MEMBERSHIP MANAGEMENT SYSTEM

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ABSTRACT

This project presents the development of a Membership Management System (MMS) to address the inefficiencies associated with manual membership processes such as registration, renewals, and activity tracking. Organizations that rely on traditional methods face challenges including human error, operational delays, and difficulty maintaining member engagement. The proposed MMS automates these processes, significantly reducing administrative workload and enhancing data accuracy. Then, the system integrates multi-channel communication tools, including email, SMS, and push notifications, to improve communication between organizations and their members. This ensures timely updates on events, renewals, and payments, resulting in improved member satisfaction and engagement. Additionally, the MMS provides real-time data analytics and reporting, enabling organizations to monitor member behavior, financial contributions, and event participation, thus facilitating data-driven decision-making. Besides, a centralized database ensures the consolidation of membership data, preventing data fragmentation and supporting scalability as the organization grows. By automating routine administrative tasks and streamlining communication, the MMS enables organizations to focus on strategic goals while providing more efficient, secure, and scalable system for membership management. Ultimately, this system enhances the overall membership experience and improves operational efficiency and member retention.

Area of Study (Minimum 1, Maximum 2): Low-Code Platforms, Membership System

Keywords (Minimum 5, Maximum 10): Membership Management, Low-Code Development, Workflow Automation, Digital Transformation, Event and Attendance Tracking

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LIST OF ABBREVIATIONS

MMS	Membership Management System
POS	Point of Sale
UI	User Interface
SMS	Short Message Service (text messaging)

CHAPTER 1

The background and motivation of our research, our contributions to the field, and the thesis outline are all presented in this chapter. In this modern age, membership management systems (MMS) play an important role for modern organizations that rely on a membership-based structure, such as clubs, non-profits, and subscription services. The membership management systems allow organizations to manage member information, track engagement, and automate administrative tasks more easily. As more people rely on digital tools to manage their memberships, the demand for strong, efficient, and scalable membership management systems increases compared to old manual methods. Traditionally, most organizations tracked the member information and activity using manual methods such as spreadsheets or paper-based records. These strategies may be effective in smaller contexts, but when the number of memberships increases, the old manual system will become inefficient and problematic. Organizations using an old manual system will keep encountering difficulties in maintaining correct records, keeping up with member renewal processes, guaranteeing timely communications, and securing sensitive personal data.

In short, the organizations are expected to offer more pleasant online experiences to the members. Nevertheless, the old manual systems cannot provide a system that is more efficient, secure, and scalability. As a result, many organizations are transitioning to automated membership management systems to speed up their procedures, improve the member experience, and comply with data protection regulations. However, many existing membership systems continue to have imperfections, particularly in terms of technology, real-time monitoring, analysis of data, and security.

1.1 Problem Statement and Motivation

1.1.1 Problem Statement

Lack of digital tools has become one of the key problems in the membership management system (MMS), based on the research by S. S. Y. Yap and R. A. Aziz [8]. Limited use of digital tools commonly causes organizations to encounter issues of managing memberships effectively, which results in inefficiencies in tracking and analyzing member engagement, renewals, and other relevant members' information and activities. Besides, digital transformation, which includes implementing advanced tools, is essential for optimizing organizational procedures, according to Kraus et al. (2021) [9]. This is especially important in membership situations where tracking and reporting capabilities are restricted by old technologies. The membership management system (MMS) may address this issue and meet the demand for contemporary technologies by providing a digital platform with automation and real-time updates.

Next, **manual data processing** can cause serious problems for organizations since it depends on labour-intensive methods, which are susceptible to human error. The above type of record-keeping might result in extinct or incorrect member information, making it difficult to keep records current, measure activity, and communicate with members on time. The time necessary to manually input, update, and check data also greatly slows down operations, resulting in inefficiencies and an increased administrative effort. The absence of automation in manual procedures hampers scaling operations, especially as the membership base expands.

Moreover, an organization **without a centralized database** faces issues like data fragmentation, difficulties updating member information, and administrative inefficiencies. A centralized database in a membership management system is critical to handle multiple elements of membership, including registration, financial transactions and activity tracking. Furthermore, a centralized system provides a single point of truth, limiting the possibility of data discrepancies and loss while increasing overall operating efficiency. Besides, coordinating group memberships across separate organizations becomes extremely difficult without a centralized database in the membership management system. Without central supervision, independent organisations must

work in a decentralised way, complicating the task of guaranteeing data integrity and effective access control. This decentralization can result in fragmented data, a lack of trust across organizations, and inadequate access control methods, all of which are necessary for collaboration. Furthermore, the lack of centralized authority makes it difficult to coordinate membership changes, manage big dynamic group structures, and maintain security while limiting the transmission of sensitive information among peers.

1.1.2 Motivation

There are some motivations for doing this research. Firstly, the motivation for using a membership system is to streamline and automate member-related procedures. Organizations that use manual techniques for business activities like membership registration, renewals, and financial tracking frequently face inefficiencies, such as human mistakes and a heavy administrative load. Hence, to reduce the mistakes that occur, most organizations create MMS to satisfy the members' expectations.

Next, the second motivation for conducting this research is that the Membership Management System (MMS) provides effective data management and reporting when organizations handle an increasing volume of member data. It provides comprehensive capabilities for tracking important data, including membership trends, financial contributions, and participation in events in real time. This ability to monitor and analyse data enables organisations to make educated, data-driven decisions that improve services and strengthen engagement initiatives. An MMS enables administrators to study member behaviour, forecast future trends, and adjust their services to better suit members' wants, hence improving the overall member experience and organizational performance.

1.2 Research Objectives

1.2.1 To reduce administrative workload by automating manual processes

Many organizations still rely on manual methods such as paper-based records or

spreadsheets to handle member data, renewals, and event management. This process is labour-intensive, prone to errors, and inefficient. Hence, we will implement automating manual processes to reduce these problems, to let staff focus on more strategic tasks and improve overall efficiency.

1.2.2 Provide digital tools for the organization's analysis

Membership management with digital tools enables organisations to use data-driven insights to improve their operations. These tools may create data on member engagement, retention rates, and participation patterns, which provide a clear view of overall success. Real-time data and visual dashboards enable organizations to discover critical areas for development, track the performance of membership initiatives, and make educated resource allocation choices, ensuring they accomplish their strategic objectives while increasing member happiness.

1.2.3 Implement a centralized database to streamline data management

The membership management system will implement a centralized database to store all the membership data, including personal member details, financial transactions, event participation, and communication history. This can eliminate data fragmentation and reduce the risk of data duplication or errors. Furthermore, the centralized database will allow for easier scalability as the organization expands, and it can support the management of thousands of members with ease.

1.3 Project Scope and Direction

The project scope of a Membership Management System (MMS) encompasses the development of a comprehensive, web-based platform designed to automate and streamline critical membership processes for organizations of varying sizes and purposes. The system will provide a centralized solution for handling all aspects of membership management, including registration, renewals, event management, and reporting. Through its intuitive interface, the MMS will enable organizations to efficiently manage member information, track engagement metrics, and facilitate seamless communication with members through integrated channels such as email, SMS, and in-app notifications. The MMS will provide strong analytics capabilities in addition to

administrative tasks, enabling businesses to track important performance metrics. This data-driven approach will empower organizations to make informed decisions about membership strategies, identify trends, and implement targeted engagement initiatives. The development direction will prioritize user experience, system security, and scalability to ensure the platform can grow alongside the organization while maintaining performance and data integrity. While the initial release will focus on core membership management functionality, the architecture will be designed to accommodate future enhancements and potential integrations with other organizational systems. By automating routine administrative tasks and providing comprehensive tools for member engagement and analysis, the MMS aims to transform how organizations manage their membership operations, ultimately leading to improved operational efficiency, enhanced member satisfaction, and stronger organizational growth.

1.4 Contributions

Through this project, the organization has developed a custom membership management system designed to enhance efficiency in tracking members, managing events, and recording attendance. By creating this system, I've provided St. John with a comprehensive, easy-to-use platform that streamlines the management of member profiles, training data, and event participation. The system automates tasks that were once done manually, such as tracking attendance and member participation, which reduces administrative work and the likelihood of human error. This boosts organizational efficiency, freeing up time for staff to focus on higher-impact tasks.

One of the major aspects of this project is the integration of event management and attendance tracking. Members can easily register for events, and their attendance is automatically recorded, simplifying the process for both members and administrators. This makes event management more accurate and efficient by reducing the need for manual tracking and paperwork. Real-time notifications about training sessions, renewal dates, and significant events are also provided by the system. This increases members' engagement by keeping them updated on forthcoming events and due dates. The project also employs a data-driven approach to membership management, giving administrators the ability to gather and examine important data regarding engagement levels, event attendance, and member activity. Insights from this data aid in decision-making and enhance upcoming projects and programs. Even for people with limited technical expertise, the user-friendly interface, created with Inistate, is simple to use and intuitive. The

system guarantees that members and administrators, regardless of their technical expertise, can use it efficiently by providing an user friendly platform.

1.5 Report Organization

To provide a clear and understandable presentation of the investigation, this report is separated into eight chapters. The project's background, problem statement, motivation, objectives, scope, contributions, and overall structure are all presented in Chapter 1. The literature review is presented in Chapter 2, which looks at membership management procedures used by groups like BSMM, Lembaga Zakat Selangor, KRS, CoSA Club, and Scouts. The necessity for a centralized and automated solution is justified by highlighting their shortcomings and contrasting them with the suggested St. John Membership Management System. The suggested methodology is covered in Chapter 3, with a focus on the Agile development approach. Planning, design, development, testing, and deployment phases are described, along with how stakeholder input and iterative improvements were integrated into the project.

Chapter 4 presents the system requirements gathered from surveys and analysis. Both functional and non-functional requirements are identified, forming the foundation for the design and development of the system.

Chapter 5 focuses on the design phase, covering database normalization, entity–relationship diagrams, activity diagrams, and use case diagrams. These design elements illustrate the structure, workflow, and functionality of the proposed system. Chapter 6 explains the development phase using the Inistate low-code platform. It describes the implementation of modules such as Member Registration, Renewal, Rank, Certification, Examination, Training, Duty, Event, Announcement, and Payment, ensuring that organizational needs are fully addressed. Chapter 7 highlights the testing phase, documenting the test cases, execution procedures, and outcomes. This ensures that the system’s reliability, accuracy, and performance meet the required standards. Finally, Chapter 8 concludes the project by concluding the

contributions of the project, reflecting on challenges faced, and suggesting recommendations for future enhancements to improve scalability, integration, and overall system effectiveness.

CHAPTER 2

Literature Reviews

2.1 Previous Work

In recent years, Malaysian clubs, societies, and service organizations have faced challenges in managing membership using manual or paper-based systems. These practices often result in inefficiencies, duplication, and delays in communication. To address these challenges, several organizations have developed or adopted digital systems. The following reviews highlight examples of clubs and societies that illustrate the problems of manual systems and the improvements made through digitization.

2.1.1 Pengakap Malaysia (Scouts)

The youth uniformed society Pengakap Malaysia (Scouts) is one of the largest co-curricular organizations in Malaysian schools, emphasizing discipline, leadership, and community service among students. As part of its structured activities, Scouts are required to maintain a Buku Log Pengakap (Scout Log Book), which serves as an official record of their personal details, achievements, badge progress, and participation in weekly or special programs. The log book has long been a central tool in documenting a member's journey, acting as both an administrative record and a formative exercise in personal responsibility.

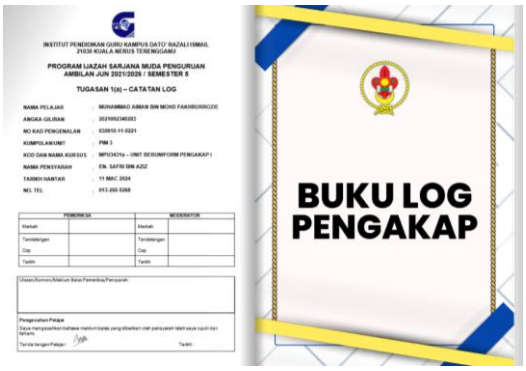


Figure 2.1.1 Buku Log Pengakap (Scout Log Book)

2.1.2 Kadet Remaja Sekolah (KRS)

Kadet Remaja Sekolah (KRS), a national uniformed youth organisation, continues to depend on handwritten logbooks for recording membership data, activities, and assessments. Recent editions such as the BUKU LOG KRS 2025 show printed templates that require manual entry of biodata, attendance, and program notes [2],[3]. Likewise, the BUKU LOG KRS compiled by Nurul Hazwany Binti Muhammad Hussin includes pages for member registration, activity folios, and attendance sheets that are completed by hand [2],[3]. Teacher-level references such as the BUKU LOG GURU KRS UPSI further illustrate the reliance on manual registers, where information is decentralised into personal books or files instead of being integrated into a centralized database. This practice slows down consolidation, increases the risk of missing data, and creates duplication issues when compiling end-of-term or yearly reports.

2.1.3 CoSA Club at UiTM Sabah

Paper forms and manual procedures have long been used by the Computer Science Club (CoSA) at Universiti Teknologi MARA Sabah to handle registration and event membership. But in 2023, CoSA unveiled the CoSA Management System 2.0, a digital platform designed to automate member registration, compile data about club activities, and lessen dependency on time-consuming paperwork. The UiTM INVENTOPIA extended abstract claims that the system helps prevent errors like duplicate or missing records that afflicted the previous system and drastically decrease the amount of time spent on manual sign-ups [4].

2.1.4 Lembaga Zakat Selangor (LZS)

Lembaga Zakat Selangor (LZS) plays important role in managing zakat collection and distribution in the state of Selangor. It serves as a bridge between zakat payers and beneficiaries, ensuring that funds are channelled to asnaf groups such as the poor, single mothers, students, and other individuals in need. Over the years, LZS has gained a reputation for being one of the most

structured and trusted zakat institutions in Malaysia, with a strong presence across the state through its service counters and outreach programs. However, despite its size and importance, the process of registering or applying for zakat assistance is still rooted in conventional methods. Applicants are required to download and print forms from the official portal, fill them in by hand, and submit the completed documents at physical LZS counters before the application can be processed [5]. The official website also highlights various counter services for verification and intake [6], reflecting how the onboarding journey, while partially digital at the information stage, still depends heavily on face-to-face interactions and paper-based records.

2.1.5 Persatuan Bulan Sabit Merah Malaysia (BSMM)

The Persatuan Bulan Sabit Merah Malaysia (BSMM), or Malaysian Red Crescent Society, is one of the largest uniformed co-curricular bodies in Malaysian schools. Its student chapters are actively involved in first aid training, community service, and health-related activities, often serving as a platform for cultivating leadership, discipline, and volunteerism. To support these activities, members and treasurers are expected to maintain Buku Log Bulan Sabit Merah (log books), which record financial transactions, membership details, and routine activities. Specimens of these logbooks, accessible online through platforms like Scribd, reveal that much of the record-keeping process is still manual, involving handwritten ledgers for receipts, payment statements, and membership registers [7], [8]. These books are structured with pre-printed tables and sections for financial reporting, asset records, and activity documentation, all of which must be filled in by hand. While this practice reflects long-standing traditions of accountability within school-level BSMM units, it also illustrates the continued reliance on paper-based documentation rather than a digitized membership and financial management system.

2.2 Limitation

2.2.1 Pengakap Malaysia (Scouts)

Even though the *Buku Log Pengakap* has long been part of Scouting culture and plays a role in encouraging responsibility, it also comes with several challenges when viewed as a membership management system. The log books are still fully paper-based and kept individually by members, which means that information is scattered across hundreds of personal files instead of being stored in a single centralized database. As a result, troop leaders and administrators are required to manually collect and compile reports at the school or district level, a process that takes a great deal of time and often leads to duplication of records [1]. Because all entries are handwritten, mistakes are also common, ranging from illegible handwriting and incomplete sections to inconsistencies in how information is recorded. These errors reduce the accuracy and reliability of reports produced later on [1].

The physical nature of the books creates additional risks, since they can easily be misplaced, damaged, or lost, which often leads to gaps in membership history, especially when students transfer to new schools. Higher-level leadership also cannot access these records directly, which means they have little real-time visibility into member progress, badge achievements, or troop activity. Another important limitation is that the log book system cannot connect with other administrative functions such as fee tracking, certification management, or attendance monitoring. Leaders are therefore forced to handle these tasks separately in silos. Taken together, these issues show that while the log book remains useful as a tool for personal development, it is no longer suitable as an efficient, scalable, and transparent approach to membership management in today's context [1].

2.2.2 Kadet Remaja Sekolah (KRS)

The continued reliance on handwritten logbooks in KRS creates a number of limitations that mirror the challenges faced by other uniformed societies. Because all membership and activity records are kept on paper, information is fragmented across individual student and

teacher files instead of being consolidated into a central database. This makes it difficult for school-level leaders, let alone district or state administrators, to access reliable and up-to-date information on member participation or performance. The manual format also opens the door to human error, such as miswritten biodata, incomplete attendance, or arithmetic mistakes in activity evaluations [2], [3]. Over time, these small errors accumulate and can significantly affect the accuracy of reports submitted to higher authorities.

Another issue is the time-consuming nature of compiling and reconciling records, especially at the end of a term or academic year when reports must be submitted. Teachers and student leaders often spend many hours copying information from individual books into summary reports, which increases administrative workload and reduces efficiency [2]. Moreover, because the logbooks are physical objects, they are vulnerable to being misplaced, damaged, or lost which leads to gaps in membership histories that cannot easily be recovered. Finally, these manual systems are not integrated with other administrative needs, such as certification, event planning, or training documentation, which forces leaders to maintain separate records and further fragments the overall membership management process. Collectively, these issues show that while the KRS logbooks maintain tradition and instill discipline, they are no longer adequate as a robust or scalable membership management system in today's digital era [3].

2.2.3 CoSA Club at UiTM Sabah

Before the introduction of the CoSA Management System, the club's reliance on paper forms and handwritten records created several inefficiencies. Registration had to be conducted physically during events or at designated counters, and committee members were responsible for collecting, sorting, and storing these paper forms. This approach was labor-intensive and prone to delays, as information often needed to be manually transcribed into spreadsheets or reports. Errors such as duplicate sign-ups, incomplete forms, and misplaced records were common, which not only complicated membership tracking but also reduced the accuracy of participation data [4]. Moreover, because the system was not centralized, records were often fragmented across different files or documents, making it difficult to access a complete picture of club membership and activities at any given time.

Another limitation of the manual system was the significant administrative burden placed on student leaders. Much of their time was spent on repetitive clerical work—collecting forms, cross-checking member lists, and preparing attendance reports—rather than on planning meaningful activities for the club. This manual process also lacked scalability: as the club grew in size, the amount of paperwork multiplied, making it increasingly difficult to manage effectively. Additionally, the absence of digital integration meant that there was no automated backup of membership records, raising the risk of data loss if forms were misplaced or damaged. These issues highlighted the inadequacy of manual approaches for a modern, technology-oriented club like CoSA, and provided the motivation for developing a digital membership management system that could improve accuracy, efficiency, and transparency [4].

2.2.4 Lembaga Zakat Selangor (LZS)

This counter-based onboarding workflow creates several limitations that hinder efficiency and transparency. Firstly, requiring applicants to visit service counters in person can be inconvenient, especially for those living in rural or remote areas who may face transportation barriers. Secondly, staff are tasked with manually reviewing and keying in information from handwritten forms into internal systems, which introduces risks such as spelling mistakes, misinterpretation of handwriting, and data duplication. Thirdly, the reliance on physical documents slows down processing time; applications may be delayed due to misplaced forms, incomplete attachments, or human backlog at counters. Fourthly, this system reduces data visibility across the organization—information remains fragmented in local offices or filing systems, limiting higher management's ability to access real-time statistics or monitor application flows. Furthermore, manual file storage increases the risk of document loss or damage, which poses problems for auditing, historical tracking, and long-term transparency. Taken together, these factors highlight that although LZS has integrated some digital tools on its website, its onboarding process is still non-centralized, labour-intensive, and prone to human error, underscoring the need for a fully digitized membership and assistance management system [5].

2.2.5 Persatuan Bulan Sabit Merah Malaysia (BSMM)

The reliance on handwritten logbooks creates a number of challenges that undermine efficiency, transparency, and scalability in managing BSMM school chapters. Firstly, manual bookkeeping is highly vulnerable to arithmetic errors during calculations of income, expenses, or membership fees, especially when handled by students with limited accounting experience. Secondly, transcription errors may occur when information from receipts or attendance lists is copied into ledgers, which can cause inconsistencies in financial reporting. Thirdly, paper logbooks are fragile and difficult to preserve, as they can be misplaced, damaged, or lost due to human negligence or environmental factors such as humidity and wear-and-tear over time. This increases the risk of incomplete historical records, making audits or retrospective analysis unreliable. Fourthly, the lack of a centralized digital system means that data remains siloed within individual schools; district or state BSMM administrators have no real-time access to member or financial data, forcing them to depend on delayed and often inconsistent manual submissions. This fragmentation complicates coordination across chapters and hinders timely decision-making. Finally, preparing end-of-term or annual reports is labour-intensive, requiring treasurers and advisors to spend many hours reconciling receipts, tallying membership records, and producing summaries that a digital MMS could generate instantly. Collectively, these issues demonstrate that while the manual system instills responsibility and accountability, it is increasingly inadequate for ensuring accuracy, efficiency, and transparency in a modern organizational context [7],[8].

2.3 Comparison

Criteria	**Pengakap Malaysia (Scouts)**	**Kadet Remaja Sekolah (KRS)**	**CoSA Club at UiTM Sabah**	**Lembaga Zakat Selangor (LZS**	**Persatuan Bulan Sabit Merah Malaysia (BSMM)**	**St John Membership System**
Data Management	Handwritten *Buku Log*,	Simple sign-up through	Old: paper forms; New:	Manual onboardin	Paper-based treasurer/membership books	Fully centralized

	decentralized [1]	app/website; limited offline	centralized CoSA 2.0	g at counters		digital database
Error Risks	High handwriting errors, duplication, incomplete data	High: miswritten biodata, missing attendance, arithmetic errors	Old: duplicate/missing forms; New: reduced errors	Medium: risks in manual re-entry and misplaced forms	High: transcription mistakes, lost pages, arithmetic errors	Low: digital forms reduce errors
Efficiency	Low efficiency, manual reporting, time-consuming	Low: heavy admin workload, slow compilation	Old: slow manual sign-ups; New: efficient process	Low: manual verification delays processing	Low: reconciliation during audits is slow	High: automated reports, renewals, tracking
Accessibility	Limited accessibility, no real-time access for higher leadership	Limited: fragmented across student and teacher files	Old: paper-only; New: centralized access	Limited: applicants cannot track in real time	Limited: fragmented across schools, poor oversight	High: real-time dashboards for admins & leaders
Integration	None, no link to finance, training, or events	None, no link to certification, training, or events	Old: no integration; New: partial link with events	Limited: onboarding not connected to full ecosystem	Limited: onboarding not connected to full ecosystem	Strong: integrated with finance, training, certification, events, attendance

Table 2.3 Comparison between Clubs and Societies

In short, the table above shows the the comparison that most organizations and societies in Malaysia, such as Pengakap Malaysia, KRS, and BSMM, continue to depend on manual,

paper-based systems that are decentralized, error-prone, and time-consuming to manage. Even in more advanced cases, such as CoSA Club at UiTM Sabah and Lembaga Zakat Selangor, digital initiatives only partly address the challenges, leaving gaps in integration, accessibility, and efficiency. In contrast, the proposed St. John Membership System provides a fully centralized and integrated solution, offering real-time access, automated reporting, and strong linkages across finance, training, certification, events, and attendance. This comparison demonstrates the pressing need for a modern digital platform to overcome the limitations of existing manual or semi-digital systems.

Club or Society Membership System/ Features	**Pengakap Malaysia (Scouts)**	**Kadet Remaja Sekolah (KRS)**	**CoSA Club at UiTM Sabah**	**Lembaga Zakat Selangor (LZS**	**Persatuan Bulan Sabit Merah Malaysia (BSMM)**	**St John Membership System**
Centralized database	✗	✗	✗	✗	✗	✔
Low Error Risks	✗	✗	✗	✗	✗	✔
High Efficiency	✗	✗	✗	✗	✗	✔
Real time Dashboard	✗	✗	✗	✗	✗	✔
Intergration	✗	✗	✗	✗	✗	✔

Table 2.4 Comparison of Membership System Features Across Organizations

This table compares the features of membership systems used by various organizations such as Scouts, KRS, CoSA Club, LZS, and BSMM against the proposed St. John Membership System. Most existing systems rely on manual or decentralized processes, leading to higher error risks, lower efficiency, and lack of real-time dashboards. In contrast, the proposed St. John Membership System supports centralized databases, reduced error risks, higher efficiency, real-time dashboards, and integration, making it more comprehensive and efficient.

CHAPTER 3

Proposed Method/Approach

Figure 3.1 Agile Methodology

3.1 Agile Methodology

The Agile software development methodology was used in the creation of the St. John Membership System. Agile was chosen for this project because of its flexibility and iterative nature, which allow for ongoing improvements based on input from users. Unlike traditional linear models such as Waterfall, Agile promotes short development cycles known as "sprints," where planning, design, development, and testing activities are conducted simultaneously. This approach is especially suitable for systems like membership management, where requirements may evolve based on user needs or operational feedback [10].

Each sprint in this project lasted approximately two weeks and focused on delivering working functionality. At the end of each sprint, a functional prototype of the module was presented to stakeholders, including supervisors and committee members from the St. John organization. Their feedback was used to improve the system in the following sprint, ensuring that the system remained aligned with real-world use. This process allowed rapid adaptation to changes, minimized risk, and improved collaboration between developers and end users, as emphasized by Ponce and Ponce in their analysis of Agile's educational adoption trends [10].

3.1.1 Phase 1: Planning (Requirement Gathering)

The sprint planning process, alternatively known as the requirement gathering phase, is where we define scope and priorities for system development. For the St. John Membership System, needs were determined by review of the literature and characteristics of existing membership systems as well as stakeholder consultation related to operational needs. The approach also allowed the project to concentrate on key modules such as member registration, membership renewal, training and so on. The result of this phase was a concrete list of requirements that we used to organize the next sprints.

To support this process, a questionnaire was designed and distributed using Google Forms to a group of respondents. The survey included closed-ended questions addressing key areas such as membership registration, attendance management, and reporting and analytics. Feedback collected from these respondents provided practical insights into user expectations and priorities. In order to make sure that the system was developed to correspond with both organizational objectives and user needs, the questionnaire data were then combined and utilized as a point of reference during the development process.

3.1.2 Phase 2: Design

The objective of the design phase is to transform the gathered requirements into a workable system development plan. The design process placed a strong emphasis on setting up workflows, outlining module interactions, and creating states and transitions for every module because this project was built utilizing the Inistate low-code platform. Workflow charts and entity-relationship diagrams (ERD) were drawn to show the interactions between the various modules, such as Member Registration, Training, Certification, and Renewal. Scalability was guaranteed by this modular design, which also made the system adaptable to future developments.

In addition, form layouts and user interface (UI) mockups were developed directly within Inistate to preview how administrators and members would interact with the system. These

mockups helped refine the arrangement of input fields, dropdowns, and linked modules, ensuring the platform was easy to navigate. The outputs from this design phase served as direct references for the sprint development, while also allowing stakeholders to confirm that the proposed system design matched their operational requirements.

3.1.3 Phase 3: Development

The development phase followed an iterative sprint-based approach, where features were implemented incrementally rather than all at once. Using the Inistate low-code platform, the project team developed core modules first, such as membership registration and rank management, before progressing to more advanced modules like certification and finance and payment. Each sprint cycle included coding, configuration, and internal reviews to ensure that the deliverables met the predefined requirements.

The ability to swiftly incorporate user feedback was a significant benefit of this iterative development process. Stakeholders were shown the half completed system at the conclusion of each sprint, and enhancements were noted. This agile methodology decreased the possibility of significant rework at a later stage and made sure the system changed in response to real-world requirements.

3.1.4 Phase 4: Testing

Testing was conducted at the end of each sprint to ensure the membership system built in Inistate worked correctly. Unit testing was applied to modules such as Membership Renewal and Attendance to confirm that their workflows and states functioned as expected. System testing also checked simple integrations, for example when updating a member's profile information was reflected correctly in the renewal records. These tests helped maintain consistency and reliability across the system.

3.1.5 Phase 5: Deployment

In the deployment phase, the membership system was released using the Inistate low-code platform. The system was first tested in a small environment with key modules such as

Member Registration and Training, before adding other modules step by step. This gradual release made it easier for administrators to adapt without major disruption.

To support deployment, short training and simple guides were provided to show administrators how to manage tasks such as renewals, payments, and reports. Because Inistate is low-code, adjustments could be made quickly if issues were found. This helped the transition from manual work to digital management run more smoother.

CHAPTER 4

System Requirements Phase

4.1 Introduction

This chapter presents the system requirements for the St. John Membership Management System (MMS). The requirements were identified through data collected using Google Forms, with 30 respondents providing their feedback. The survey aimed to capture user expectations on important features, challenges with existing systems, and improvements needed. These findings serve as the foundation for designing and developing the system.

4.2 Data Collection Process

The questionnaire was designed using Google Forms and distributed online to members, administrators, and individuals familiar with membership-based systems. It included multiple-choice and rating scale questions covering areas such as membership registration, renewal, attendance, payments, and system usability. The survey also asked about challenges faced with current systems and preferences for new features like automation, mobile compatibility, and digital membership cards. In total, 30 responses were collected and analyzed.

4.3 Analysis of Data

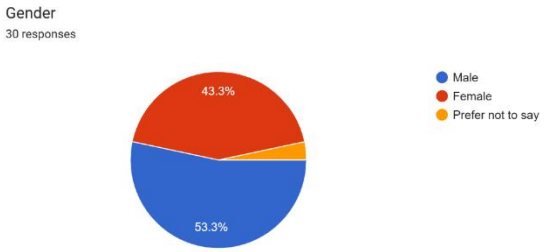


Figure 4.3.1 Gender Distribution of Respondents

It illustrates the gender distribution of the 30 respondents. The majority of participants were male, accounting for 53.3% (16 respondents). Female respondents made up 43.3% (13 respondents), showing a strong level of female participation as well. Meanwhile, a small minority of 3.4% (1 respondent) preferred not to disclose their gender. This balanced distribution between male and female respondents suggests that the data collected reflects perspectives from both genders, making the survey results more representative.

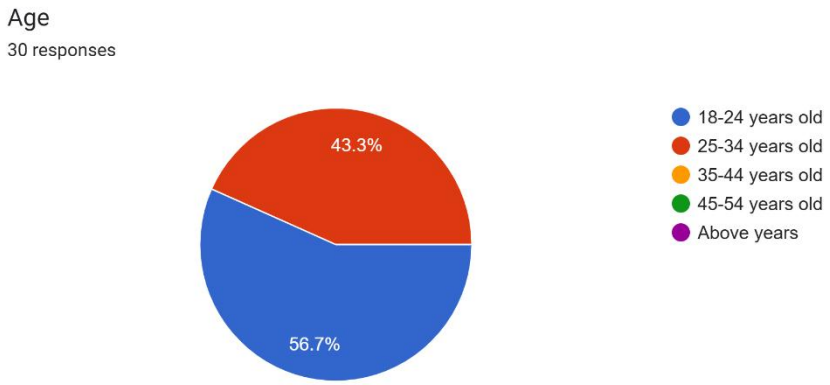


Figure 4.3.2 Age Distribution of Respondents

Figure above presents the age distribution of the 30 respondents. The majority of respondents, 56.7% (17 individuals), fall within the 18–24 years old category, indicating that younger participants made up the largest group in the survey. This suggests that the system's design and features may need to be tailored to a younger user base who are more digitally engaged. The second largest group, 43.3% (13 respondents), belong to the 25–34 years old category, showing strong representation from young working adults. Notably, no respondents were aged 35 years and above, which highlights that the feedback was primarily contributed by younger demographics. This result emphasizes that the system should prioritize user-friendliness and mobile compatibility to meet the expectations of younger members.

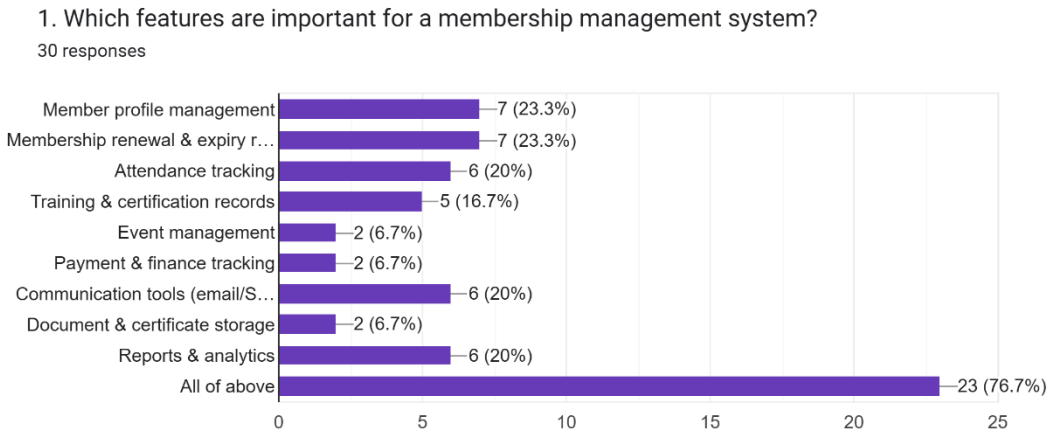


Figure 4.3.3 The Most Important Features of MMS

Figure 4.3.3 highlights the features respondents considered most important in a membership management system. A large majority, 76.7% (23 respondents), selected "All of the above", reflecting the demand for a complete system that integrates multiple functions rather than focusing on individual features. Among specific features, member profile management and membership renewal & expiry reminders were equally prioritized, each chosen by 23.3% (7 respondents). Attendance tracking and communication tools followed closely at 20% (6 respondents each), while training & certification records were highlighted by 16.7% (5 respondents).

In contrast, features such as event management, payment & finance tracking, and document & certificate storage were considered less critical, with only 6.7% (2 respondents each) selecting them individually. This suggests that while all features are valued, users strongly prefer a system that provides a holistic package of functionalities rather than limited tools.

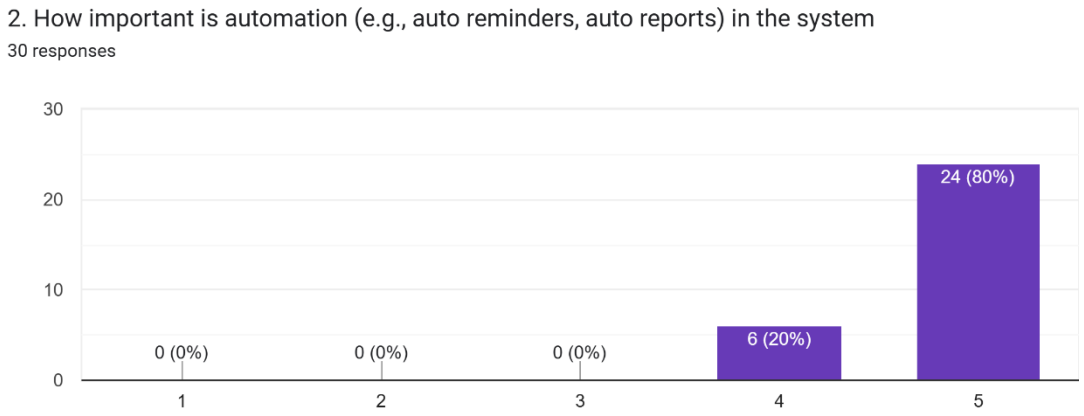


Figure 4.3.4 Important of Automation

The chart shows that automation is considered highly important by the respondents. A large majority of 80% (24 respondents) rated it as "very important" (5), while the remaining 20% rated it as "important" (4). Notably, no one rated automation as neutral or unimportant. This indicates that features like auto reminders, auto reports, and automated processes are viewed as essential in improving the efficiency of a membership management system.

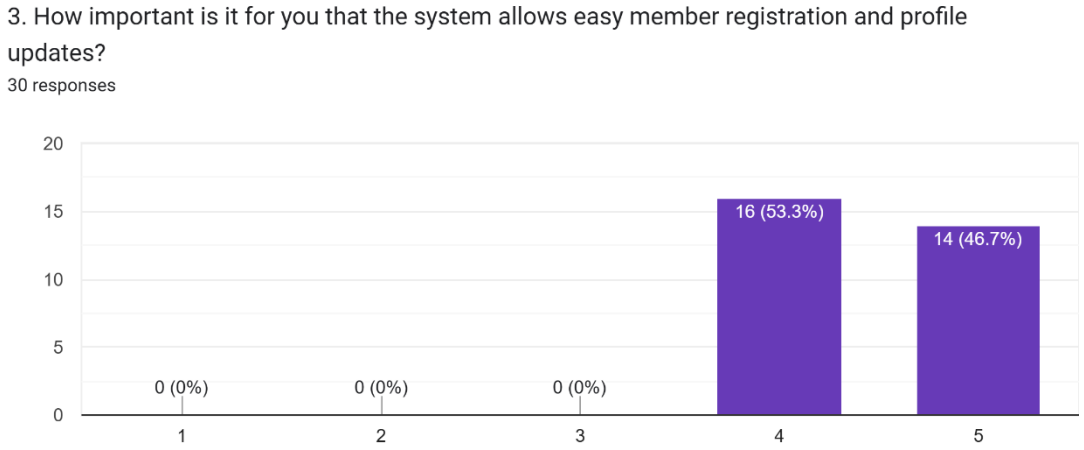


Figure 4.3.5 Importance of Easy Member Registration and Profile Updates

According to the responses, all participants valued the ability to easily register members

and update their profiles. More than half, 53.3% (16 respondents), rated this as important (4), while 46.7% (14 respondents) considered it very important (5). The absence of lower ratings (1–3) highlights that every respondent agreed on the need for simple and user-friendly profile management functions in the system.

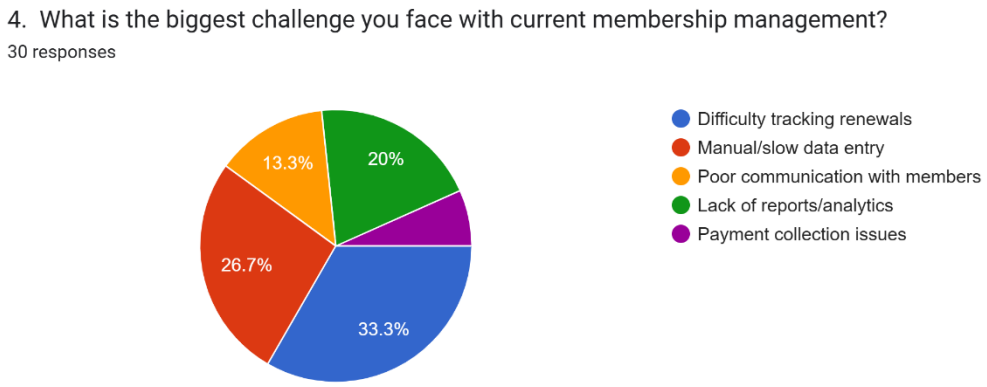


Figure 4.3.6 Challenges of Membership Management

The chart illustrates the main issues faced with existing membership systems. The most common challenge reported was difficulty in tracking renewals (33.3%, 10 respondents). This was followed by manual or slow data entry, affecting 26.7% (8 respondents). Poor communication with members was highlighted by 20% (6 respondents), while 13.3% (4 respondents) struggled with payment collection issues. Lastly, a smaller proportion, 6.7% (2 respondents), indicated lack of reports or analytics as a problem. These findings emphasize the need for automation, better tracking tools, and improved communication features.

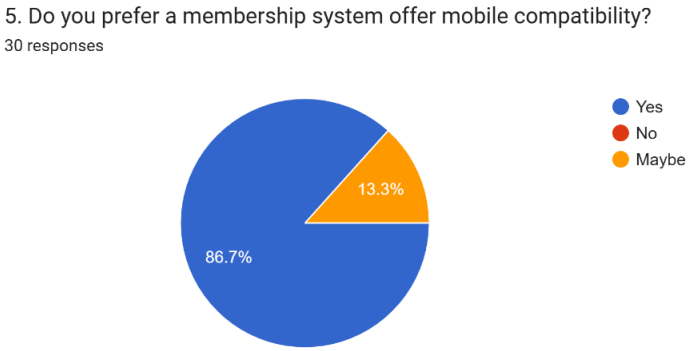


Figure 4.3.7 Preference of Mobile Compatibility

Figure 4.3.7 shows that the majority of respondents (86.7%) prefer the membership system to offer mobile compatibility. This highlights that most users expect to access the system easily on their phones or tablets. Only 13.3% of respondents were uncertain, while none rejected the idea. This indicates that mobile support is considered a vital feature for convenience and usability.

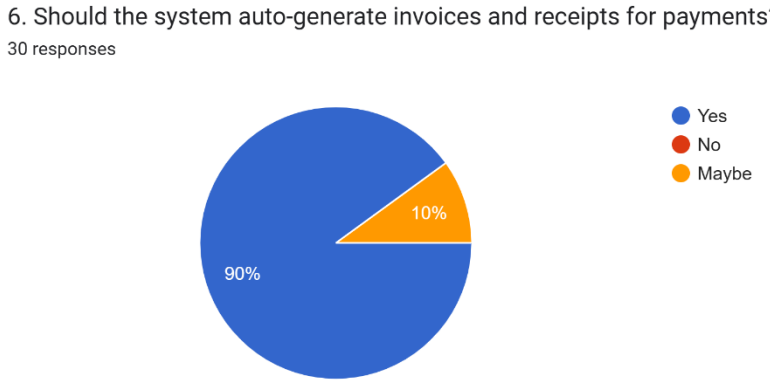


Figure 4.3.8 Automation of Generating Invoice and Reciepts

Figure 4.3.8 illustrates that 90% of respondents want the system to auto-generate invoices and receipts for payments. This reflects a strong demand for automation in financial processes to reduce manual work. Only 10% of respondents were unsure, and

no one opposed the feature, showing that automated payment records are widely expected as a standard function.

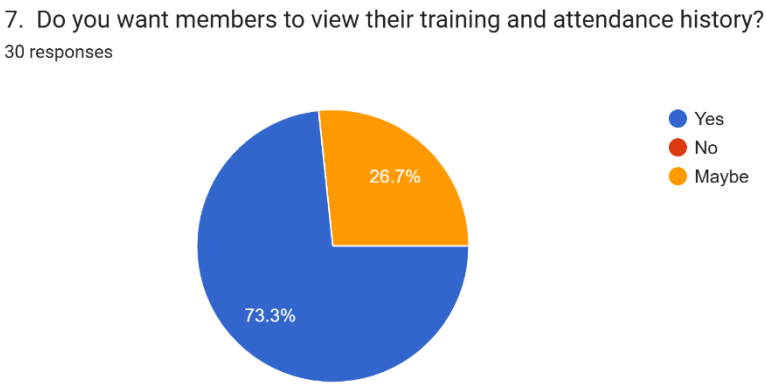


Figure 4.3.9 Member Preference for Viewing Training and Attendance History

Figure 4.3.9 reveals that 73.3% of respondents want members to be able to view their training and attendance history. Meanwhile, 26.7% were uncertain, and none opposed the feature. This suggests that transparency in records is important, as it allows members to track their progress and maintain accurate documentation of their participation.

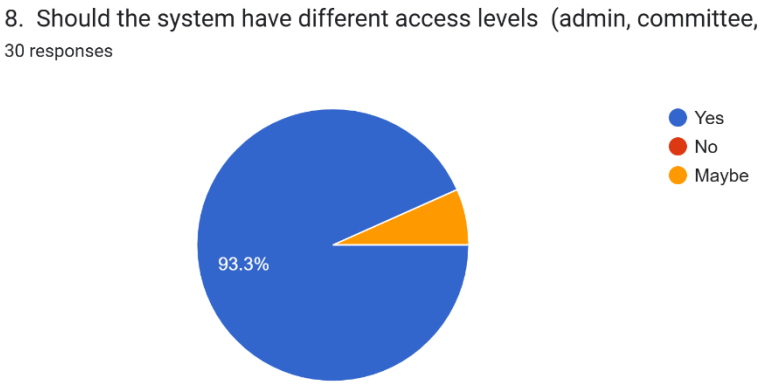


Figure 4.3.10 Important of Levels of Accessibility

Figure 4.3.10 indicates that almost all respondents (93.3%) support having different access levels in the system, such as admin, committee, and member roles. Only 6.7% were uncertain, and no one disagreed. This result emphasizes the importance of role-based access control for security and proper management of system functions.

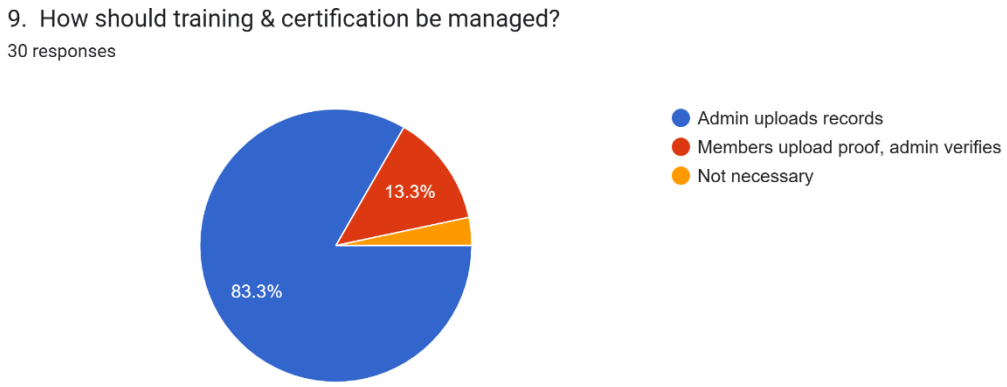


Figure 4.3.11Way of Manage Training and Certification

It shows 83.3% of respondents prefer that training and certification records be uploaded and managed directly by administrators. A smaller group (13.3%) suggested that members upload proof which is later verified by admins, while only 3.3% felt it was unnecessary. This highlights that respondents largely trust centralized admin control for accuracy and consistency.

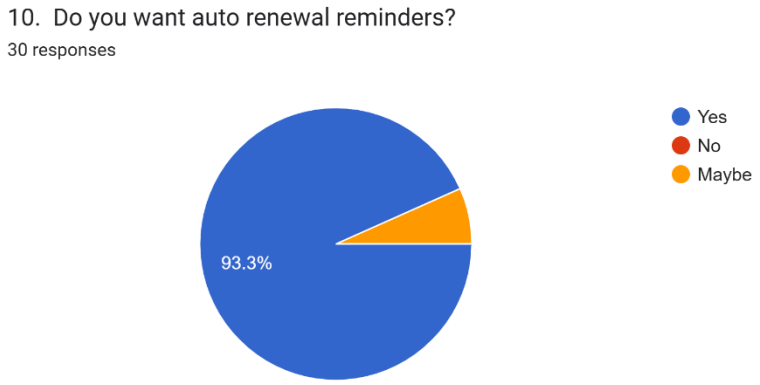


Figure 4.3.12 Preference of Auto Renewal Reminders

An overwhelming 93.3% of respondents indicated the need for automatic renewal reminders, showing strong support for automation in this area. Only a small fraction (6.7%) answered “Maybe,” and none rejected the feature outright. This makes it clear that timely reminders are seen as an essential part of efficient membership management.

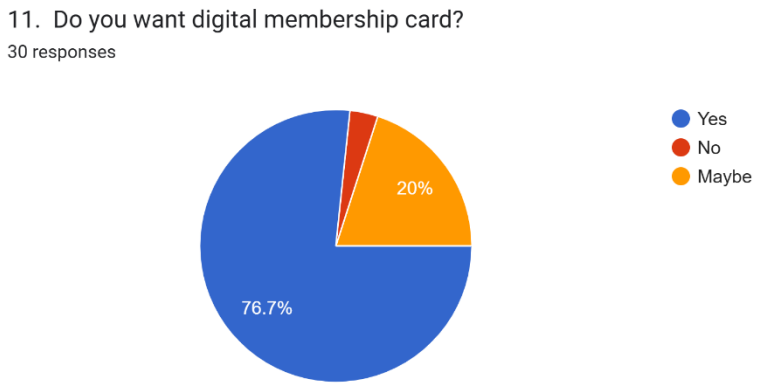


Figure 4.3.13 Preference for Digital Membership Cards

Most respondents (76.7%) expressed interest in having digital membership cards, reflecting the growing trend of digital convenience. Around 20% were unsure, while only 3.3% rejected the idea. This suggests that while the majority support digital cards, some members may still prefer traditional formats.

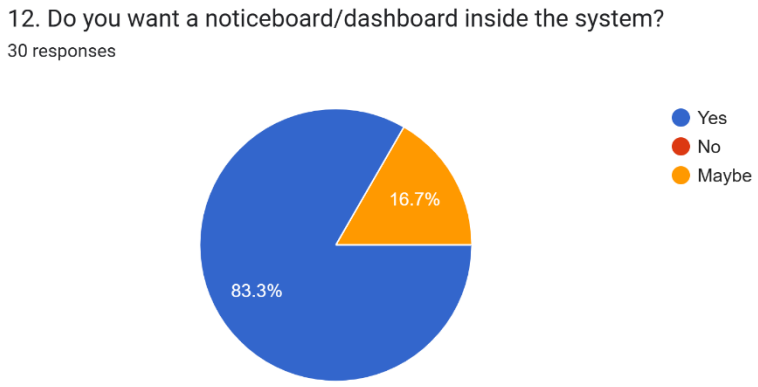


Figure 4.3.14 Preference for Dashboard

The data shows that 83.3% of respondents want a noticeboard or dashboard feature inside the system, emphasizing its role in improving communication and updates. Meanwhile, 16.7% were uncertain, but none opposed the feature. This indicates strong overall support for an internal communication platform.

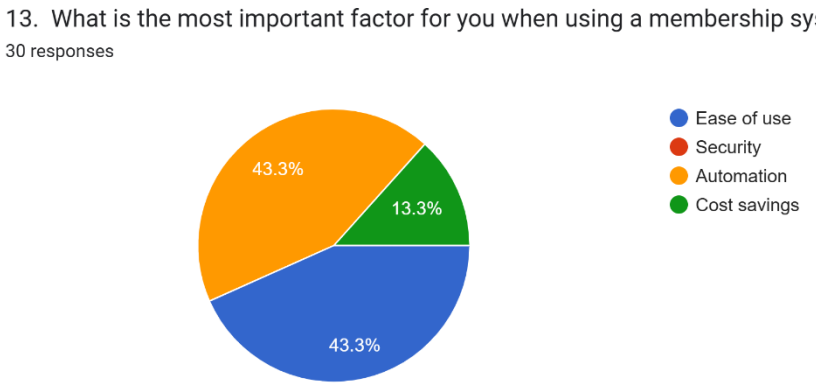


Figure 4.3.15 Important factor of Using Membership System

Respondents were almost evenly split between ease of use (43.3%) and automation (43.3%) as the most important factor when using a membership system. A smaller portion (13.3%) prioritized cost savings, while none selected security as the top concern. This reflects that simplicity and automation are the main drivers of user expectations.

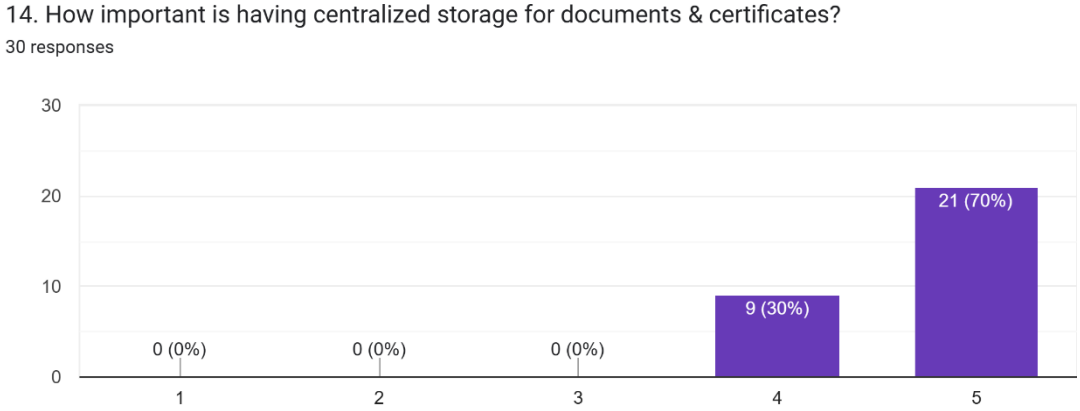


Figure 4.3.16 Important of Centralized Storage for Documents and Certifications

Most respondents (70%) rated centralized storage as “very important,” while another 30% choose it as “important.” No one choose it as less important. This indicates unanimous agreement that storing documents and certificates in one place is a highly valued feature.

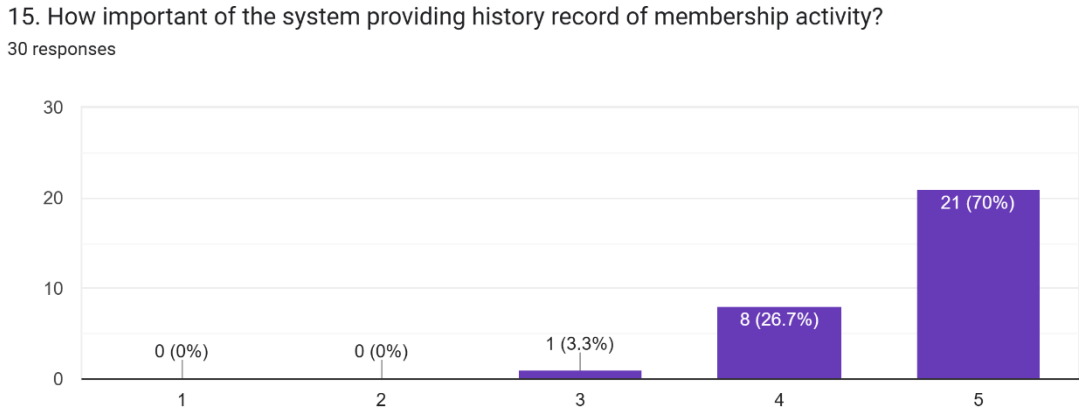


Figure 4.3.17 Important of History Record in Membership System

A large majority (70%) rated the importance of maintaining a history record of membership activity as “very high,” while 26.7% considered it “important.” Only 3.3% gave it a neutral rating, and no one found it unimportant. This reflects that keeping historical records is a key requirement for accountability and transparency

4.4 Summary

The findings from the Google Form survey clearly show that users expect a complete, easy-to-use, and automated membership management system. The requirements identified combine both core features such as registration, attendance, payments, and renewals, with non-functional aspects such as usability, security, and mobile access. These requirements provide the foundation for building the St. John Membership Management System using Inistate low-code.

In addition, respondents highlighted the importance of automation, such as reminders and auto-generated reports, to reduce manual workload and improve efficiency. Centralized storage for documents and certificates was also emphasized, ensuring easy access and better record management. The demand for features like digital membership cards, access level control, and mobile compatibility shows that users value convenience and security. Overall, the analysis of requirements provides a clear direction for developing a reliable system that aligns with both organizational goals and user expectations.

CHAPTER 5

Design Phase

5.1 Unnormalized Form (0NF)

Before any normalization rules are applied, the data is in its raw state, known as the Unnormalized Form (UNF). In this format, data is frequently kept in a single table with multiple-valued attributes, redundant information, or repeated groups. It shows how data is initially gathered, without being organized for database efficiency. The following entities are included in the 0NF schema:

Unnormalized Form(0NF)
Document ID (PK)
Full Name
Date of Birth
Renewal Date
Rank
Certification Name
Exam Name
Attendance Status
Training Title
Duty Name
Event Name

Table 5.1 Unnormalized Form (0NF)

5.2 First Normal Form (1NF)

First Normal Form (1NF) is the initial stage of database normalization where all attributes must contain only atomic (indivisible) values, and there should be no repeating groups or multi-valued attributes. Each record must be unique, with a clearly defined primary key. By applying 1NF, data is organized into structured tables, reducing redundancy and making it easier to query and maintain consistency [11].

Membership Registration Module

RegistrationID (PK)	FullName	Identification Number	DateOfBirth	Email	Gender

Table 5.2.1 First Normal Form (1NF)- Membership Registration Module

Membership Renewal Module

RenewalID (PK)	MemberID (FK)	RenewalDate	ExpiryDate

Table 5.2.2 First Normal Form (1NF)- Membership Renewal Module

Member Record Module

RecordID (PK)	MemberID (FK)	MemberName	Identification Number	Gender	Phone	Email	JoinDate	Rank

Table 5.2.3 First Normal Form (1NF)- Membership Record Module

Rank Module

RankID (PK)	MemberID (FK)	Rank	IssueDate	ExpiryDate	PromotionFiles	Remarks

Table 5.2.4 First Normal Form (1NF)- Rank Module

Certification Module

CertificationID (PK)	MemberID (FK)	CertificationName	IssueDate	ExpiryDate	CertificationFile

Table 5.2.5 First Normal Form (1NF)- Certification Module

Examination Table

ExamID (PK)	ExamName	ExamType	ExamDate	Remarks

Table 5.2.6 First Normal Form (1NF)- Examination Module

Examination Registration Table

ExamRegID (PK)	ExamID (FK)	MemberID (FK)	Remarks

Table 5.2.7 First Normal Form (1NF)- Examination Registration Module

Exam Attendance Table

ExamAtID (PK)	ExamID (FK)	MemberID (FK)	AttendanceStatus

Table 5.2.8 First Normal Form (1NF)- Examination Attendance Module

Training Table

TrainingID (PK)	TrainingTitle	Date	Location	Trainer	Remarks

Table 5.2.9 First Normal Form (1NF)- Training Module

Training Registration Table

TrainingRegID (PK)	TrainingID (FK)	MemberID (FK)	Remarks

Table 5.2.10 First Normal Form (1NF)- Training Registration Module

Training Attendance Table

TrainingAtID (PK)	TrainingID (FK)	MemberID (FK)	AttendanceStatus	Remarks

Table 5.2.11 First Normal Form (1NF)- Training Attendance Module

Duty Table

DutyID (PK)	DutyName	DutyType	DutyDate	Remarks

Table 5.2.12 First Normal Form (1NF)- Duty Module

Duty Registration Table

DutyRegID (PK)	DutyID (FK)	MemberID (FK)

Table 5.2.13 First Normal Form (1NF)- Duty Registration Module

Duty Attendance Table

DutyAtID (PK)	DutyID (FK)	MemberID (FK)	AttendanceStatus

Table 5.2.14 First Normal Form (1NF)- Duty Attendance Module

Event Table

EventID (PK)	EventName	EventType	EventDate	Remarks

Table 5.2.15 First Normal Form (1NF)- Event Module

Event Registration Table

EventRegID (PK)	EventID (FK)	MemberID (FK)

Table 5.2.16 First Normal Form (1NF)- Event Registration Module

Event Attendance Table

EventAtID (PK)	EventID (FK)	MemberID (FK)	AttendanceStatus

Table 5.2.17 First Normal Form (1NF)- Event Attendance Module

5.3 Second Normal Form (2NF)

Second Normal Form (2NF) is achieved when:

- The table is already in 1NF.
- All non-key attributes are fully dependent on the whole primary key, not just part of it.

This mainly affects tables with composite primary keys (where more than one field is used as the key). In the 1NF design of the St. John Membership System, modules such as Examination, Training, Duty, and Event initially mixed both activity definitions and member participation data in the same table. This caused partial dependencies, because attributes such as ExamName or TrainingTitle depended only on part of the key instead of the whole.

Examination Table

ExamID (PK)	ExamName	ExamType	ExamDate	Remarks

Table 5.3.1 Second Normal Form (2NF)- Examination Module

Examination Registration Table

ExamRegID (PK)	ExamID (FK)	MemberID (FK)	Remarks

Table 5.3.2 Second Normal Form (2NF)- Examination Registration Module

Exam Attendance Table

ExamAtID (PK)	ExamID (FK)	MemberID (FK)	AttendanceStatus

Table 5.3.3 Second Normal Form (2NF)- Examination Attendance Module

Training Table

TrainingID (PK)	TrainingTitle	Date	Location	Trainer	Remarks

Table 5.3.4 Second Normal Form (2NF)- Training Module

Training Registration Table

TrainingRegID (PK)	TrainingID (FK)	MemberID (FK)	Remarks

Table 5.3.5 Second Normal Form (2NF)- Training Registration Module

Training Attendance Table

TrainingAtID (PK)	TrainingID (FK)	MemberID (FK)	AttendanceStatus	Remarks

Table 5.3.6 Second Normal Form (2NF)- Training Attendance Module

Duty Table

DutyID (PK)	DutyName	DutyType	DutyDate	Remarks

Table 5.3.7 Second Normal Form (2NF)- Duty Module

Duty Registration Table

DutyRegID (PK)	DutyID (FK)	MemberID (FK)

Table 5.3.8 Second Normal Form (2NF)- Duty Registration Module

Duty Attendance Table

DutyAtID (PK)	DutyID (FK)	MemberID (FK)	AttendanceStatus

Table 5.3.9 Second Normal Form (2NF)- Duty Attendance Module

Event Table

EventID (PK)	EventName	EventType	EventDate	Remarks

Table 5.3.10 Second Normal Form (2NF)- Event Module

Event Registration Table

EventRegID (PK)	EventID (FK)	MemberID (FK)

Table 5.3.11 Second Normal Form (2NF)- Event Registration Module

Event Attendance Table

EventAtID (PK)	EventID (FK)	MemberID (FK)	AttendanceStatus

Table 5.3.12 Second Normal Form (2NF)- Event Attendance Module

5.4 Third Normal Form (3NF)

Third Normal Form (3NF) is achieved when a database is already in 2NF and all non-key attributes depend only on the primary key, not on another non-key attribute. This eliminates transitive dependencies, ensuring that each table represents only one concept.

Rank Table

RankID (PK)	MemberID (FK)	Rank	IssueDate	ExpiryDate	PromotionFiles	Remarks

Table 5.4.1 Third Normal Form (3NF)- Rank Module

Certification Table

CertificationID (PK)	MemberID (FK)	CertificationName	IssueDate	ExpiryDate	CertificationFile

Table 5.4.2 Third Normal Form (3NF)- Certification Module

Payment Table

PaymentID (PK)	MemberID (FK)	PaymentType	PaymentDate	Amount

Table 5.4.3 Third Normal Form (3NF)- Payment Module

5.5 ERD Diagram

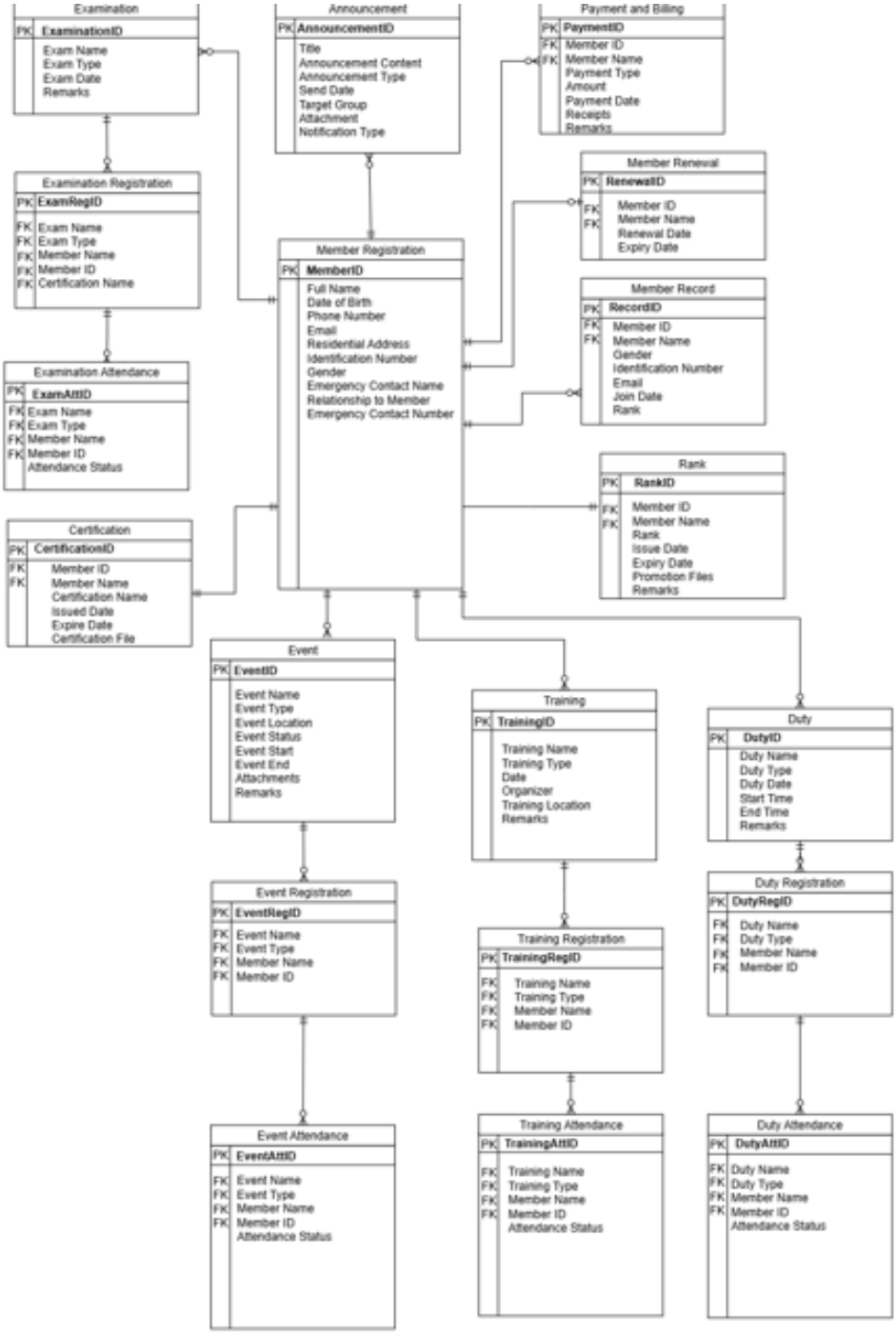


Diagram 5.5.1 Entity Relationship Diagram for St John Membership System

The Entity-Relationship Diagram (ERD) for the Membership Management System illustrates the logical structure of the database, showing how entities are related to one another. At the core of the system lies the member registration entity, which serves as the foundation for all other modules. This entity stores essential details of each member, including full name,

identification number, date of birth, gender, contact information, and emergency contacts. By centralizing member information, it ensures accuracy and consistency across the system, while preventing duplication of records. Once registered, validated member information is transferred into the member record entity, which acts as the official repository of approved members. This separation ensures that only legitimate and verified members are included in the organization's database.

Membership continuity is supported through the member renewal entity. This module stores information related to renewal dates, expiry dates, and amounts due, thereby allowing administrators to monitor membership validity. Closely linked to this, the Rank entity records details of members' ranks, issue and expiry dates, and promotion files. It formalizes the hierarchical structure within the organization and provides evidence of progression. Similarly, the certification entity documents certifications earned by members, including issue and expiry dates and digital copies of certification files, ensuring transparency in professional development records.

The system also manages assessments through the examination entity, which defines details of examinations such as exam name, type, and date. This entity is linked to examination registration, where members register for exams, and to examination attendance, which tracks participation. This separation reduces redundancy, as exam details are stored only once and referenced by registration and attendance records. A parallel structure is applied to training activities. The training entity outlines training sessions organized by the institution, while training registration records member enrolments, and training attendance documents their participation. This layered design ensures clarity between the definition of activities and actual member involvement.

Operational commitments are handled by the duty entity, which stores information about scheduled duties, including duty name, type, and date. It is supported by duty registration, which records member sign-ups, and duty attendance, which verifies whether members fulfilled their assigned responsibilities. Similarly, the event entity defines organizational events, while event registration and event attendance manage participation and track member engagement in these activities. Together, these modules provide a comprehensive mechanism to record, monitor, and evaluate members' involvement in organizational tasks.

The system also incorporates modules to manage finances and communication. The payment and billing entity records all financial transactions, including payment type, amount, date, and receipts, ensuring transparency and accountability in managing membership fees and other contributions. On the other hand, the announcement entity stores organizational announcements, including title, content, date, attachments, and targeted member groups. This module facilitates effective communication by allowing administrators to disseminate information systematically, ensuring that members receive timely updates.

Overall, the ERD demonstrates a database structure that has been normalized up to the Third Normal Form (3NF). Each entity represents a distinct concept, and all relationships are connected through primary and foreign keys, eliminating redundancy and transitive dependencies. By organizing the database in this manner, the system achieves efficiency, scalability, and accuracy, while also supporting modular expansion in the future. The ERD therefore reflects a robust foundation for the Membership Management System, ensuring that the needs of registration, renewals, ranks, certifications, training, duties, events, payments, and communication are met in a structured and integrated manner.

5.6 Activity Diagram

5.6.1 Admin Activity Diagram

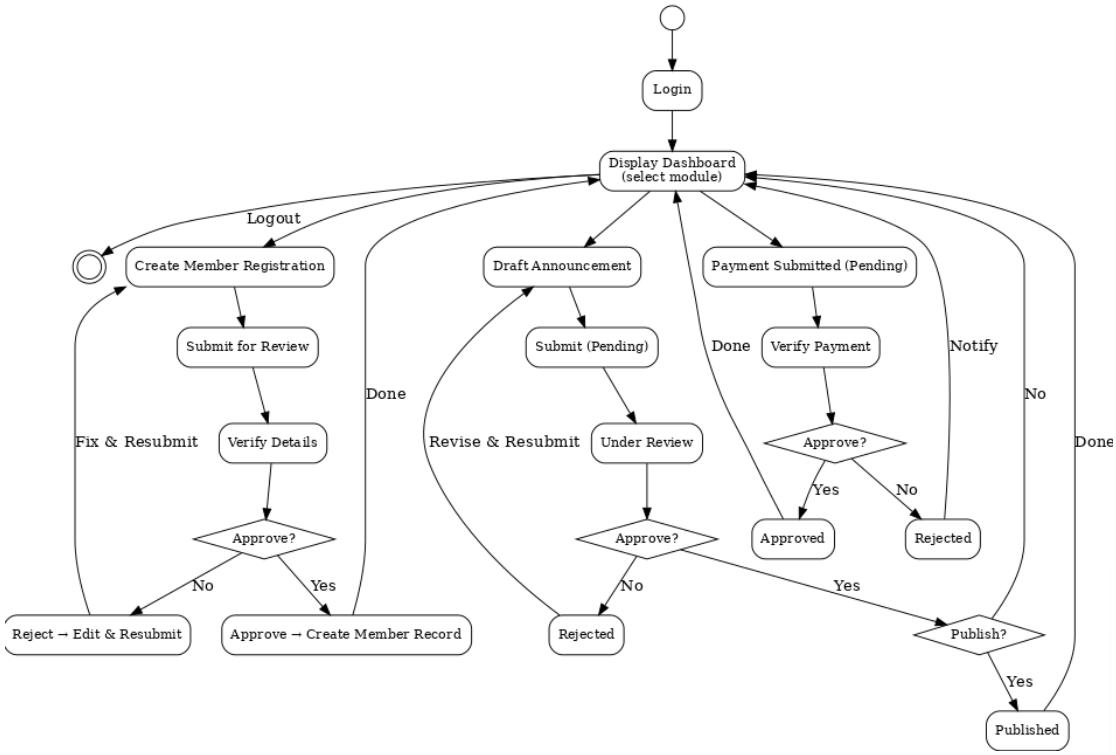


Diagram 5.6.1 Admin Activity Diagram

The Admin Activity Diagram illustrates the sequence of actions and decision points undertaken by the administrator within the St. John Membership Management System. The process begins when the administrator logs into the system and is directed to the dashboard, where different functional modules are available for selection. From this point, the administrator can choose to manage member registration, announcements, or payment verification, depending on the operational requirements.

In the member registration module, the admin creates a new registration, submits the details for review, and verifies the information such as personal data and contact details. If the information is accurate, the registration is approved and a new member record is created. If discrepancies are found, the request is rejected and the registration must be edited and resubmitted, ensuring data consistency.

In the announcement module, the admin drafts a new announcement and submits it for review.

The announcement undergoes a verification process, during which it can either be approved or rejected. If approved, the admin decides whether to publish it immediately. Rejected announcements are sent back for revision and resubmission. This ensures that only accurate and relevant announcements reach the members.

In the payment module, the admin verifies payments that have been submitted by members. Payments are reviewed against the submitted receipts and transaction details. If approved, the payment status is updated as completed. If rejected, the system notifies the member so they can re-upload or correct the receipt. This verification process helps maintain financial transparency and accuracy.

The diagram also shows that from any module, the admin can return to the dashboard to select another task, or log out of the system, which ends the activity flow. Overall, this activity diagram highlights how the administrator manages critical processes such as member registration, announcements, and payments by following structured steps with decision points that safeguard data accuracy, system reliability, and smooth operations.

5.6.2 Member Activity Diagram

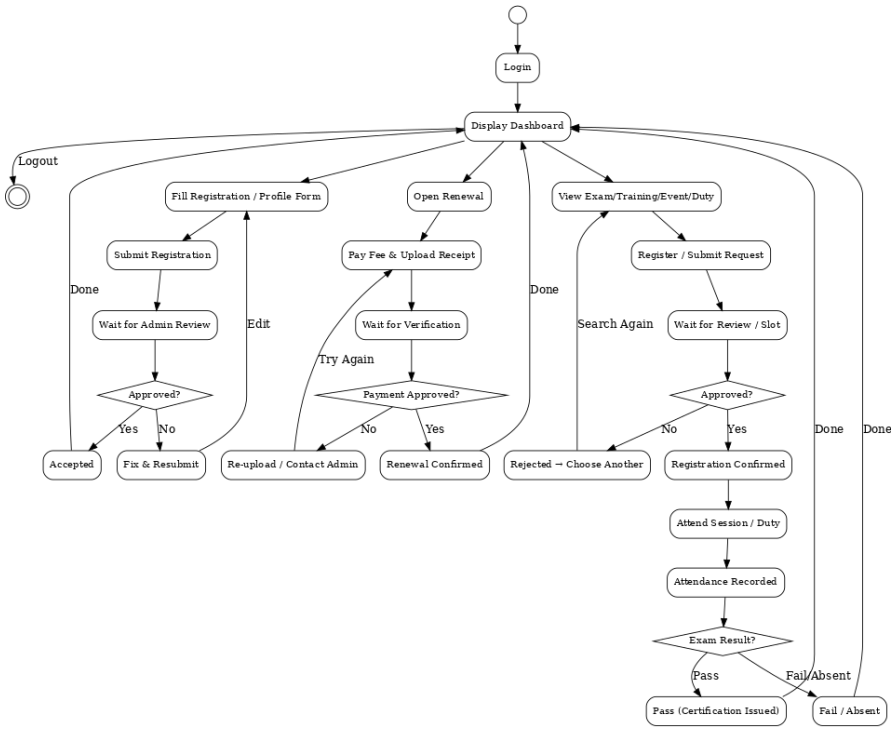


Diagram 5.6.2 Member Activity Diagram

The Member Activity Diagram represents the sequence of activities performed by a general member in the St. John Membership Management System. The process begins when a member logs into the system and navigates to the dashboard, which serves as the central point for accessing multiple modules. From here, the member may choose to register or update their profile, renew membership, register for exams, training, events, or duty, or track participation and outcomes.

In the registration and profile module, the member fills in the registration form and submits it for processing. The system forwards the submission to the administrator for review. If the registration is approved, the member is officially accepted. If the request is rejected, the member is prompted to fix and resubmit the details, ensuring accurate and complete personal information.

In the renewal module, the member initiates the renewal process, pays the membership fee, and uploads the payment receipt. The system then holds the request in a pending state until it is verified. If the payment is approved, the renewal is confirmed. If rejected, the member must re-upload the

receipt orcontact the administrator, ensuring that financial records remain accurate and transparent.

In the exam, training, event, and duty module, the member can view available opportunities and submit a registration request. Each submission undergoes a review process for slot allocation or approval. If approved, the registration is confirmed, and the member can attend the scheduled session or duty. Attendance is recorded in the system for accountability. For examinations, an additional decision point is introduced: if the member passes, a certification is issued; if the member fails or is absent, no certification is granted.

At any point, the member can return to the dashboard to perform another activity or choose to log out, which terminates the interaction. This diagram highlights the member's active role in maintaining their profile, renewing their membership, participating in training and duties, and advancing through examinations, all while ensuring that validations and approvals are systematically handled by the system and administrators.

5.7 Use Case Diagram

5.7.1 Member Registration Module

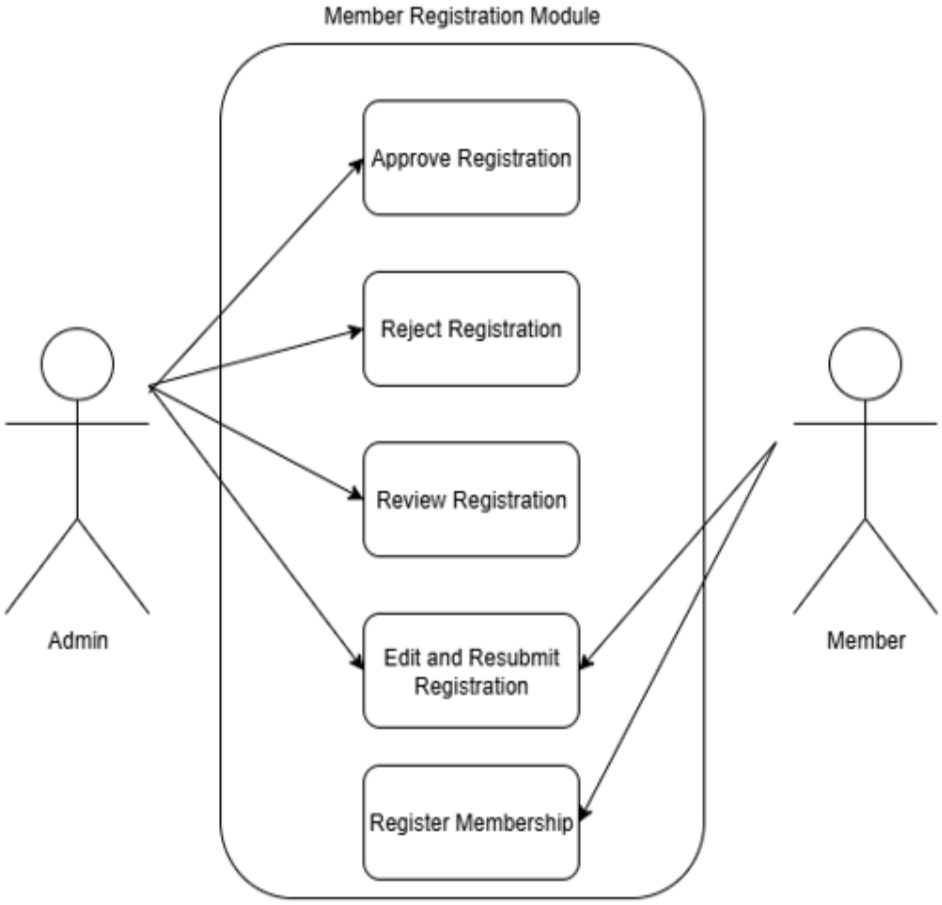


Diagram 5.7.1 Use Case Diagram for Membership Registration Module

The Member Registration Module is responsible for managing the entry of new members into the system. Administrators are tasked with reviewing submitted applications, verifying the accuracy of personal details, and subsequently approving or rejecting the request. Normal members are only permitted to submit their applications, whereas executive members may later verify the validity of registrations. This module ensures that only legitimate individuals are admitted into the membership database, thereby maintaining accuracy and credibility.

5.7.2 Membership Renewal Module

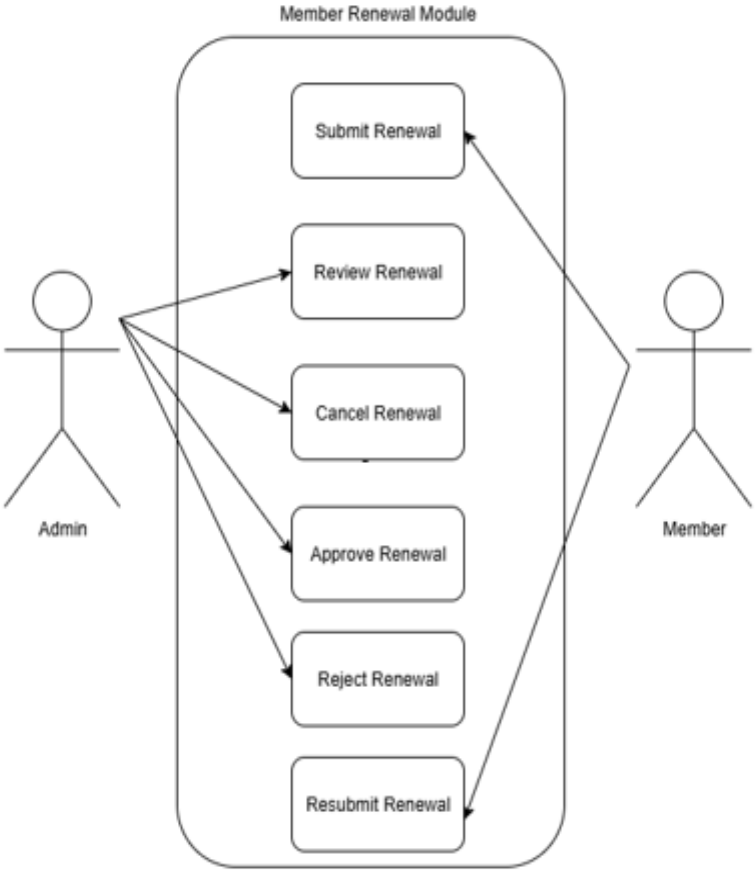


Diagram 5.7.2 Use Case Diagram for Membership Renewal Module

The Membership Renewal Module provides a structured process for extending membership validity. Normal members initiate the renewal process by submitting a request, which is subsequently reviewed by the administrator. Depending on the accuracy of the submission, the request may either be approved or rejected. The inclusion of this module prevents the occurrence of inactive or expired memberships and ensures that member participation remains continuous within the organization.

5.7.3 Rank Module

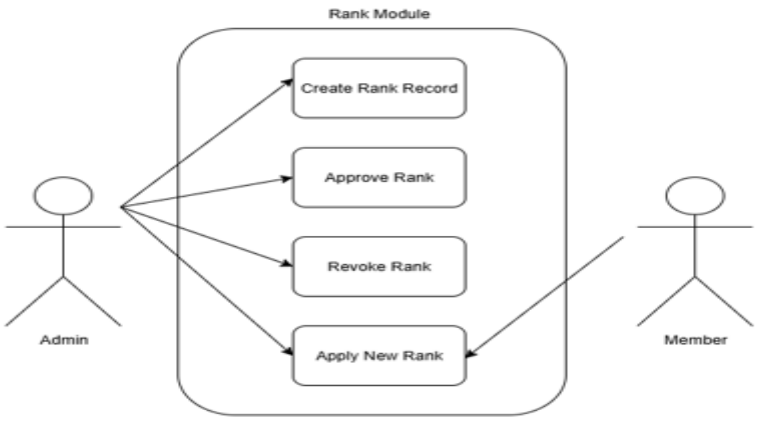


Diagram 5.7.3 Use Case Diagram for Rank Module

The Rank Module facilitates the systematic management of member progression within the organization. Administrators are empowered to assign, approve, or revoke ranks based on eligibility and performance. Normal members may view their assigned ranks, whereas executives are responsible for validating promotions. This module formalizes recognition and progression, thereby supporting a structured organizational hierarchy.

5.7.4 Certification Module

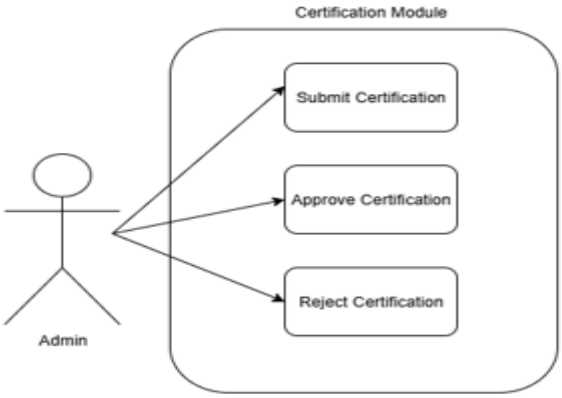


Diagram 5.7.4 Use Case Diagram Certification Module

The Certification Module records and validates the training achievements of members. Administrators issue certifications after confirming the completion of relevant training programs, while also approving or rejecting certification submissions. The module also allows for the upload of certification-related documents for verification. Normal members are permitted to view their certifications, which supports transparency and accountability in skills recognition.

5.7.5 Examination Module

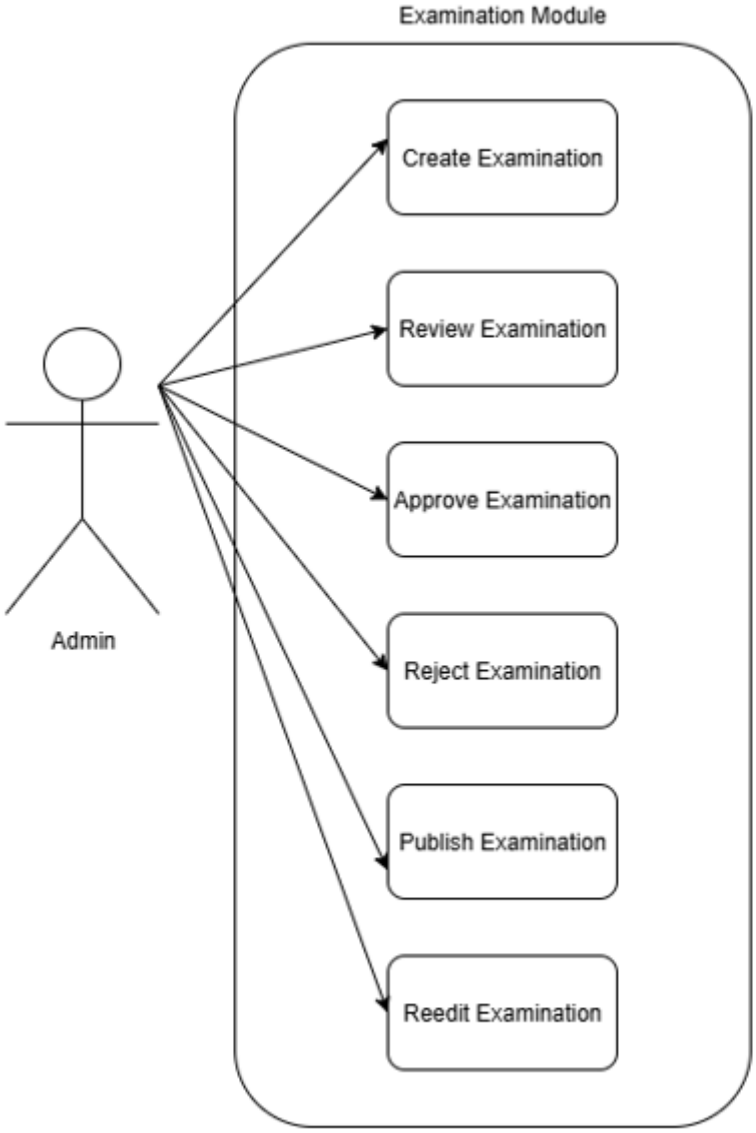


Diagram 5.7.5 Use Case Diagram for Examination Module

The Examination Module use case diagram illustrates how the admin manages the full lifecycle of examinations. The admin can create new exams, review them for accuracy, and either approve or reject them depending on compliance with requirements. If rejected, the admin may reedit the exam before resubmitting. Approved exams can be published, making them officially available for members. This diagram highlights the centralized control and decision-making power of the admin in maintaining exam quality.

5.7.6 Examination Registration Module

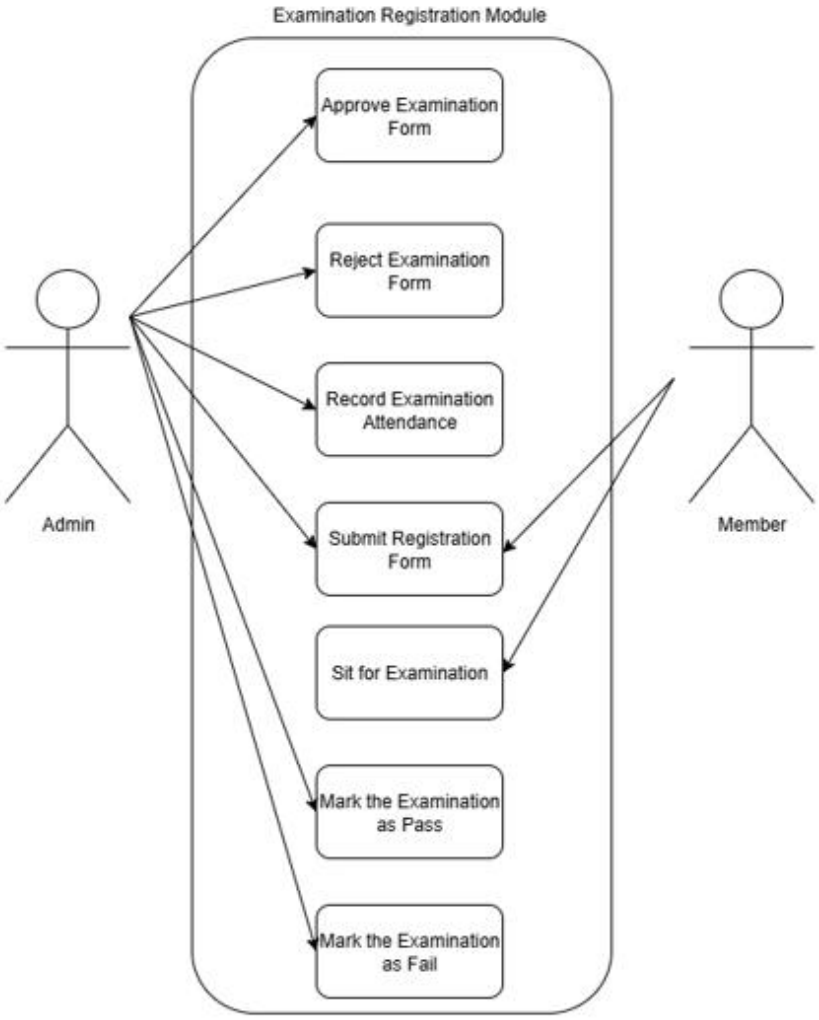


Diagram 5.7.6 Use Case Diagram for Examination Registration Module

In the examination registration module, both admin and member roles are involved. Members are responsible for submitting registration forms and sitting for the examination. On the other hand, the admin oversees the process by approving or rejecting examination forms, recording attendance, and updating results whether pass or fail. This diagram emphasizes the collaborative workflow, where members initiate participation while administrators validate and maintain the integrity of exam processes.

5.7.7 Training Registration Module

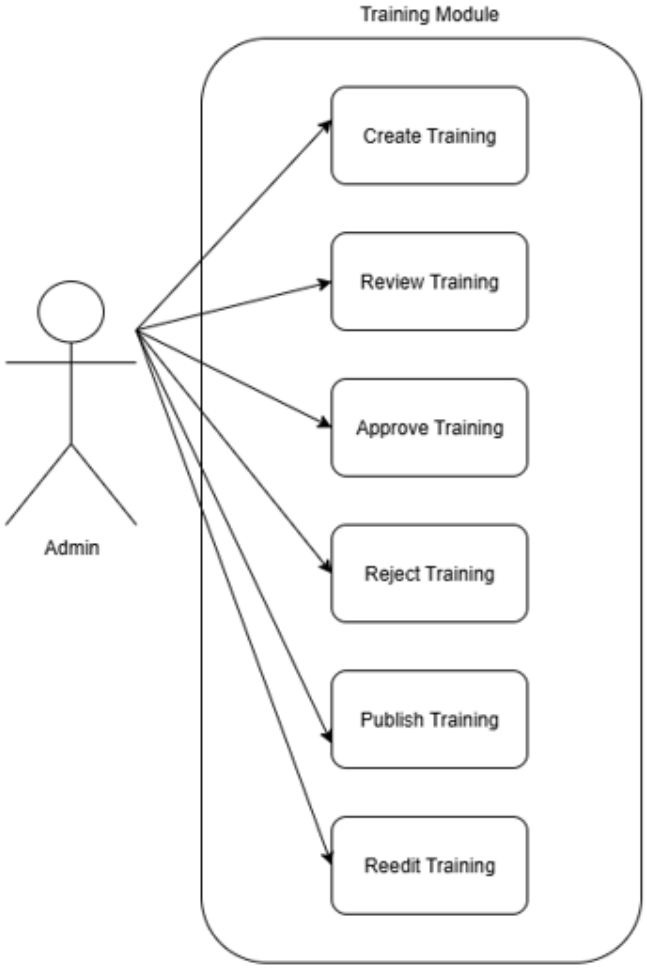


Diagram 5.7.7 Use Case Diagram for Training Module

The Training Module use case focuses exclusively on the admin's role in handling training activities. Admins are tasked with creating training sessions, reviewing their content, and deciding whether to approve or reject them. Once approved, trainings can be published and, if necessary, reedited for improvements. This module showcases structured governance, ensuring that all training initiatives align with organizational standards before being delivered to participants.

5.7.8 Training Registration Module

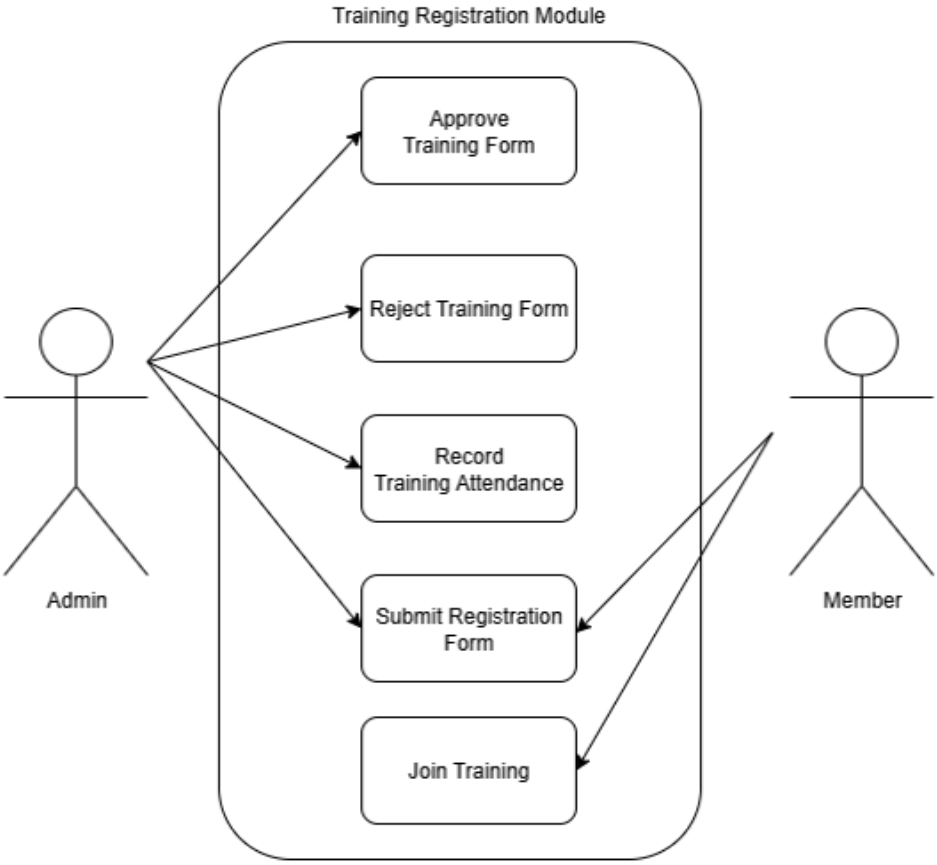


Diagram 5.7.8 Use Case Diagram for Training Registration Module

In this module, both members and admins play significant roles. Members register and join training programs, while admins manage the backend by approving or rejecting training forms, recording attendance, and verifying registration submissions. The interaction demonstrates a dual responsibility model while members engage in learning opportunities, and administrators ensure legitimacy and proper recordkeeping throughout the process.

5.7.9 Duty Module

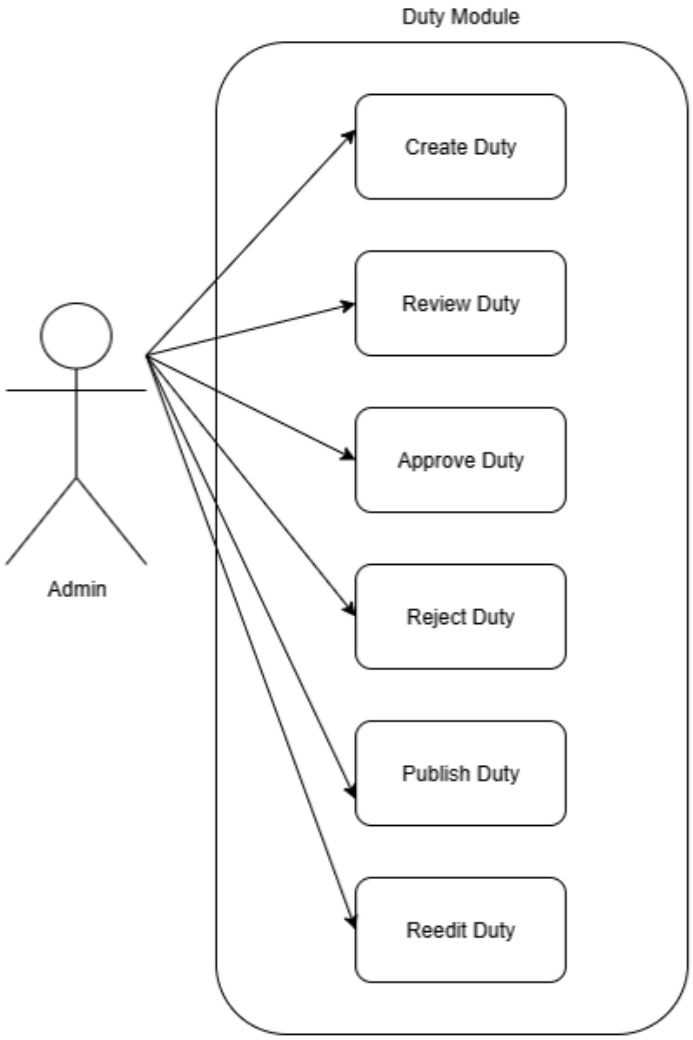


Diagram 5.7.9 Use Case Diagram for Duty Module

The duty module is managed solely by the admin, who creates, reviews, approves, or rejects duty assignments. Admins can also reedit duty details or publish them for execution. This use case diagram underlines the administrative authority in scheduling and maintaining operational duties, ensuring that all assignments are both properly reviewed and officially communicated to members.

5.7.10 Duty Registration Module

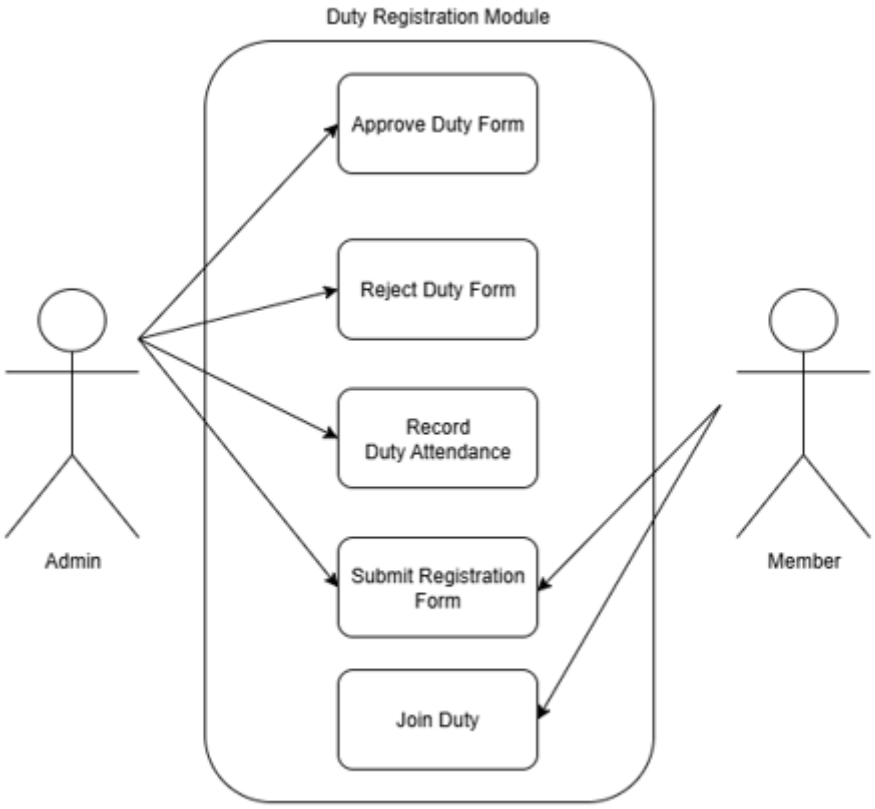


Diagram 5.7.10 Use Case Diagram for Duty Registration Module

This diagram illustrates the interactions within the duty registration process. The admin manages the approval, rejection, and recording of duty attendance, while members are responsible for submitting registration forms and joining assigned duties. The clear division of responsibilities ensures accurate attendance tracking and structured participation.

5.7.11 Event Module

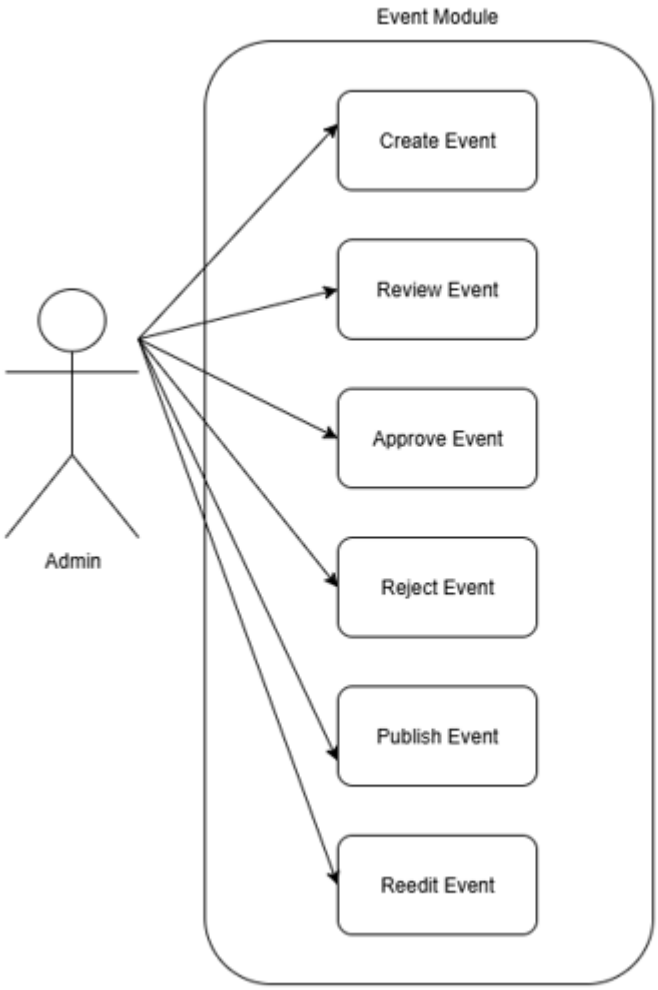


Diagram 5.7.11 Use Case Diagram for Event Module

The event module use case diagram highlights the administrative control over event management. The admin can create, review, approve, reject, publish, and reedit events, reflecting the iterative process of planning and refining events. This systematic structure supports proper validation before events are officially announced to members.

5.7.12 Event Registration Module

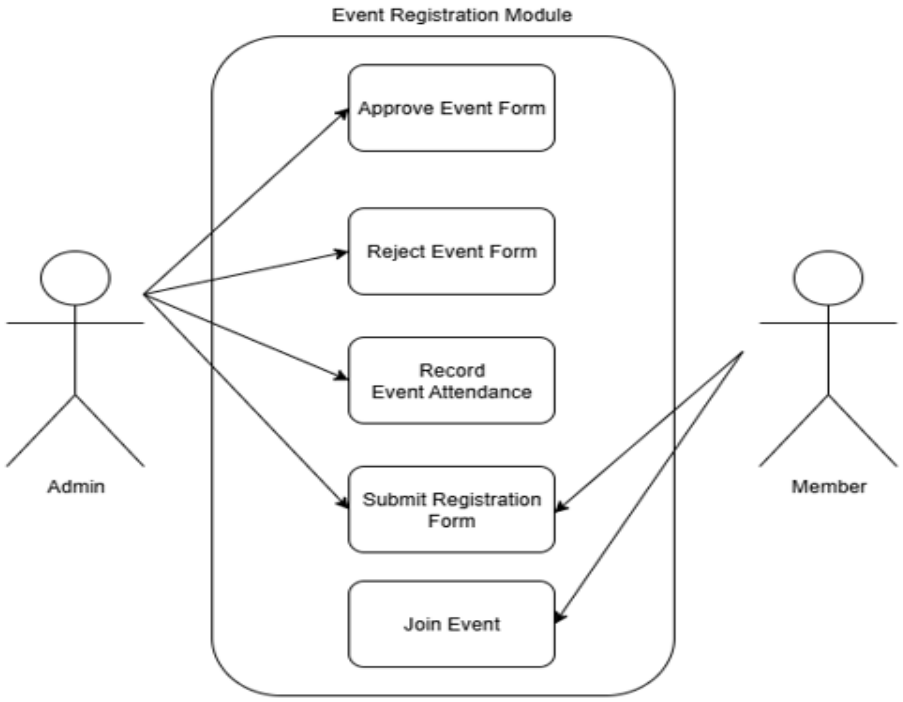


Diagram 5.7.12 Use Case Diagram for Event Registration Module

This diagram shows the collaboration between admins and members in registering for events. Members are able to submit registration forms and join events, whereas admins hold the authority to approve, reject, or record attendance. This dual responsibility promotes both accountability and transparency in participation.

5.7.13 Announcement Module

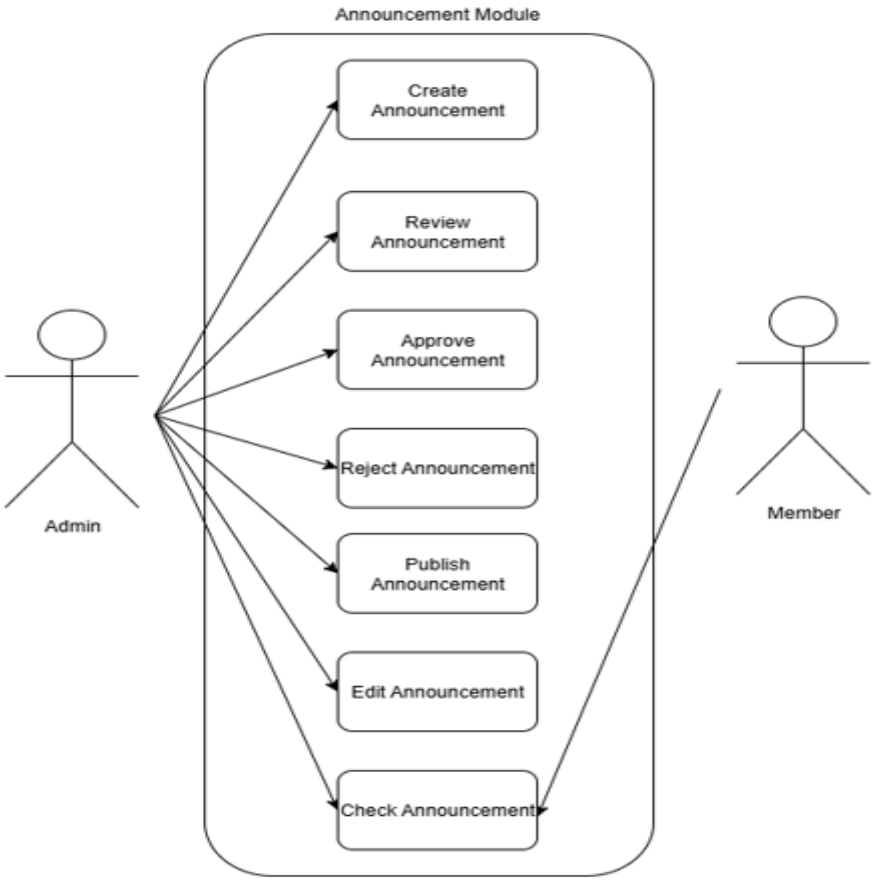


Diagram 5.7.13 Use Case Diagram for Announcement Module

The announcement module emphasizes communication management. Admins create, review, approve, reject, publish, and edit announcements, while members primarily check announcements. The structure underscores the hierarchical nature of communication, ensuring information is validated before dissemination to members.

5.7.14 Payment and Finance Module

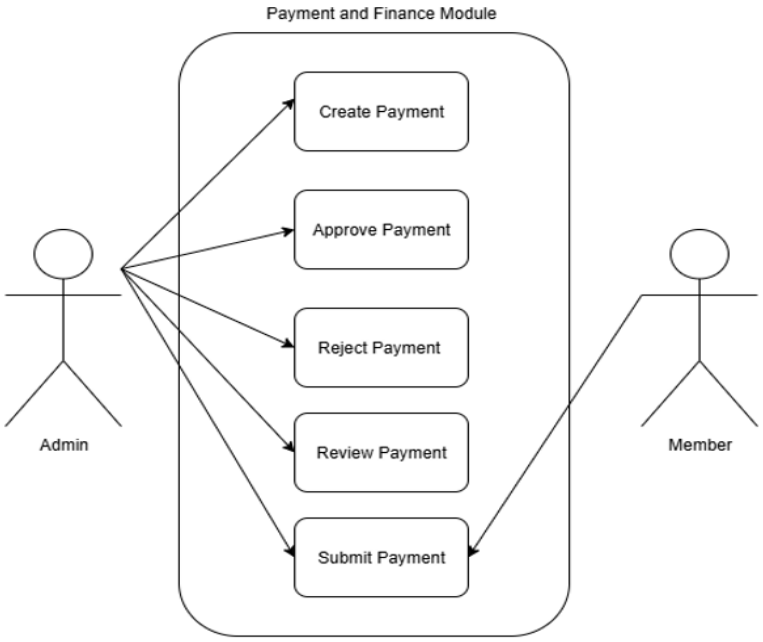


Diagram 5.7.14 Use Case Diagram for Payment and Finance Module

This use case diagram captures the financial workflow. Members initiate the process by submitting payments, while admins oversee creation, approval, rejection, and review of payments. This arrangement guarantees that all financial activities are properly validated and documented, minimizing risks of error or misuse.

CHAPTER 6

Development Phase

6.1 Member Registration Module

Figure 6.1.1 Member Registration Form

Figure above is the member registration module designed and implemented in St John membership system using Inistate. This module allows admin to enter, edit and view their personal information such as name, identification number, date of birth, gender, and contact information. It ensures that admin to ensure the records are accurate, up-to-date, and stored securely in a centralized system.

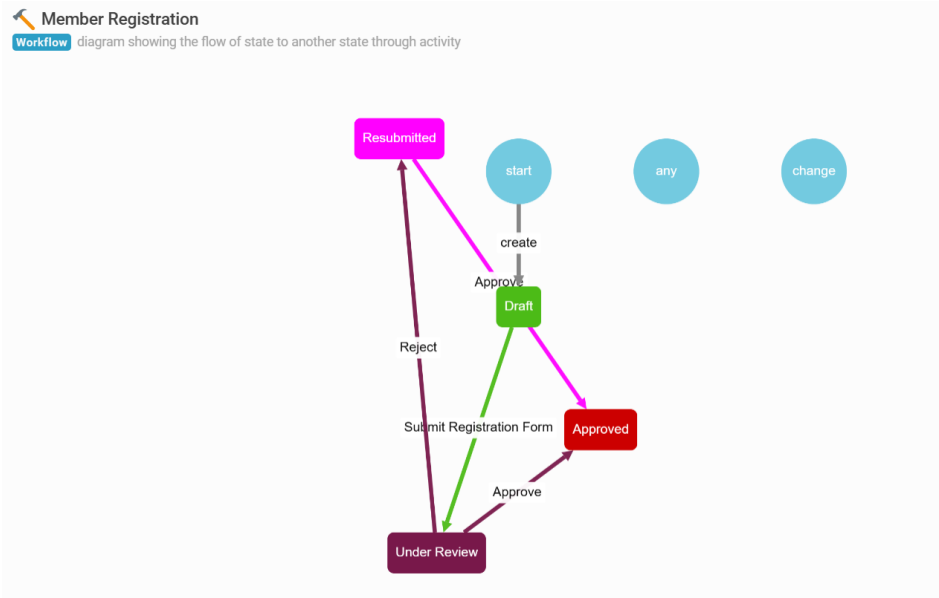


Figure 6.1.2 Member Registration Workflow

The admin's role in the member registration workflow begins once a form is submitted. Under review state, the admin checks the details for accuracy and completeness. If the form is correct, the admin approves it, moving it to approved. If issues are found, the admin can reject it, sending it back to resubmitted for the member to correct and re-submit. This process ensures only valid and verified registrations are accepted into the system.

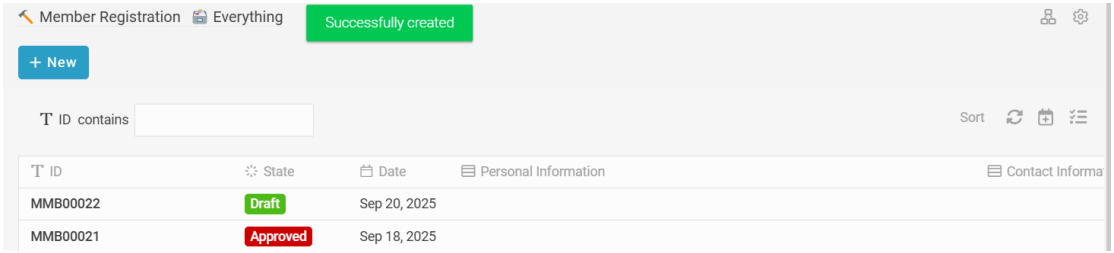


Figure 6.1.3 Member Registration Under Draft State

In the member registration module, a newly created record first appears in the Draft state. This indicates that the member's details have been entered into the system but are not yet finalized or officially submitted for review.

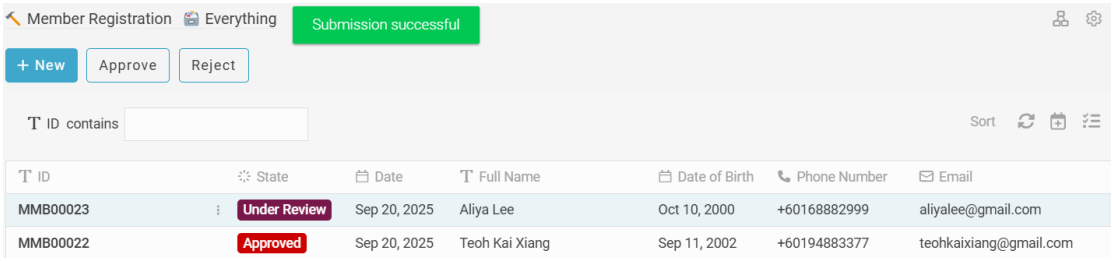


Figure 6.1.4 Member Registration Under Review State

Once the administrator submits the form for checking, the record moves into the Under Review state, where the admin verifies the personal details such as name, date of birth, phone number, and email. From this stage, the admin decides whether the registration should be approved or rejected.

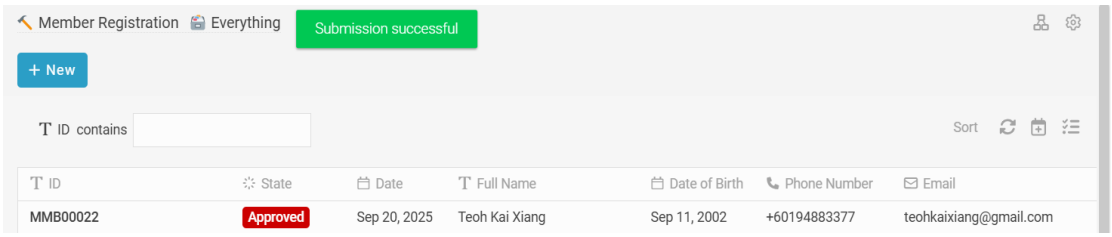


Figure 6.1.5 Member Registration Under Approve State

If the details are accurate and legitimate, the record transitions to the Approved state, meaning the member is officially accepted into the system.

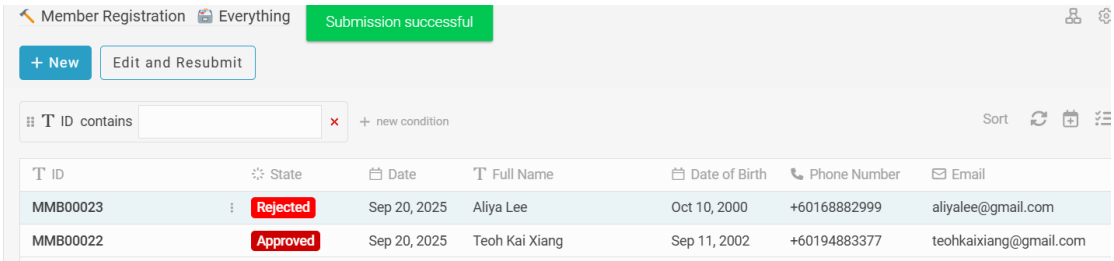


Figure 6.1.6 Member Registration Under Rejected State

However, if errors or invalid information are found, the record is placed into the Rejected state. When a record is rejected, the system provides an option for the admin to trigger Edit and Resubmit, allowing corrections before being re-evaluated.

6.2 Member Record Module

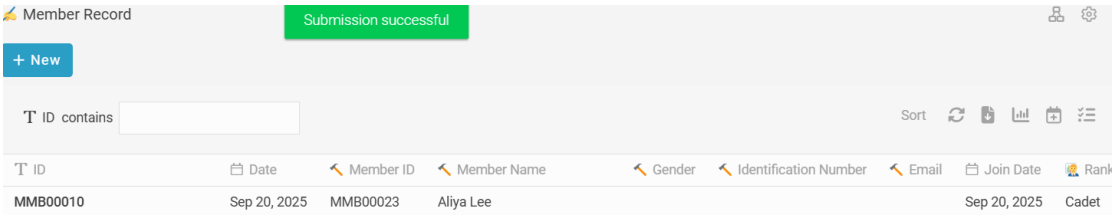


Figure 6.2.1 Member Record

In the Member Record module, the details of a member are automatically stored once their registration has been approved in the Member Registration module. This ensures that only verified and accepted members are recorded in the official database. The record includes essential information such as the member ID, name, gender, identification number, email, join date, and assigned rank. By linking the registration approval process with the Member Record module, the system maintains data integrity and prevents unverified entries from being added. This module serves as the central repository for all active member information, enabling administrators to quickly view and manage member details in a structured format.

6.3 Member Renewal Module

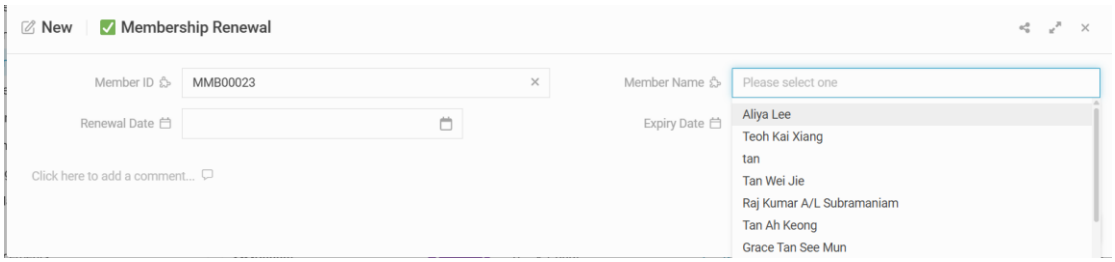


Figure 6.3.1: Membership Renewal Form

The Membership Renewal module allows administrators to manage the renewal process for existing members. Its main function is to record renewal dates, set expiry dates, and track payment details while linking each renewal to the approved Member Record. This ensures that membership remains valid, up to date, and accurately documented in the system.

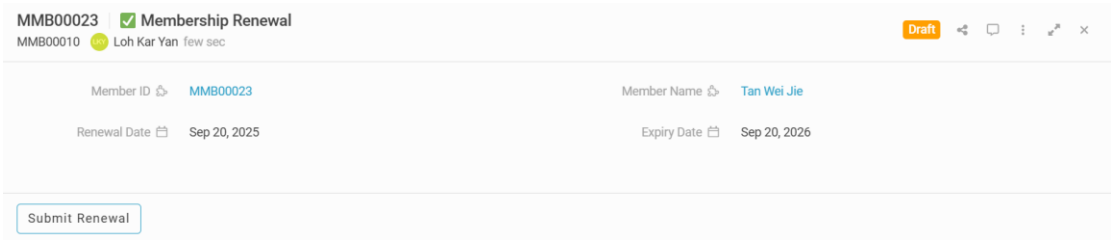


Figure 6.3.2: Membership Renewal under Draft State for Admin Side

The renewal record is first created in the Draft state, where details such as member ID, renewal date, expiry date, and payment amount are entered but not yet submitted.

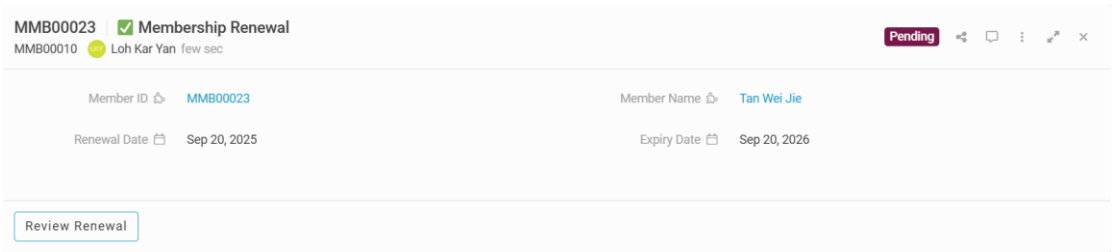


Figure 6.3.3: Membership Renewal under Pending State for Admin Side

After submission, the record moves into the Pending state, awaiting review. At this stage, the admin can either proceed with reviewing the renewal or cancel the request.

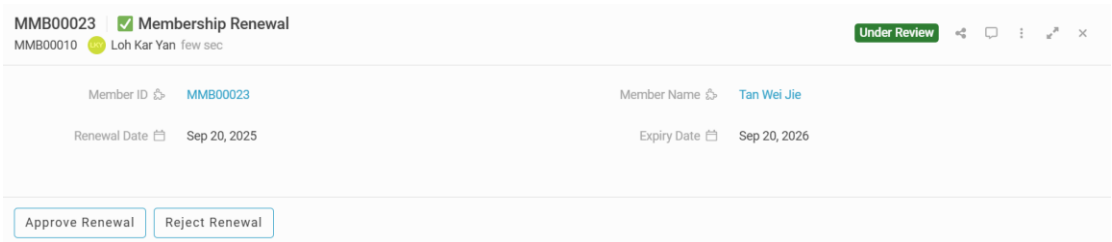


Figure 6.3.4: Membership Renewal under Review State for Admin Side

In the Under Review state, the administrator verifies the accuracy of the renewal details and decides whether to approve or reject the request.

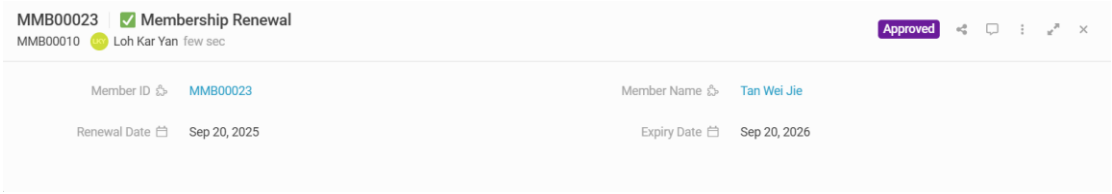


Figure 6.3.5: Membership Renewal under Approved State for Admin Side

Once validated, the record transitions into the Approved state, confirming that the membership renewal has been successfully completed and accepted into the system.

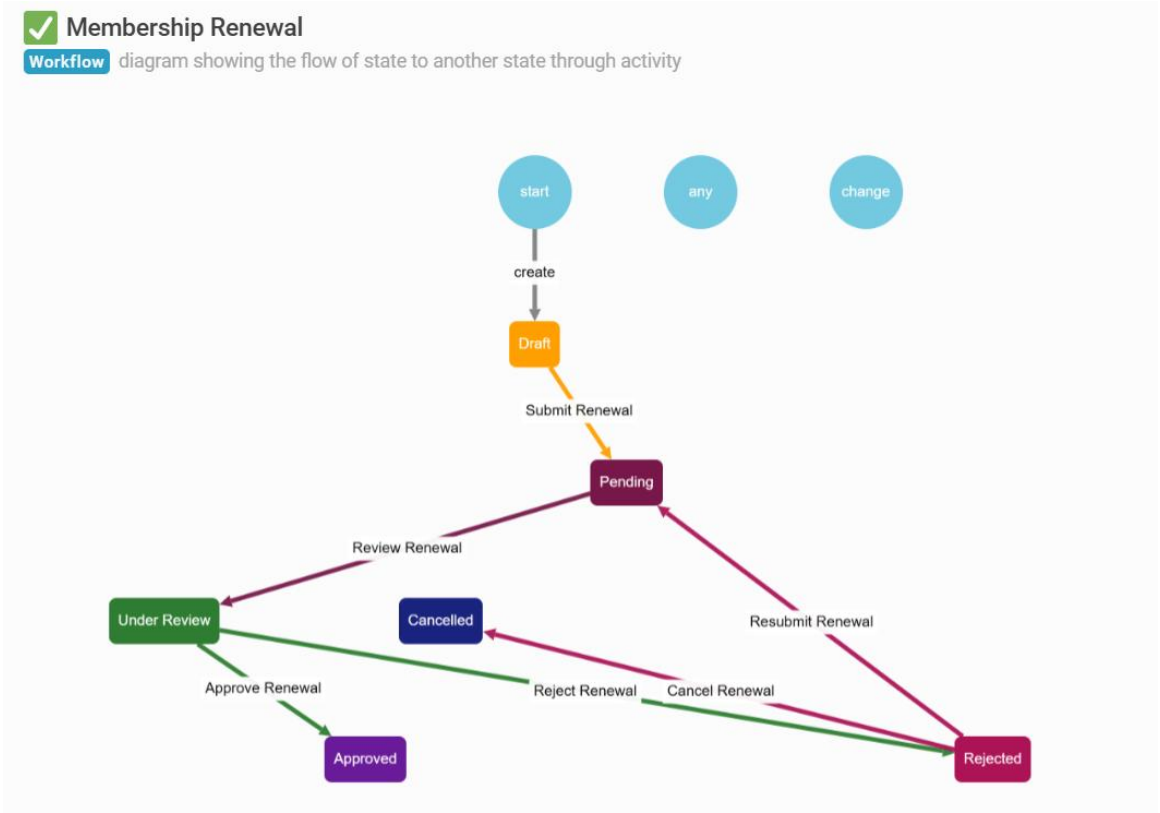


Figure 6.3.6: Membership Renewal Workflow

The Membership Renewal workflow begins in the Draft state, where a renewal record is first created. Once submitted, it moves into Pending, awaiting further action. From Pending, the administrator can review the renewal, moving it into the Under Review state. At this stage, the admin may either Approve Renewal or Reject Renewal or moving it to Cancelled. If a renewal is rejected, it can still be corrected and resubmitted, sending it back to Pending for review again. This workflow ensures that all membership renewals are validated, with clear paths for approval, rejection, or cancellation.

6.4 Rank Module

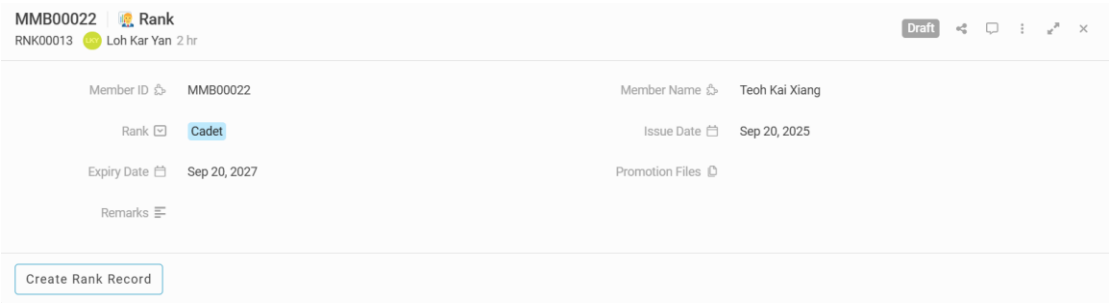


Figure 6.4.1: Rank Module

The Rank module is designed to manage and track the ranks of members within the system. Once a member's information is saved and approved in the Member Record module, the details such as Member ID and Member Name are automatically linked and displayed in the Rank module. This ensures consistency and prevents administrators from having to re-enter the same data manually. In this module, administrators can assign a rank (e.g., Cadet), specify the issue date and expiry date, and upload related promotion files if necessary.

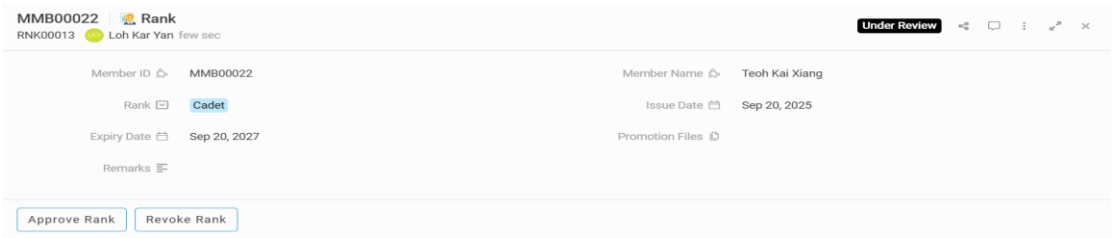


Figure 6.4.2: Rank Module Under Review State

The rank record is being verified by the administrator, who decides whether to approve or revoke it.

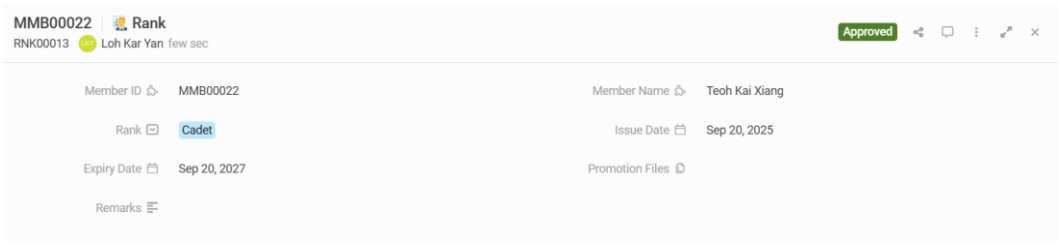


Figure 6.4.3: Rank Module Under Approved State

The rank assignment has been officially validated and confirmed by the administrator.

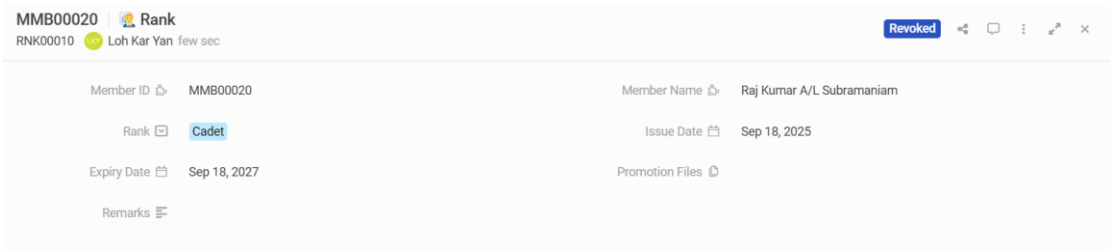


Figure 6.4.4: Rank Module Under Revoked State

The previously assigned rank has been removed by the administrator, marking it as invalid or cancelled.

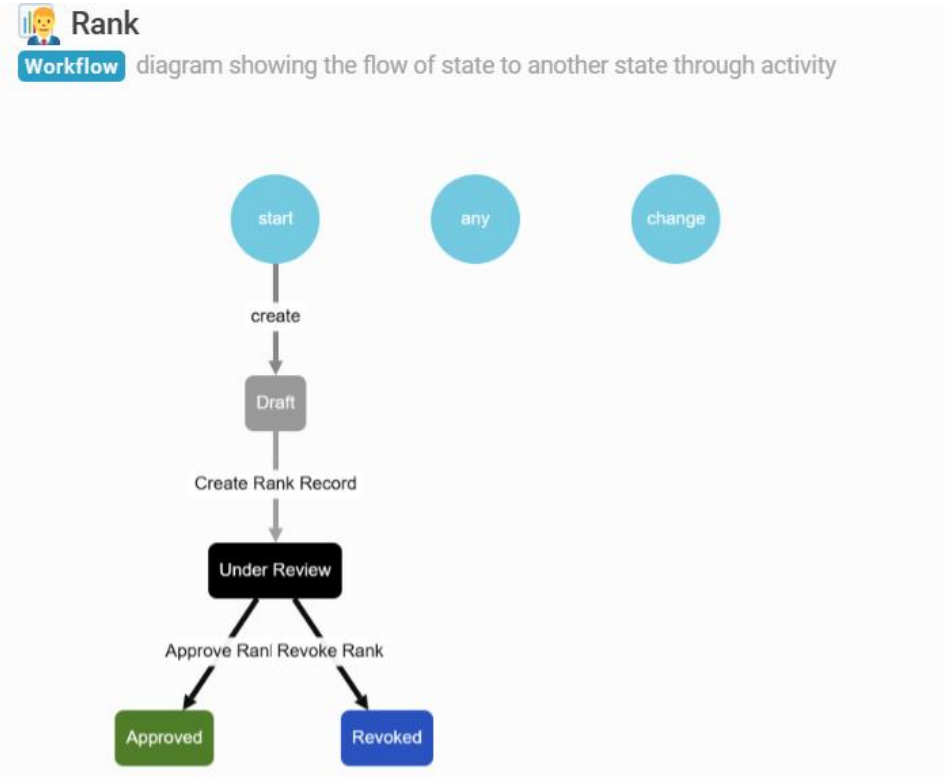


Figure 6.4.5: Rank Module Workflow

The Rank workflow begins in the Draft state when a new rank record is created. Once submitted, it moves to the Under Review state, where the administrator verifies the details. From there, the admin can either Approve Rank, moving it to the Approved state, or Revoke Rank, moving it to the Revoked state. This workflow ensures that rank assignments are properly checked before being finalized or cancelled.

6.5 Certification Module

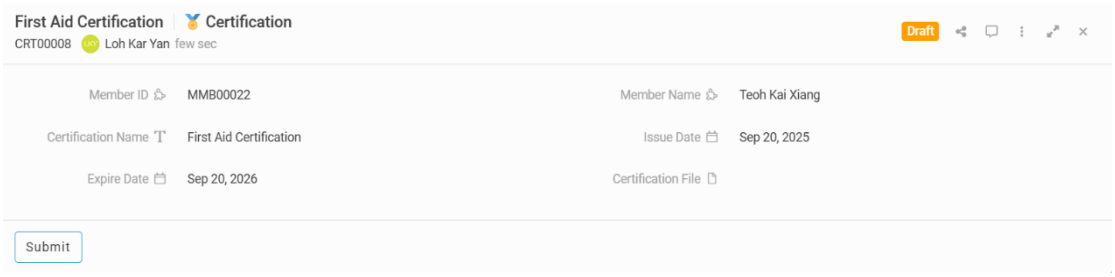


Figure 6.5.1: Certification Module Under Draft State

The Certification module is used to manage and track the certifications earned by members within the system. Once a member's information is saved and approved in the Member Record module, their Member ID and Member Name are automatically linked and displayed in the Certification module. This integration ensures that certifications are always tied to valid, registered members without requiring duplicate data entry. In this module, administrators can record details such as the certification name, issue date, expiry date, and upload related certification files.

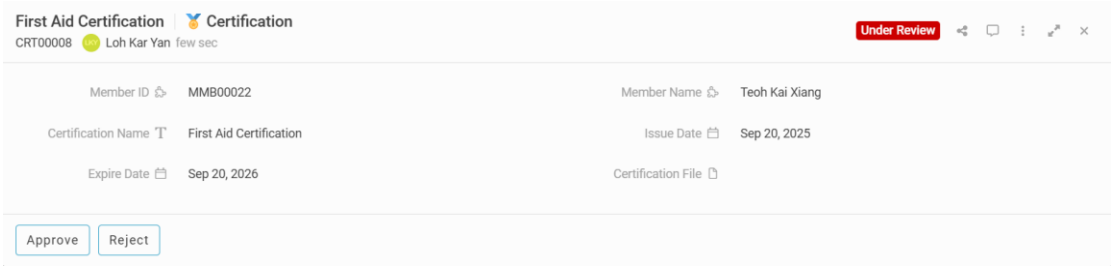


Figure 6.5.2: Certification Module Under Review State

The certification record for the member is in the Under Review state, meaning the administrator is currently verifying the details such as certification name, issue date, and expiry date before making a decision.

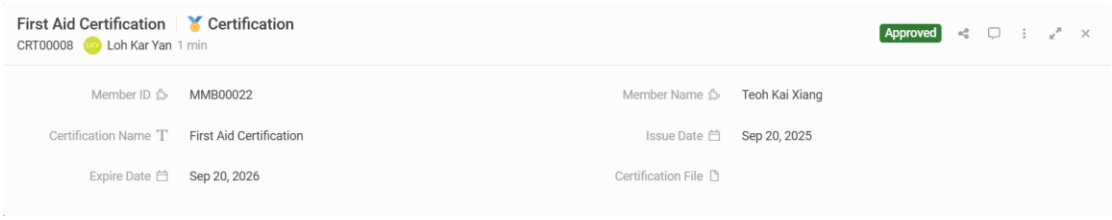


Figure 6.5.3: Certification Module Under Approved State

The certification has successfully passed the review process and is now in the Approved state, confirming that member's certification is officially valid and stored in the system.

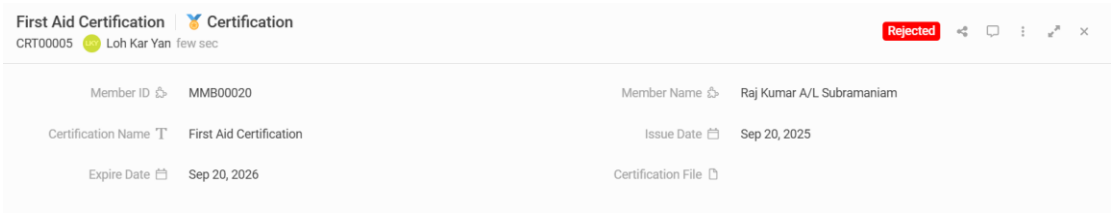


Figure 6.5.4: Certification Module Under Rejected State

The certification record for the member is shown in the Rejected state, indicating that the administrator did not approve the submission due to incorrect or invalid details.

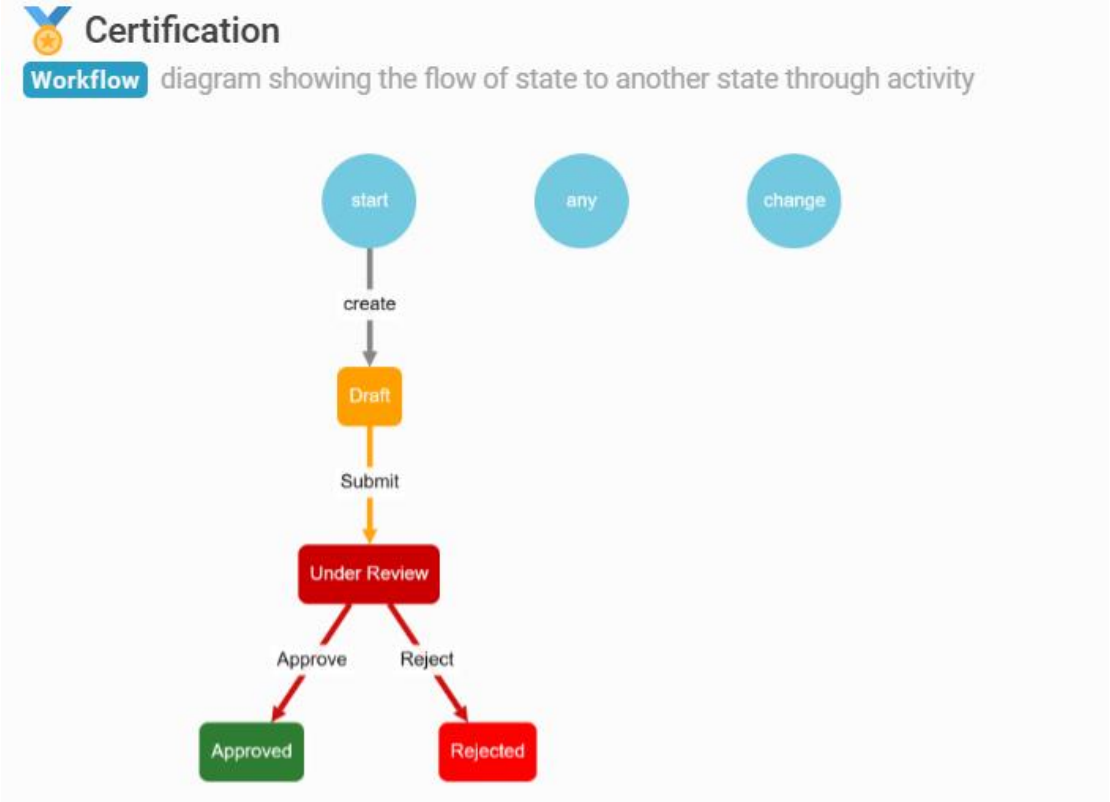


Figure 6.5.5: Certification Module Workflow

The certification workflow starts in the draft state when a new certification record is created. Once submitted, it moves into the under review state, where the administrator verifies the details. From there, the admin can either approve the certification, making it valid, or reject it if the information is incomplete or incorrect. This workflow ensures that certifications are carefully checked before being officially recorded in the system.

6.6 Examination Module

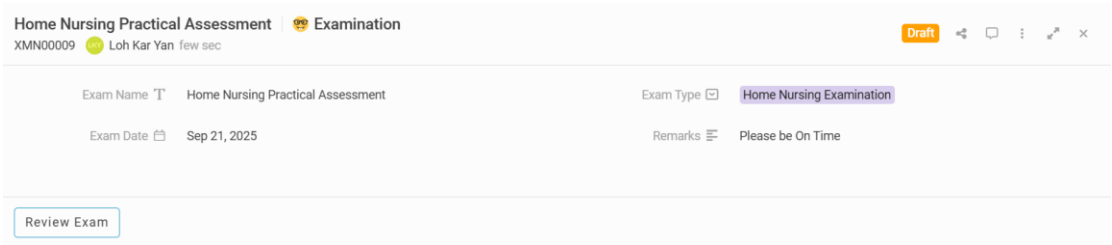


Figure 6.6.1: Examination Module Under Draft State

The diagram above shows the exam details are created but still in draft form. It has not been reviewed or confirmed yet.

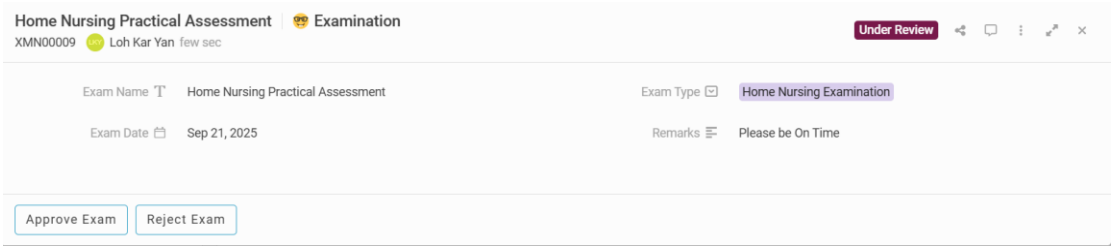


Figure 6.6.2: Examination Module Under Review State

The exam is submitted and awaiting verification by the admin. At this stage, the exam can either be approved or rejected.

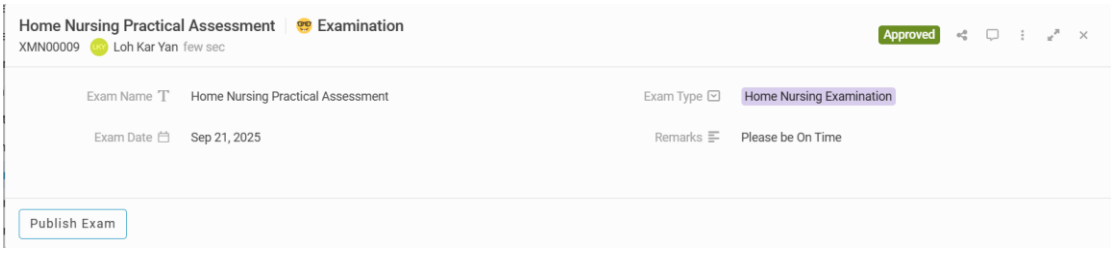


Figure 6.6.3: Examination Module Under Approved State

The exam has been checked and approved by the admin but not yet published to participants.

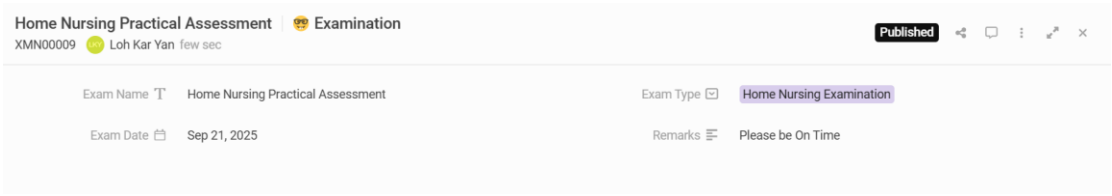


Figure 6.6.4: Examination Module Under Published State

The exam is officially released and made available for participants to view and attend.

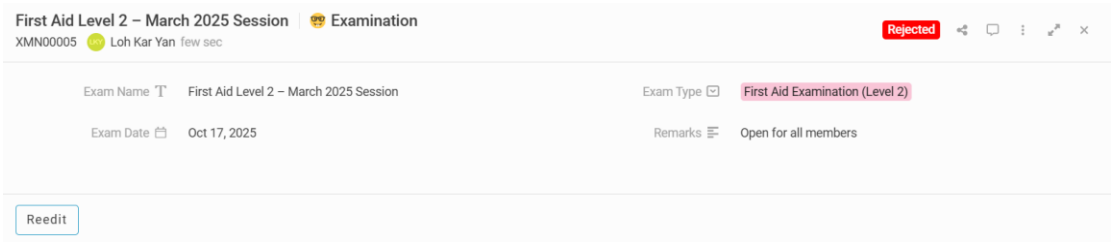


Figure 6.6.5: Examination Module Under Rejected State

The exam was reviewed but rejected by the admin due to incorrect or incomplete details.

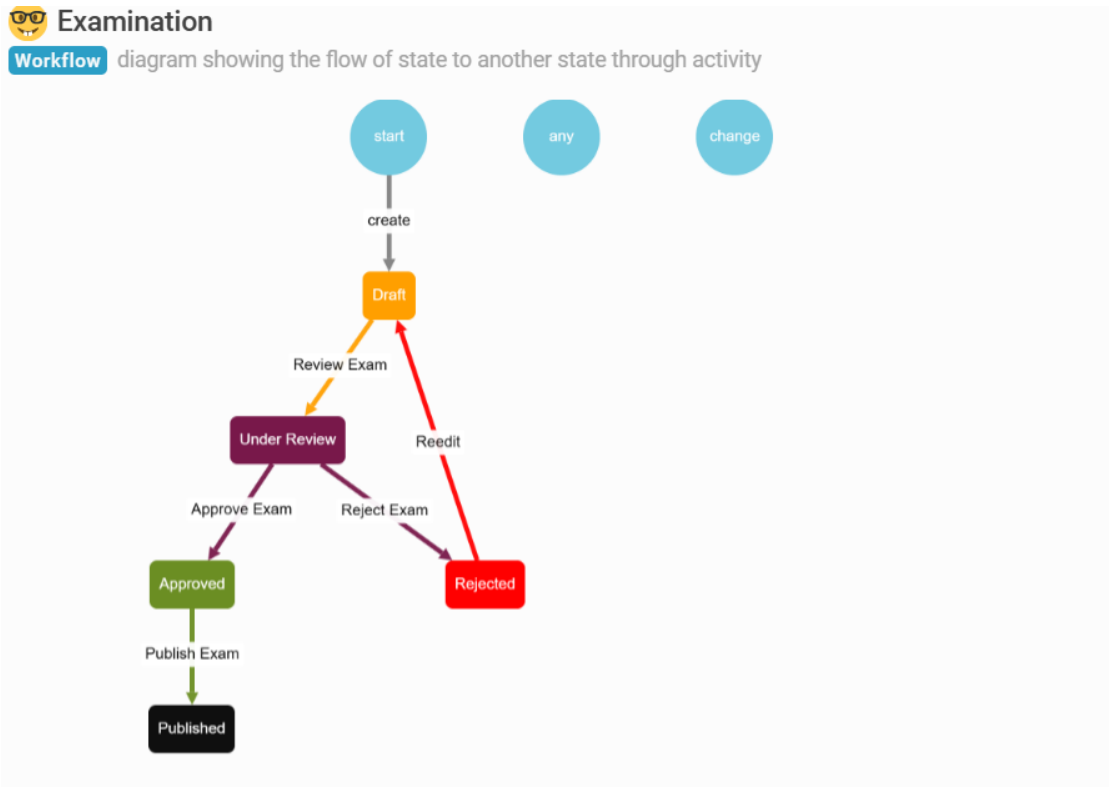


Figure 6.6.6: Examination Module Workflow

The examination workflow diagram shows the process flow of the examination module. It begins in the draft state when a new exam is created. once submitted, the exam moves to the under review state, where the admin can either approve or reject it. If approved, the exam can then be published, making it available for participants. If rejected, the exam can be re-edited and resubmitted for review. This flow ensures that only valid and reviewed exams are published in the system.

6.7 Examination Registration Module

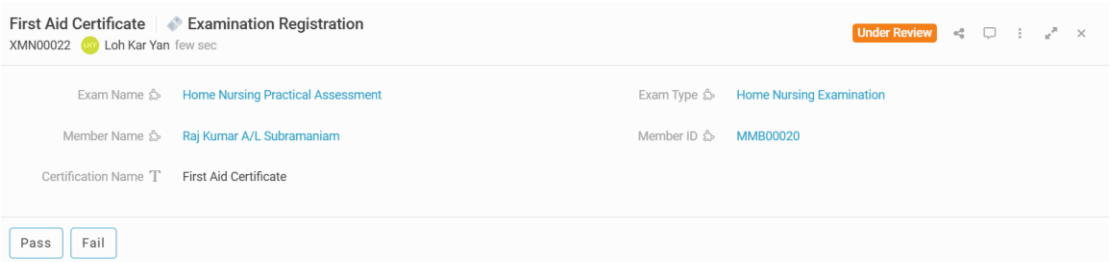


Figure 6.7.1: Examination Registration Module Under Review

Figure 6.7.1 shows the examination registration module under review, where a member's exam registration is being verified by the administrator before the result is decided.

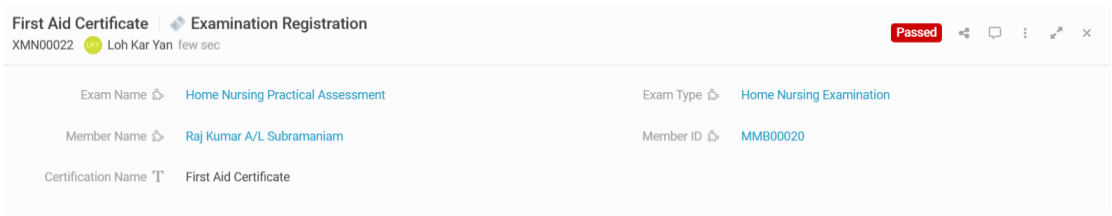


Figure 6.7.2: Examination Registration – Passed

Figure 6.7.2 shows the examination registration module in the passed state, where the member has successfully completed the exam and obtained the certification.

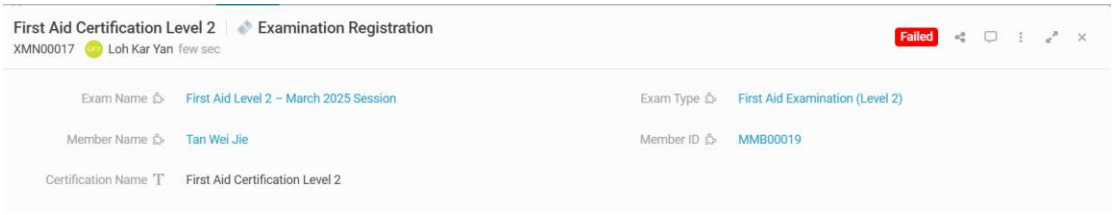


Figure 6.7.3: Examination Registration - Failed

Figure 6.7.3 shows the examination registration module in the failed state, where the member did not meet the passing requirements and the exam attempt is recorded as unsuccessful.

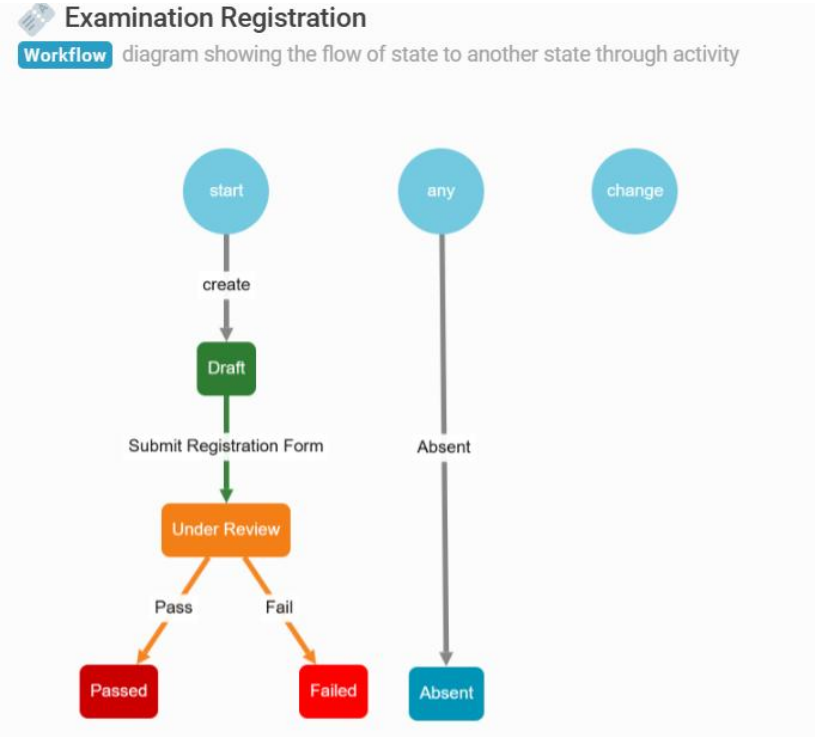


Figure 6.7.4: Examination Registration Module Workflow

Figure 6.7.4 illustrates the examination registration module workflow. The process begins with creating a draft and submitting the registration form. Once under review, the exam outcome can be recorded as passed, failed, or absent.

6.8 Examination Attendance Module

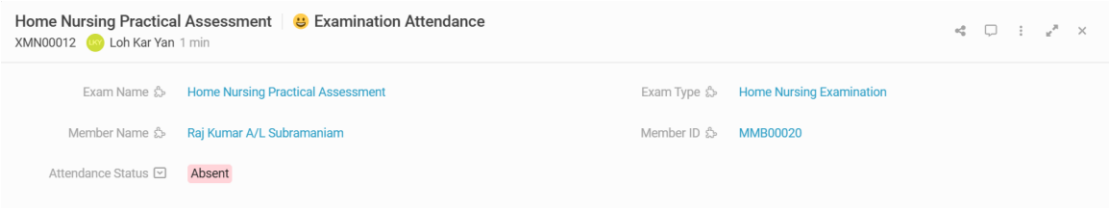


Figure 6.8.1: Examination Attendance Module Recorded as Absent

Figure 6.8.1 shows the examination attendance module where a member's status is recorded as absent, indicating the participant did not attend the scheduled exam.

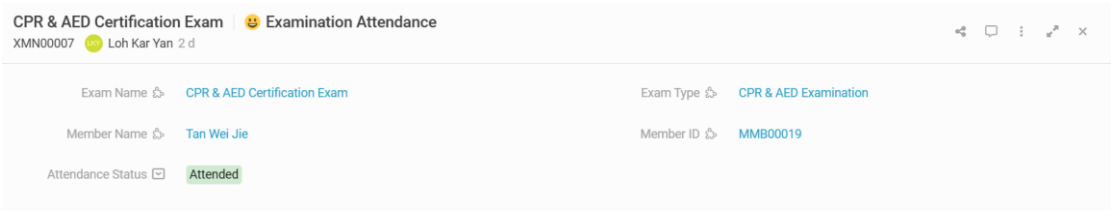


Figure 6.8.2: Examination Attendance Module Recorded as Attended

Figure 6.8.2 shows the examination attendance module where a member's status is recorded as attended, indicating that the participant was present during the exam. However, being marked as attended only confirms participation and does not determine the outcome, as the member may still fail even after attending the exam session.

6.9 Training Module

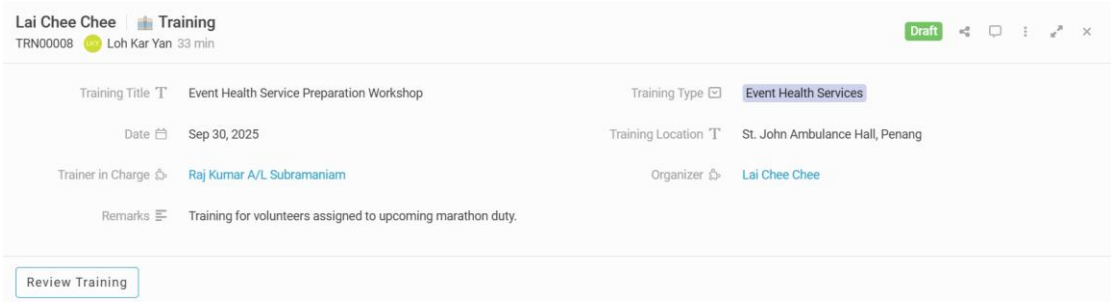


Figure 6.9.1: Training Module Under Draft State

Figure 6.9.1 shows the training module in the draft state, where the training details have been created but are not yet submitted for review.

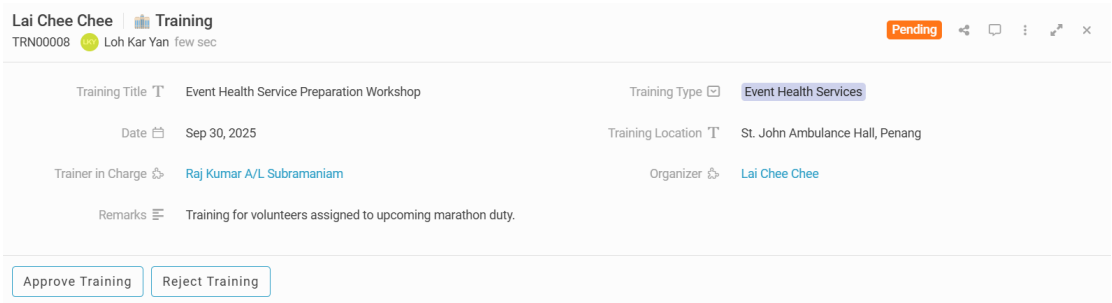


Figure 6.9.2: Training Module Under Pending State

Figure 6.9.2 shows the training module in the pending state, meaning the training request has been submitted and is awaiting a decision from the administrator.

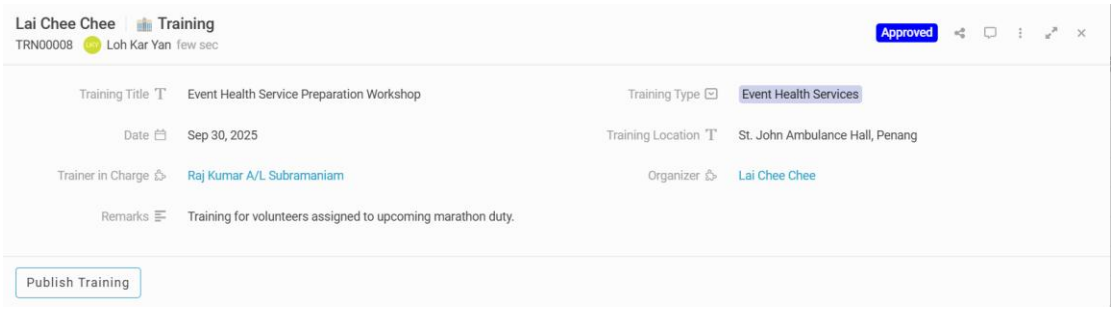


Figure 6.9.3: Training Module Under Approved State

Figure 6.9.3 presents the training module in the approved state, where the training details have been verified and confirmed by the administrator.

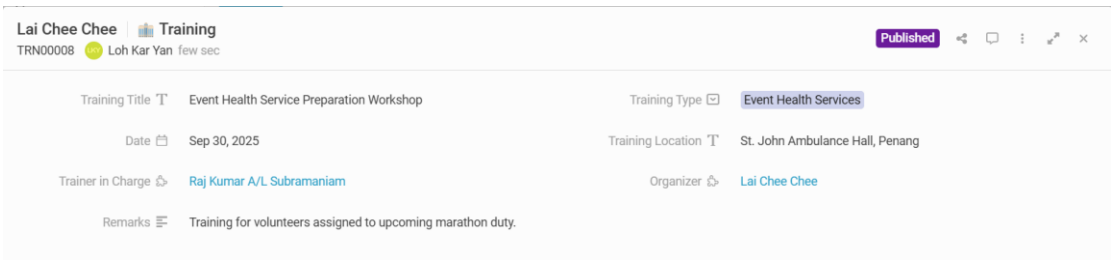


Figure 6.9.4: Training Module Under Published State

Figure 6.9.4 presents the training module in the published state, meaning the training has been officially released and is available for members to participate in.

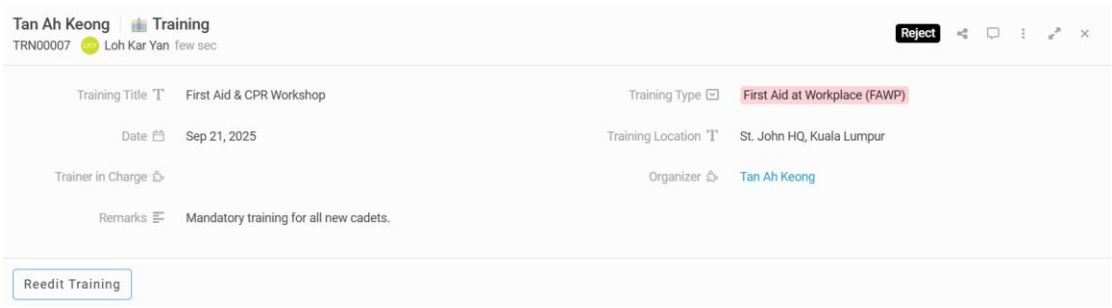


Figure 6.9.5: Training Module Under Reject State

Figure 6.9.5 presents the training module in the rejected state, where the submitted training request did not meet the requirements and needs to be re-edited before resubmission.

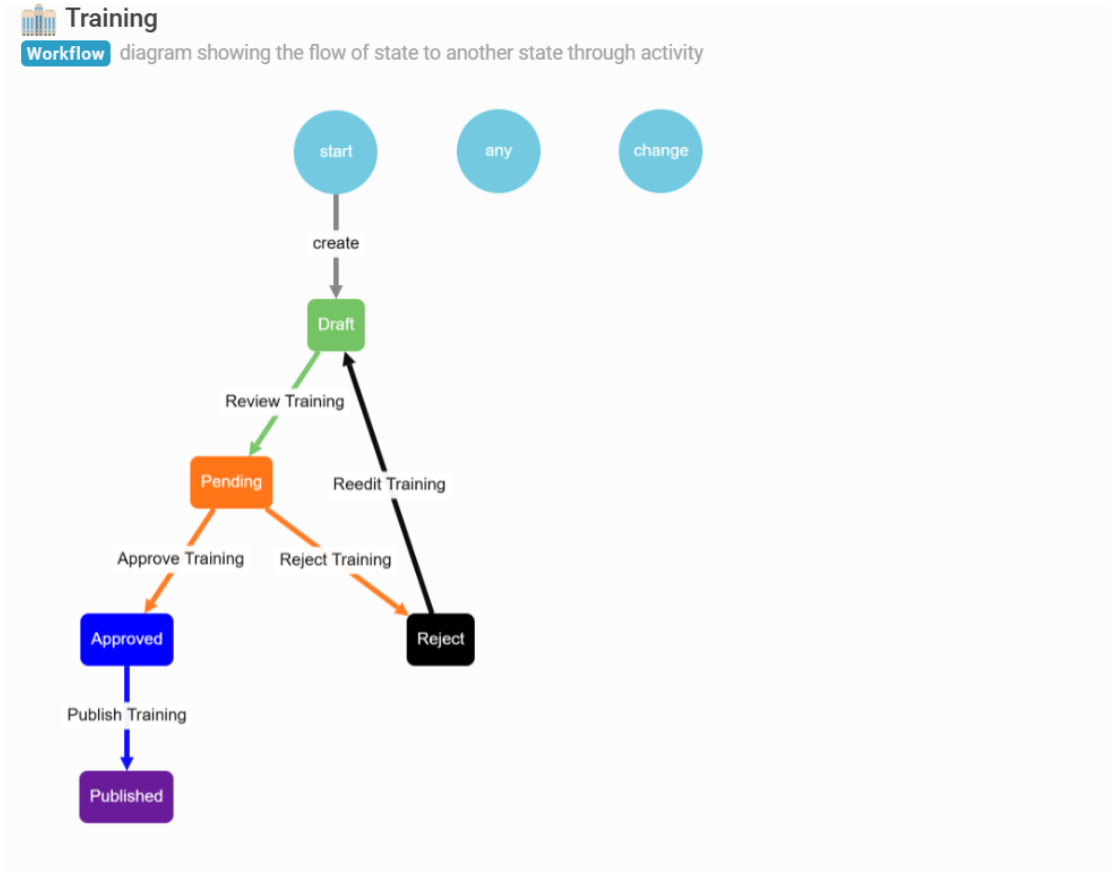
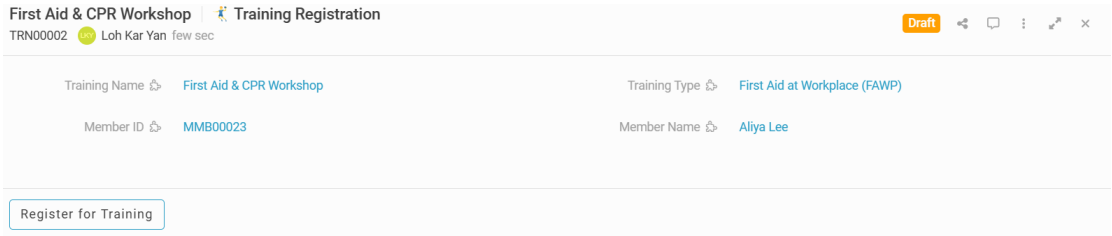


Figure 6.9.6: Training Module Workflow

Figure above illustrates the workflow of the training module. The process begins in the draft state when a training record is created. Once submitted, it moves to the pending state, where the administrator reviews the details. From here, the training can either be

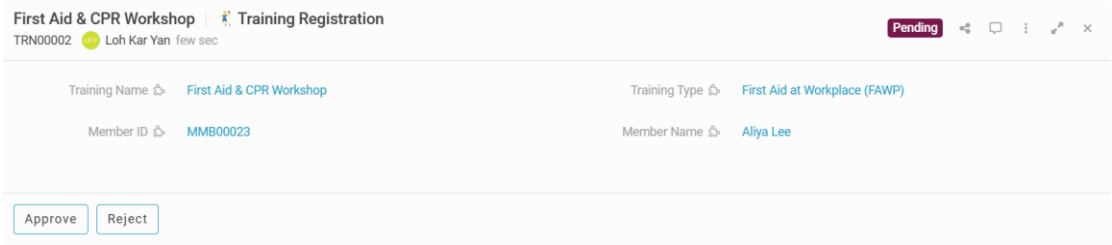
approved or rejected. If approved, it proceeds to the approved state and can then be published, making it official and visible to members. If rejected, the training must be re-edited and resubmitted for consideration.

6.10 Training Registration Module



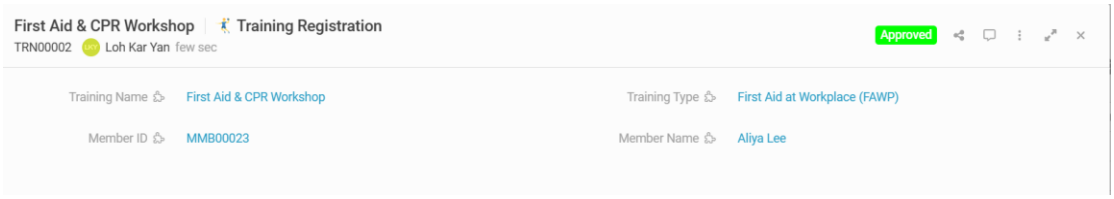
6.10.1 Training Registration Module Under Draft State

In the Draft State, the member fills in the registration form but has not submitted it yet.



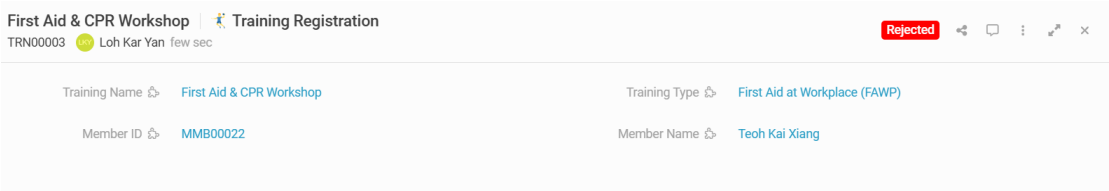
6.10.2 Training Registration Module Under Pending State

Once submitted, the status changes to pending, waiting for the administrator's review.



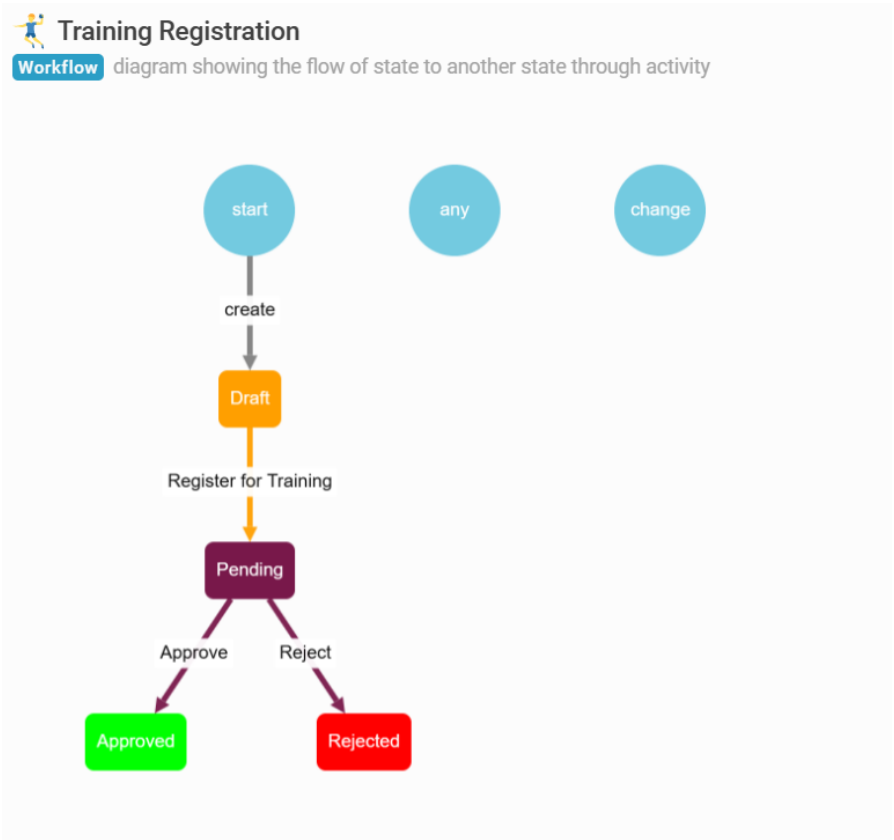
6.10.3 Training Registration Module Under Training State

If the request is valid, the admin approves it, and the registration moves to the approved State, confirming the member's participation in the training.



6.10.4 Training Registration Module Under Rejected State

If the request is not suitable or contains errors, it is placed in the rejected state, preventing the member from joining the session.

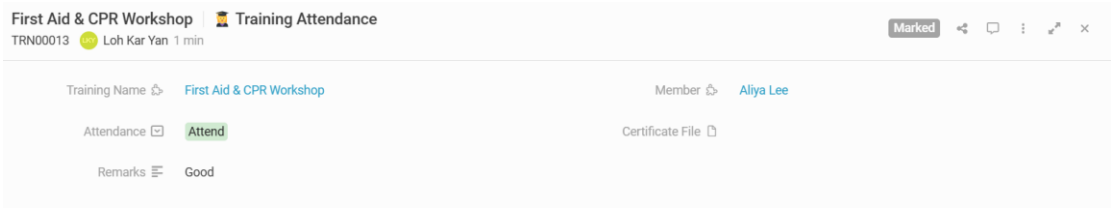


6.10.5 Training Registration Module Workflow

The Training Registration Module Workflow begins when a member creates a registration, placing it in the draft state. Once the member submits the form, it moves to the pending state, awaiting admin review. From here, the admin can either approve the request, confirming the member's participation in the training, or reject it,

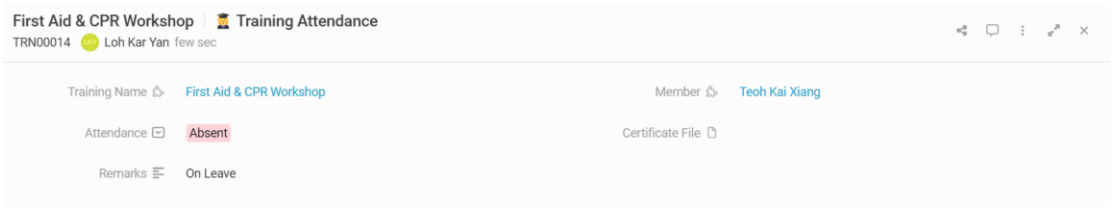
preventing the member from joining.

6.11 Training Attendance Module



6.11.1 Training Attendance Module Recorded as Attend

The system records the member as attended for the training session, confirming their participation and allowing remarks to be added.



6.11.2 Training Attendance Module Recorded as Absent

The system records the member as **absent** for the training session, showing that the individual did not participate, with remarks such as "On Leave" provided for clarification.

6.12 Duty Module

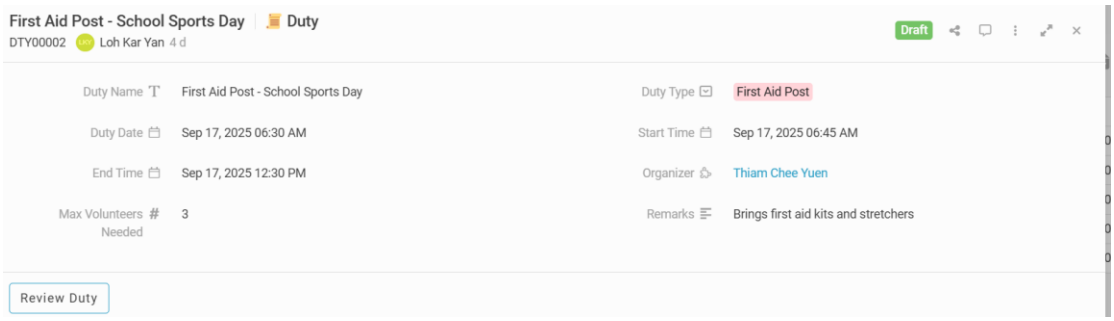


Figure 6.12.1: Duty Module Under Draft State

Figure 6.12.1 shows the duty module in the draft state. At this stage, the duty details such as date, time, location, and required volunteers are entered but not yet submitted for approval.

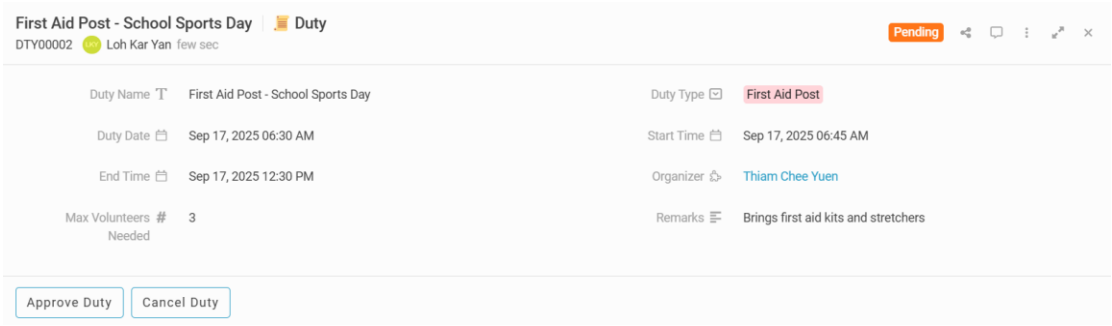


Figure 6.12.2: Duty Module Under Pending State

Figure 6.12.2 presents the duty module in the pending state, where the submitted duty is waiting for administrative review. The admin can either approve the duty for execution or cancel it if the details are unsuitable.

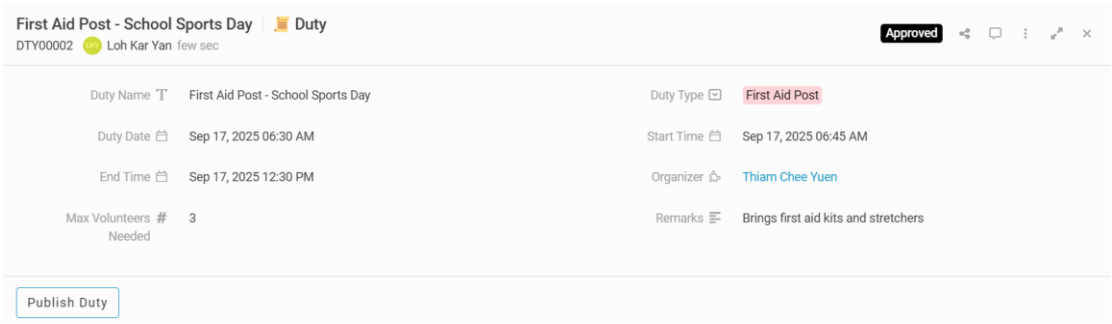


Figure 6.12.3: Duty Module Under Approved State

Figure 6.12.3 illustrates the duty module in the approved state. Here, the duty has already been reviewed and validated by the admin, making it ready for publishing so that volunteers can be officially assigned.

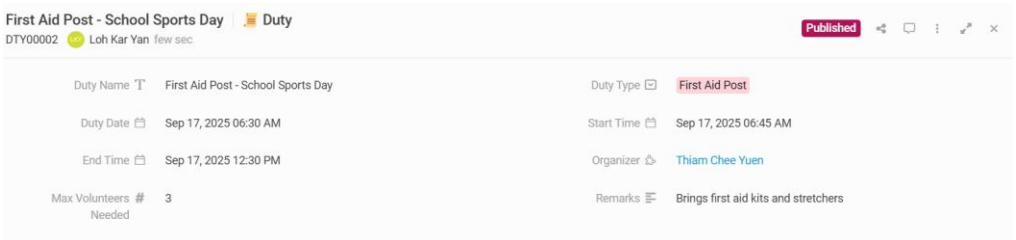


Figure 6.12.4: Duty Module Under Published State

Figure 6.12.4 demonstrates the duty module in the published state. At this stage, the duty is officially confirmed and made visible, allowing members to acknowledge and prepare for participation.

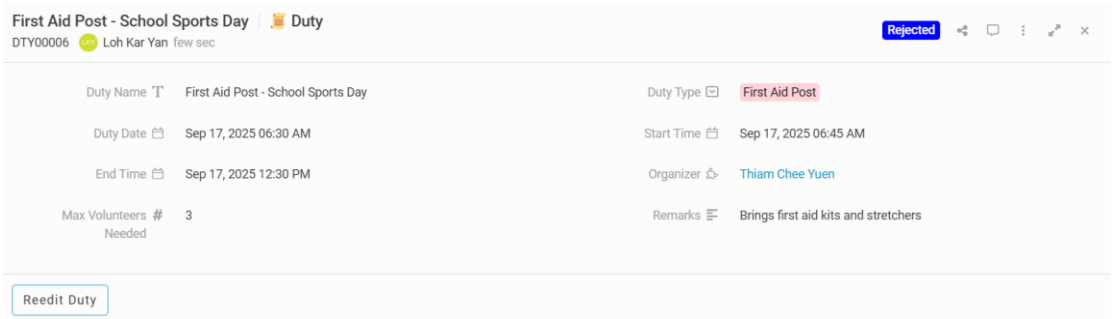


Figure 6.12.5: Duty Module Under Rejected State

Figure 6.12.5 shows the duty module in the rejected state. This occurs when the submitted duty request does not meet the required standards or contains incomplete details. In this state, the duty cannot proceed further unless it is re-edited and resubmitted for review.

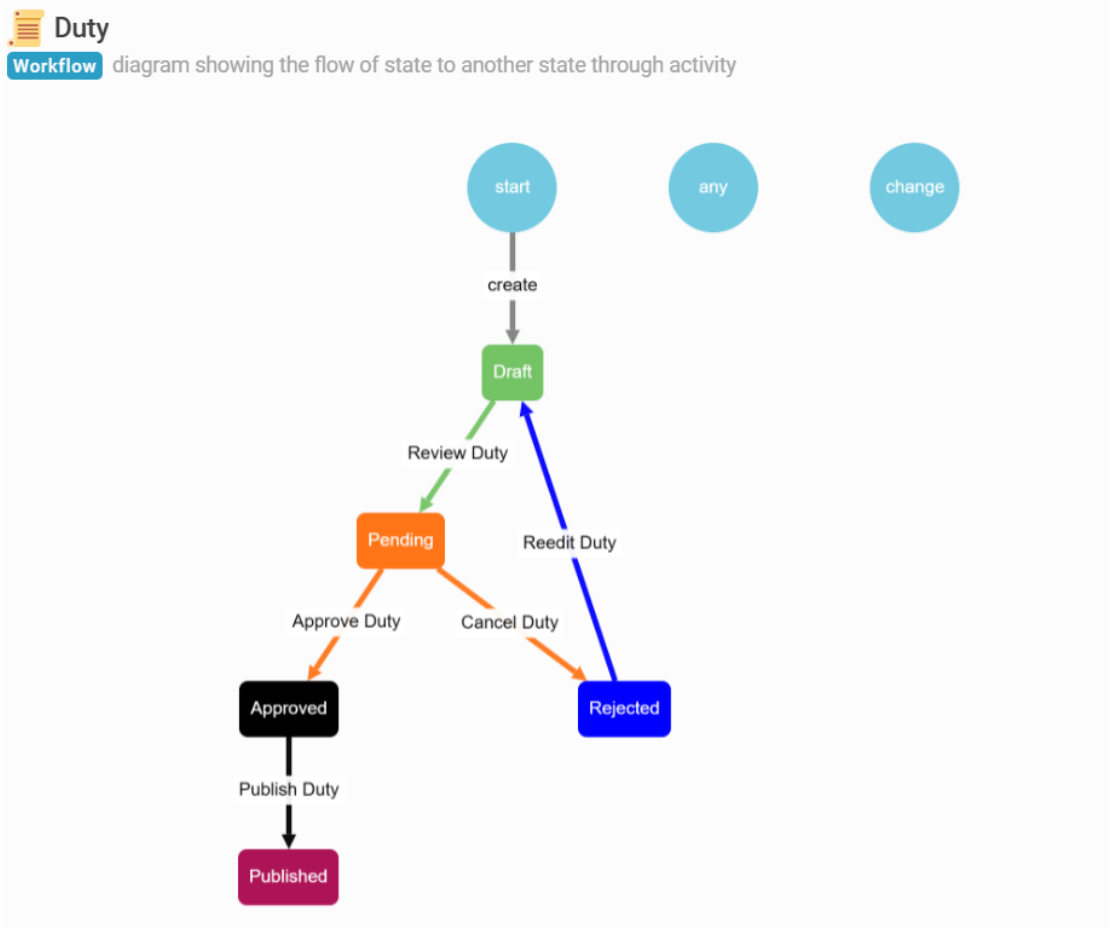
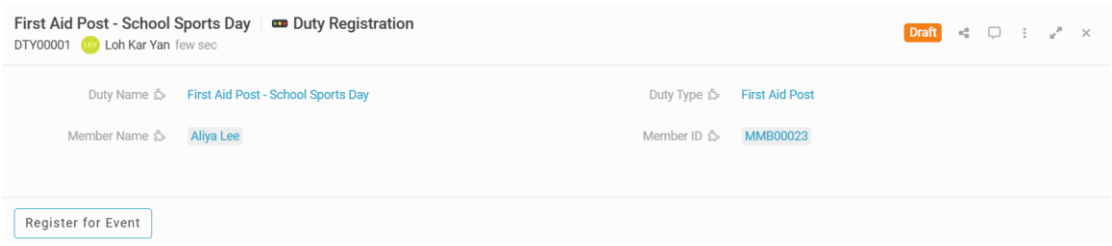


Figure 6.12.6: Duty Module Workflow

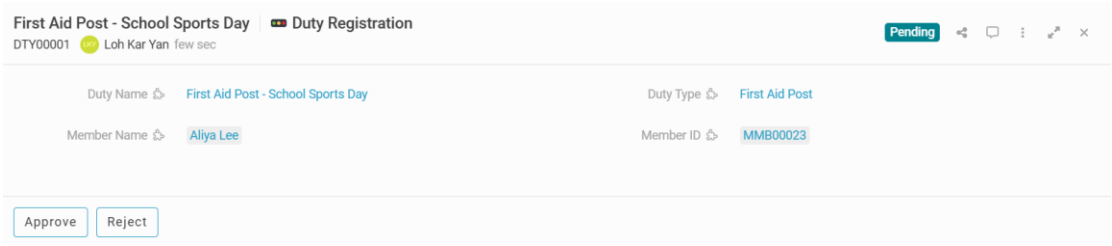
The workflow diagram in Figure 6.12.6 illustrates the entire duty module process. A duty begins in the draft state when it is first created. After submission, it moves to the pending state for review. From here, the admin may either approve the duty, which can then be published for volunteers, or reject it if corrections are needed. The diagram also shows that a rejected duty can be re-edited and resubmitted, ensuring flexibility in managing duty assignments.

6.13 Duty Registration Module



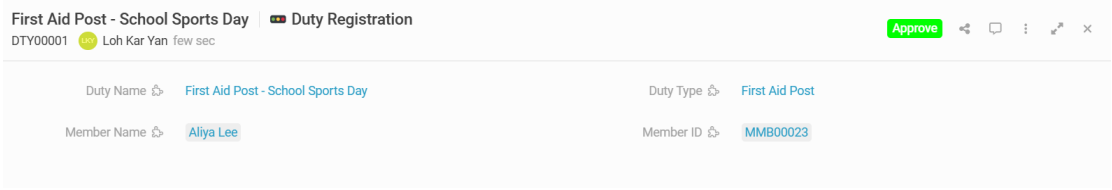
6.13.1 Duty Registration Module Under Draft State

The duty registration form is created but not yet submitted, allowing the member to edit details before final submission.



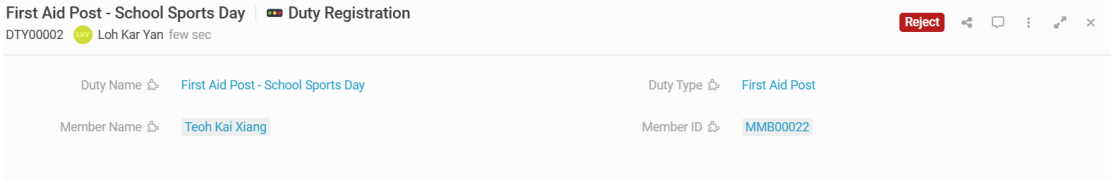
6.13.2 Duty Registration Module Under Pending State

The registration has been submitted by the member and is awaiting admin review for approval or rejection.



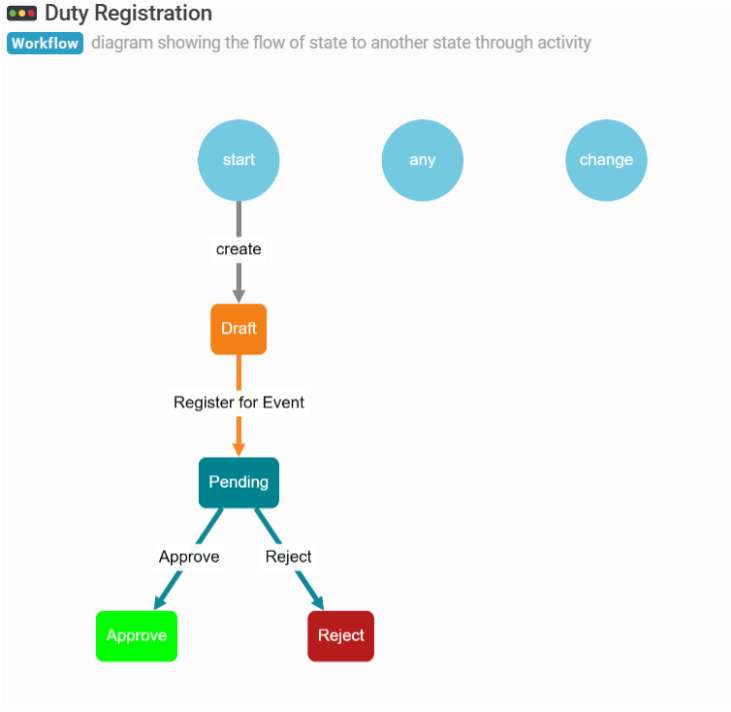
6.13.3 Duty Registration Module Under Approve State

The admin has reviewed and accepted the registration, confirming the member's assignment to the duty.



6.13.4 Duty Registration Module Under Rejected State

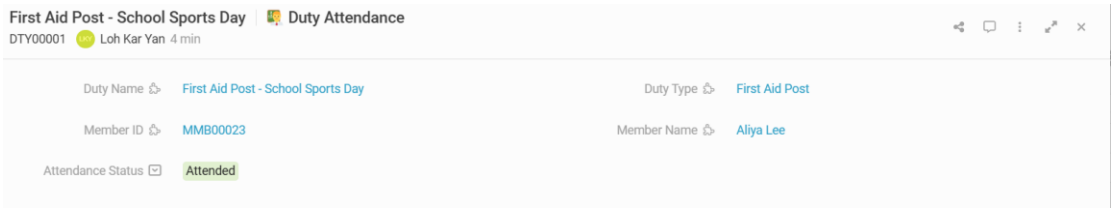
The admin has reviewed but declined the duty registration, preventing the member from participating in that duty.



6.13.5 Duty Registration Module Workflow

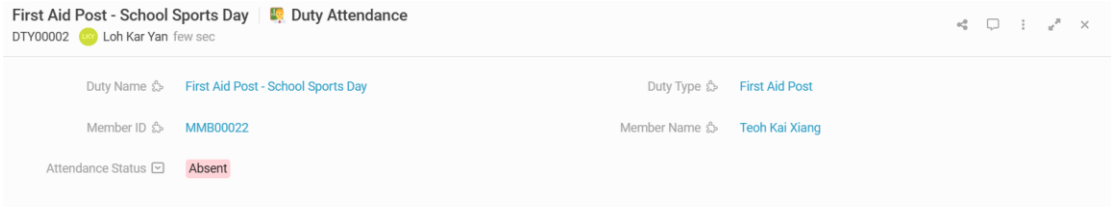
The Duty Registration Module Workflow begins when a member creates a new duty registration, which is first placed in the draft state. At this stage, the details can still be edited before submission. Once the member registers for the duty, the request moves into the pending state, waiting for the administrator's review. From here, the admin has two options which is, if the registration meets the requirements, it is approved, confirming the member's assignment to the duty; if the details are incorrect or unsuitable, it is rejected, preventing the member from taking part in that duty. This structured flow ensures that duty assignments are properly controlled and verified before confirmation.

6.14 Duty Attendance Module



6.14.1 Duty Attendance Recorded as Attended

The system shows that the member is marked as attended for the assigned duty, confirming their participation.



6.14.2 Duty Attendance Recorded as Absent

The system shows that the member is marked as absent for the assigned duty, indicating non-participation.

6.15 Event Module

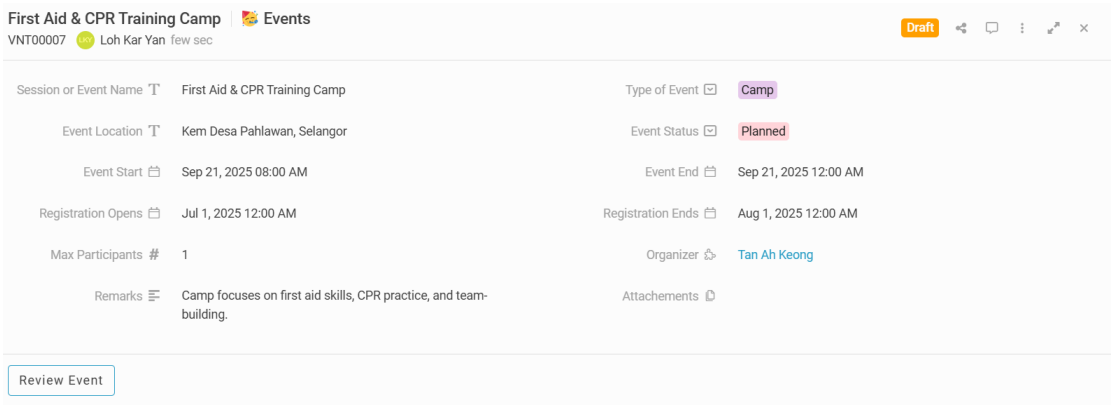


Figure 6.15.1: Event Module Under Draft State

The event module in the draft state represents the stage where event details are first created. At this point, information such as the event title, location, date, and description is recorded but not yet finalized or submitted.

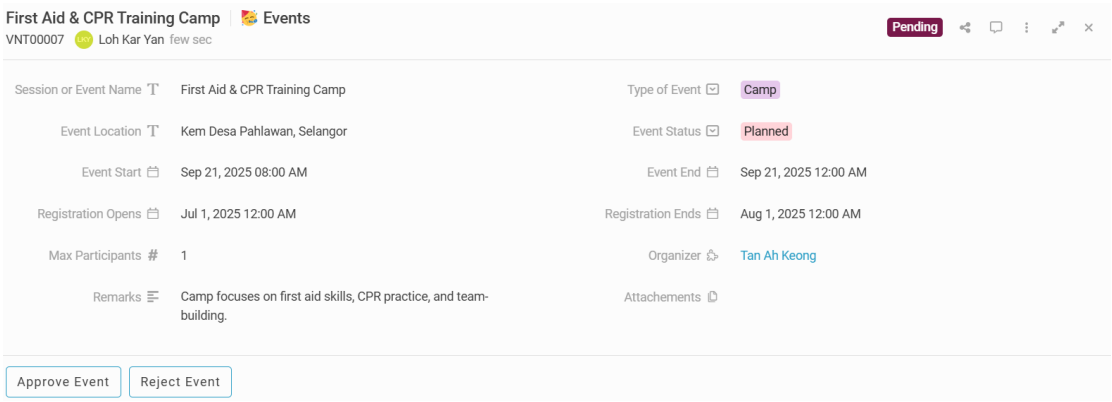


Figure 6.15.2: Event Module Under Pending State

In the pending state, the event has been submitted for administrator review. Here, the admin evaluates the details and decides whether to approve or reject the request.

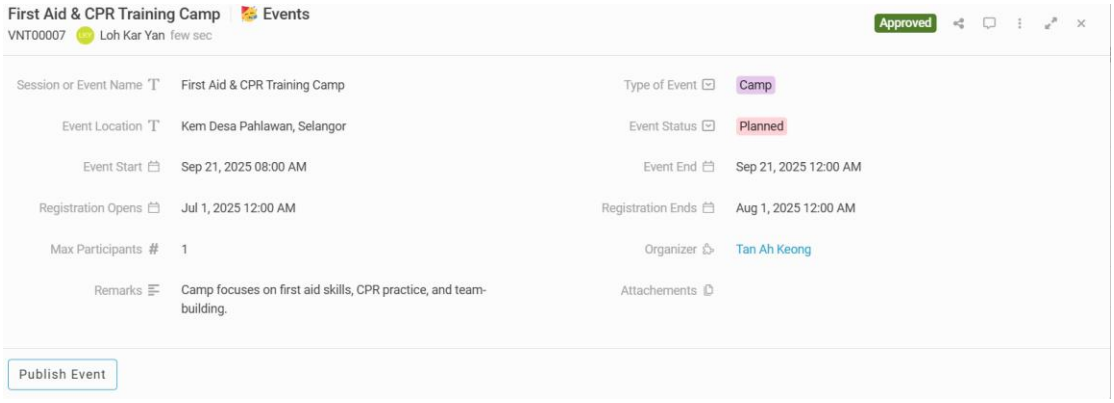


Figure 6.15.3: Event Module Under Approved State

The approved state indicates that the event has been reviewed and confirmed by the administrator. Once approved, the event is ready to move forward and can be published for members to view and join.

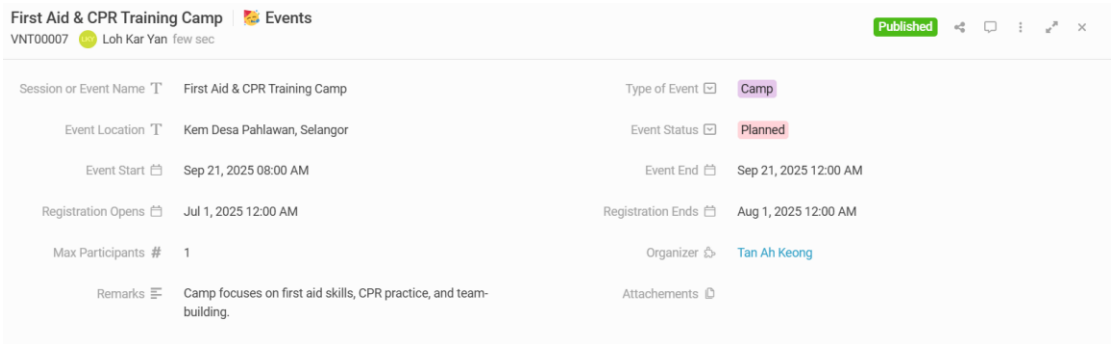


Figure 6.15.4: Event Module Under Published State

The event module in the published state indicates that the event has been fully approved and made official. At this stage, the event is visible to members, and participants can join or prepare to attend.

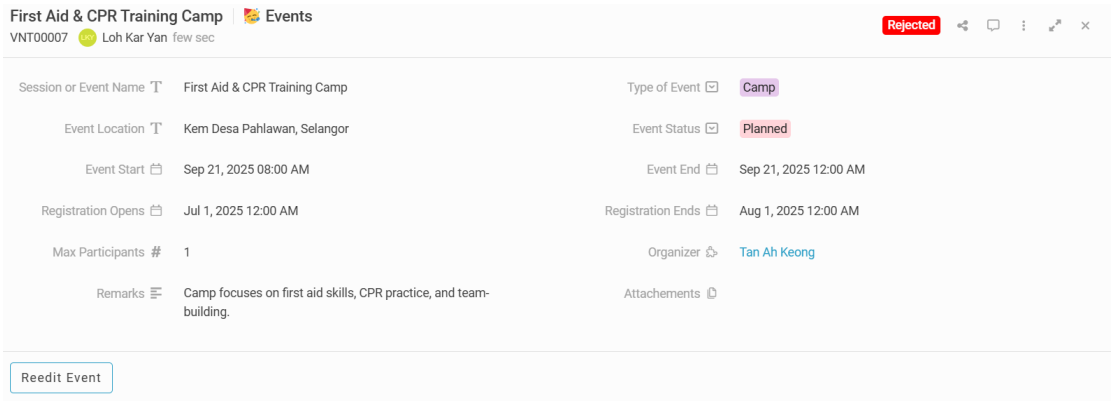


Figure 6.15.5: Event Module Under Rejected State

The rejected state represents an event submission that did not meet the required standards or contained incorrect information. When an event is rejected, it must be re-edited and resubmitted before it can be considered again.

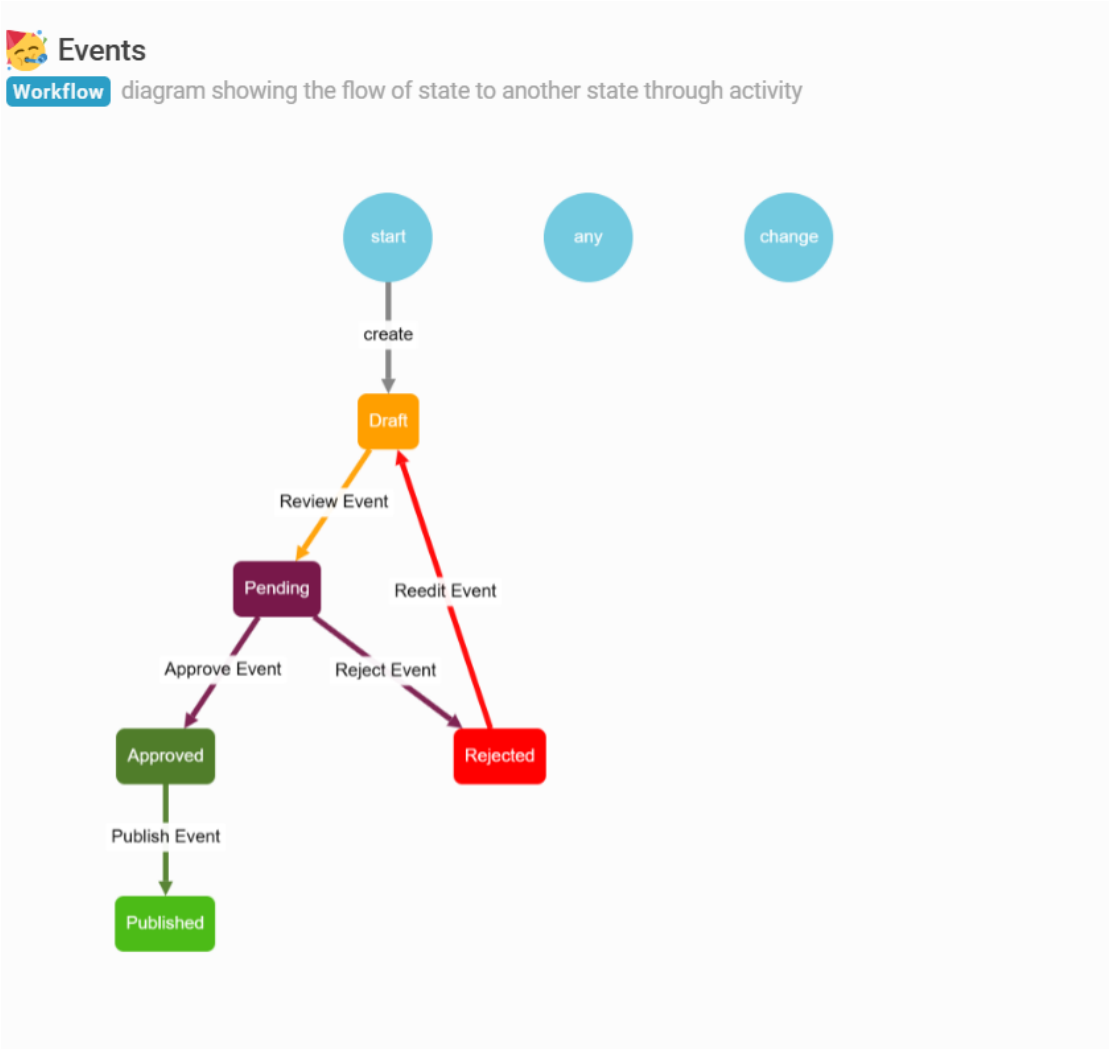
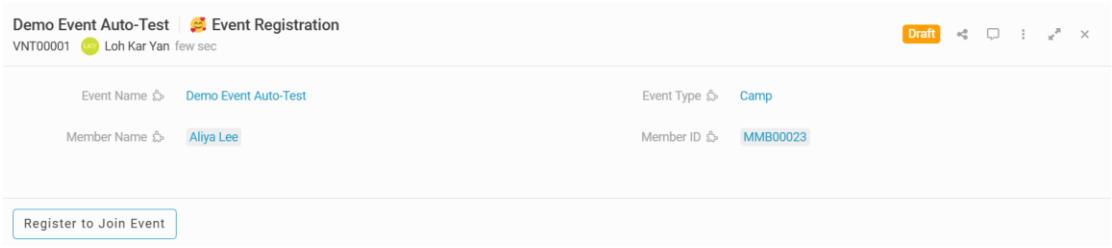


Figure 6.15.6: Event Module Workflow

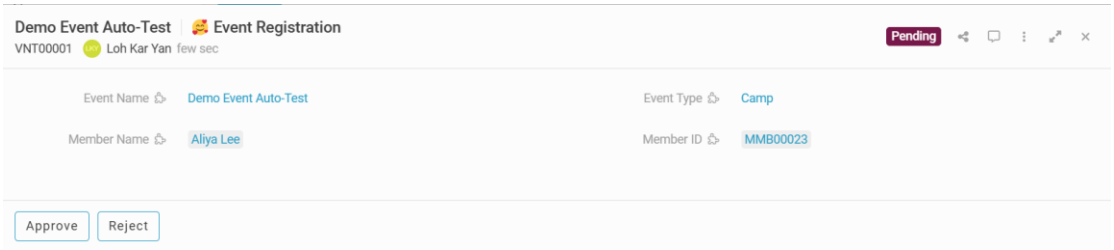
The event module workflow begins with the draft state, where event details are first created. Once submitted, the event moves into the pending state for administrator review. From there, the event can either be approved or rejected. If approved, it proceeds to the approved state and can then be published, making it official and visible to members. If rejected, the event must be re-edited and resubmitted before it can be reconsidered.

6.16 Event Registration Module



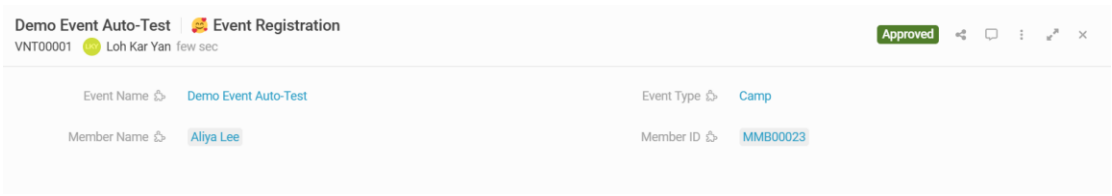
6.16.1 Event Registration Module Under Draft State

The event registration form has been created but not yet submitted, it remains editable by the member.



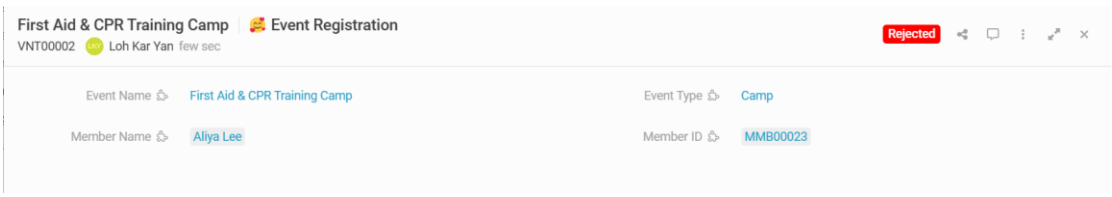
6.16.2 Event Registration Module Under Pending State

The registration has been submitted by the member and is waiting for admin review and approval.



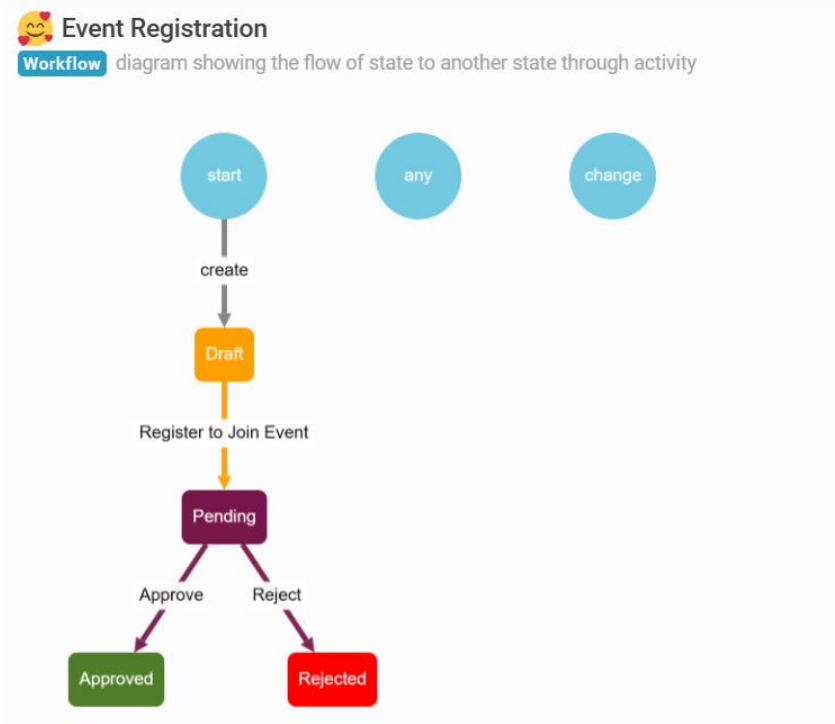
6.16.3 Event Registration Module Under Approved State

The registration request has been reviewed and accepted by the admin, confirming the member's participation in the event.



6.16.4 Event Registration Module Under Rejected State

The registration has been reviewed but declined by the admin, and the member cannot join the event unless re-applied.



6.16.5 Event Registration Module Workflow

6.17 Event Attendance Module

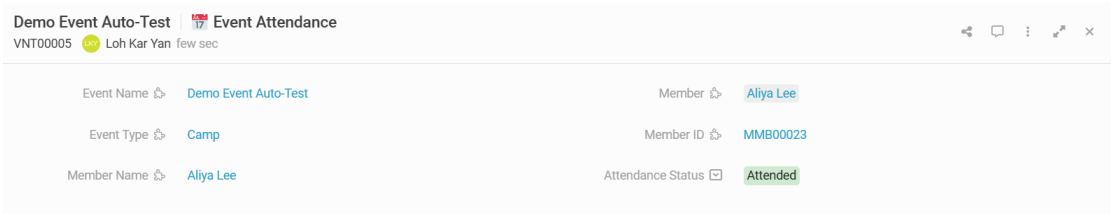


Figure 6.17.1: Event Attendance Module Recorded as Attended

The Event Attendance Module records when a member is marked as Attended, confirming their successful participation in the event.

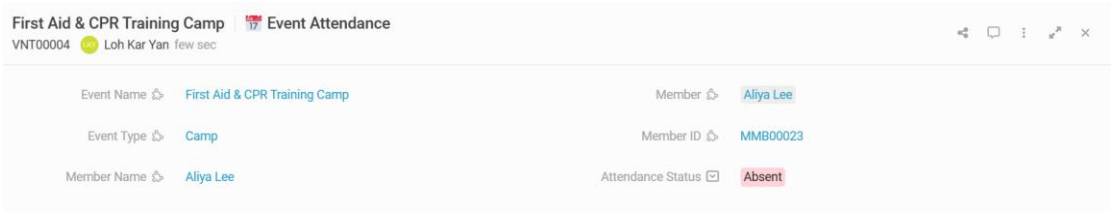


Figure 6.17.2: Event Attendance Module Recorded as Absent

If marked as Absent, it indicates that the member did not participate, ensuring accurate records for reporting, certification, and future planning.

6.18 Announcement Module

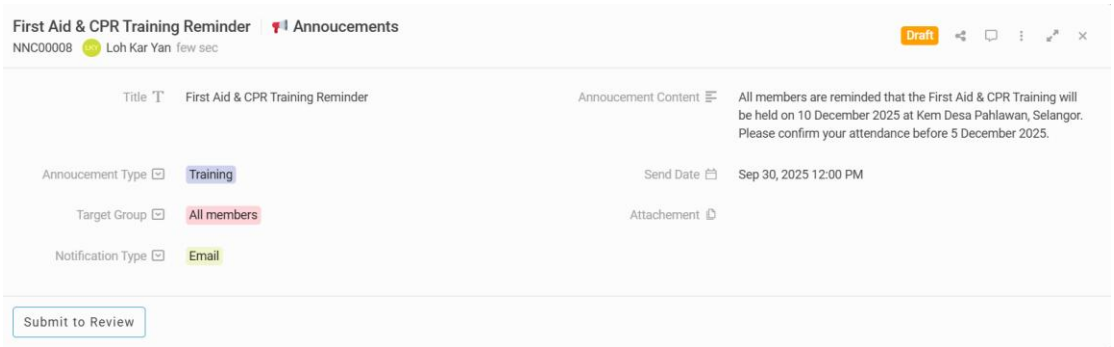


Figure 6.18.1: Announcement Module Under Draft State

The announcement module begins with the draft state, where the announcement is created and prepared.

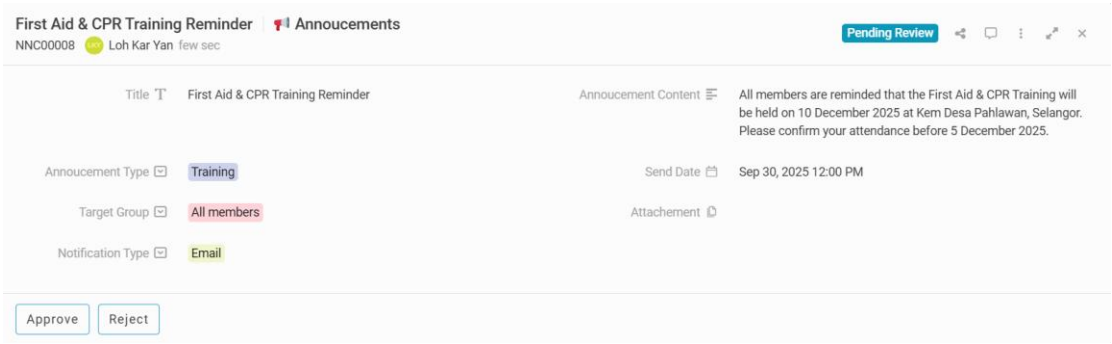


Figure 6.18.2: Announcement Module Under Pending State

Once submitted, it moves into the pending state, waiting for admin review.

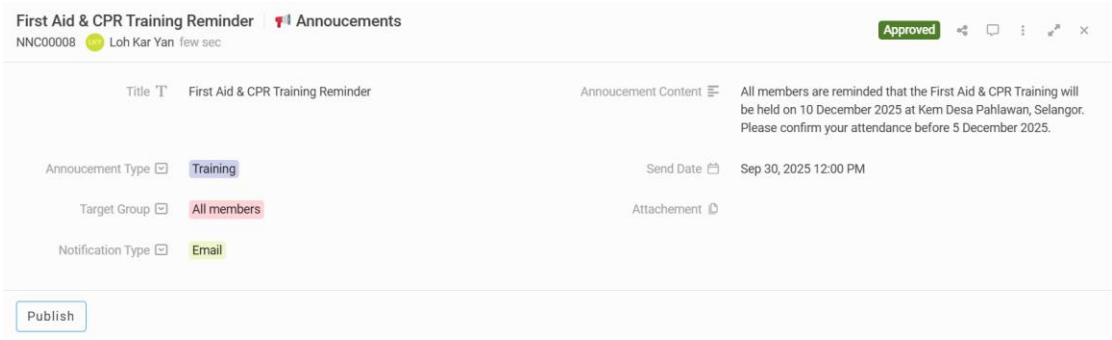


Figure 6.18.3: Announcement Module Under Approved State

If approved, the announcement proceeds to the approved state and can be published to notify the targeted members.

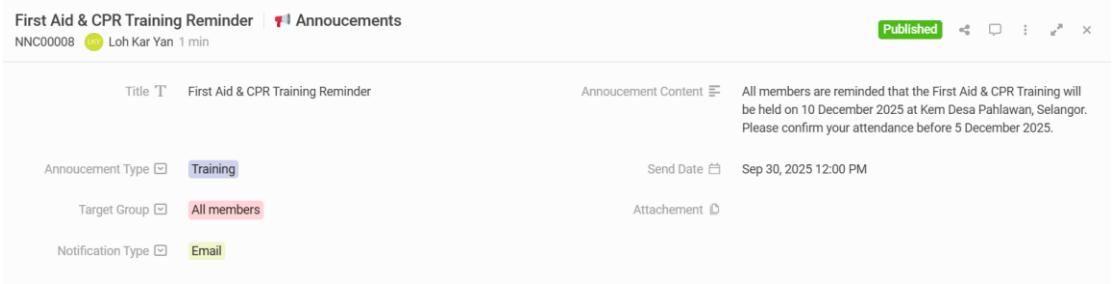


Figure 6.18.4: Announcement Module Under Published State

The announcement has been successfully released to all members. It communicates

important training details such as the event date, location, and attendance confirmation deadline. Since the notification type is set to email, all members will receive this reminder directly in their inbox, ensuring timely updates and participation.

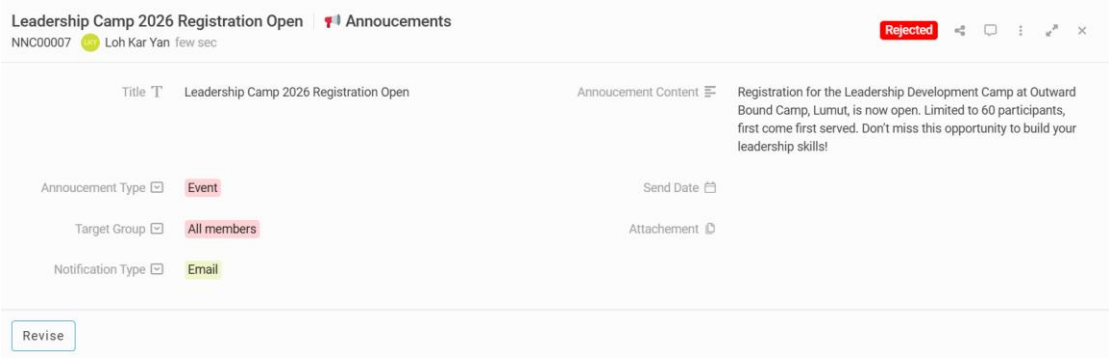


Figure 6.18.5: Announcement Module Under Rejected State

In case it is rejected, the announcement must be revised before resubmission.

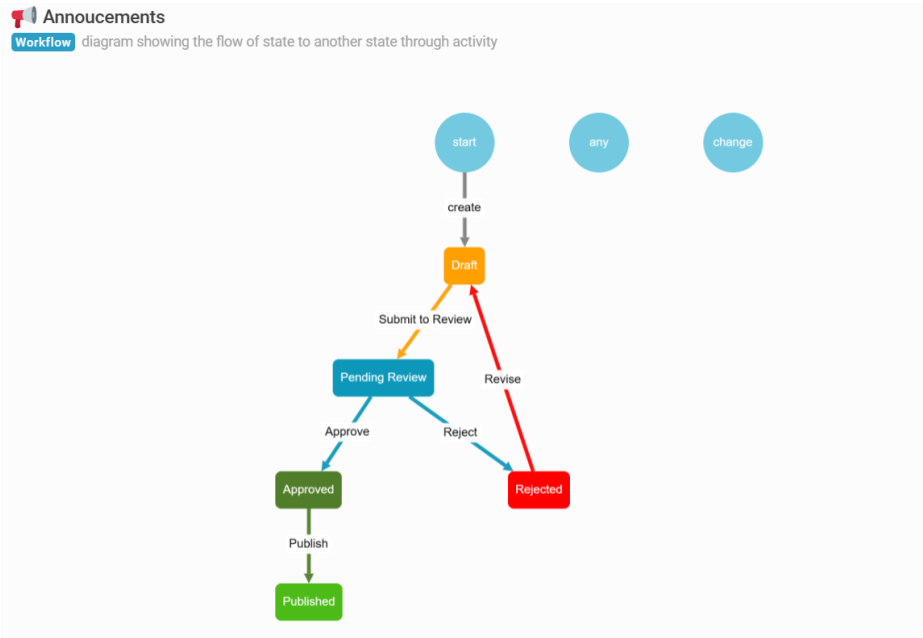


Figure 6.18.6: Announcement Module Workflow

This announcement workflow diagram illustrates the process from creation to publication. An announcement begins in the draft state, where details are prepared. It can then be submitted for review, moving into the pending review stage. From there, the announcement may be approved and then published, making it visible to the target

group. If issues are found, it may be rejected, requiring re-editing, or revised back to draft for corrections. This structured flow ensures that announcements are properly checked before being shared.

6.19 Payment and Finance Module

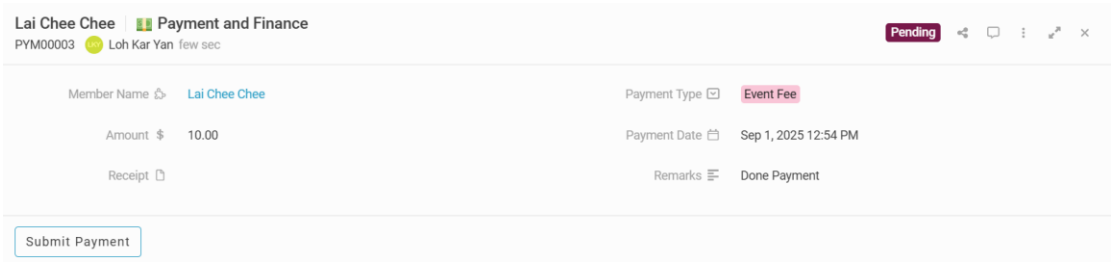


Figure 6.19.1: Payment and Finance Module Under Pending State

Figure 6.19.1 shows the payment and finance module in the pending state, where a new payment record is submitted but has yet to be reviewed. At this stage, the details are stored but not finalized.

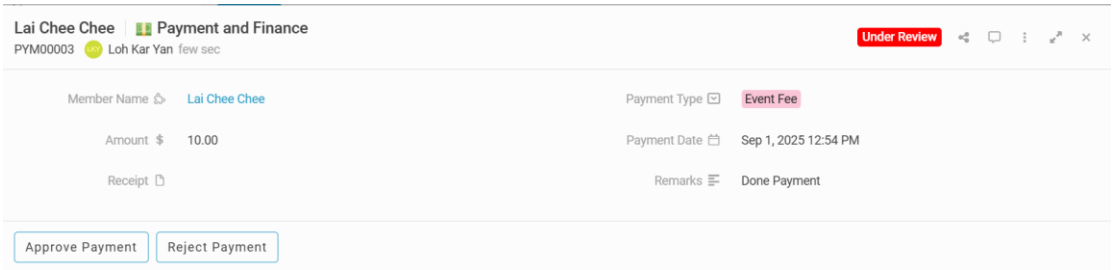


Figure 6.19.2: Payment and Finance Module Under Review State

Figure 6.19.2 illustrates the module under review state, where the submitted payment is checked for accuracy and validity. The admin can either approve the payment or reject it based on the verification process.

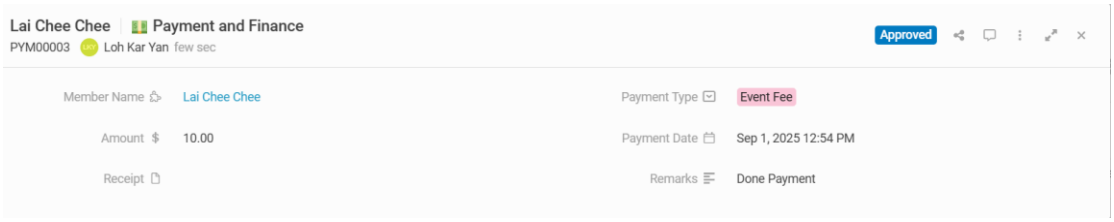


Figure 6.19.3: Payment and Finance Module Under Approved State

Figure 6.19.3 presents the approved state of the module. Once approved, the payment is confirmed as valid, completing the process and updating the member's record successfully.

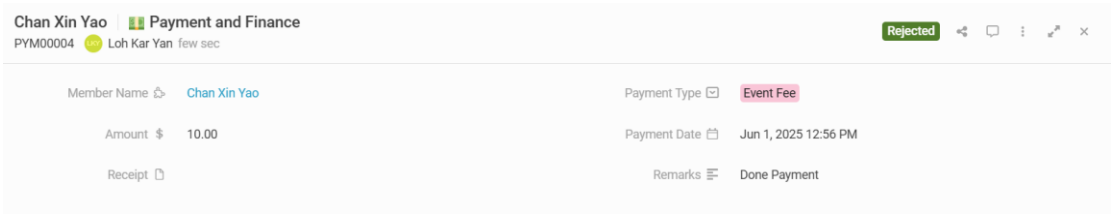


Figure 6.19.4: Payment and Finance Module Under Rejected State

Figure 6.19.4 displays the payment and finance module under the rejected state. This indicates that the submitted payment has been reviewed but did not meet the required criteria, and therefore the transaction was not accepted.

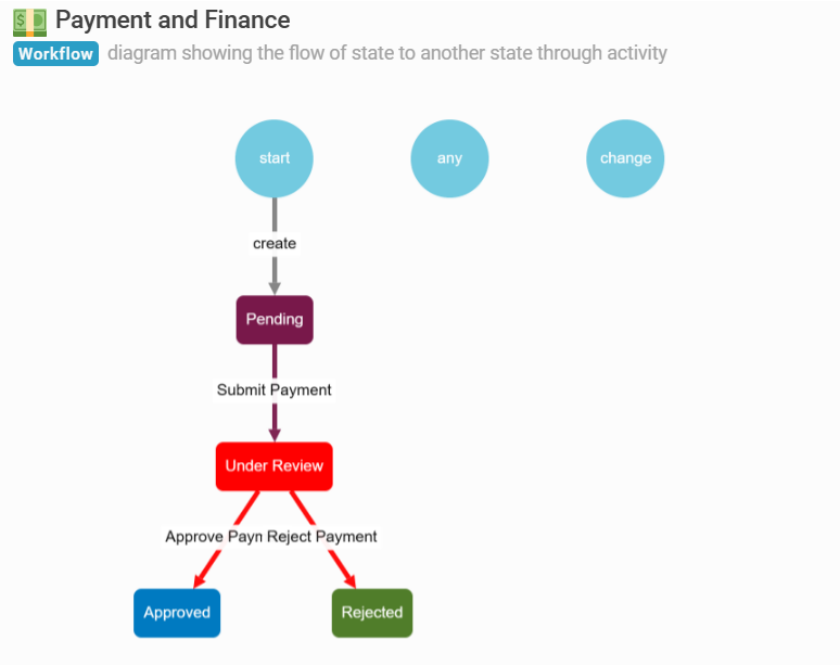


Figure 6.19.5: Payment and Finance Module Workflow

Figure 6.19.5 shows the overall workflow of the payment and finance module. It begins from the pending state, moves to review, and then leads to either approval or rejection, ensuring a structured and traceable payment proces

CHAPTER 7

Testing Phase

7.1 Membership Registration Module

This module handles all activities related to the management of member profiles and statuses. It is central to the system's user lifecycle operations.

Test Cases:

- Register a new member and ensure all personal details are accurately stored in the membership database.
- Modify existing member profile information and confirm that updates are successfully reflected in the system.
- Enable or disable a member account to validate proper activation and deactivation functionalities.
- Evaluate and process membership applications by approving or rejecting requests according to predefined criteria.
- Automatically or manually terminate memberships once the validity period has expired, ensuring compliance with time constraints.
- Generate and store a new member record automatically upon successful registration.
- Edit member profile information and verify that changes are updated.

7.2 Membership Renewal Module

This module manages the process of extending a member’s validity in the system.

Test Cases:

- Submit a renewal request and store details in the database.

- Verify expiry date is extended correctly upon approval.
- Approve or reject renewal request based on payment validation.
- Generate renewal invoice and receipt automatically.
- Notify members of successful or failed renewal status.

7.3 Member Record Module

This module serves as the central repository for all approved member details.

Test Cases:

- Verify that only approved registrations are stored as member records.
- View member profile information and validate correctness.
- Update member details and confirm synchronization across modules.
- Check that deactivated members remain in records but flagged inactive.

7.4 Rank Module

This module manages member hierarchy and progression within the organization.

Test Cases:

- Assign a new rank to a member and verify issue and expiry dates.
- Approve or revoke a rank assignment.
- Upload promotion files and verify they are stored.
- Ensure rank changes are reflected in the member's record.

7.5 Certification Module

This module handles training certifications awarded to members.

Test Cases:

- Record certification details including issue and expiry dates.
- Upload certification file and verify its accessibility.
- Approve or reject certification submission.
- Ensure certifications are linked to valid members only.

7.6 Examination Module

This module covers exam creation and management.

Test Cases:

- Create a new exam with correct name, type, and date.
- Submit exam for review and verify approval/rejection process.
- Publish an approved exam for participants.
- Ensure rejected exams can be re-edited and resubmitted.

7.7 Examination Registration Module

Test Cases:

- Register a member for an exam and store record.
- Approve or reject exam registration request.
- Record exam results as passed, failed, or absent.
- Generate certification automatically for passed members.

7.8 Examination Attendance Module

Test Cases:

- Mark exam attendance as present or absent.
- Verify attendance record is linked to correct member ID.
- Ensure attendance data is available for reporting.

7.9 Training Module

This module manages training programs and schedules.

Test Cases:

- Create training details including title, date, and trainer.
- Approve or reject training program submission.
- Publish training schedule for members.
- Update or cancel training session.

7.10 Training Registration Module

Test Cases:

- Register a member for training and store details.
- Approve or reject registration submission.
- Record slot allocation and verify against limits.
- Ensure registration details sync with training attendance.

7.11 Training Attendance Module

Test Cases:

- Record attendance as present or absent.

- Verify attendance is tied to correct training ID and member ID.
- Generate attendance reports automatically.

7.12 Duty Module

This module manages organizational duty assignments.

Test Cases:

- Create duty details including type and date.
- Approve or reject duty assignment.
- Revoke or update existing duty details.

7.13 Duty Registration Module

Test Cases:

- Register member for duty assignment.
- Approve or reject duty registration.
- Record member details for assigned duty.

7.14 Duty Attendance Module

Test Cases:

- Record duty attendance as completed or absent.
- Verify attendance is linked to correct duty ID.
- Generate duty participation reports.

7.15 Event Module

This module handles organizational events.

Test Cases:

- Create new event with type and date.
- Approve or reject event request.
- Publish approved events to members.
- Update event details or cancel events.

7.16 Event Registration Module

Test Cases:

- Register a member for event participation.
- Approve or reject registration form.
- Record participation in member's profile.

7.17 Event Attendance Module

Test Cases:

- Record event attendance as present or absent.
- Verify attendance is linked to event ID and member ID.
- Generate attendance summary report.

7.18 Announcement Module

This module facilitates communication between admin and members.

Test Cases:

- Create new announcement with title, content, and attachments.
- Approve or reject announcement before publishing.
- Publish announcement and verify visibility to target groups.
- Edit or revoke published announcements.

7.19 Payment and Finance Module

This module records financial transactions related to membership.

Test Cases:

- Record a new payment with type, amount, and date.
- Approve or reject payment based on receipt verification.
- Generate and store invoice and receipt automatically.
- Update member’s renewal status after successful payment.
- Ensure rejected payments notify members for correction.

CHAPTER 8

Conclusion

8.1 Discussion

The development of the St. John Membership System has successfully addressed the inefficiencies of manual membership processes. By implementing modules such as member registration, renewal, training, certification, event, duty, and announcements, the system ensures a centralized and automated approach to managing members. The integration of workflows, state transitions, and activity tracking has minimized human errors while streamlining administrative tasks. The use of the Inistate low-code platform further demonstrates the practicality of adopting agile methodologies in system development. Iterative sprints allowed for continuous improvement, incorporating feedback from users and stakeholders into the design. This approach not only enhanced usability but also ensured that the system aligned with organizational needs. Additionally, the inclusion of reporting and analytics features provides administrators with real-time insights into membership growth, attendance, and financial contributions, supporting data-driven decision-making. Overall, the system has enhanced efficiency, improved communication, and provided scalability for future growth. Challenges such as ensuring user adoption and maintaining data accuracy remain, but the project has laid a strong foundation for digital transformation in membership management.

8.2 Conclusion

In conclusion, the St. John Membership System achieves its primary objectives of reducing administrative workload, improving data accuracy, and enhancing member engagement. By digitizing manual processes and consolidating information into a centralized database, the system significantly reduces fragmentation and operational delays. The project highlights the importance of automation and integration in modern membership systems, proving that a low-code approach can deliver reliable and scalable solutions. The successful implementation of this system not only improves organizational efficiency but also provides members with a seamless and transparent experience. Future improvements may include integrating mobile applications, enhancing data security features, and expanding analytics capabilities. Nevertheless, the current system

demonstrates that digital platforms can transform traditional membership operations into efficient, user-friendly, and sustainable solutions.

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APPENDIX

Poster

MEMBERSHIP MANAGEMENT SYSTEM

Project Developer: Loh Kar Yan
Project Supervisor: Ts Lim Jit Theam

INTRODUCTION

Organizations like St. John rely heavily on membership-based structures to manage profiles, training, and events. Traditional manual systemsusing paper records or spreadsheets are inefficient, error-prone, and difficult to scale. To address these challenges, a digital Membership Management System (MMS) was developed using the Inistate low-code platform, focusing on automation, centralized data, and real-time updates

PROBLEM STATEMENT

- Lack of digital tools – organizations cannot efficiently track and analyze member information.
- Manual data processing – labour-intensive methods increase errors and slow operations.
- Without a centralized database – data remains fragmented, causing duplication, inconsistencies, and limited scalability.

OBJECTIVE

- Automate manual processes to reduce administrative workload.
- Provide digital tools for real-time analysis and reporting.
- Implement a centralized database to streamline data management and ensure accuracy.

Proposed Solution

The St. John Membership Management System was developed using the Inistate low-code platform. It integrates key modules such as:

- Member Registration & Renewal
- Training, Certification, and Examination
- Duty & Event Management
- Payment & Finance
- Announcements & Communication
- Reporting & Analytics

The system follows Agile methodology, ensuring iterative improvements and alignment with organizational needs.

Result

The system, built with Inistate, automated manual processes and reduced errors. A centralized database improved data accuracy, while real-time reports supported better decision-making. User testing confirmed improved usability, communication, and member satisfaction.