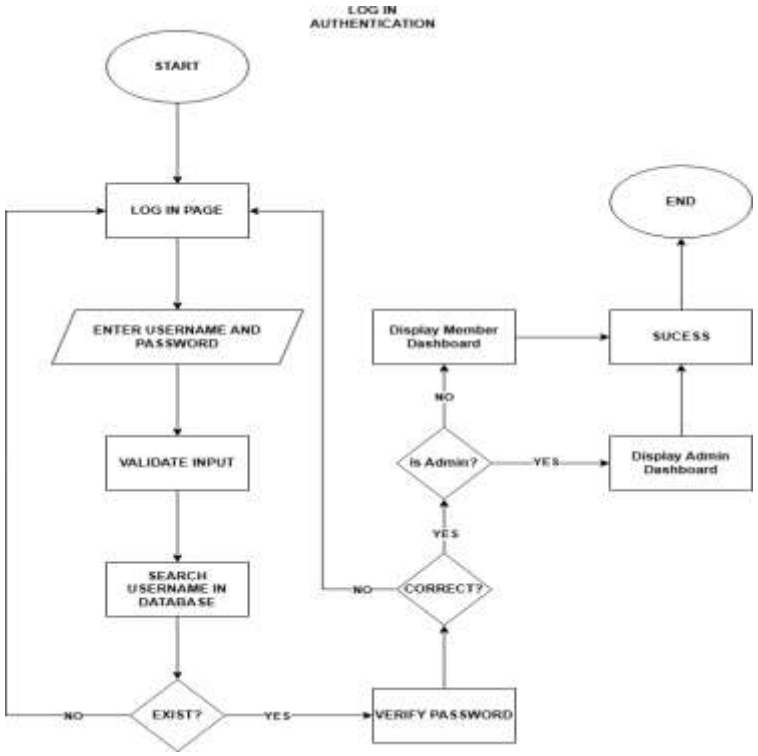
For the Member flow, members access features related to their personal gym activities. Members can view attendance history, request attendance check-ins, access workout programs, track fitness progress, and update workout completion records. During the check-in process, the system first validates whether the member already has an attendance record for the day to prevent duplicate entries. If no duplicate exists, the system stores the request as “Pending” and notifies the administrator for approval.

Once the administrator approves the request, the attendance status is updated and reflected in the member dashboard. Members can then continue monitoring their workout routines and progress through the system.

Both administrator and member activities are continuously stored and updated within the database. After completing their tasks, users may log out of the system, ending the process.

Overall, the flowchart demonstrates the complete workflow of the SmartGym system, including authentication, attendance processing, membership management, workout program handling, reporting, and progress monitoring. It highlights the interaction between users, system processes, and database operations to ensure accurate, secure, and efficient gym management.

Login Authentication Flowchart



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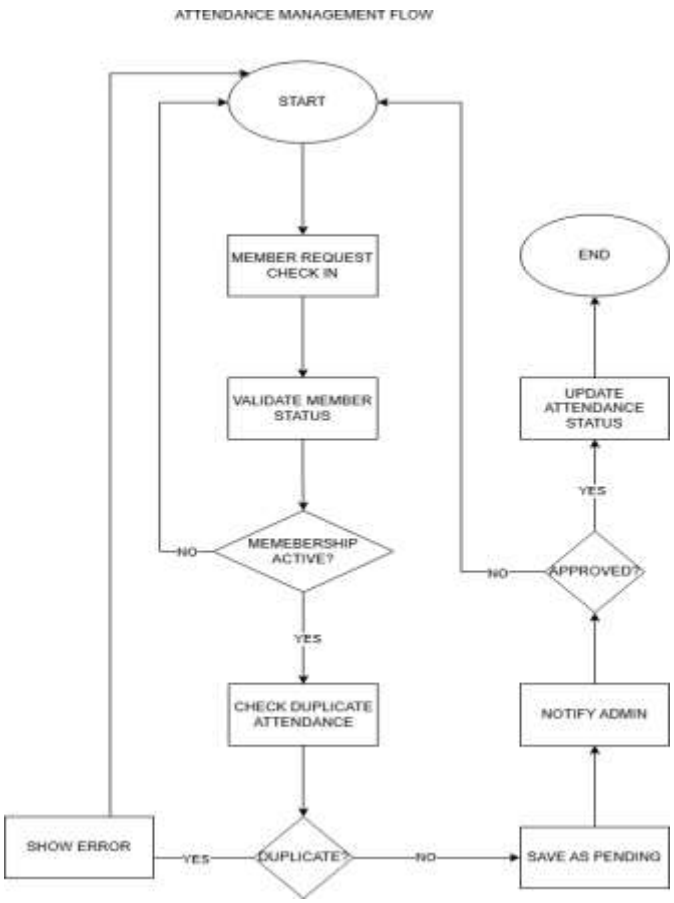
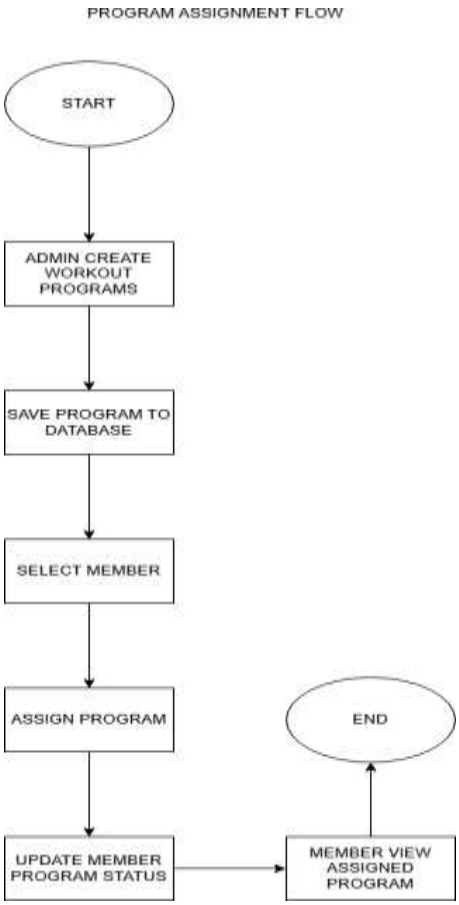
Attendance Management Flowchart



Program Assignment Flowchart



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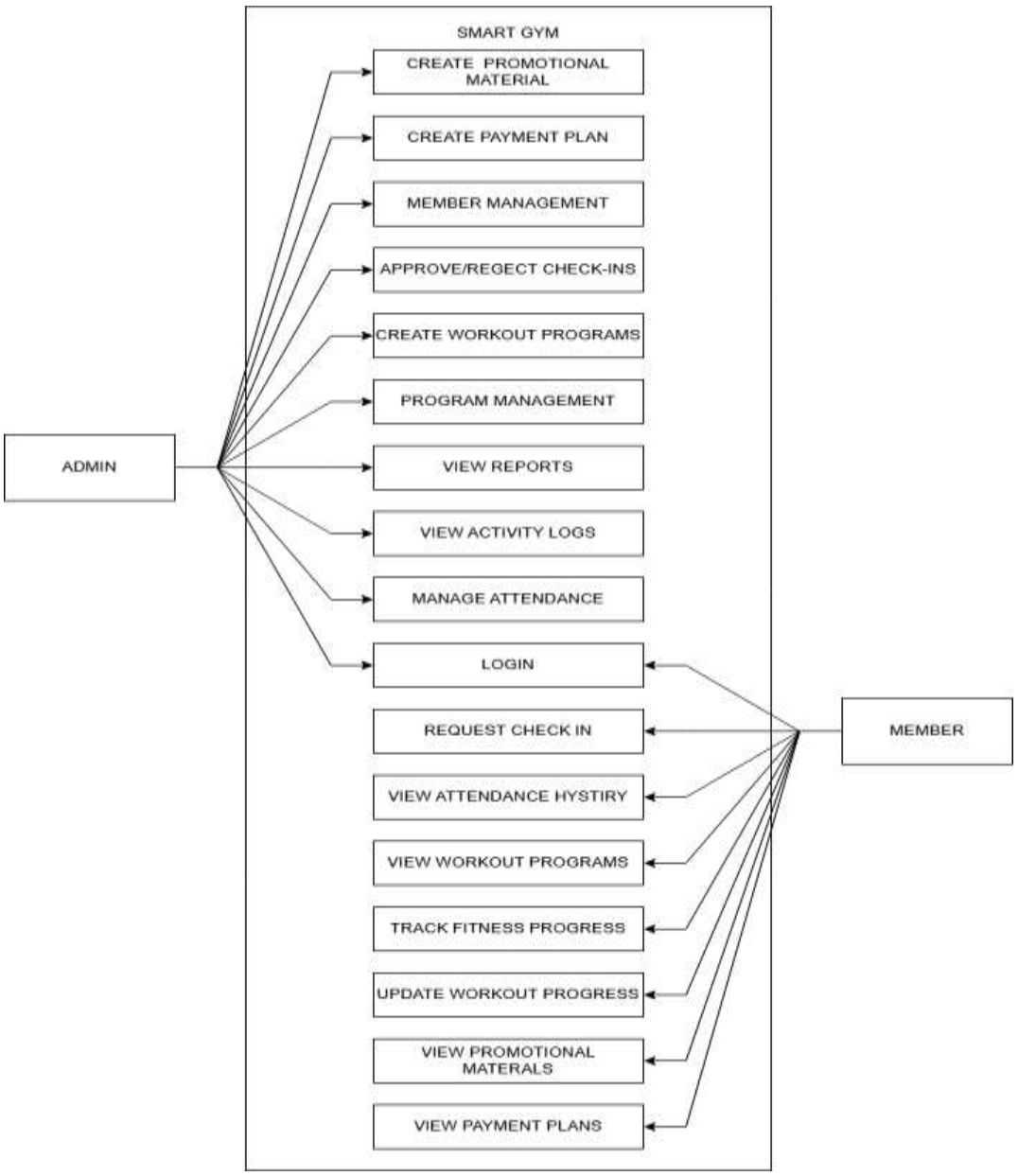
Use Case Diagram



The Use Case Diagram of the SmartGym: Web-Based Fitness Program Management and Membership Tracking System illustrates the interaction between the users of the system and its major functionalities. It identifies the different actors involved and the actions they can perform within the system. The diagram helps visualize how the system operates and how users interact with its features.

The system has two primary actors: the Administrator and the Member.

The Administrator is responsible for managing the overall operations of the system. The administrator can log into the system using authorized credentials to gain access to administrative features. Once authenticated, the administrator can manage member records by adding, updating, and archiving member information. The administrator is also responsible for monitoring attendance by approving or rejecting member check-in requests. In addition, the administrator can create workout programs, assign programs to members, view reports, and monitor activity logs. These functions allow the administrator to maintain accurate records and ensure smooth gym operations.

The Member is the regular user of the system who accesses features related to personal fitness activities. Members can log into the system to access their personalized dashboard. They can request attendance check-ins, view attendance history, access assigned workout programs, track fitness progress, and update workout

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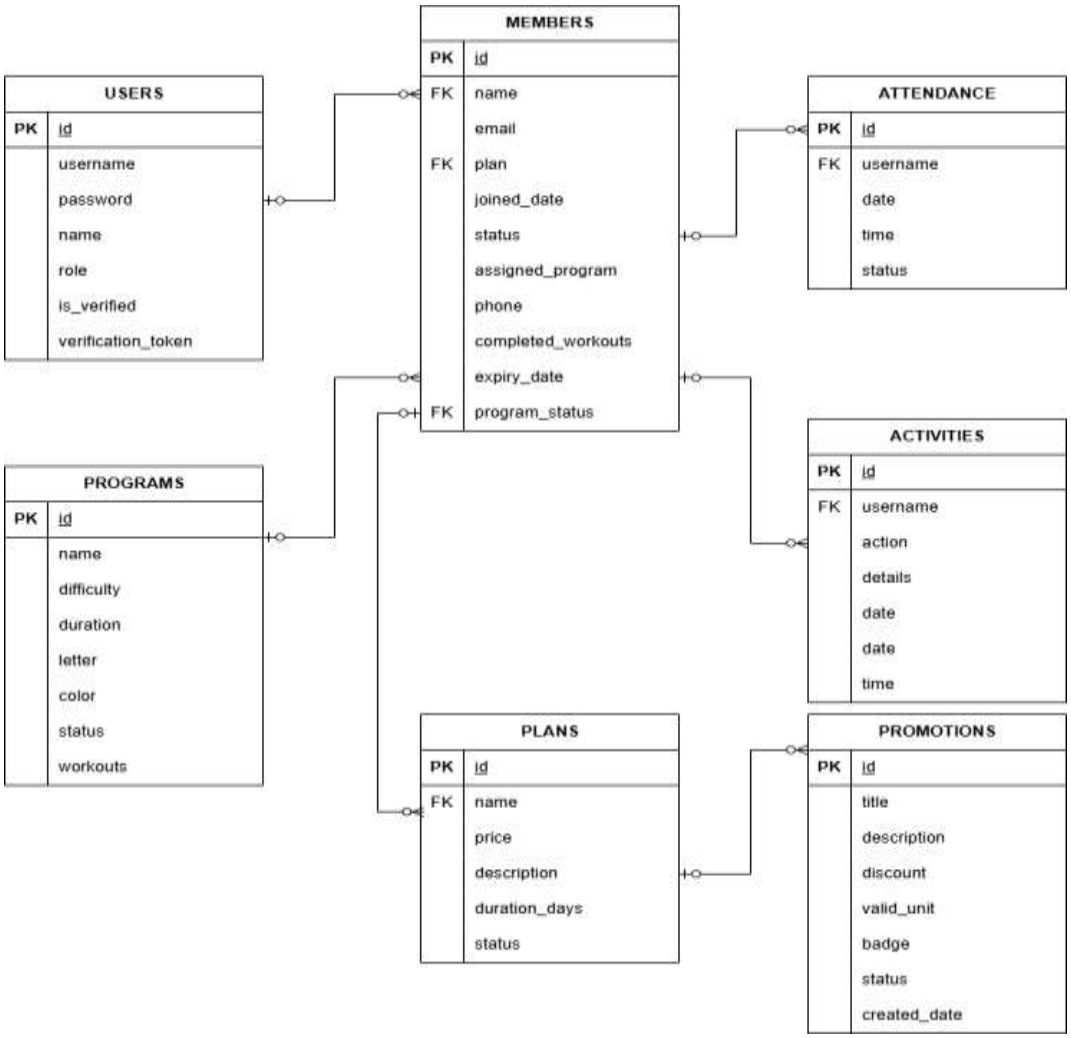
completion records. These functionalities allow members to monitor their gym activities and stay informed about their fitness journey.

The Login functionality serves as the entry point of the system for both administrators and members. It ensures secure and role-based access control by validating user credentials before granting access to system features.

The use case diagram demonstrates the relationship between users and system processes. It highlights how the SmartGym system supports membership management, attendance tracking, workout program management, progress monitoring, and reporting. Overall, the diagram provides a clear overview of the system's functionalities and shows how the system improves operational efficiency, organization, and user interaction within Vinathletics Fitness Gym.

Ntity Relationship Diagram



The Entity Relationship Diagram (ERD) of the SmartGym: Web-Based Fitness Program Management and Membership Tracking System illustrates the structure of the database and the relationships between the system's major entities. It provides a visual representation of how data is stored, organized, and connected within the system to support gym operations efficiently.

The ERD consists of six major entities: Users, Members, Attendance, Programs, Member_Programs, and Activities. Each entity contains specific attributes that store important information required by the system.

The Users entity stores the login credentials and access roles of individuals using the system. It contains attributes such as user_id, username, password, and role. The role attribute distinguishes whether the user is an administrator or a member. This entity is essential for authentication and role-based access control.

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The Members entity contains detailed information about gym members. Its attributes include member_id, full_name, email, contact_number, membership_plan, account_status, and expiry_date. The Members entity is connected to the Users entity through a foreign key relationship, ensuring that each member account is linked to a valid system user.

The Attendance entity records the daily attendance and check-in history of members. It includes attributes such as attendance_id, member_id, checkin_date, checkin_time, and status. Each attendance record belongs to a specific member, creating a one-to-many relationship between Members and Attendance. This relationship allows one member to have multiple attendance records over time.

The Programs entity stores workout programs created within the system. It contains attributes such as program_id, program_name, difficulty_level, duration, workout_details, and created_by. This entity allows administrators or trainers to manage workout routines that can be assigned to members.

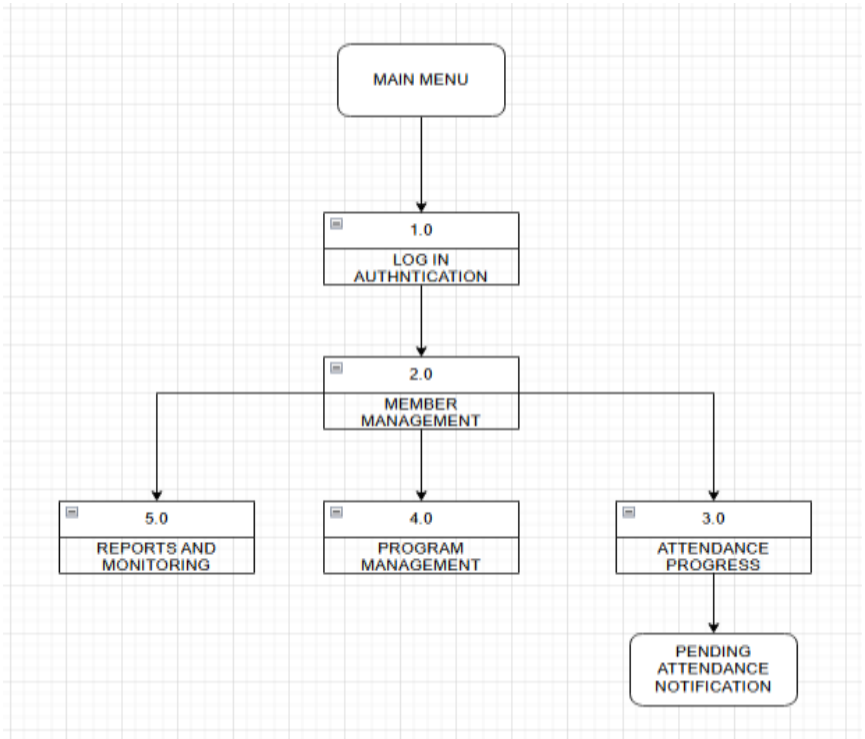
The Member_Programs entity serves as a junction or associative table between Members and Programs. It contains assign_id, member_id, program_id, assigned_date, and progress_status. This relationship allows many members to be assigned to many workout programs. It supports tracking of assigned routines and member progress within the system.

The Activities entity records important system activities and logs performed by users. Its attributes include activity_id, user_id, activity_type, description, activity_date, and activity_time. This entity helps maintain system transparency and supports monitoring and auditing of user actions.

The relationships shown in the ERD ensure data integrity and proper organization of information. One user can generate many activity logs, one member can have multiple attendance records, and many members can be assigned to multiple workout programs through the Member_Programs table.

Overall, the ERD demonstrates how the SmartGym system manages and connects user information, attendance data, workout programs, and activity logs within a centralized database structure. It serves as the foundation of the system's data management process, ensuring accurate storage, efficient retrieval, and organized handling of gym-related information.

Vtoc Diagram



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Visual Table of Contents (VTOC) Explanation

The VTOC presents the hierarchical structure of the system, outlining its major processes and how users navigate through them from the main entry point.

At the top level, the system begins with the Main Menu, which serves as the primary interface for users to access system functionalities.

From the Main Menu, users proceed to Process 1.0: Log In / Authentication. This module is responsible for verifying user credentials and ensuring secure access to the system. Only authenticated users can proceed further.

Once logged in, users enter Process 2.0: Member Management, which acts as the central hub of the system. This module allows users to manage member-related information and provides access to other key system functions.

From Member Management, the system branches into three main sub-processes:

Process 3.0: Attendance Progress

This module tracks and monitors attendance records. It also triggers Pending Attendance Notifications, which alert users about incomplete or missing attendance data.

Process 4.0: Program Management

This section handles the creation, updating, and organization of programs within the system. It ensures that all program-related data is properly maintained.

Process 5.0: Reports and Monitoring

This module generates reports and provides analytical insights, enabling administrators to monitor system performance, member activity, and attendance trends.

Summary of Flow

1. Main Menu
2. Log In / Authentication (1.0)
3. Member Management (2.0)
4. Branch to:

- Attendance Progress (3.0) → Pending Attendance Notification
- Program Management (4.0)
- Reports and Monitoring (5.0)

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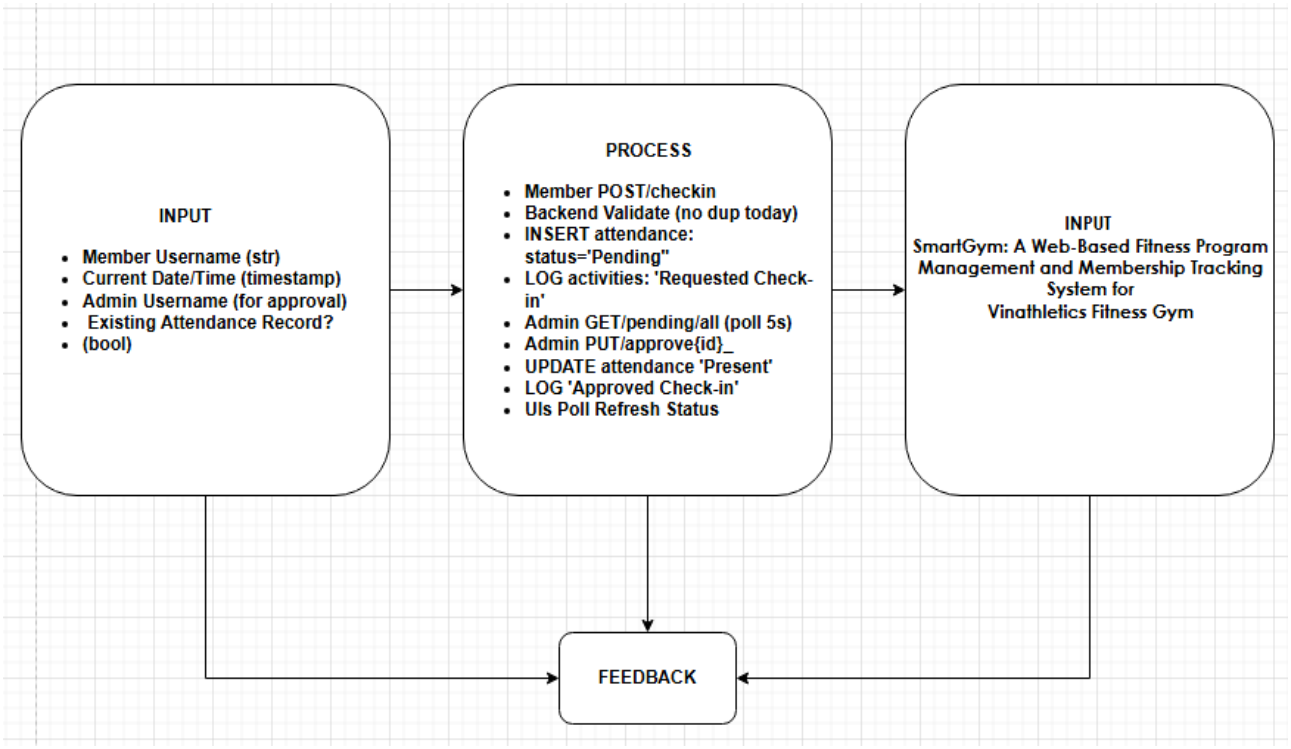
Ipo Diagram



Explanation of the IPO Diagram

The diagram illustrates the flow of data within the system, beginning with the required inputs, followed by the internal processing steps, and ending with the generated outputs. It also includes a feedback mechanism to ensure system updates and user awareness.

Input

The system requires specific data to initiate the attendance process:

- **Member Username (string):** Identifies the member attempting to check in.
- **Current Date/Time (timestamp):** Records when the check-in request is made.
- **Admin Username (for approval):** Identifies the administrator responsible for validating the request.
- **Existing Attendance Record (boolean):** Determines whether the member has already checked in for the day, preventing duplicate entries.

These inputs ensure that the system has sufficient and accurate data before processing any attendance request.

Process

The process section outlines the sequence of operations performed by the system:

1. The member submits a **POST request** to check in.
2. The system performs **backend validation** to ensure no duplicate attendance exists for the current day.
3. If valid, the system **inserts a new attendance record** with a status of *Pending*.
4. The system logs the activity as **"Requested Check-in"** for tracking purposes.

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5. The admin interface retrieves pending requests via a **GET request**.
6. The administrator reviews and approves the request using a **PUT request**.
7. Once approved, the system **updates the attendance status to "Present."**
8. The system logs the action as **"Approved Check-in."**
9. The user interface refreshes automatically to reflect the updated status.

This structured process ensures data integrity, accountability, and proper authorization before confirming attendance.

Output

After processing, the system generates the following outputs:

- **Display of confirmation status:** Notifies the user whether their check-in is approved or pending.
- **Updated attendance status:** Reflects the member's official attendance record.
- **Activity logs:** Maintains a history of actions for auditing and monitoring.
- **Monthly reports:** Compiles attendance data into reports for administrative use.

Feedback

The feedback loop connects the output back to the system and users. This ensures that:

- Users receive real-time updates on their check-in status.
- The system continuously updates records and logs.
- Administrators can monitor and adjust actions based on system responses.

SUMMARY

Overall, the IPO diagram demonstrates a controlled and validated attendance workflow where user inputs are carefully processed, verified by an administrator, and transformed into meaningful outputs such as attendance records and reports. The inclusion of a feedback loop enhances system reliability and user interaction.

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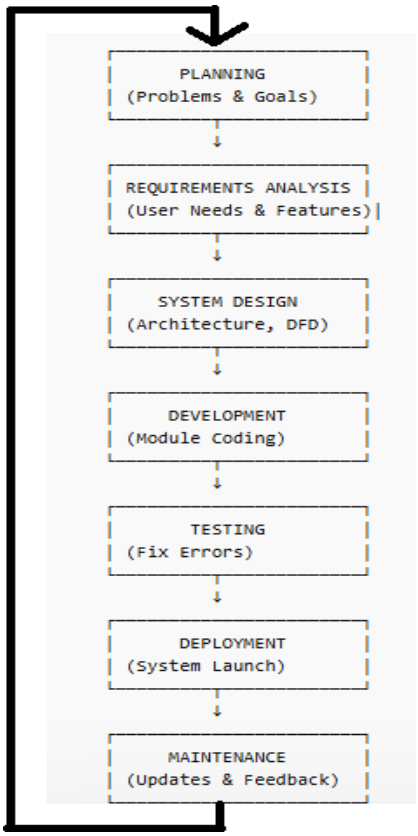
Software Development Life Cycle (SDLC)

Agile Model



This study adopted the **Agile Software Development Life Cycle (SDLC) Model** in the development of the *SmartGym: Web-Based Fitness Program Management and Membership Tracking System*. The Agile model is an iterative and incremental approach that emphasizes flexibility, continuous improvement, and active user involvement throughout the development process.

The selection of the Agile model is appropriate for this system because it allows the researchers to develop the application in phases while continuously testing and improving each module. Since the system includes multiple components such as membership management, attendance tracking, workout program management, and progress monitoring, Agile enables the gradual integration of these features while ensuring that user requirements are consistently met.

Phases of the Agile SDLC Model

Planning Phase

The planning phase involves identifying the problems and defining the objectives of the system. Based on the initial assessment, Vinathletics Fitness Gym experiences inefficiencies due to manual record-keeping, data inaccuracies, and delays in processing information.

In this phase, the researchers established the general and specific objectives of the study, identified the target users (administrators, trainers, and members), and determined the overall scope and limitations of the system.

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Requirements Analysis Phase

During this phase, the researchers gathered and analyzed the system requirements through observation, interviews, and review of existing processes. The requirements were categorized into functional and non-functional requirements.

The key functional requirements identified include:

- Membership Management
- Attendance Tracking
- Workout Program Management
- Fitness Progress Monitoring
- Role-Based User Access

Non-functional requirements such as system usability, reliability, performance, and security were also considered to ensure the system meets quality standards.

System Design Phase

In the design phase, the overall architecture and structure of the system were defined. The SmartGym system follows a **three-tier architecture**, consisting of:

- **Presentation Layer (Frontend):** Developed using HTML, CSS, and JavaScript
- **Application Layer (Backend):** Developed using Python with FastAPI
- **Data Layer (Database):** Managed using SQLite with SQLAlchemy ORM

Additionally, system design tools such as Data Flow Diagrams (DFD), Input-Process-Output (IPO) diagrams, and database schema designs were created to visualize system processes and data flow.

Development Phase

The development phase involves the actual coding and implementation of the system. Using the Agile approach, the system was developed incrementally, with each module built and tested separately before integration.

The major modules developed include:

- User Authentication System
- Membership Management Module
- Attendance Tracking Module
- Workout Program Management Module
- Progress Monitoring Dashboard

Each module was continuously refined based on testing results and feedback from users.

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Testing Phase

The testing phase ensures that the system functions correctly and meets user requirements. Various testing methods were applied, including:

- **Unit Testing** – to verify individual components
- **Integration Testing** – to ensure modules work together properly
- **User Acceptance Testing (UAT)** – to evaluate system usability and functionality

Errors and bugs identified during testing were immediately corrected in subsequent iterations, ensuring system reliability and performance.

Deployment Phase

After successful testing, the system was deployed for actual use at Vinathletics Fitness Gym. The system was made accessible through a web browser, allowing users to log in and utilize its features in real time.

During deployment, users were oriented on how to use the system, including membership registration, attendance check-in, and program monitoring.

Maintenance and Continuous Improvement

The final phase involves maintaining and improving the system based on user feedback and performance evaluation. Since Agile promotes continuous iteration, updates and enhancements are regularly implemented.

Future improvements may include:

- Integration of online payment systems
- SMS or email notification features
- Development of a mobile application version
- Advanced analytics and reporting tools

This phase ensures that the system remains effective, up-to-date, and aligned with the evolving needs of the users.

SUMMARY

The Agile SDLC model provided a structured yet flexible framework for the development of the SmartGym system. Through iterative development, continuous testing, and user feedback integration, the system was successfully designed and implemented to improve gym operations, enhance data accuracy, and provide a better user experience for administrators, trainers, and members.

Evaluation Result

Summary of Findings

This chapter presents the findings based on the data gathered using the **Descriptive–Quantitative Survey Design** described in Chapter III. The responses were analyzed using the **Weighted Mean (WM = Σfx / N)** and interpreted using the approved 5-Point Likert Scale.

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The respondents consisted of **fifty (50) participants**, including the gym owner, trainers/staff, and gym members of Vinathletics Fitness Gym, selected through purposive sampling. These respondents directly interacted with the SmartGym system and were therefore capable of providing valid and reliable evaluations regarding its acceptability.

CONCLUSIONS

Based on the findings of the study, the following conclusions are drawn:

6. The SmartGym system effectively improves the accuracy of membership, attendance, and workout program records compared to manual processes.

7. The system demonstrates satisfactory reliability in supporting daily gym operations; however, improvements in accessibility and performance stability are necessary.

8. The system achieved a high level of user satisfaction, particularly in ease of use and interface design, as reflected by the "Strongly Agree" rating.

9. With a computed grand mean of 3.99 (Agree), the SmartGym system is acceptable for integration into Vinathletics Fitness Gym operations.

10. The Descriptive–Quantitative evaluation conducted among 50 participants confirms that SmartGym meets its objectives of enhancing operational efficiency, improving record accuracy, and supporting gym management processes.

RECOMMENDATIONS

Based on the conclusions of the study, the following recommendations are proposed:

7. Improve System Accessibility
Enhance hosting infrastructure and internet optimization to ensure 24/7 access and minimize downtime.

8. Strengthen System Performance
Optimize the backend system and database queries to improve speed and reduce potential crashes.

9. Integrate Additional Features

Future enhancements may include:

- Online payment and billing integration
- SMS or email notification system
- Dedicated mobile application version
- Advanced data analytics and reporting tools

10. Conduct Regular System Maintenance
Periodic updates, monitoring, and security audits should be implemented to maintain system reliability and protect stored data.

11. Expand Research Scope
Future studies may evaluate the system across multiple gym branches or incorporate biometric and IoT-based tracking technologies.

12. Continuous System Evaluation
    It is recommended that follow-up surveys be conducted annually to continuously assess system performance and user satisfaction.

Overall, the SmartGym: Web-Based Fitness Program Management and Membership Tracking System has been evaluated by 50 respondents and has proven to be an acceptable and beneficial technological solution for improving the operational efficiency of Vinathletics Fitness Gym.

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2. Mahesh Thapa (2021) developed Gym Management System. https://dspace.sxcjpr.edu.in/jspui/bitstream/123456789/836/1/Informatica2020_21.pdf#page=9

2023

- **Author(s): Minseong Kim, Sae-Mi Lee**
- **Year: 2023**
- **Link: Read Study**
- **Summary:**
  Identified factors influencing satisfaction and dissatisfaction in fitness apps, emphasizing usability and system design.
- **Author(s): Kittiya Sae-lee et al.**
- **Year: 2023**
- **Link: Read Study**
- **Summary:**
  Focused on workout tracking through a mobile health app and its impact on weight reduction across different age groups.
- **Author(s): Chao Wang, Zhigang Wang**
- **Year: 2023**
- **Link: Read Study**
- **Summary:**
  Explored how user involvement and experience influence value creation in fitness apps, highlighting the importance of engagement features.
- **Author(s): Mastura Ramli, Suzana Yusof**
- **Year: 2023**
- **Link: Read Study**
- **Summary:**
  Developed a responsive web-based gym system that automates membership management, scheduling, and payments. Results showed improved efficiency in gym operations.

- **Author(s): Salvador Angosto, Jerónimo García-Fernández, Moisés Grimaldi-Puyana**
- **Year: 2023**
- **Link: Read Study**
- **Summary:**
  A systematic review of 29 studies showing that fitness app adoption increased significantly due to digital transformation and health awareness.
- **Author(s):** Jerzy Tchórzewski, Wojciech Nabiałek, Artur Księżopolski
- **Year:** 2023
- **Link:** Read Study
- **Summary:**

1. Analyzed a web-based gym management system using systems theory and modeling. It demonstrated how system structure improves gym operations and data processing.
2. Abilar, J. C., Artica, B. B., Limsiaco, C. I. R., Subade, D. P., Tanael, D. V., & Centeno, C. J. (n.d.). Fitness game application for promoting physical activity and healthy lifestyle using ISO 25010 evaluation. https://pdfs.semanticscholar.org/a458/7a9b8689b2f7ddaae09e44b57b14c2268a07.pdf
3. Cauilan, J. M., Macaraeg, A. D., Parreño, R. S., Solomon, M. M., & Teria, J. K. R. (n.d.). Strong Tower Management System with health monitoring progress. https://www.scribd.com/document/648536224/5-25-2023
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5. Zhao, D., Wang, F., & Zhu, X.-f. (2023). Design and implementation of gym management system based on web. https://books.google.com/books?hl=en&lr=&id=97nJEAAAQBAJ&oi=fnd&pg=PA44&dq=web+based+gym+management+system&ots=YPo6lKZhmE&sig=RVq4l8DTpI_TTJLuB9QwuybE6Ic

2022

- **Author(s): Mobark Q. Aldossari, Quynh N. Nguyen, Anh Tac, Steven A. Schulz**
- **Year: 2022**
- **Link: Read Study**
- **Summary:**
  Examined how system quality and information quality influence user behavior and performance in fitness apps.

2025

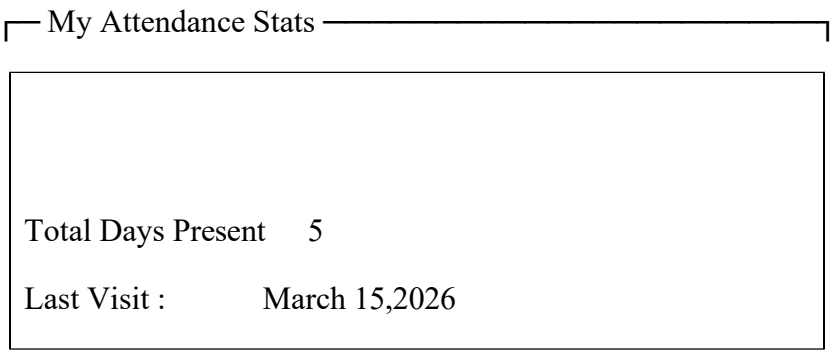
1. Bulaclac, J. R., Pastorfide, J. M. V., Herrera, N. G., & Tambio, C. N. C. (n.d.). King's Way cashless payment and product monitoring system with QR technology for the fitness industry. Nueva Ecija University of Science and Technology, Philippines. https://www.ijikm.org/Volume20/IJIKMv20Art035Bulaclac12314.pdf
2. Hussain, A. R., Yi, K. W., Halimi, S. N. A. R., & Abidin, S. M. F. S. (n.d.). Q-Fitness Gym System (QFGS): A web-based gym management platform. https://rsisinternational.org/journals/ijriss/view/q-fitness-gym-system-an-integrated-web-application-for-smart-gym-operations-and-member-engagement
3. Sabado, S. C., Espartinez, R. A., Acepcion, R., Jr., Bautista, J. V. P., Mancera, F. W., & Magdael, A. J. (n.d.). A web-based gym member monitoring system using predictive analytics and decision tree

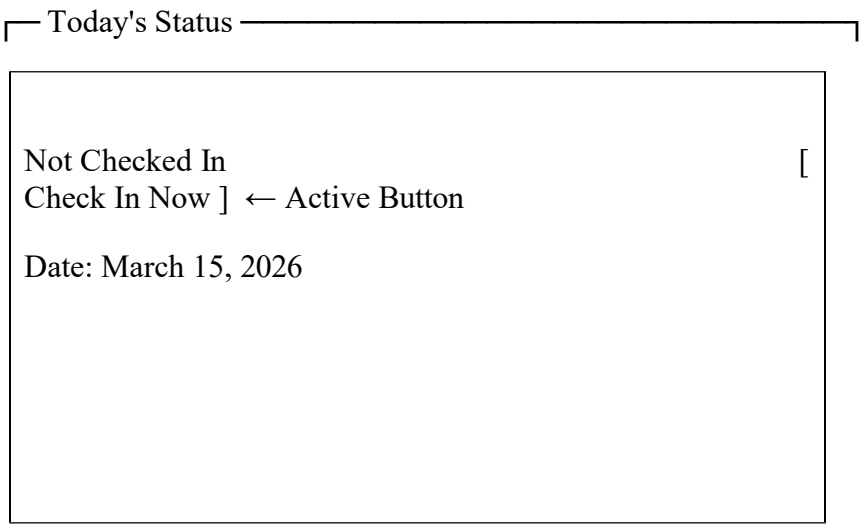
algorithm. Arellano University, Pasig Campus. https://www.ijltemas.in/submission/online/article/view/3287?utm_source

4. Villanueva, M. C., Sevilla, S. A. S., & Verecio, R. L. (2025). Development of Olympic Fitness Gym Management System with integrated QR code technology. https://doi.org/10.46932/sfjdv6n4-030

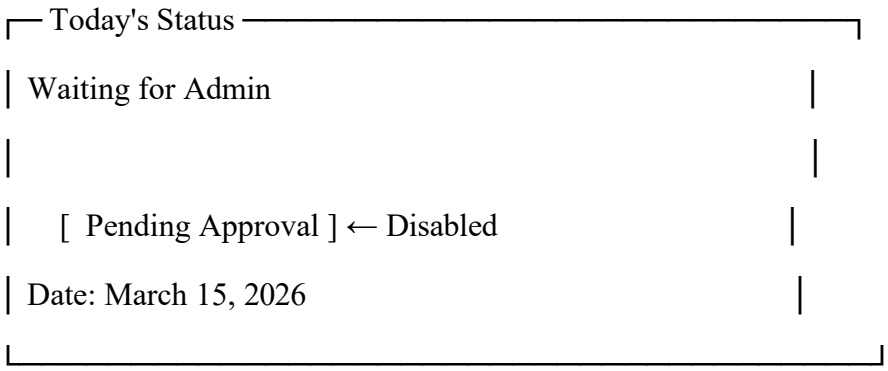
Sample Screen Output

MEMBER VIEW - Before Check-In





MEMBER VIEW - After Request (Pending)



Toast: "Check-in requested! Waiting for admin. "

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MEMBER VIEW - After Approval (Present)

```
┌─ Today's Status ──────────────────────────────────────
│ Present Today  ← Green text
│
│    [ Checked In ] ← Green, Disabled
│ Date: March 15, 2026
└──────────────────────────────────────────────────────
```

ADMIN DASHBOARD - Pending Check-Ins

```
┌                Pending Check-ins ──────────────────────────────
│ ┌──────┬──────────────────────┬──────┬──────────────┐
│ │      │ @john_doe            │2:30P │[Approve][Reject]│
│ └──────┴──────────────────────┴──────┴──────────────┘
└──────────────────────────────────────────────────────────────
```

ADMIN - After Approval (Activity Log)

```
┌─ Recent Activity ──────────────────────────────────────
│ ┌──────┬──────────────────┬──────────────────┬────────┐
│ │      │ @admin           │ Approved         │ 2:31P  │
│ │      │ Check-in         │ for @john_doe    │        │
│ └──────┴──────────────────┴──────────────────┴────────┘
└──────────────────────────────────────────────────────────
```

Pending table: Row removed

PROGRAM LISTING

1. Frontend - Member Check-In (script.js)

```
// Line 85-105: handleCheckIn()
async function handleCheckIn() {
const user = JSON.parse(localStorage.getItem('vin_current_user'));
const btn = document.getElementById('btn-checkin');
btn.innerText = "Processing...";
await fetch(`${API_URL}/attendance/checkin`, {
```

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```
method: 'POST',
headers: {'Content-Type': 'application/json'},
body: JSON.stringify({ username: user.username })
});
showToast("Check-in requested! Waiting for admin.", "success");
fetchMemberAttendance(user.username);  // Poll refresh
}
```

2. Backend - Check-In Endpoint (app.py Lines 210-225)

```
@app.post("/attendance/checkin")
def check_in(data: AttendanceCreate, db: Session = Depends(get_db)):
    now = datetime.now()
    date_str = now.strftime("%b %d, %Y")
    # Duplicate check (Step 2.1)
    existing = db.query(Attendance).filter(
        Attendance.username == data.username,
        Attendance.date == date_str
    ).first()
    if existing:
        raise HTTPException(400, "Already requested today!")
    # Insert Pending (Step 2.1)
    new_log = Attendance(username=data.username, date=date_str,
                         time=now.strftime("%I:%M %p"), status="Pending")
    db.add(new_log)
    db.commit()
        log_activity(db, data.username, "Requested Check-in")  # Step 2.2
    return new_log
```

3. Backend - Admin Approval (app.py Lines 240-250)

```
@app.put("/attendance/{record_id}/approve")
def approve_attendance(record_id: int, user: str, db: Session = Depends(get_db)):
```

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```
    record = db.query(Attendance).filter(Attendance.id == record_id).first()
    if record:
        record.status = "Present"  # Step 2.3
        db.commit()
        log_activity(db, user, "Approved Check-in", f"@{record.username}")
```

4. Frontend Polling - Real-time Sync (script.js Lines 50-70)

```
// 5s Poll for Member
setInterval(() => fetchMemberAttendance(user.username), 5000);
// Admin Pending Table
async function fetchPendingCheckins() {
  const pending = await fetch(`${API_URL}/attendance/pending/all`);
  // Render Approve/Reject buttons
}
```

User's Manual

SmartGym: Web-Based Fitness Program Management and Membership Tracking System

Introduction

The **SmartGym System** is a web-based application designed to manage gym membership, attendance tracking, workout programs, and user progress. It provides an efficient and user-friendly platform for administrators, trainers, and members of Vinathletics Fitness Gym.

This manual serves as a guide for users to understand how to operate the system effectively.

System Requirements

Hardware Requirements

• Desktop or Laptop Computer
• Minimum 4GB RAM
• Stable Internet Connection
• Mobile Device (smartphone or tablet) capable of running a modern web browser

Software Requirements

• Web Browser (e.g., Google Chrome, Microsoft Edge, or equivalent)
• Backend Server (FastAPI running locally or hosted)

Accessing the System

Step 1: Start the System

1. Open terminal/command prompt

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2. Navigate to backend folder

3. Run the command:

python main.py

4. Open the frontend file (e.g., index.html or siadaw.html) in a browser

Step 2: Login

1. Enter your **Username**

2. Enter your **Password**

3. Click **"Login"** or **"Access Dashboard"**

Default Admin Account:
Username: admin
Password: 123

User Roles and Access

The system has two primary user roles:

Administrator

- Manage members
- Approve/reject attendance
- Create workout programs
- View reports and logs

Member

- Request attendance check-in
- View workout programs
- Track progress and attendance history

Administrator Guide

Dashboard Overview

After logging in, the administrator will see:

- Member List
- Pending Check-ins
- Activity Logs
- Reports Section

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Managing Members

Add Member

1. Go to **Members Tab**
2. Click **"Add Member"**
3. Fill in required details:
   - Name
   - Email
   - Contact Number
   - Membership Plan
4. Click **Save**

Update Member

1. Select a member from the list
2. Click **Edit**
3. Update details
4. Click **Save**

Archive Member

1. Select member
2. Click **Archive**
3. Confirm action

Attendance Management

View Pending Requests

1. Go to **Dashboard**
2. Check **Pending Check-ins Table**

Approve Check-in

1. Click **Approve** button
2. Status changes to **Present**

Reject Check-in

1. Click **Reject** button
2. Status changes to **Rejected**

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5.4 Program Management

Create Program

1. Go to **Programs Tab**
2. Click **Add Program**
3. Enter:
   - Program Name
   - Difficulty Level
   - Duration
   - Workout Details
4. Click **Save**

Assign Program to Member

1. Go to **Members Tab**
2. Select a member
3. Assign a program
4. Save changes

5.5 Viewing Reports

1. Navigate to **Reports Tab**
2. View:
   - Attendance statistics
   - Member activity
3. Print or export if available

5.6 Activity Logs

1. Go to **Activity Tab**
2. View system logs:
   - Check-ins
   - Approvals
   - Updates

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6. Member Guide

6.1 Dashboard Overview

Members can view:

- Attendance Status
- Workout Program
- Progress Tracking

6.2 Check-In Process

Request Check-In

1. Click **"Check In Now"**
2. Status becomes **Pending Approval**

After Approval

- Status changes to **Present**
- Button becomes disabled

6.3 Viewing Attendance

- View attendance history
- Check total days present
- See last visit

6.4 Viewing Workout Program

1. Go to **My Program Section**
2. View assigned exercises
3. Track completed workouts

6.5 Updating Progress

1. Mark completed workouts
2. Save progress
3. System updates automatically

System Features

- Automated attendance tracking
- Real-time check-in approval
- Membership management

- Workout program assignment
- Activity logging system
- Role-based access control

Troubleshooting Guide

Issue	Possible Solution
Cannot login	Check username/password
Button not working	Refresh the page
No pending check-ins	No requests submitted
Server not running	Run python main.py
Duplicate check-in error	Only one check-in per day allowed

Security Notes

- Do not share login credentials
- Logout after use
- Only administrators can modify data
- System logs track all activities

Summary

The SmartGym system provides a centralized and efficient platform for managing gym operations. By following this manual, users can easily navigate the system, perform tasks, and maximize its features for improved fitness management and administrative efficiency.

T-TEST ANALYSIS

Purpose of the T-Test

A **T-test** is a statistical method used to determine whether there is a significant difference between a sample mean and a known or hypothesized population mean.

In this study, the T-test is used to evaluate the **system performance**, specifically the **response time** of the SmartGym system, to determine if it meets the acceptable standard.

Hypotheses

- **Null Hypothesis (H_0):**
  The system response time is **greater than or equal to 2 seconds** ($\mu \geq 2.0$) → Not acceptable
- **Alternative Hypothesis (H_1):**
  The system response time is **less than 2 seconds** ($\mu < 2.0$) → Acceptable

Formula Used

t=x¯−μ0snt = \frac{\bar{x} - \mu_0}{\frac{s}{\sqrt{n}}}t=nsx¯−μ0

Where:

- x¯\bar{x}x¯ = sample mean

- μ0\mu_0μ0 = hypothesized mean
- sss = standard deviation
- nnn = sample size

Given Data

- Sample Size (n) = 30
- Mean (x¯\bar{x}x¯) = 0.478 seconds
- Standard Deviation (s) = 0.078
- Hypothesized Mean (μ_0) = 2.0 seconds

Table 1. Summary of Data

Parameter	Value
Sample Size (n)	30
Sample Mean ($\bar{x}$)	0.478 seconds
Standard Deviation (s)	0.078
Hypothesized Mean (μ_0)	2.0 seconds
Level of Significance (α)	0.05
Type of Test	One-tailed

Solution

Substitute the values:

$$t = \frac{0.478 - 2.0}{0.078/\sqrt{30}}$$

$$t = \frac{-1.522}{0.01424}$$

$$t = -39.72$$

Critical Value

- Level of Significance: $\alpha = 0.05$
- Degrees of Freedom: df = 29
- Critical t-value ≈ **-1.699** (one-tailed test)

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Table 2. Computation of T-Value

Step	Formula / Solution	Result
1	Formula: $t = (\bar{x} - \mu_0) / (s / \sqrt{n})$	—
2	Substitute values	$t = (0.478 - 2.0) / (0.078 / \sqrt{30})$
3	$\sqrt{30}$	5.477
4	$s / \sqrt{n} = 0.078 / 5.477$	0.01424
5	$\bar{x} - \mu_0 = 0.478 - 2.0$	-1.522
6	$t = -1.522 / 0.01424$	-39.72

Table 3. Decision Rule

Criteria	Value
Degrees of Freedom (df)	29
Critical t-value ($\alpha = 0.05$)	-1.699
Computed t-value	-39.72
Decision Rule	Reject H_0 if $t < -1.699$

Decision Rule

- If **$t < -1.699$**, reject H_0
- If **$t \geq -1.699$**, accept H_0

Decision

Since:

$t = -39.72 < -1.699$

Reject the Null Hypothesis (H_0)

Basis	**Result**
Comparison	-39.72 < -1.699
Decision	**Reject H_0**

Interpretation

The result shows that the system's response time is **significantly less than 2 seconds**. Therefore, the SmartGym system meets the required performance standard.

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CONCLUSION

The T-test analysis confirms that the SmartGym system performs efficiently, with an average response time of **0.478 seconds**, which is significantly faster than the acceptable threshold of 2 seconds. This indicates that the system provides a fast and responsive user experience.

Cost Benefit Analysis

Overview

This section presents the cost–benefit analysis of the *SmartGym: Web-Based Fitness Program Management and Membership Tracking System*. The analysis evaluates the financial feasibility of implementing the system at Vinathletics Fitness Gym, considering its defined scope and limitations.

The system focuses on **membership management, attendance tracking, workout program management, and progress monitoring**, without including advanced features such as online payments, biometric integration, or multi-branch deployment.

1. Development Costs (One-Time Cost)

Category	Cost (PHP)	Description
System Development	25,000	Estimated 50 hours of development (₱500/hour)
Testing and Evaluation	5,000	Includes system testing and user evaluation
Software Tools	0	Open-source tools (FastAPI, SQLite, HTML, CSS, JavaScript)
Total Development Cost	**₱30,000**	

Operational Costs (Annual)

Category	Cost (PHP)	Description
Hosting / Server	6,000	VPS hosting (₱500/month) or local hosting option
System Maintenance	10,000	Updates, bug fixes, and monitoring
Data Backup	1,200	Cloud storage for database backup
Total Operational Cost (Annual)	**₱17,200**	

Expected Benefits (Annual)

Since the system does **not include payment processing**, benefits are focused on **operational efficiency and cost savings**.

Benefit	Value (PHP)	Description
Labor Cost Savings	240,000	Reduced manual work (2 hrs/day × 300 days × ₱400/hr)
Error Reduction	50,000	Minimizes data loss, duplication, and manual errors
Improved Decision-Making	30,000	Accurate reports for attendance and member tracking
Total Benefits (Annual)	**₱320,000**	

Net Benefit Analysis

Item	Amount (PHP)
Total Annual Benefits	320,000
Total Costs (Year 1)	47,200
Net Benefit (Year 1)	**₱272,800**

Return on Investment (ROI

$$ROI = \frac{\text{Net Benefit}}{\text{Total Cost}} \times 100$$

$$ROI = \frac{272,800}{30,000} \times 100 = 909\%$$

👉 ROI ≈ 900%

Payback Period

$$\text{Payback Period} = \frac{30,000}{320,000/12}$$

$$= \frac{30,000}{26,667} \approx 1.1 \text{ months}$$

The system pays for itself in **approximately 1 month**

Consideration of Scope and Delimitations

The cost–benefit results are influenced by the system's defined limitations:

Excluded Features

- No online payment system
- No biometric or IoT integration
- No mobile application
- Single-gym implementation only

Impact on Costs

- Lower development cost (no complex integrations)
- Reduced maintenance complexity
- Minimal infrastructure requirements

Impact on Benefits

- No direct revenue from payment automation
- Benefits mainly come from:
  - Efficiency improvements
  - Labor savings
  - Data accuracy

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Sensitivity Analysis

Scenario	Members	Annual Benefit	Payback Period
Base Case	100	₱320,000	1.1 months
Small Gym	50	₱160,000	2.2 months
Expanded Use	200	₱640,000	< 1 month

Summary

The cost–benefit analysis demonstrates that the SmartGym system is **financially viable and highly beneficial**. Despite its limited scope, the system provides significant savings through improved efficiency and reduced manual workload. With a **high ROI of approximately 900%** and a **payback period of about one month**, the implementation of the system is strongly justified.

Conclusion

The SmartGym system is a cost-effective solution for improving gym operations. Even without advanced features such as payment integration or multi-branch support, the system delivers substantial operational and financial benefits. Therefore, it is recommended for immediate implementation in Vinathletics Fitness Gy

FINAL DEFENSE PANEL REPORT

DATE / TIME OF DEFENSE	ACADEMIC YEAR / SEMESTER
APRIL-24-2026 / 1:00 P.M.	2025 - 2026 2ND Semester

SECTION A: PROGRAM INFORMATION	SECTION B: STUDENT INFORMATION
COLLEGE OF COMPUTER SCIENCE	MEMBERS: **De Leon, Jarri** **Dela Peña, Aidrian** **Escalante, Nathaniel** **Jurane, Adrian** **Rivas, Ivan Greg** **Sison, Johann Carlo** **Tanay, Karl Charton**
DEGREE/PROGRAM B.S. COMPUTER SCIENCE	
MAJOR/SPECIALIZATION N/A	

SECTION C: THESIS INFORMATION		
DEFENSE RESULT	NUMERICAL EQUIVALENT	THESIS TITLE
( ) PASSED	[1.0], [1.25]	**SmartGym: A Web-Based Fitness Program Management and Membership Tracking System for Vinathletics Fitness Gym**
( ) WITH MINOR REVISIONS	[1.5], [1.75]	
( ) WITH MAJOR REVISIONS	[2.0], [2.25], [2.75]	
( ) UNSATISFACTORY/FAILED	[5.0]	
* Revisions not approved and reported to the Office of the Department Chair, through the Panel Chair Report, not later than 10 days after the Final Defense Deliberation shall be considered as "FAILED". ** FAILED defense means student has to restart thesis cycle. ** FAILED defense means student has to restart thesis cycle.		

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SECTION D: THESIS PANEL		
NAME		**SIGNATURE**
PANEL CHAIR	MR. HOBEL J. DIOQUINO	
MEMBER	MRS. MAY ANN MANIEGO LOPEZ	
MEMBER	MR. TRAMMY ORTEGA	

SECTION E: PROGRAM INFORMATION		
NAME		**SIGNATURE**
ADVISER	**MS. JEANETHJOY D. NATURALES**	

IMPORTANT: This Final Defense Panel Report must be accomplished in four (4) copies by the Chair of the Defense Panel and submitted immediately to the Office of the Academic Affairs, without need for the revisions in the thesis. Distribution of the copies shall be: Office of the Academic Affairs (1); Office of the Registrar (1); the Department (1); and the student (1).

Pre Oral Panel Report

DATE / TIME OF DEFENSE	ACADEMIC YEAR / SEMESTER
DECEMBER-18-2025 / 11:00 A.M.	2025 - 2026 1st Semester

SECTION A: PROGRAM INFORMATION	SECTION B: STUDENT INFORMATION
COLLEGE OF COMPUTER SCIENCE	MEMBERS: **De Leon, Jarri** **Dela Peña, Aidrian** **Escalante, Nathaniel** **Jurane, Adrian** **Rivas, Ivan Greg** **Sison, Johann Carlo** **Tanay, Karl Charton**
DEGREE/PROGRAM B.S. COMPUTER SCIENCE	
MAJOR/SPECIALIZATION N/A	

SECTION C: THESIS INFORMATION		
DEFENSE RESULT	NUMERICAL EQUIVALENT	THESIS TITLE
( ) PASSED	[1.0], [1.25]	**SmartGym: A Web-Based Fitness Program Management and Membership Tracking System for Vinathletics Fitness Gym**
( ) WITH MINOR REVISIONS	[1.5], [1.75]	
( ) WITH MAJOR REVISIONS	[2.0], [2.25], [2.75]	

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( ) UNSATISFACTORY/FAILED	[5.0]	
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PANEL CHAIR	MR. HOBEL J. DIOQUINO	
MEMBER	MRS. MAY ANN MANIEGO LOPEZ	
MEMBER	MR. TRAMMY ORTEGA	

SECTION E: PROGRAM INFORMATION		
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ADVISER	**MS. JEANETHJOY D. NATURALES**	

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APPROVAL SHEET

In partial fulfillment of the requirements for the degree of **Bachelor of Science in Computer Science** this thesis entitled "**SmartGym: A Web-Based Fitness Program Management and Membership Tracking System for Vinathletics Fitness Gym**" has been prepared and submitted by:

Names	**Document (70%)**	**System (30%)**
1. **De leon, Jarri**	_____	_____
2. **Dela Peña, Aidrian**	_____	_____
3. **Escalante, Nathaniel**	_____	_____
4. **Jurane, Adrian**	_____	_____
5. **Rivas, Ivan Greg**	_____	_____
6. **Sison, Johann Carlo**	_____	_____

7. **Tanay, Karl Charton** _____ _____

JEANETH JOY D. NATURALES, DIT

Adviser

Approved and accepted by the Committee on Oral Examination with a grade of **1.75** on (date) **DECEMBER-18-2025** .

HOBEL J. DIOQUINO

Chairman

MR. TRAMMY ORTEGA

Member

MRS. MAY ANN MANIEGO LOPEZ

Member

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MR. HOBEL J. DIOQUINO, Chairman, Panel of Examiners, for his motivation, valuable insights, and brilliant recommendations for the refinement of the study;

And above all, the **ALMIGHTY GOD** for His mercy, guidance, and blessings.

DEDICATION

This is the fruit of countless and arduous sacrifices.

I devotedly dedicate this humble undertaking to our classmate

DE LEON, JARRI

DELA PEÑA, AIDRIAN

ESCALANTE, NATHANIEL

JURANE, ADRIAN

RIVAS, IVAN GREG

SISON, JOHANN CARLO

TANAY, KARL CHARTON

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for their hardwork and being cooperative to this study;

To my dissertation adviser, panel, and mentors

MR. HOBEL J. DIOQUINO, MR. MARK FELICIANO,

And **DR. JEANETH JOY D. NATURALES**

for their invaluable wisdom and guidance;

ST. CLARE COLLEGE OF CALOOCAN

Zabarte Rd., Camarin Caloocan City

REGISTRATION FORM

Student: [20226695] Nathaniel Rosario Escalante
Specialization: Bachelor of Science in Computer Science
Year Level: 4th Year
Age: 23
Term: S.Y. 2025-2026 2nd Term
Enlistment Date: 01/28/2026 06:37 AM
Payment Scheme: A.Y 2025-2026 2ND SEMESTER

Subjects

Set	Code	Description	Units			Fee
			Total	Lec	Lab	
	CS-GE18	**Asian/Western Civilization** Lecture Room • Thu 14:30 • 16:00 \nLecture Room • Tue 14:30 • 16:00	3.0	0.0	0.0	1,500.00
	CS-PD101	**Parallel and Distributed Computing** Lecture Room • Thu 11:30 • 13:00 \nLecture Room • Tue 11:30 • 13:00	3.0	0.0	0.0	1,500.00
	CS-NC101	**Networks and Communications** Lecture Room • Thu 13:00 • 14:30 \nLecture Room • Tue 13:00 • 14:30	3.0	0.0	0.0	1,500.00
	CS-GE17	**Economics (w/ Taxation & Agrarian Reform Integrated)** VR PR1 • Thu 17:00 • 20:00	3.0	0.0	0.0	1,500.00
	CS-THS102	**CS Thesis Writing 2** Computer Laboratory • Sat 16:00 • 19:00	3.0	0.0	0.0	1,500.00
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		Total:	18.0			9,000.00

Fees Breakdown

Particulars	Amount
EMA DISCOUNTED MATRICULATION FEE	14,000.00
Total:	14,000.00

Payment Summary

Tuition Fee:	9,000.00
Laboratory:	0.00
Miscellaneous:	14,000.00
Payment Scheme Additional Charge:	0.00
Penalty:	1,500.00
Total Amount + Other:	24,500.00
Deductions:	
Payment Scheme Discount	
ERNESTO M. ADALEM SCHOLARSHIP	9,000.00
Total Amount Due:	15,500.00

A.Y 2025-2026 2ND SEMESTER

Downpayment (14%) — 2026-01-29	1,960.00
1st Periodic (11%) — 2026-01-30	1,540.00
Prelim (11%) — 2026-02-13	1,540.00
2nd Periodic (11%) — 2026-02-27	1,540.00
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4th Periodic (11%) — 2026-04-30	1,540.00
Final (9%) — 2026-05-15	1,260.00
Added penalties () —	1,500.00
Added penalties	1,500.00
Additional Charges	0.00

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