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NCHAPTERS CLUBS, SOCIETIES AND EVENT MANAGEMENT WEB APPLICATION

by

Group A21

A Project Report

NSBM Green University

03/2024

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We extend our deepest gratitude to every individual who has guided us and supported us throughout this project journey.

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Abstract

This project, NChapters, deals with the problem of lack of notification or awareness about university events among NSBM Green University students. The main objectives of this project are to include a user-friendly web interface for accessing event details, allow smooth login using NSBM student email credentials, ensure efficient management of club and event details, and club leaders' details, as well as sending email notifications to subscribers.

Modern web development techniques were adopted in implementing the NChapters platform. It involved designing an instinctive interface, integrating with NSBM student email credentials for authentication and working with club leaders and administrators in collecting and organizing clubs' and events' details. Data analysis was done through managing data bases and e-mail integration.

As a result of this implementation, there can be greater access to information on university events hence improving student engagement and participation. Users from whom we collected user requirements, reported that the platform offered a friendly user interface as it promoted better organization and promotion of university events.

NChapters effectively addresses the problem by providing a centralized platform that helps to facilitate communication between students and club organizers leading to improved notification shortcomings related to university events among NSBM Green University students. This project enhances communication between students and clubs while still offering a central hub for such activities thereby ensuring effective notification about campus events among students.

Table of contents

List of Figures	6
List of tables	6
List of abbreviations	7
Chapter 1	8
Introduction	8
Chapter 2	9
Literature review	9
Chapter 3	11
Methodology	11
Specifications	11
Key Agile Practices Implemented	12
Work Breakdown and Timeline	14
User Requirements	17
Functional Specifications	18
Technical Specifications	20
System Architecture	22
Implementation of the Solution	23
Chapter 4	24
Results & Discussion	24
Comparison with requirements:	24
Challenges and solutions	25
Impact and Benefits:	26
Testing	27
Chapter 5	28
Conclusion and Future Works	28
Reference list	29
Appendix: Individual Contribution Matrix	30
Appendix 2: User Requirements Gathering	32
Appendix 3: User Requirements Testing	34
Appendix 4: Meeting Minutes	36
Important Meeting Minutes	40

List of Figures

Figure 1 - DFD	20
Figure 2 - Database Design	21
Figure 3 - User Requirement Gathering 1	32
Figure 4 - User Requirement Gathering - 2	33
Figure 5 - User Requirement Testing1	34
Figure 6 - User Requirement Testing2	35
Figure 7 - Meeting Minutes 1	36
Figure 8 - Meeting Minutes 2	36
Figure 9 - Meeting Minutes 3	
Figure 10 - Meeting Minutes 4	37
Figure 11 - Meeting Minutes 5	38
Figure 12 - Meeting Minutes 6	38
Figure 13 - Meeting Minutes 7	39
Figure 14 - Meeting Minutes 8	39
List of tables	
Table 1 - Individual Contribution Matrix	31

List of abbreviations

NSBM National School of Business Management

HTML Hyper Text Markup Language

CSS Cascade Styling Sheets

JS JavaScript

MERN MongoDB Express React NodeJS

Chapter 1

Introduction

Students in modern universities are finding ways to be a part of campus life and develop their personalities further. Clubs and societies in universities have been an integral part of this dynamic university experience. NSBM Green University also has numerous dynamic clubs and societies that contribute to the student life of NSBM undergraduate students by fostering their potential. Providing students with avenues to pursue their passions, sharpen skills and new talents, and meet fellow enthusiasts is among the ways that a university community can foster growth. However, the process of discovery, joining, staying informed and active participation in university clubs and societies, can be challenging for some students when they try to explore opportunities or find out about events being held. This could be mainly due to lack of centralized information, time consuming enrolment and limited awareness.

This project, NChapters, is developed to cater to the above mentioned user requirements. To resolve the problem of insufficient notification and awareness of university events for NSBM Green University students, NChapters was developed as a club and society event management web application. The main goal of this platform is to optimize the procedure of getting information about events organized by various clubs and societies within NSBM Green University so that students can easily avail themselves of upcoming programs.

Focusing on the scope of the project, NChapters covers the following criteria,

- Easy-to-use, user friendly web interface.
- Easy login facility for students, club leaders and admin using only NSBM student email.
- Efficient club details management, event details management, volunteer registration, participant registration and club leaders' detail management.
- Email notifications for subscribers.

Focusing on the justification of the project, the need for NChapters is driven by business as well as social requirements. A vibrant campus life, with a culture of engagement and a sense of belonging that students feel after developing relationships with others, are benefits for universities from the business perspective, which in turn affects their prestige. Socially, students must be given the opportunity to participate actively and fully in all kinds of activities and resources provided by campus life. By addressing communication barriers in relation to university events, NChapters can establish a good fit between both University and student interests.

Chapter two discusses the literature review conducted in relation to this project, NChapters.

Chapter 2

Literature review

A survey of the literature shows that there is an increasing amount of study being done on enhancing participation and communication in university communities. Numerous research endeavours have examined the obstacles linked to student notice and attendance at events, underscoring the significance of efficient routes of communication. In addition, several goods and services—from conventional email alerts to specialized event management platforms—are available to handle these issues.

- [1] [2]Existing solutions provide the following benefits:
- 1. Ease of Use: Event organizers can manage and promote their events with ease thanks to some of the platforms that are currently in place.
- 2. Accessibility: Students can easily obtain event information thanks to the numerous solutions' cross-platform compatibility.

But these solutions also have some significant drawbacks:

- 1. Fragmented Information: Students may find it difficult to locate thorough event listings in the absence of a centralized platform, which could result in missed opportunities.
- 2. Lack of Interactivity: Some platforms are less successful in encouraging community participation because they lack features that allow for user engagement and interaction.

Theoretical Framework:

React, and Node.js as well as Firebase as the main database solution, are utilized in the creation of NChapters to offer a complete and effective event management platform. Every element in the stack enhances the user experience overall and allows for particular functionality, which adds to the theoretical framework.

- 1. Firebase NChapters' backend architecture is powered by Firebase, which also offers authentication services and a real-time database. Firebase's theoretical underpinnings are in accordance with the fundamentals of developing scalable, cloud-based applications; features like offline support, real-time data synchronization, and user authentication are highlighted. NChapters guarantees safe user authentication, smooth data management, and effective communication between the application's client and server components by utilizing Firebase. [3]
- 2. React (R), Node.js (N): Although Firebase is the major database solution, React, and Node.js are the other parts of the MERN stack that work in tandem with Firebase to offer extra features and improve the development process as a whole. Server-side routing and middleware administration are made easier using Express.js, which makes it possible to handle HTTP requests and API endpoints effectively. Conversely, React provides a reusable and modular

frontend design that makes it simple to create interactive user interfaces. The runtime environment is Node.js, which makes it possible to execute JavaScript server-side and allows for easy connection with Firebase services. [4]

NChapters' theoretical framework includes concepts for developing cloud-based applications, synchronizing data in real-time, authenticating users, and executing JavaScript on the server side. These concepts are implemented by utilizing Firebase and the MERN stack in tandem. NChapters strives to provide a solution that is user-centric and scalable, effectively solving the communication issues encountered by university communities by coordinating technology decisions with theoretical ideas.

Chapter 3

Methodology

Agile methodology is a flexible and collaborative approach to software development that emphasizes iterative development and response to change.

In the context of our project, agile principles play a vital role in the success of our NChapters website. By implementing agile practices such as Scrum or Kanban, our team can effectively manage tasks, collaborate effectively and provide incremental updates to the site. Emphasizing flexibility allows us to adapt to changing user needs and stakeholder feedback during the development process.

Collaboration between team members, including project managers, developers, testers, and QA specialists, is fostered through daily stand-up meetings, sprint planning sessions, and ongoing communication channels. This iterative approach allows us to deliver operational features in short cycles, gather early feedback and make necessary adjustments, ensuring the final product meets user expectations and delivers value to our stakeholders.

An agile methodology not only promotes a customer-centric mindset, but also enables our team to effectively respond to change, complexity and uncertainty in software projects.

Specifications

We implemented the Scrum framework within the Agile methodology for our project.

Scrum's iterative and incremental approach was perfect for our project goals of developing a comprehensive website for university clubs and societies. The framework's emphasis on regular feedback, continuous improvement, and adaptability matched our team structure, which included distinct roles such as project manager, technical manager, programming manager, test manager, and QA manager.

Scrum sprint cycles allowed us to break down the development process into manageable tasks, prioritize features based on user needs, and present work milestones at the end of each sprint. This iterative delivery approach facilitated close collaboration, minimized risk and ensured that our development approach was responsive to change and stakeholders throughout the project lifecycle.

Overall, Scrum provided the structure and flexibility needed to effectively achieve our project goals.

Key Agile Practices Implemented

Throughout our project, we applied key Agile practices to ensure efficient development and delivery. These practices included the following:

Sprint planning: We held sprint planning sessions at the beginning of each sprint to organize our work into manageable tasks and set clear goals for the iteration. Our team worked together to identify user stories, prioritize them by importance and complexity, and estimate the effort required for each task. This helped us create a sprint with actionable goals for the next sprint.

Daily stand-ups: Daily stand-ups were held to keep the team informed and aware of the day's progress, challenges and plans. Each team member briefly discussed their accomplishments since their last stand-up, any obstacles they encountered, and their tasks for the day. These short, focused meetings encouraged openness, collaboration and problem solving within the team.

Back-end management: The product portfolio was continuously managed, refined and prioritized throughout the project. We regularly reviewed and updated the order book based on changing requirements, stakeholder feedback and new insights gained during development. This ensured that the backlog remained aligned with the project goals and reflected the changing needs of users.

Iterative Development: Our development process followed an iterative approach with the goal of presenting product work steps at the end of each sprint. We focused on completing and testing user stories during the sprint with the goal of adding a potential deliverable product. This iterative development cycle allowed us to gather early feedback and make changes based on user input.

Continuous Integration and Testing: We have integrated continuous integration (CI) practices into our development workflow to ensure that code changes are regularly integrated into the core code. base. Automated testing was introduced to maintain product quality. Unit tests, integration tests and final tests were performed. This approach helped us quickly identify and resolve issues and ensure a stable and reliable product.

Sprint Review and Retrospective: At the end of each sprint, we conducted sprint reviews to present the completed work to stakeholders and gather feedback. This allowed us to validate our progress, receive feedback from stakeholders and make necessary changes to the product base. In addition, a sprint retrospective was organized where we reflected on our performance, identified areas for improvement and implemented changes for the next sprint that promote continuous learning and efficiency in the team.

The Agile method brought several benefits to our team, improving our project results and overall efficiency:

Better response to stakeholder feedback: Agile's iterative approach allowed us to regularly gather and incorporate stakeholders and ensure that the final product met their expectations and requirements more efficiently.

Deliver working software faster: By organizing work into sprints and focusing on product delivery, Agile has helped achieve faster, more frequent releases, delivering tangible value to stakeholders faster.

Improved team collaboration and morale: Agile practices such as daily stand-ups, sprint planning and retrospectives fostered collaboration, communication and shared responsibility within the team, which improved morale and productivity.

Better flexibility to adapt to change: Agile's ability to adapt to changes in requirements and priorities allowed us to quickly pivot, adapt plans and adapt to new features or changes without major disruptions to project schedule or quality.

Better matching of results with the client's expectations: Through constant collaboration and feedback, Agile helped us ensure that, our results were exactly aligned with customer expectations, resulting in better satisfaction and less rework.

Work Breakdown and Timeline

Project Initiation Phase (Completed):

Duration: 1 week **Dependencies:** None

Tasks:

Define project scope, objectives, and constraints.

Identify project stakeholders and establish communication channels.

Develop the project charter outlining key project details.

Assign roles and responsibilities to project team members.

Conduct a kickoff meeting to communicate project goals and expectations.

Deliverables:

Project Proposal Team Assignment Kick-off Meeting

Requirement Gathering Phase (Completed):

Duration: 2 weeks

Dependencies: Project Initiation Phase

Tasks:

Conduct interviews and observations to gather user requirements.

Document functional and non-functional requirements in the requirements document.

Create user stories or use cases to capture user interactions and scenarios.

Prioritize requirements based on stakeholder input and project constraints.

Review and validate requirements with stakeholders to ensure alignment.

Deliverables:

Requirements Document User Stories/Use Cases Prioritized Feature List

Design Phase (Completed):

Duration: 3 weeks

Dependencies: Requirement Gathering Phase

Tasks:

Develop wireframes and mockups to visualize the website's layout and structure. Create design concepts for the user interface (UI) and user experience (UX) of the website. Iterate on design concepts based on feedback from stakeholders and usability testing. Finalize UI/UX designs and prepare design assets for implementation.

Deliverables:

Wireframes and Mockups User Interface (UI) Design User Experience (UX) Design

Development Phase (Completed):

Duration: 6 weeks

Dependencies: Design Phase

Tasks:

Set up development environments and version control systems.

Implement front-end components and user interface elements based on approved designs.

Develop back-end functionality and database integration to support website features.

Integrate third-party APIs or services as needed for additional functionality.

Conduct code reviews and collaborate with team members to ensure code quality and consistency.

Deliverables:

Front-end Implementation Back-end Development Integration of Design Elements

Testing and Quality Assurance Phase (Completed):

Duration: 1 week

Dependencies: Development Phase

Tasks:

Develop a test plan outlining testing objectives, strategies, and resources.

Create test cases and scenarios covering functional, usability, and performance aspects.

Execute various types of testing, including unit testing, integration testing, and system testing. Identify and report bugs and issues, and work with developers to resolve them.

Conduct user acceptance testing (UAT) with stakeholders to validate the website's functionality and usability.

Deliverables:

Test Plan

Test Cases

Deployment Phase (Completed):

Duration: 1 week

Dependencies: Testing and Quality Assurance Phase

Tasks:

Prepare for deployment by configuring hosting environments and server settings.

Perform final checks and validations to ensure that the website is ready for production.

Migrate data and files to the production server and set up domain configurations.

Monitor deployment processes and address any issues or errors that arise.

Conduct post-deployment testing to verify that the website is functioning correctly in the production environment.

Deliverables:

Deployment Plan

Final Project Report Phase (Completed):

Duration: 1 week

Dependencies: Deployment Phase

Tasks:

Summarize project objectives, activities, and outcomes in the final project report.

Reflect on lessons learned and identify areas for improvement or future development.

Provide recommendations for further enhancements or maintenance of the website.

Share the project report with stakeholders and present findings and recommendations as needed.

Archive project documentation and deliverables for future reference.

Deliverables:

Project Summary Lessons Learned

Conclusion and Recommendations

User Requirements

Our project is designed to cater to the following users / stakeholders.

- 1. **Students at NSBM Green University** The main users of this website will be the students at NSBM Green University who are interested in joining to the clubs and societies of NSBM and who are interested in participating in events organized by clubs and societies of NSBM.
- 2. **Prospective Students** Students who are waiting to enrol in NSBM Green University can explore the rich array of clubs and societies available at NSBM Green University and the events organized by them.
- 3. **Leaders of Clubs and Societies of NSBM Green University** Leaders of clubs and societies of NSBM are another key group which benefits from this website. Leaders can conveniently share details about their clubs and societies, their events and promote them. Also, they can conveniently gather volunteers for the events through this website.

Functional Requirements

Students should be able to login to the website using NSBM Student Email.

The website should provide accurate and up-to-date information about available clubs, societies, and their events.

Club leaders should be able to create and manage event details on the website.

Students should be able to easily explore and join events of clubs and societies as volunteers or participants.

Students should be able to receive notifications about the latest events of their interested clubs and societies.

Non-Functional Requirements

Performance - The website should load quickly and respond promptly to user actions, even during peak usage times.

Security: The website should allow only NSBM Student Accounts to be logged in.

The website should be compatible and responsive with a wide range of web browsers and devices, including desktops, laptops, tablets, and smartphones.

Functional Specifications

Requirement ID: N-01

Requirement Description: Students should be able to login to the website using NSBM

Student Email.

Dependencies: None **Acceptance Criteria:**

Users should be able to enter their NSBM student email address and password on the login page.

Upon successful authentication, users should be redirected to their personalized page.

Priority: High

Requirement ID: N-02

Requirement Description: The website should provide accurate and up-to-date information about available clubs, societies, and their events.

Dependencies: None **Acceptance Criteria:**

Club and society cards should include detailed descriptions about the club or society.

Information on the website should be regularly updated to reflect any changes or additions to club activities and events.

Priority: High

Requirement ID: N-03

Requirement Description: Club leaders should be able to create and manage event details on the website.

Dependencies: N-02 **Acceptance Criteria:**

Club leaders should have access to a dedicated interface where they can create new events, update event details, and manage event schedules.

Event management features should include options to specify event titles, descriptions, dates, times, locations, and participant limits.

Priority: High

Requirement ID: N-04

Requirement Description: Students should be able to easily explore and join events of clubs and societies as volunteers or participants.

Dependencies: N-02 **Acceptance Criteria:**

Users should be able to browse a comprehensive list of upcoming events organized by clubs and societies.

Users should have the option to register as participants or volunteers for events directly through the website.

Priority: Medium

Requirement ID: N-05

Requirement Description: Students should be able to receive notifications about the latest events of their interested clubs and societies.

Dependencies: N-02 **Acceptance Criteria:**

Users should be able to subscribe to receive notifications from specific clubs and societies of interest

Notifications should be sent via email to inform users about upcoming events and updates.

Priority: Medium

Technical Specifications

• Data Flow Diagram

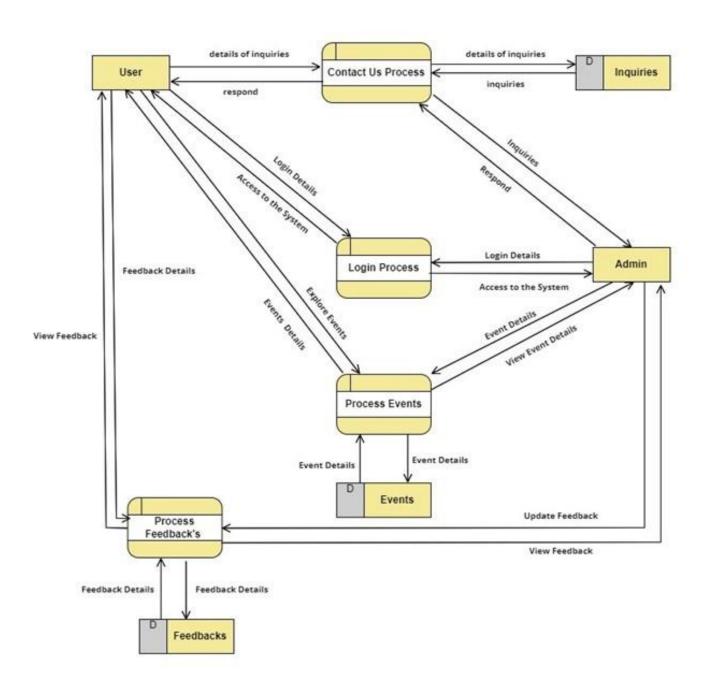


Figure 1 - DFD

• Database Design

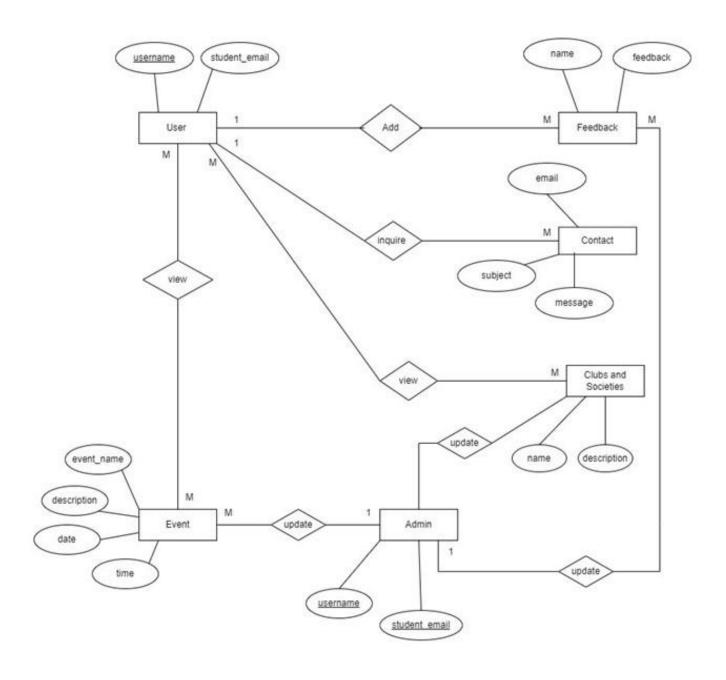


Figure 2 - Database Design

System Architecture

Front-End Architecture

Front-End Client: React, Tailwind CSS, Html.

Use React Router for simple navigation between different pages.

Back-end Architecture

Back-end Server: Node.js

Database: Firebase Realtime Database for storing user data, clubs, subscribers, events, leaders, inquiries, and feedback.

Third party services: Azure Active Directory (Entra ID) for authentication, Email JS for email notifications.

Database: Uses Firebase Realtime Database to store and manage details of clubs, events, club leaders, subscribers, feedback, and inquiries.

Firebase Functions: Serverless functions to handle backend logic and interact with Firebase Realtime Database. Management of details of clubs, events, club leaders, subscribers, feedback, and inquiries.

Authentication and Authorization

Provided roles and permissions in the system based on user attributes obtained from Azure AD. Restrict access to certain parts of the system based on user roles or permissions.

Front-end and Back-end Communication

The front-end interacts with Firebase Functions endpoints via standard HTTP calls. Uses Node.js to create a backend server that communicates with the React frontend application.

Error Handling and Logging

Implement basic error handling in both front-end and back-end code to handle common errors such as network issues or invalid inputs.

Using try-catch blocks in the front-end code to handle errors and display user friendly error messages. In the back end, implement logging functionality to track errors and system behavior for troubleshooting purposes.

Implementation of the Solution

Development Process:

NChapters was developed using modern web development technologies such as React, HTML, Tailwind CSS, Node JS, Azure Active Directory (Entra Id), Email JS and Firebase Realtime Database.

Agile development methodologies were followed, with iterative cycles of development, testing, and feedback incorporated into the process.

User Interface Design:

The user interface was designed with a focus on simplicity and intuitiveness.

Wireframes were created to outline the layout and functionality of each page, ensuring an easy-to-navigate experience for users.

Login Facility:

A safe sign-in system was implemented, allowing students, club leaders, and admin to log in using their NSBM student email credentials securely.

Club and Event Management:

NChapters provides comprehensive management tools for clubs and events, including features for creating and editing club profiles, posting and managing events, handling volunteer and participant registrations, and managing club leaders' details.

Feedback and Inquiry Management:

NChapters also provides a platform for participants to place feedback about the events they participated, as well as manage inquiries from users.

Email Notifications:

Automated email notifications are sent to subscribers to inform them about upcoming events, ensuring that students stay informed about relevant activities on campus.

Testing and Quality Assurance:

Extensive testing was conducted to ensure the reliability, functionality, and security of NChapters.

Unit testing, integration testing, and user acceptance testing were performed to identify and address any issues or bugs.

Chapter 4

Results & Discussion

During the project, our team successfully achieved several milestones and delivered key features in line with the project objectives. These achievements include:

Milestones Achieved: Our team completed all planned project phases within the specified time frame. This included project initiation, requirements gathering, design phase, development phase, testing and quality assurance, implementation, and final report.

Functions implemented: The project included several functions essential to its success. These features include a centralized platform for club and association listings, streamlined registration processes, an event calendar to track activities, messaging and notification features, and administrative features to track club registrations.

Key Deliverables Completed: Completed deliverables included a fully functional website. with responsive design, user-friendly interface for easy navigation, backend systems to manage club members and event records, email notification systems for event updates and administrative tools to manage user access rights.

Typically, the results achieved reflect the successful execution of the project plan, the achievement of defined milestones, the delivery of crucial functions, the completion of key deliverables and quantitative. improvements to the project. performance meters.

Comparison with requirements:

The final project results were compared with the original project requirements and objectives to assess the consistency and fulfillment of the project scope.

Meeting the defined requirements: The main goal of the project was to create a centralized platform for students at NSBM Green University to learn, register and stay connected with university clubs and societies. It also aimed to facilitate effective communication between club leaders and members, provide comprehensive information about clubs and events, and promote a sense of community among students. The final deliverables fulfilled these defined requirements by implementing all the essential functions and features described in the project proposal.

Deviations or changes: During the life of the project, some deviations and changes were observed, mainly due to comments from stakeholders, change of users, needs and technical considerations. These changes included UI improvements to improve usability, additional features such as email notification systems and final tweaks to improve performance and scalability. Although these changes resulted in improvements to the final product, they also required flexible adaptation and prioritization to ensure timely delivery and alignment with the project's goals.

Challenges and solutions

During the project, our team encountered several challenges and obstacles, overcoming them which required strategic solutions and effective collaboration. These challenges included technical complexity, resource constraints, schedule pressures, and occasional changes in project scope. Here is a detailed overview of the challenges and implemented solutions:

Technical Challenges: One of the first technical challenges was the seamless integration of the email notification system with the platform. This required understanding and working with external APIs and ensuring proper authentication and delivery of emails. Additionally, optimizing the platform for device and browser responsiveness created another technical hurdle.

Solution: To address these challenges, the CTO worked closely with the development team to thoroughly review API documentation, test email functionality, and implement responsive design. principles Regular code reviews and collaboration sessions ensured rapid identification and resolution of technical problems.

Resource limitation: limited availability of certain resources (e.g., special software tools or external plugins), limited certain development activities. This affected the speed and efficiency of certain features.

Solution: The team took a pragmatic approach, prioritizing critical features and functions based on how they impact project goals. Explored alternative solutions or workarounds for tasks that required certain resources not readily available.

Timeline pressures: As with all projects, there were pressures during the development phase, especially to accommodate changes or improvements requested by stakeholders. Balancing ontime delivery with quality and fullness of features was a recurring challenge.

Solution: Agile methodologies such as Scrum have helped resolve timeline tensions. Regular sprint planning sessions were held to prioritize tasks, and the team kept communication channels open to manage stakeholder expectations for delivery times. Incremental development and continuous feedback enabled iterative improvements without compromising project deadlines.

Project changes: new requirements emerged during the project or existing features required changes based on stakeholder feedback. Managing change throughout the project was a challenge.

Solution: agile principles of flexibility and adaptability were used for effective change management. Regular sprint reviews and retrospectives facilitated discussion of new requirements, and the team collaborated with stakeholders to prioritize changes based on their impact and feasibility within the project schedule. Clear documentation and communication ensured that all team members were aligned with the updated project scope.

Impact and Benefits:

The successful completion of the project has brought significant impacts and benefits from different perspectives, which are in line with the organization's goals, increase user satisfaction and increase efficiency. Here are the main impacts and benefits of the project:

Improved user experience and satisfaction: The implementation of the university's club and society registration website has greatly improved the user experience of NSBM Green University students, prospective students and other stakeholders. Students can now easily research, register and connect with university clubs and societies, improving satisfaction and increasing participation in extracurricular activities. A simplified registration process, comprehensive access to information and effective communication channels have helped to enhance and fulfill the university experience.

Efficiency benefits for club and club management: Website features such as registration management, event tracking and communication tools have greatly improved the efficiency of club leaders and club leaders in managing their groups and activities. Automated processes, centralized data and real-time communication capabilities have reduced administrative burdens and simplified organizational workflows. This has resulted in more effective coordination, better event planning and better engagement of members in clubs and communities.

Orientation to Organizational Goals: Project outcomes directly align with NSBM Green University's organizational goals of fostering a vibrant and inclusive campus community. engaging students and providing comprehensive support for extracurricular activities. By making information about clubs and societies more accessible, promoting an event and encouraging community interaction, the website contributes to a more cohesive and dynamic university environment.

Improved visibility and brand image: The website serves as an introduction to a variety of people. NSBM Green University offers various clubs, societies, and activities. This increased visibility not only attracts prospective students interested in a vibrant campus, but also reinforces the university's image as a student-centered institution that values well-rounded development and a sense of community. The site is a valuable recruiting tool and reinforces the University's commitment to providing enriching experiences beyond academics.

Informed Decision Making: The project also facilitated the collection and analysis of user engagement, event, and club/society data. preferences. This data approach enables informed decisions about future improvements, resource allocation and strategic planning for extracurricular activities. Insights from user interaction and feedback mechanisms contribute to the continuous improvement and optimization of the platform.

Testing

Unit Testing:

Unit testing was conducted during the development phase to assess small units of code, such as functions or modules, independently. This helped identify bugs or issues at the code level and ensured that each unit functioned correctly according to its specifications.

Integration Testing:

Integration testing was performed after unit testing to assess the integration points between various modules or components of the University Clubs and Societies Enrollment Website. This ensured that data flow, communication, and functionality between distinct parts of the system were functioning as expected.

System Testing:

System testing was conducted once integration testing was completed. It involved testing the entire website application, including its features, functionalities, user interfaces, databases, and external integrations. System testing aimed to identify any defects or inconsistencies in the overall system behavior.

User Acceptance Testing (UAT):

UAT was performed with actual users, such as NSBM Green University students and stakeholders, to validate the website's usability, functionality, and alignment with user expectations. Feedback gathered during UAT helped identify areas for improvement and ensure that the final product met user needs effectively.

Chapter 5

Conclusion and Future Works

The website's goal is to be a central hub where students can easily find accurate and current information about university clubs, societies, and their events. This makes it simple for students to stay informed and get involved, enhancing their university experience.

We've streamlined the enrolment process for clubs and events, making it quick and easy for students to sign up and participate. By providing a centralized platform for registration, we've made it more convenient for students to join campus activities.

Additionally, students can provide feedback for each event they attend, helping organizers improve future events based on their input. This ensures that events better meet the needs and preferences of the student community.

The website also serves as an effective tool for promoting club and society events. By reaching a wider audience, it encourages more students to participate, enriching the overall university experience and fostering a stronger sense of community.

In summary, our website simplifies access to information and enrolment processes, facilitates feedback for event improvement, and promotes engagement in campus life, ultimately enhancing the university experience for all students.

Focusing on the future work of this project,

Enhanced User Experience: Based on user feedback, continue to improve the website's interface and usability. Implement user-friendly features like personalized club and event recommendations, intuitive navigation, and accessibility improvements to ensure that all students have easy access to the platform.

Advanced Feedback Mechanisms: Develop more robust feedback mechanisms, such as surveys or polls, to gather comprehensive insights from students about their experiences with clubs and events. Use this data to identify trends, areas for improvement, and preferences among the student body.

Inclusion of Faculty Clubs and Events: We aim to broaden the scope of our platform by incorporating clubs and events from all faculties within the university. This means students can easily find and engage with activities relevant to their academic interests and career goals.

Integration of External Clubs and Societies: Additionally, we're intending to include external clubs and societies, providing students with opportunities to participate in events beyond the university. This allows students to explore diverse interests and connect with communities outside of their academic environment.

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Appendix : Individual Contribution Matrix

1 = Contributed

0 = Did not contribute

Project Task	Onaliy Jayawardana	Udugodage Rodrigo	Jayamuni Rashminda	Waniga Perera	Kariyawasam Induwara
Project Proposal	1	1	1	1	1
UI / UX Design	1	1	1	1	1
Sign In Backend	1	0	0	0	1
Navigation Bar with Backend Operations	1	0	1	0	0
Home Page	0	1	0	0	0
Club Pages Frontend	1	1	0	0	0
Club Filter Backend	0	0	1	0	0
Club Add Page Frontend	0	1	0	0	0
Club Add Page Backend	0	1	0	0	0
Club Edit Page Frontend and Backend	0	0	0	0	1
Events Page Frontend	1	1	0	0	0
Events Page Frontend	1	1	0	0	0
Event Details Page Frontend	0	0	1	0	0
Event Details Page Backend	0	0	1	0	0
Event Edit Page Frontend	1	0	1	0	0
Event Edit Page Backend	1	0	1	0	0
Event Feedback Frontend	0	0	1	0	0
Event Feedback Frontend	0	0	1	0	0

Event Feedback Edit Page Frontend	1	1	0	0	0
Event Feedback Edit Page Backend	0	0	1	0	0
Event Filter Backend	0	0	1	0	0
Inquiries / Contact Form Frontend	0	0	0	1	0
Inquiries / Contact Form Backend	1	1	0	0	0
About Us Page	0	1	1	0	0
Email Notification System	1	1	0	1	0
Firebase Realtime Database Configuration	1	1	0	0	0
Interim Report	1	1	1	1	1
Final Project Report	1	1	1	1	1
Testing	1	1	1	1	1

Table 1 - Individual Contribution Matrix

Appendix 2: User Requirements Gathering

User Requirements Gathering for NChapters

I hereby state that the following are the requirements I require through NChapters clubs and events management web application.

- The website should provide accurate and up-to-date information about available clubs, societies, and their events.
- Leaders of clubs and societies should be able to login to the website using the NSBM Student Email.
- Leaders of clubs and societies should be able to add and manage event details related to their respective clubs and societies.
- This website ensures that event details of a particular club or society can be managed only by the leader of that club or society.
- Students should be able to easily explore and join events of clubs and societies as volunteers or participants after logging in.
- Students should be able to login to the website only using the NSBM Student Email.
- Students should be able to receive notifications about the latest events of their interested clubs and societies.
- Students should be able to explore the events and easily enroll for them as volunteers of participants.

Subodha Hettiarachchi

Club Captain

FOSS Community of NSBM

Figure 3 - User Requirement Gathering 1

User Requirements Gathering for NChapters

I hereby state that the following are the requirements I require through NChapters clubs and events management web application.

The website should provide accurate and up-to-date information about available clubs, societies, and their events.

Students should be able to easily explore and join events of clubs and societies as volunteers or participants after logging in.

Students should be able to login to the website only using the NSBM Student Email.

Students should be able to receive notifications about the latest events of their interested clubs and societies.

Students should be able to explore the events and easily enroll for them as volunteers of participants.

d Parindya

Parindya Liyanage

BSc Hons Software Engineering (Plymouth) – Second Year Undergraduate NSBM Green University

Figure 4 - User Requirement Gathering - 2

Appendix 3: User Requirements Testing

Identified Requirements of NChapters Website

Given below are the identified requirements that will be covered by NChapters website.

- The website should provide accurate and up-to-date information about available clubs, societies, and their events.
- Leaders of clubs and societies should be able to login to the website using the NSBM Student Email
- Leaders of clubs and societies should be able to add and manage event details related to their respective clubs and societies.
- This website ensures that event details of a particular club or society can be managed only by the leader of that club or society.
- Students should be able to easily explore and join events of clubs and societies as volunteers or participants after logging in.
- Students should be able to login to the website only using the NSBM Student Email.
- Students should be able to receive notifications about the latest events of their interested clubs and societies.
- Students should be able to explore the events and easily enroll for them as volunteers of participants.

As a student of NSBM Green University, I verify that my requirements for an event management website is covered through the above mentioned requirements of NChapters website.

Parindya Liyanage

BSc Hons Software Engineering (Plymouth) - Second Year Undergraduate

NSBM Green University

Parindya

Figure 5 - User Requirement Testing1

Identified Requirements of NChapters Website

Given below are the identified requirements that will be covered by NChapters website.

- The website should provide accurate and up-to-date information about available clubs, societies, and their events.
- Leaders of clubs and societies should be able to login to the website using the NSBM Student Email
- Leaders of clubs and societies should be able to add and manage event details related to their respective clubs and societies.
- This website ensures that event details of a particular club or society can be managed only by the leader of that club or society.
- Students should be able to easily explore and join events of clubs and societies as volunteers or participants after logging in.
- Students should be able to login to the website only using the NSBM Student Email.
- Students should be able to receive notifications about the latest events of their interested clubs and societies.
- Students should be able to explore the events and easily enroll for them as volunteers of participants.

As a club leader, I verify that my requirements for an event management website is covered through the above mentioned requirements of NChapters website.

Subodha Hettiarachchi

Club Captain

FOSS Community of NSBM

Figure 6 - User Requirement Testing2

Appendix 4: Meeting Minutes

Meeting Participants



Name (Original Name)	User Email	Join Time	Leave Time	Duration (Minutes)	Guest	In Waiting Room
Avish Madushanka		09/25/2023 07:45:10 PM	09/25/2023 08:02:35 PM	18	Yes	No
Onaliy Jayawardana (On	10815319@students.ply	09/25/2023 07:45:51 PM	09/25/2023 09:35:32 PM	110	No	No
Shanushki Bodhinayaka (10898432@students.ply	09/25/2023 07:54:34 PM	09/25/2023 09:35:32 PM	101	No	No
Geeth Induwara (Kariyaw	10898484@students.ply	09/25/2023 07:58:08 PM	09/25/2023 09:35:31 PM	98	No	No
Rashminda		09/25/2023	09/25/2023	94	Yes	No

Figure 7 - Meeting Minutes 1

08:02:10 PM

09/25/2023

08:04:03 PM

92

09:35:34 PM

09/25/2023

09:35:32 PM

Yes

No

Meeting Participants

Avish Madushanka

Export ☐ Export with meeting data ☐ Show unique users Duration In Waiting Name (Original Name) User Email (i) Join Time **Leave Time** Guest (Minutes) Room 10/07/2023 10/07/2023 Rashminda 9 Yes No 02:58:21 PM 03:06:23 PM 10/07/2023 10/07/2023 10815319@students.ply... Onaliy Jayawardana 83 No No 02:58:26 PM 04:20:44 PM 10/07/2023 10/07/2023 Shanushki Asinsala 79 Yes No 02:59:41 PM 04:18:02 PM 10/07/2023 10/07/2023 Geeth Induwara (Kariyaw... 10898484@students.ply... 78 No No 03:00:33 PM 04:18:01 PM 10/07/2023 10/07/2023 Udugodage Rodrigo 10898638@students.ply... 79 No No 03:02:22 PM 04:20:44 PM 10/07/2023 10/07/2023 Kalindu Malika 5 Yes No 03:09:05 PM 03:04:38 PM 10/07/2023 10/07/2023 Rashminda 72 Yes No 03:06:40 PM 04:18:04 PM 10/07/2023 10/07/2023 Kalindu Malika 69 Yes No 04:17:25 PM 03:09:22 PM

Figure 8 - Meeting Minutes 2

Meeting Participants

☐ Export with meeting data
☐ Show unique users
☐ Export

Name (Original Name)	User Email (i)	Join Time	Leave Time	Duration (Minutes)	Guest	In Waiting Room
Udugodage Rodrigo	10898638@students.ply	10/27/2023 05:06:06 PM	10/27/2023 05:23:47 PM	18	No	No
Onaliy Jayawardana	10815319@students.ply	10/27/2023 05:06:13 PM	10/27/2023 05:23:46 PM	18	No	No
Rashminda		10/27/2023 05:08:43 PM	10/27/2023 05:15:11 PM	7	Yes	No
Rashminda		10/27/2023 05:23:07 PM	10/27/2023 05:23:46 PM	1	Yes	No
Rashminda		10/27/2023 05:15:38 PM	10/27/2023 05:21:56 PM	7	Yes	No
Rashminda		10/27/2023 05:22:12 PM	10/27/2023 05:23:07 PM	1	Yes	No

Figure 9 - Meeting Minutes 3

Meeting Participants

Export Export with meeting data ☐ Show unique users Duration In Waiting User Email (i) Name (Original Name) Join Time Leave Time Guest (Minutes) Room 11/01/2023 11/01/2023 Shanu 125 Yes No 09:35:37 PM 07:30:41 PM 11/01/2023 11/01/2023 Rashminda 124 Yes No 07:31:57 PM 09:35:39 PM 11/01/2023 11/01/2023 Onaliy Jayawardana 10815319@students.ply... 45 No No 07:32:52 PM 08:17:46 PM 11/01/2023 11/01/2023 Udugodage Rodrigo 10898638@students.ply... 60 No No 07:34:29 PM 08:33:48 PM 11/01/2023 11/01/2023 10898484@students.ply... 52 No Kariyawasam Induwara No 07:34:59 PM 08:26:07 PM 11/01/2023 11/01/2023 10815319@students.ply... 78 Onaliy Jayawardana No No 08:17:54 PM 09:35:39 PM 11/01/2023 11/01/2023 Kariyawasam Induwara 10898484@students.ply... 26 No No 08:42:17 PM 09:07:25 PM 11/01/2023 11/01/2023 Kalindu Malika 20 Yes No 09:35:37 PM 09:16:33 PM

Figure 10 - Meeting Minutes 4

Meeting Participants

__ Onon unique acció

Duration In Waiting User Email (i) Join Time Leave Time Guest Name (Original Name) (Minutes) Room 11/08/2023 11/08/2023 Kariyawasam Induwara 10898484@students.ply... 111 No No 06:48:58 PM 08:39:35 PM 11/08/2023 11/08/2023 Onaliy Jayawardana 10815319@students.ply... 91 No No 06:49:21 PM 08:19:28 PM 11/08/2023 11/08/2023 Rashminda 9 Yes No 06:52:39 PM 07:01:16 PM 11/08/2023 11/08/2023 Rashminda Yes 98 No 07:02:27 PM 08:39:37 PM 11/08/2023 11/08/2023 Udugodage Rodrigo 10898638@students.ply... 65 No No 07:06:39 PM 08:10:53 PM 11/08/2023 11/08/2023 Udugodage Rodrigo 10898638@students.ply... 12 No No 08:11:31 PM 08:23:27 PM 11/08/2023 11/08/2023 Onaliy Jayawardana 10815319@students.ply... 2 No No 08:21:45 PM 08:23:40 PM 11/08/2023 11/08/2023 Udugodage Rodrigo 10898638@students.ply... 16 No No 08:24:16 PM 08:39:36 PM 11/08/2023 11/08/2023 Onaliy Jayawardana 10815319@students.ply... 16 No No 08:23:48 PM 08:39:40 PM

Figure 11 - Meeting Minutes 5

Meeting Participants Export Export with meeting data ☐ Show unique users Duration In Waiting User Email (i) Name (Original Name) Join Time Leave Time Guest (Minutes) Room 01/01/2024 01/01/2024 Udugodage Rodrigo 10898638@students.ply... 200 No No 05:39:54 PM 08:58:57 PM 01/01/2024 01/01/2024 Onaliy Jayawardana 10815319@students.ply... 195 No No 05:44:45 PM 08:58:58 PM 01/01/2024 01/01/2024 Udugodage Rodrigo 10898638@students.ply... 9 No No 06:39:45 PM 06:48:44 PM 01/01/2024 01/01/2024 Udugodage Rodrigo 10898638@students.ply... 1 No No 06:49:10 PM 06:49:45 PM 01/01/2024 01/01/2024 StudPro OC | Geeth Indu... 103 Yes No 08:58:15 PM 07:16:06 PM

Figure 12 - Meeting Minutes 6

Onaliy Jayawardana

Meeting Participants

No

No

☐ Export with meeting da☐ Show unique users	ta					Export
Name (Original Name)	User Email	Join Time	Leave Time	Duration (Minutes)	Guest	In Waiting Room
Udugodage Rodrigo		02/07/2024 07:29:22 PM	02/07/2024 09:50:57 PM	142	Yes	No
Onaliy Jayawardana	10815319@students.ply	02/07/2024 07:30:54 PM	02/07/2024 07:44:57 PM	15	No	No
Onaliy Jayawardana	10815319@students.ply	02/07/2024 08:15:52 PM	02/07/2024 08:24:39 PM	9	No	No
Rashminda		02/07/2024 08:17:56 PM	02/07/2024 09:49:59 PM	93	Yes	No
Onaliy Jayawardana	10815319@students.ply	02/07/2024 08:24:40 PM	02/07/2024 09:21:24 PM	57	No	No

Figure 13 - Meeting Minutes 7

08:24:40 PM

02/07/2024

09:21:30 PM

10815319@students.ply...

09:21:24 PM

02/07/2024

09:50:58 PM

30

Export Export with meeting data ☐ Show unique users Duration In Waiting User Email (i) Name (Original Name) Join Time Leave Time Guest (Minutes) Room 03/16/2024 03/16/2024 10815319@students.ply... Onaliy Jayawardana 189 No No 04:06:46 PM 07:15:37 PM 03/16/2024 03/16/2024 Avish Madushanka Rodri... 221 Yes No 04:08:01 PM 07:48:30 PM 03/16/2024 03/16/2024 Udugodage Rodrigo 39 Yes No 05:15:47 PM 05:54:10 PM 03/16/2024 03/16/2024 Udugodage Rodrigo 2 Yes No 05:54:18 PM 05:55:51 PM 03/16/2024 03/16/2024 Rashminda Yes No 06:06:29 PM 06:12:43 PM 03/16/2024 03/16/2024 Rashminda 92 Yes No 06:14:43 PM 07:46:04 PM 03/16/2024 03/16/2024 Kalindu Malika 89 Yes No 06:16:59 PM 07:45:58 PM 03/16/2024 03/16/2024 Onaliy Jayawardana 10815319@students.ply... 33 No No 07:15:37 PM 07:48:30 PM

Figure 14 - Meeting Minutes 8

Important Meeting Minutes

Meeting Minutes: NChapters Development Team Meeting

Date: September 25, 2023

Time: 7:45 PM

Location: Online

Attendees:

Onaliy Jayawardana

Udugodage Rodrigo

Jayamuni Rashminda

Kariyawasam Induwara

Agenda:

Review Progress on NChapters Development

Discuss Implementation of Signup

Discuss Implementation of Clubs Section

Assign Tasks for Next Phase of Development

Meeting Minutes:

Progress Review:

Onaliy Jayawardana provided an overview of the current progress on NChapters development, highlighting completion of frontend layout design and initial backend setup.

Udugodage Rodrigo shared updates on database integration and user authentication system development.

Kariyawasam Induwara discussed challenges faced during frontend development and proposed solutions for smoother workflow.

Kariyawasam Induwara reported successful implementation of basic user profile functionalities and discussed plans for further feature enhancements.

Waniga Perera reviewed the project timeline and milestones achieved, ensuring alignment with the development roadmap.

Implementation of Signup:

The team discussed the Signup process flow, including user registration, email verification,

and error handling mechanisms.

Udugodage Rodrigo outlined the technical requirements for Signup implementation and

proposed a modular approach for scalability.

Jayamuni Rashminda suggested incorporating social media authentication options to

streamline the Signup process and enhance user experience.

Tasks were assigned to finalize Signup UI/UX design and commence backend integration.

Implementation of Clubs Section:

Kariyawasam Induwara presented mock-ups for the Clubs section layout and received feedback

from the team on usability and aesthetics.

Waniga Perera discussed database schema design considerations for storing club-related

information and membership data.

Udugodage Rodrigo proposed integrating search and filter functionalities to facilitate user

exploration of different clubs and events.

The team agreed to prioritize the Clubs section implementation and allocate resources

accordingly.

Task Assignment for Next Phase:

Specific tasks were assigned for the next phase of development:

Finalize Signup UI/UX design - Jayamuni Rashminda

Implement Signup backend functionality - Udugodage Rodrigo

Develop Clubs section frontend components - Kariyawasam Induwara

Integrate Clubs section with backend database - Waniga Perera

Conduct thorough testing and bug fixes - All team members.

Next Meeting: October 7, 2023, 3:00 PM, Online - Agenda Items: Review Signup and Clubs

Section Progress, Plan Next Phase Milestones

Meeting Adjourned at: 8:30 PM

41

Meeting Minutes: NChapters Development Team Meeting

Date: October 07, 2023

Time: 3:00 PM

Location: Online

Attendees:

Onaliy Jayawardana

Udugodage Rodrigo

Jayamuni Rashminda

Kariyawasam Induwara

Waniga Perera

Agenda:

Review Progress on NChapters Development

Discuss Implementation of Events Section

Discuss Progress of Clubs Section

Assign Tasks for Next Phase of Development

Meeting Minutes:

Progress Review:

Onaliy Jayawardana provided an overview of the current progress on NChapters development, emphasizing the completion of backend API development and database setup.

Udugodage Rodrigo shared updates on frontend development progress, including the implementation of user authentication and profile management features.

Jayamuni Rashminda discussed challenges encountered during integration testing and proposed strategies for resolving identified issues.

Kariyawasam Induwara reported successful implementation of basic Events section functionalities and demonstrated the user interface for feedback.

Waniga Perera reviewed the project timeline and milestones achieved, ensuring alignment with the development roadmap.

Implementation of Events Section:

The team discussed the design and functionality requirements for the Events section, focusing on event creation, registration, and management features.

Udugodage Rodrigo outlined the technical architecture for integrating the Events section with the existing platform and proposed a modular approach for scalability.

Jayamuni Rashminda suggested incorporating calendar integration and notification features to enhance user engagement with event updates and reminders.

Tasks were assigned to finalize Events section wireframes and commence frontend and backend development.

Progress of Clubs Section:

Kariyawasam Induwara provided an update on the progress of the Clubs section, highlighting successful integration with the backend database and initial frontend layout design.

The team reviewed user feedback on the Clubs section prototype and discussed iterative improvements to enhance usability and functionality.

Waniga Perera discussed plans for implementing advanced search and filtering options to facilitate user discovery of relevant clubs and organizations.

Task Assignment for Next Phase:

Specific tasks were assigned for the next phase of development:

Finalize Events section wireframes - Jayamuni Rashminda

Implement Events section frontend components - Udugodage Rodrigo

Develop backend functionality for event management - Onaliy Jayawardana

Enhance Clubs section UI/UX based on user feedback - Kariyawasam Induwara

Conduct testing and bug fixes for existing features - Waniga Perera

Next Meeting: October 27, 2023, 5:00 PM, Online - Agenda Items: Review Events Section Implementation, Discuss Marketing Strategies

Meeting Adjourned at: 4:00 PM

Meeting Minutes: NChapters Development Team Meeting

Date: November 11, 2023

Time: 7:30 PM

Location: Online

Attendees:

Onaliy Jayawardana

Udugodage Rodrigo

Jayamuni Rashminda

Kariyawasam Induwara

Waniga Perera

Agenda:

Review Progress on NChapters Development

Discuss Implementation of Signup

Discuss Implementation of Clubs Section

Assign Tasks for Next Phase of Development

Meeting Minutes:

Progress Review:

Onaliy Jayawardana provided an overview of the current progress on NChapters development, highlighting completion of frontend layout design and initial backend setup.

Udugodage Rodrigo shared updates on database integration and user authentication system development.

Jayamuni Rashminda discussed challenges faced during frontend development and proposed solutions for smoother workflow.

Kariyawasam Induwara reported successful implementation of basic user profile functionalities and discussed plans for further feature enhancements.

Waniga Perera reviewed the project timeline and milestones achieved, ensuring alignment with the development roadmap.

Implementation of Signup:

The team discussed the Signup process flow, including user registration, email verification, and error handling mechanisms.

Udugodage Rodrigo outlined the technical requirements for Signup implementation and proposed a modular approach for scalability.

Jayamuni Rashminda suggested incorporating social media authentication options to streamline the Signup process and enhance user experience.

Tasks were assigned to finalize Signup UI/UX design and commence backend integration.

Implementation of Clubs Section:

Kariyawasam Induwara presented mock-ups for the Clubs section layout and received feedback from the team on usability and aesthetics.

Waniga Perera discussed database schema design considerations for storing club-related information and membership data.

Udugodage Rodrigo proposed integrating search and filter functionalities to facilitate user exploration of different clubs and events.

The team agreed to prioritize the Clubs section implementation and allocate resources accordingly.

Task Assignment for Next Phase:

Specific tasks were assigned for the next phase of development:

Finalize Signup UI/UX design - Jayamuni Rashminda

Implement Signup backend functionality - Udugodage Rodrigo

Develop Clubs section frontend components - Kariyawasam Induwara

Integrate Clubs section with backend database - Waniga Perera

Conduct thorough testing and bug fixes - All team members.

Next Meeting: January 01, 2024, 5:40 PM, Online - Agenda Items: Review Signup and Clubs Section Progress, Plan Next Phase Milestones

Meeting Adjourned at: 9:00 PM