KSHREE APP

MINI PROJECT REPORT

submitted by

Sanjay Mathew(CHN20CS097)

Karthik Vijay(CHN20CS064)

R Ashwin(CHN20CS085)

to

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in partial fulfilment of requirements for the award of B.Tech Degree in
Computer Science and Engineering

DEPARTMENT OF COMPUTER AND ENGINEERING

COLLEGE OF ENGINEERING CHENGANNUR, ALAPPUZHA

JULY 2023

DECLARATION

We hereby declare that the project report **KShree APP** submitted for partial fulfilment of the requirements for the award of the degree of Bachelor of Technology from the APJ Abdul Kalam Technological University, Kerala, is a bonafide work done by us under the supervision of Asst. Prof. Sreelekshmi K R.

This submission represents our ideas in our own words, and where ideas or words of others have been included, we have adequately and accurately cited and referenced the original sources.

We also declare that we have adhered to the ethics of academic honesty and integrity and have not misrepresented or fabricated any data, idea, fact, or source in my submission. We understand that any violation of the above will be a cause for disciplinary action by the institute and/or the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been obtained.

This report has not been previously formed the basis for the award of any degree, diploma, or similar title from any other University.

Sanjay Mathew

Chengannur **R Ashwin**

31-07-2023 **Karthik Vijay**

DEPARTMENT OF COMPUTER AND ENGINEERING COLLEGE OF ENGINEERING CHENGANNUR

2022-23

CERTIFICATE

This is to certify that the report entitled KShree App submitted by **R Ashwin (CHN20CS085)** to the APJ Abdul Kalam Technological University in partial fulfilment of the B.Tech. degree in Computer Science and Engineering is a bonafide record of the project work carried out by him under our guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose.

Asst. Prof. Sreelekshmi K R
(Project Guide)
Assistant Professor
Dept. Of Computer & Eng.
College Of Engineering
Chengannur

Dr. Shyama Das
(Project Coordinator)
Professor
Dept. Of Computer & Eng.
College Of Engineering
Chengannur

Dr.Manju S Nair
(Head of Dept)
Associate Professor
Dept. Of Computer & Eng.
College Of Engineering
Chengannur

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Sanjay Mathew

Karthik Vijay

R Ashwin

ABSTRACT

This project aims to integrate Kudumbashree, a women's empowerment program by the Government of Kerala, into the technology phase. Currently, Kudumbashree uses paper and pen, and its management systems are split up into different third-party apps that are not properly maintained or regularly updated. This app provides an all-in-one platform for the government agency managing Kudumbashree to view the different activities of different Kudumbashrees. It also allows the committee to view, track, and manage various activities such as deposits, loans, and self-employment opportunities for every member. One potential challenge is that many Kudumbashree members may not be familiar with smartphones and apps, so it may be difficult for them to manage their activities at the starting stage.

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CHAPTER 1

INTRODUCTION

The Kudumbashree app is a mobile application designed to empower and support the Kudumbashree initiative, a poverty eradication and women empowerment program in Kerala, India. This app serves as a comprehensive tool to streamline and enhance the functioning of Kudumbashree, offering features that enable easy management of self-help groups, access to financial services, training programs, and marketplaces for showcasing products and services. It fosters effective communication and collaboration among members, facilitating knowledge sharing and mentorship. By embracing technology, the Kudumbashree app aims to strengthen the impact of the initiative, empowering more women and families to become financially independent and active contributors to their communities. Through this mini project, we explore the development and implementation of the Kudumbashree app, its features, functionalities, and the positive impact it has on the lives of Kudumbashree members, contributing to the ongoing efforts of empowering women and eradicating poverty through technology-driven solutions.

1.1. Project Area

The KShree App is a cutting-edge mobile application designed to empower and support Kudumbashree members and administrators in their endeavors. With an intuitive user interface built on Material UI and React Native, the app offers a seamless and visually appealing experience. It enables users to efficiently manage attendance, register for events, and access essential notifications. Moreover, the app facilitates loan management, providing members with a streamlined process for application, approval, and repayment. The KShree App not only simplifies administrative tasks but also fosters community engagement and financial empowerment. By adhering to high-performance standards and ensuring compatibility with Android 7 and higher devices, the app guarantees a reliable and efficient platform. As an instrumental tool in the Kudumbashree movement, the KShree App stands at the forefront of innovation, aiming to make a meaningful impact in the lives of its users.

1.2. Objective

Design and develop a user-friendly Kudumbashree app that facilitates effective management of self-help groups, financial services, and entrepreneurship opportunities. Streamline and enhance the functioning of Kudumbashree by leveraging technology to provide a comprehensive platform for members to access resources, information, and training programs. Foster effective communication and collaboration among Kudumbashree members through the app, enabling knowledge sharing, mentorship, and community engagement. Contribute to the empowerment of women and eradication of poverty by leveraging technology-driven solutions and promoting economic growth within the Kudumbashree network.

CHAPTER 2

EXISTING SYSTEM

The development of the KShree App has been guided by an extensive literature review, which involved the analysis of similar existing apps, such as LokOS, and lessons learned from the deprecated app by Irings Technologies LLP[7]. These sources have provided valuable insights into best practices, user preferences, and challenges faced in the domain of community empowerment through mobile applications. The key findings from the literature review are as follows:

Learning from LokOS[6]:

LokOS, a similar app in the domain of community empowerment, has garnered attention for its notable features and functionalities. Key takeaways from LokOS include:

1. Unique Selling Points: LokOS has successfully distinguished itself by offering unique selling points and features that cater to its target audience. Identifying and leveraging similar distinguishing factors can enhance the appeal and competitiveness of the KShree App.

2. User Experience and Interface Design: LokOS prioritizes user experience and intuitive interface design. Implementing user-centric design principles in the KShree App will contribute to seamless navigation and increased user engagement.

3. User Feedback and Reviews: Understanding user feedback and reviews for LokOS has provided valuable insights into user preferences and pain points. Addressing these insights in the KShree App can result in higher user satisfaction and improved app performance.

Learning from the Deprecated App by Irings[7]:

The examination of the deprecated app by Irings Technologies LLP has offered valuable lessons for the development and maintenance of the KShree App. Key learnings include:

1. Importance of Ongoing Updates: The deprecated status of app due to no updates since 2019 highlights the significance of continuous maintenance and development for mobile applications. The KShree App should prioritize regular updates, bug fixes, and feature enhancements to ensure its long-term relevance and usability.

2. Responsive Support and Bug Fixes: Prompt and responsive support, as well as timely bug fixes, are critical aspects of sustaining a successful mobile app. Learning from Irings Technologies LLP[7], the KShree App should establish a robust support system to address user queries and promptly resolve any issues that arise.

3. User-Centric Iterative Development: Adopting an iterative development approach based on user feedback can significantly improve the KShree App. Regularly seeking user input and incorporating their suggestions into subsequent updates will enhance user satisfaction and engagement.

In conclusion, the literature review encompassing similar apps like LokOS and experiences from the deprecated app by Irings technologies LLP has been instrumental in shaping the development of the KShree App. By drawing from successful features, addressing past shortcomings, and implementing best practices, the KShree App is poised to deliver a unique, user-centric, and impactful platform for community empowerment within the Kudumbashree organization. The lessons learned from Irings Technologies emphasize the importance of ongoing updates, responsive support, and user-driven development to ensure the KShree App remains a relevant and indispensable tool for the Kudumbashree community.

CHAPTER 3

PROBLEM DEFINITION

3.1. Problem Statement

The problem with the current system used by Kudumbashree members is the reliance on phone calls for communication, which can be inconvenient and time-consuming. Additionally, the maintenance of records and loan statistics in paper or book formats is not environmentally friendly and can lead to inefficiencies in data management. Furthermore, the manual handling of loan calculations by admins adds to the workload and increases the chances of errors. Lastly, for members to obtain information about their loan account status, they have to contact the treasurer, which can be a tedious process.

3.2. Existing Solution

- The existing system consists of two main components. Firstly, there is a deprecated app developed by Irings Technologies LLP[7]. Unfortunately, this app is no longer actively supported and has not received updates since 2019. As a result, it may not be compatible with the latest devices and operating systems, potentially leading to issues such as crashes, performance problems, and security vulnerabilities. Users of the deprecated app may encounter limitations in terms of functionality, reliability, and overall user experience.

- Secondly, there is the Lok OS app[6], which is currently being used within the Kudumbashree framework. However, this app has certain drawbacks that need to be addressed. One significant limitation is the absence of a comprehensive loan management system. The lack of such functionality can impede efficient management and tracking of loans provided to Kudumbashree members, potentially leading to administrative challenges and difficulties in ensuring proper loan monitoring and repayment. Additionally, the Lok OS app lacks an admin console system, which is crucial for effective administrative control. The absence of an admin console hinders efficient system administration, user management, and system customization.

- In addition to the apps, the official website of Kudumbashree.org serves as an important platform for information and interaction with the organization. However, the website has usability issues that impact user experience. It can be challenging to access and navigate, and its user interface is not intuitive or user-friendly. Furthermore, the website lacks necessary features to enhance user engagement and provide a seamless browsing experience. These limitations restrict users' ability to easily access information, interact with the organization, and make the most of the available online resources.

3.3. Limitations

1) Deprecated App [7]:

Lack of support: The deprecated app created by Irings Technologies LLP is no longer actively supported, meaning there are no updates or bug fixes provided. This can lead to compatibility issues with newer devices and operating systems, potentially resulting in crashes or performance issues.

Limited functionality: As the app is no longer being updated, it may lack certain essential features and capabilities that are necessary for efficient operations. Users may experience limitations in terms of functionality and usability, hindering their ability to effectively engage with the app.

2) Lok OS App [6]:

Absence of loan management system: One significant drawback of the Lok OS app is the lack of a comprehensive loan management system. This limitation can impede proper management, tracking, and monitoring of loans provided to Kudumbashree members. It may lead to administrative challenges, difficulties in ensuring timely loan repayments, and the inability to effectively assess loan-related data and metrics.

Missing admin console: The Lok OS app does not have an admin console system, which is essential for efficient system administration, user management, and system customization. The absence of an admin console can make it challenging to perform administrative tasks,

control user access and permissions, and tailor the app to meet specific organizational requirements.

3) Official Website (Kudumbashree.org) [3]:

Usability issues: The official website of Kudumbashree.org suffers from usability issues, as the user interface is not intuitive and user-friendly. This can result in a suboptimal browsing experience for users trying to access information or navigate through the website.

Lack of login features: The website lacks essential login features, such as user accounts or member logins. This absence of login functionality restricts user engagement and interaction with personalized content and services, limiting the website's overall functionality.

3.4. Proposed Method

The proposed method aims to address the limitations of the existing system by introducing a more robust and feature-rich application for Kudumbashree. The key features of the proposed method are as follows:

- The deprecated app will be replaced with new Kshree app that will be actively supported and updated with new features and bug fixes. This will ensure that the app is compatible with the latest devices and operating systems, and that it has the latest features and functionality.
- Kshree app will be designed with a focus on usability and functionality. It will include all of the essential features and capabilities that are necessary for efficient operations, and it will be regularly updated with new features and functionality.
- Kshree app will include a comprehensive loan management system. This will allow for proper management, tracking, and monitoring of loans provided to Kudumbashree members. It will also make it easier to ensure timely loan repayments and to assess loan-related data and metrics.

- Kshree app will include an admin console system. This will make it easier to perform administrative tasks, control user access and permissions, and tailor the app to meet specific organizational requirements.
- The user interface of Kshree app will be designed to be intuitive and user-friendly. This will improve the experience for users trying to access information.
- Kshree will include login features, such as user accounts or member logins. This will allow users to engage with personalized content and services, and it will increase the overall functionality of the app and ensure proper security.

CHAPTER 4

SOFTWARE REQUIREMENT SPECIFICATION

4.1. Introduction

Software requirements play a crucial role in the successful development of any software application. They define what the software should accomplish and specify its functionalities, features, and constraints. Software requirements are a vital communication tool between stakeholders, including clients, end-users, project managers, developers, and quality assurance teams.

The process of gathering and documenting software requirements begins during the early stages of the software development life cycle. It involves understanding the needs and expectations of the stakeholders, analysing user workflows, and translating these into clear and unambiguous specifications.

Software requirements serve as the foundation for the entire development process, guiding designers and developers in building the application. They help in assessing the feasibility of the project, estimating the resources required, and defining the scope of the software.

A well-defined set of software requirements ensures that the developed application meets the intended objectives, is user-friendly, and complies with the project's scope, schedule, and budget. Properly managed requirements also facilitate change management and reduce the risk of errors or rework during the development process.

Throughout the software development life cycle, software requirements are continuously reviewed and refined as the understanding of the project's goals evolves and new insights are gained. Effective communication and collaboration among stakeholders are crucial to maintaining the accuracy and relevance of software requirements.

In this report, we will outline the software requirements for the "Kshree App," a mobile application aimed at providing attendence marking, user registration, event management, loan management, and notification features for Kudumbashree members. The requirements will define the functionalities, interfaces, performance expectations, and other essential aspects of the

application. By adhering to these requirements, we aim to deliver a robust, user-friendly, and reliable software solution that fulfils the needs of the users and meets the project's objectives.

4.2. Functional Requirements

A Functional Requirement (FR) is a description of the service that the software must offer. It describes a software system or its component. A function is nothing but inputs to the software system, its behaviour, and outputs. It can be a calculation, data manipulation, business process, user interaction, or any other specific functionality which defines what function a system is likely to perform. Functional Requirements in Software Engineering are also called Functional Specification. In software engineering and systems engineering, a Functional Requirement can range from the high-level abstract statement of the sender’s necessity to detailed mathematical functional requirement specifications. Functional software requirements help you to capture the intended behaviour of the system. Functional requirements of the proposed system are as follows:

User Registration and Profile

The app must allow new users to register by providing their Name, Contact Details, and other necessary information. Users should be able to create a profile with details like Gender, Marriage Status, and Educational Status. Users with self-employment status should have the option to indicate their occupation and business details.

Attendance Management:

Administrators should be able to mark attendance for Kudumbashree members during events or meetings. The app must allow admins to view and update attendance data for each member.

Event Management and Registration:

Users should be able to view upcoming events organized by Kudumbashree. Users must have the option to register for events they wish to attend and receive event reminders.

Notification Center:

The app should provide a notification center where users can receive and view important announcements, event reminders, and other relevant notifications.

Loan Management:

The app must offer a loan management system for Kudumbashree members. Members should be able to apply for loans, and administrators can review and approve loan applications. The app should track loan details, approval status, and repayment schedules.

Performance and Prediction:

The app should perform accurate calculations to determine loan approval status based on the data provided by users. Users should be informed about the importance of providing accurate information for precise loan approval predictions.

Internet Connectivity:

The app will require internet connectivity to access the latest event information, notification updates, and loan management services.Users should be aware that continuous internet access is necessary for a seamless experience with the application.

4.3. Interface Requirement

User Interface

The user interface for the "Kudumbashree app" will be built using Material UI [5] and developed with React Native. Material UI will be utilized to create a visually appealing, modern, and responsive design for the app, ensuring a consistent and user-friendly experience for Kudumbashree members and administrators.

Hardware Requirements

The "Kudumbashree app" requires a minimum Android version of 7 or higher with at least 2 GB RAM to ensure smooth functioning and compatibility with modern Android devices. The app will be optimized to run efficiently on devices meeting these specifications.

Development System Requirements

To develop the "Kudumbashree app," the development system needs to meet specific criteria to support React Native and the required development tools. A minimum of 8 GB RAM and an Intel i5 10th Gen processor will be necessary to handle the development environment and testing processes seamlessly. The operating system must support React Native framework development. Tools such as Visual Studio Code and Android Studio will be used for coding and Android Virtual Device (AVD) testing.

4.4. Performance Requirement

Performance requirements are specific and measurable criteria that define the expected performance characteristics of a software application. These requirements focus on aspects such as speed, responsiveness, resource utilization, and scalability. Performance requirements help ensure that the software meets the desired performance levels and provides a satisfactory user experience.

App Responsiveness and Load Time:

The "Kudumbashree app" should exhibit high responsiveness, with minimal delays in loading screens and interactions. The average app launch time should be within a reasonable duration to provide a smooth user experience.

Data Processing Speed:

The app's data processing, such as attendance management and loan approval prediction, should be efficient and fast. Users should experience quick response times when performing actions that involve data processing.

Memory Utilization:

The "Kudumbashree app" should be optimized for efficient memory usage, especially when dealing with large datasets or complex operations. The app should not consume excessive memory resources, ensuring it runs smoothly on devices with varying RAM capacities.

Internet Connectivity Handling:

The app should gracefully handle scenarios with limited or intermittent internet connectivity. Users should receive clear notifications when their device loses internet connection or if certain functionalities require internet access.

Error Handling and Stability:

The "Kudumbashree app" must have robust error handling mechanisms to handle unexpected situations gracefully. The app should aim for stability and minimize crashes or unexpected shutdowns.

Optimized Battery Consumption:

The app should be optimized to minimize battery consumption during regular usage. Avoiding resource-intensive processes and background activities will help preserve battery life.

Scalability:

The app should be designed with scalability in mind, allowing it to handle potential increases in user traffic and data volume without significant performance degradation.

App Updates and Maintenance:

The development team should plan for regular updates and maintenance to enhance performance and address any issues discovered after deployment.

Security and Data Privacy:

The app must adhere to strict security standards to safeguard user data and protect against potential cyber threats. User data and sensitive information should be encrypted and handled securely to maintain data privacy.

4.5. Non-Functional Requirement

Usability and User Experience:

The "Kudumbashree app" should have an intuitive and user-friendly interface to cater to users of all technical backgrounds. The app's design should follow Material UI guidelines, ensuring consistency and familiarity for users.

Accessibility:

The app should be accessible to users with disabilities, complying with WCAG (Web Content Accessibility Guidelines) standards to provide an inclusive experience.

Security:

The app must employ strong encryption and security measures to protect sensitive user data, ensuring confidentiality and privacy. User authentication and authorization processes should be robust to prevent unauthorized access.

Reliability and Availability:

The app should have high availability, minimizing downtime and ensuring it is accessible to users whenever needed. The app's performance should be reliable, providing consistent responses to user interactions.

Performance Efficiency:

The app should utilize system resources efficiently, aiming to minimize CPU, memory, and network consumption to ensure smooth performance on various devices.

Compatibility:

The app should be compatible with a wide range of Android devices running version 7 or higher and having a minimum of 2 GB RAM. The app should support different screen sizes and resolutions to provide a seamless experience on various devices.

Maintainability:

The app's code should follow best practices and be well-documented to facilitate ease of maintenance and future updates. A modular and organized codebase will enable developers to make changes and improvements efficiently.

Scalability:

The app should be designed to accommodate future growth and new features without requiring significant architectural changes.

Data Backup and Recovery:

The app should have mechanisms in place to perform regular data backups, reducing the risk of data loss in case of any system failures. In the event of data loss, the app should have data recovery options to restore essential information.

Legal and Compliance:

The app should adhere to all relevant laws, regulations, and industry standards governing data privacy, security, and user rights.

Error Logging and Monitoring:

The app should have a comprehensive error logging and monitoring system to track issues and provide insights for continuous improvement.

CHAPTER 5

PROJECT DESIGN

5.1. System Architecture Design

System Architecture Design is the process of defining the high-level structure and components of a complex system to ensure that it meets its intended requirements, functions efficiently, and is scalable and maintainable. It involves creating a blueprint or a plan that outlines how the various elements of the system will interact and work together to achieve the system's objectives.

In the context of software development, system architecture design focuses on designing the overall structure of a software application or system. It includes defining the different subsystems, their relationships, and the interactions between them. The design also considers the hardware and software components required to implement the system and how they will be integrated.

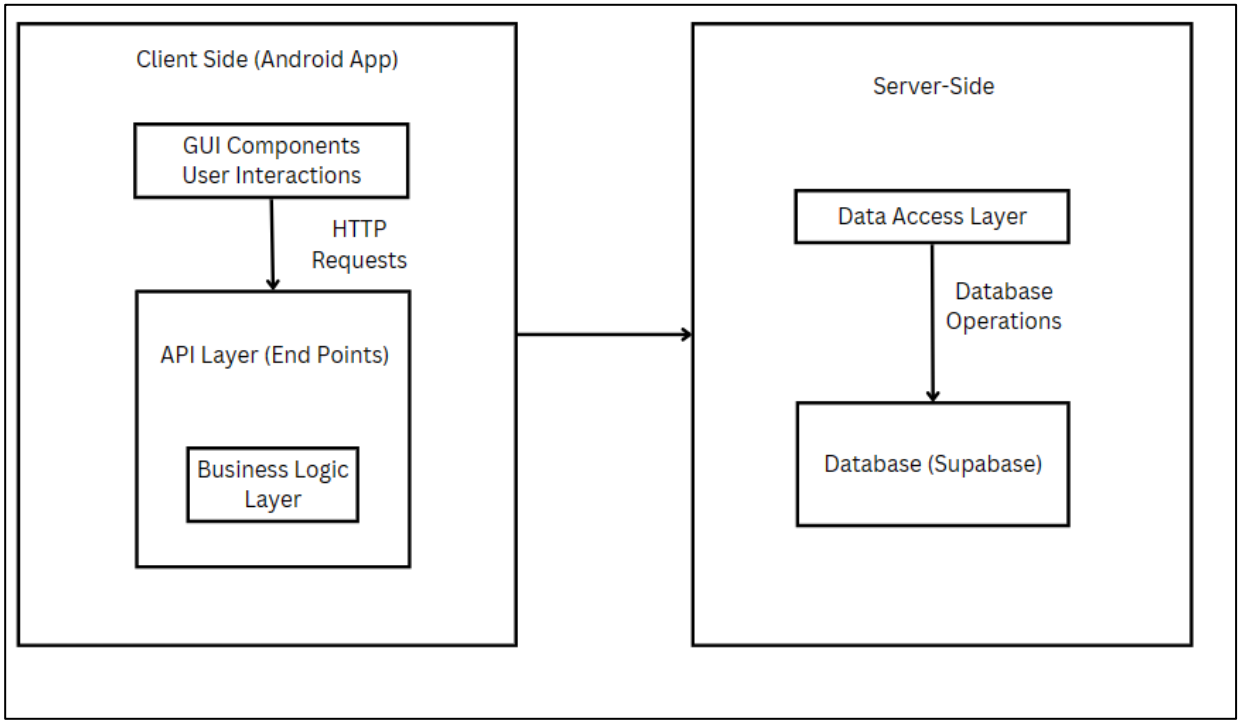


Figure 5.1: System Architecture Diagram

Client-Side (Android App):

The Client-Side represents the front-end of the "Kshree App" running on Android devices. It is the user-facing part of the application where users interact with the app's interface. The Client-Side is responsible for displaying information to the users, handling user interactions, and rendering the graphical user interface (GUI) components.

GUI Components:

GUI Components refer to the graphical elements that form the user interface of the Android app. These components include buttons, input fields, dropdown menus, and other visual elements that users interact with to perform various actions within the app.

User Interactions:

User Interactions involve actions performed by users within the app. These interactions can include registering for events, applying for loans, viewing notifications, managing attendance, and accessing essential services offered through the "Kshree App."

API Layer (Endpoints):

The API Layer serves as a bridge between the Client-Side (Android app) and the Server-Side (web application). It exposes a set of endpoints or URLs that enable communication and data exchange between the client and server. The endpoints define the functionalities and data that can be accessed by the app.

Business Logic Layer:

The Business Logic Layer is responsible for implementing the core business rules and processing user inputs. It handles the logic behind event registration, loan application processing, user account management, and other essential operations. The Business Logic Layer ensures that user actions are executed accurately and securely.

Server-Side (Web Application):

The Server-Side represents the back-end of the "Kshree App," which is a web application responsible for processing user requests and managing the application's business logic. It handles incoming requests from the client-side, performs necessary operations, and returns responses back to the client.

Data Access Layer:

The Data Access Layer connects to the database (Supabase) and manages data retrieval and storage operations. It handles queries to fetch data from the database and updates or inserts new data when required. The Data Access Layer ensures that data is efficiently managed and accessible to the application.

Database (Supabase):

The Database is the storage component of the application, where all relevant data for the "Kshree App" is stored. In this case, Supabase is used as the database platform. It securely stores user information, event details, loan application data, and other relevant information needed for the application's functionalities.[4]

The system architecture design illustrates the flow of data and interactions between these components. It highlights how the Android app communicates with the web application, how data is processed and managed, and how users interact with the app's graphical interface to access various features and services. Together, these components work cohesively to create a powerful and user-friendly "Kshree App" that empowers the Kudumbashree community.

5.2. Application Architecture

The application architecture of the "Kshree App" follows a multi-layered design, with each layer responsible for specific functionalities and interactions within the application as show in the figure 5.2. The architecture is divided into the following components:

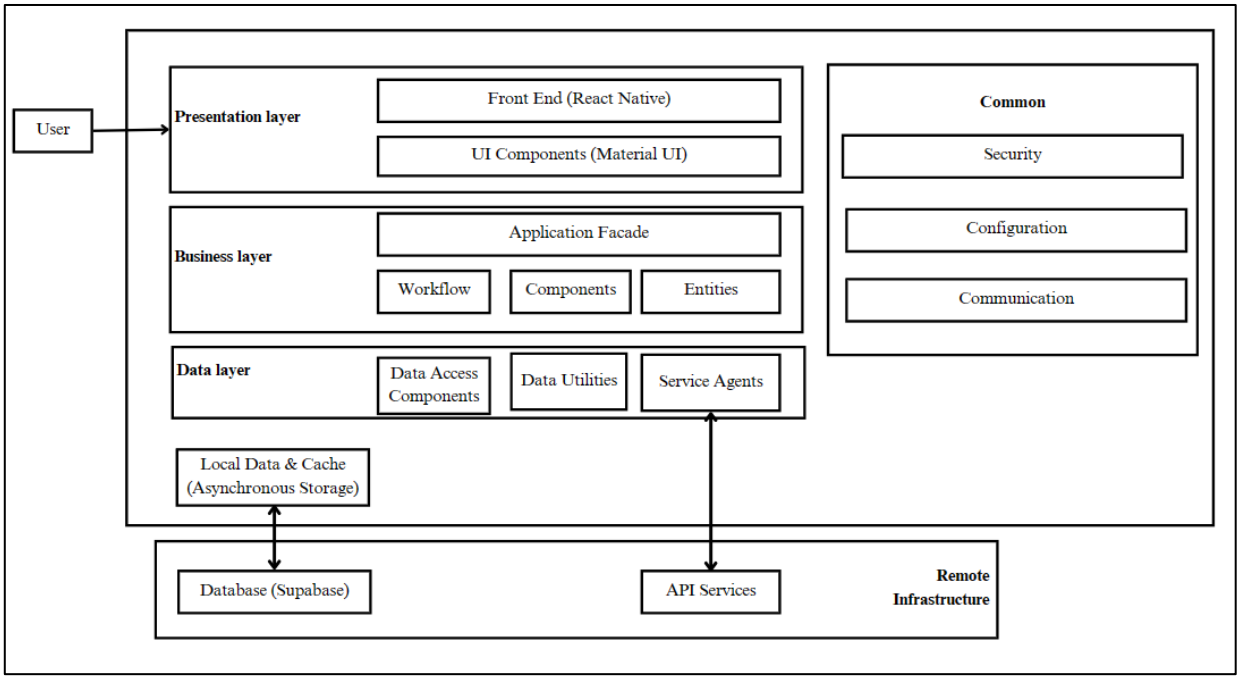


Figure 5.2: Application Architecture Diagram

Description of each component:

User Interaction (From User):

- This component represents user interactions with the app, including input and actions initiated by the user.

Presentation Layer (Frontend - React Native & Material UI):

- The Presentation Layer is the frontend of the application, built using React Native and Material UI components.
- It handles the user interface and user interactions, ensuring a seamless and visually appealing experience for users.

Business Layer (Application):

- The Business Layer contains the Application Facade, Workflow Components, and Business Entities.
- The Application Facade acts as an interface between the Presentation Layer and the underlying business components, providing a simplified view of the app's functionalities.
- Workflow Components manage the flow of data and interactions between different parts of the application.
- Business Entities represent the data structures and business objects used within the application.

Data Layer (Data Access):

- The Data Layer includes Data Access Components, Data Utilities, and Service Agents.
- Data Access Components are responsible for retrieving and manipulating data from external sources, including the backend server.
- Data Utilities provide various utility functions for data processing and transformations.
- Service Agents handle communication with external services, such as APIs and web services.

Local Data & Cache (Asynchronous Storage):

- This component enables the app to store and retrieve data locally, using asynchronous storage mechanisms.
- Local data caching improves app performance and user experience by reducing the need for frequent data retrieval from external sources.

API Services:

- The API Services component manages communication with the backend server (Supabase).[4]
- It sends API requests to the server to retrieve data, update information, and perform other server-side operations.

Common (Configuration, Security, Communication):

- The Common component includes shared functionalities used throughout the application.
- Configuration manages app settings and parameters that remain consistent across the app.
- Security handles authentication and authorization mechanisms for secure user access.

- Communication deals with handling communication protocols and interactions between different app components.

This application architecture design promotes modularity, reusability, and maintainability of the Kshree App. The clear separation of components allows for efficient development, debugging, and scalability as the app evolves and grows in functionality.

5.3. GUI Design

Sign In/Up Page

Upon opening the app, you will be greeted with the Sign In/Up page. Here, you will need to enter your username and password to access the app's features. Depending on your assigned role, whether an administrator or a member, the app will navigate you to either the admin page or the member page accordingly.

Figure 5.3: Sign In/Up Page

For new users who don't have an account yet, there is a "Sign Up" button. Tapping on it will prompt you to enter your details to create a new account. Once the account creation is completed, it will be sent to the administrator for approval. Upon approval, you will receive access to sign in and access the app's functionalities. This approval process ensures a secure and verified user base.

All accounts created through the "Sign Up" process will go through the administrator's approval, which might take some time. Once approved, you will be able to sign in and enjoy the benefits of the KShree App.

Admin Pages

Home Page

The homepage displays a list of upcoming events along with their dates. You will also find buttons to create events, add users, and logout. Additionally, the admin page shows statistics on the number of users added

.

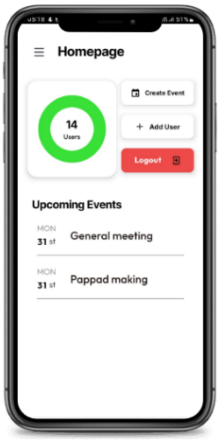


Figure 5.4: Admin's Homepage

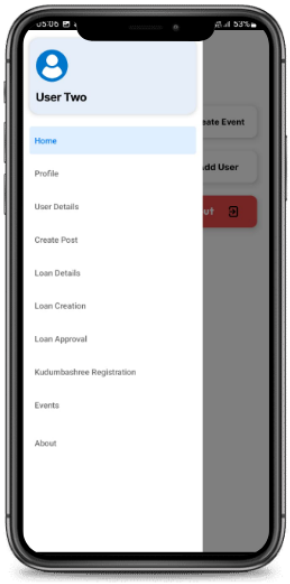


Figure 5.5: Admin's Drawer

Drawer

The drawer navigation allows you to access and navigate to different pages in the app. Admin has Profile, User Details, Create Post, Loan Details, Loan Creation, Loan Approval, Kudumbashree Registration and Events.

User Profile

This page is used to view one's profile and also has the feature to edit their profile.

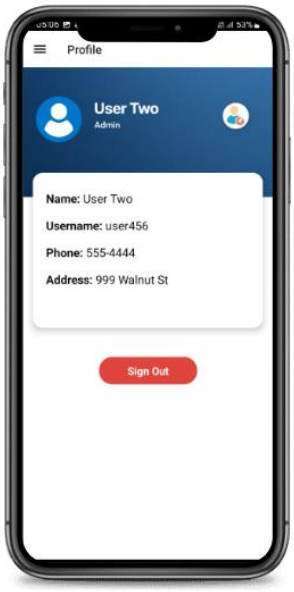


Figure 5.6: User Profile

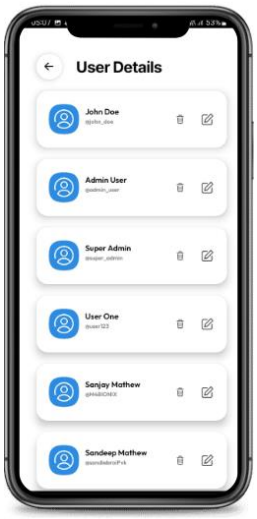


Figure 5.7: User Details

User Details

Admins can access details of other users and have the authority to delete users or edit their profiles.

Create Post

Admins can create posts and post it publicly to other users, so other can get notify about events on time.

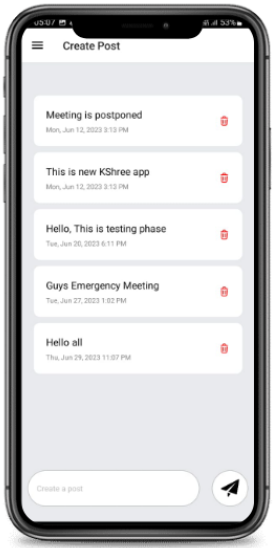


Figure 5.8 Create Post

Loan Management

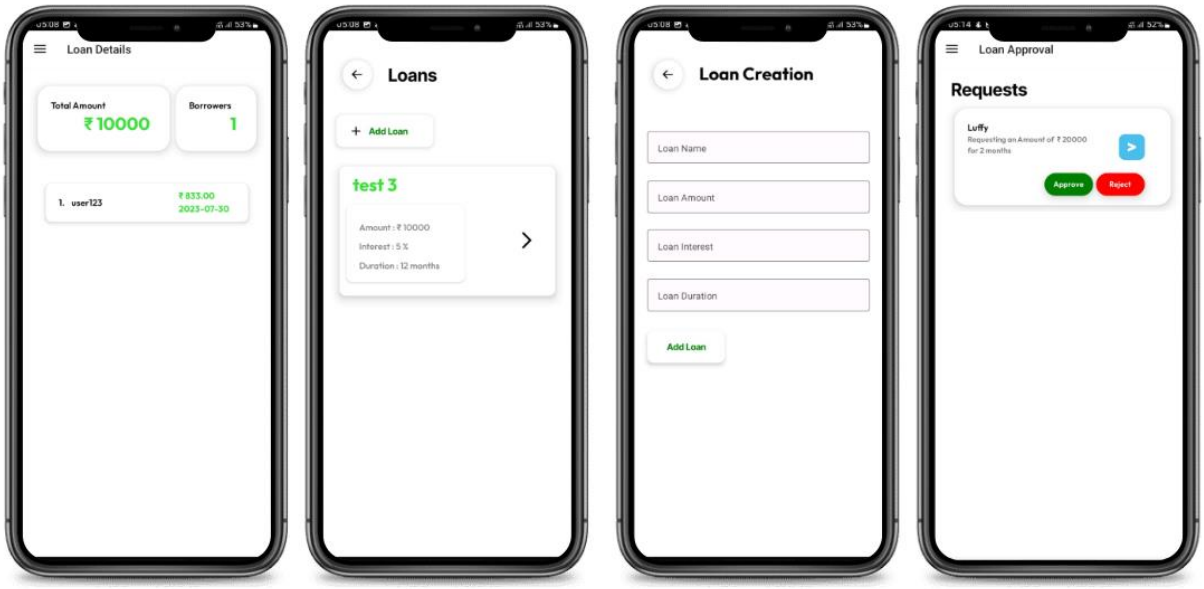


Figure 5.9: Loan management

Loan management in Kshree's admin section consists of four parts:

Loan Details: This page contains the details of users who took loans, including the loan amount, due date, and the total amount lent by Kudumbashree from the bank.

Loan: Here, the admin can create various types of loans and publish them so that other members can view the available loan options.

Loan Creation: On this page, admins can create new loans by specifying the loan name, amount, interest rate, and duration in months.

Loan Approval: This page is where admins receive loan requests from the members, and they have the authority to approve or deny the loan requests based on the eligibility and other criteria.

Event Management

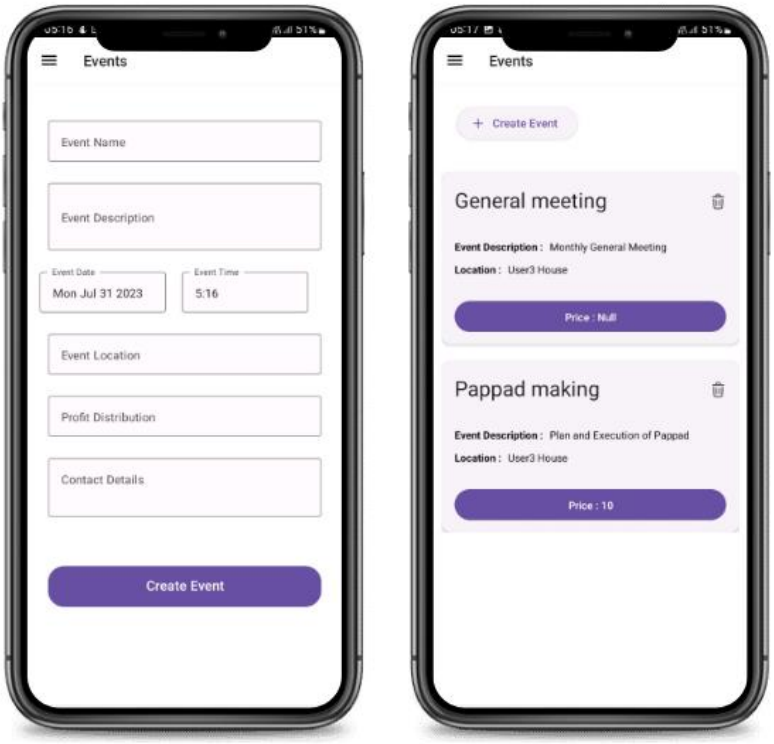


Figure 5.10: Event Management

Admins can create an event with the name, description, time and date, location to be held, profit distribution for event involving production, and contact details of responsible person. Admins can also view the list of created events and have the option to delete events if needed.

Member Pages

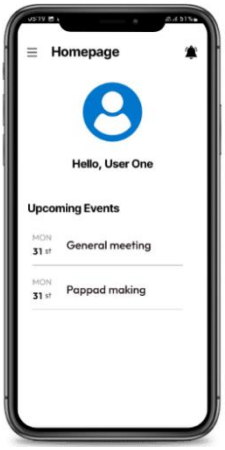


Figure 5.11: Member's Homepage

Homepage

Members have a homepage where they can view the list of upcoming events. Additionally, there is a notification icon that allows them to access notifications posted by admins.

Drawer

The drawer provides access to Home, Profile, Notifications, Loan Status, Event Attendance, and Loan Request pages for members.

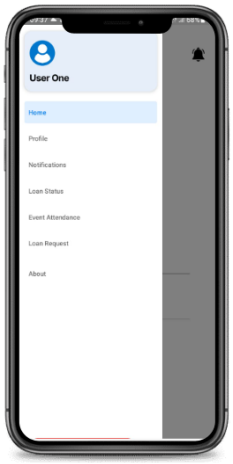


Figure 5.12: Member's Drawer

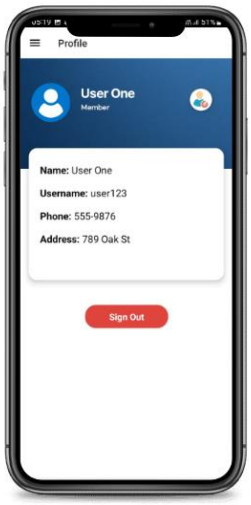
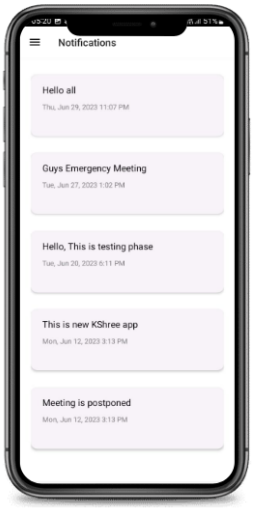


Figure 5.13: Member's Profile

User Profile

They have the same user profile as admin where they can edit and view their profile details.



Notifications

This is the page where members receive notifications and important announcements posted by admins.

Figure 5.14: Notifications

Loan Request and Loan Status

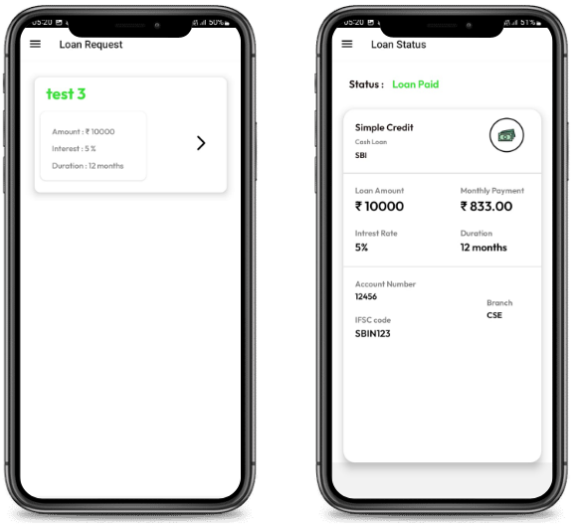


Figure 5.15: Loan Request and Status

Loan Request:

This page allows members to view the ongoing loan schemes within the group and request loans from admins.

Loan Status:

This page enables members to view the status of the loans they have taken. If they haven't applied for a loan, it will display "No loan applied."

5.4. Database Design

The database design for the "Kshree App" encompasses tables that efficiently store and manage various data entities. A well-structured database schema ensures seamless data management and retrieval, enabling the smooth functioning of the application.

Database Management System (DBMS)

The Kshree App utilizes the Supabase[4] platform as the Database Management System. Supabase, built on PostgreSQL, offers robust relational database capabilities with real-time data synchronization features.

Entity-Relationship Diagram (ERD)

The ERD visually represents the database design, outlining the entities, attributes, and their relationships. The ER Diagram is given below in figure 11 The key tables in the ERD are as follows:

EventAttendees:
EventAttendees (eventname text, attendees jsonb)
Description: This table stores information about event attendees, linking the event name with the respective attendees.

users:
users (username, password (text), admin boolean, address, name, phone_number (text), login (boolean))
Description: This table holds essential user details, including username, password, admin status, contact information, and login status.

Posts:
Posts (id bigint, created_at (timestamp), posts text)
Description: This table stores unique post entries created by users, along with their timestamps.

events:
events (event_name, event_description, location, profit, contact, date, time (text))

Description: This table contains details about different events, including event names, descriptions, locations, profit information, contact details, date, and time.

Loandetail:

Loandetail (id bigint, username, amount, purpose, rate, duration, bank, account, ifsc, branch (text), date, updatedate, finaldate (date))

Description: The Loan table stores information about loan requests made by users, including usernames, loan details, bank information, dates, and status updates.

Loans:

Loans (loanname text, duration bigint, interest_rate double precision, members jsonb, amount bigint)

Description: This table contains details about various loan schemes, including loan names, durations, interest rates, the number of members, and loan amounts.

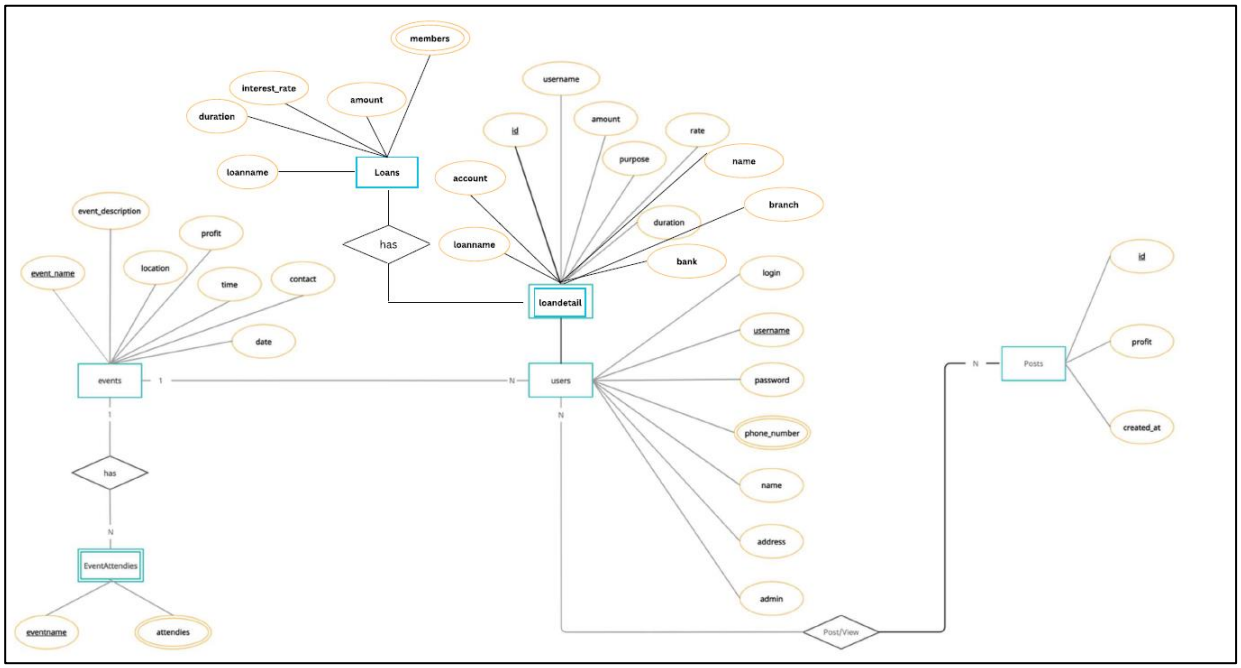


Figure 5.16: ER Diagram

Normalization

The database schema adheres to the third normal form (3NF) to eliminate data redundancy and maintain data integrity. Normalization ensures that data remains consistent and accurate throughout the application.

Conclusion

The "Kshree App" database design, built on Supabase with well-organized tables, ensures efficient data management and retrieval. The ERD provides a clear visual representation of the database structure, while normalization techniques maintain data integrity and optimize performance.

5.5. API Design

The API design for the "Kshree App" outlines the endpoints, methods, and specifications required for seamless communication between the client-side (mobile app) and the server-side (backend). The API facilitates data exchange and enables the app to access various functionalities and features. Below are the key API endpoints and their descriptions for the "Kshree App":

1. User Authentication:

- Endpoint: /api/auth/login
- Method: POST
- Description: Allows users to log in to the app by providing their registered username/email and password. Returns an authentication token upon successful login.
- Endpoint: /api/auth/register
- Method: POST
- Description: Enables users to create a new account by providing their personal information, such as name, contact details, and password. Returns a confirmation message upon successful registration.

2. Events Management:

- Endpoint: /api/events
- Method: GET
- Description: Retrieves a list of upcoming events and their details. Requires authentication for access.
- Endpoint: /api/events/{eventId}
- Method: GET
- Description: Retrieves detailed information about a specific event based on its unique eventId. Requires authentication for access.
- Endpoint: /api/events/register
- Method: POST
- Description: Allows users to register for an event by providing the event ID and their user ID. Requires authentication for access.

3. Loan Management:

- Endpoint: /api/loans
- Method: GET
- Description: Retrieves a list of available loan schemes and their details. Requires authentication for access.
- Endpoint: /api/loans/{loanId}
- Method: GET
- Description: Retrieves detailed information about a specific loan scheme based on its unique loanId. Requires authentication for access.
- Endpoint: /api/loans/apply
- Method: POST
- Description: Allows users to apply for a loan by providing necessary details like loan amount, purpose, and supporting documents. Requires authentication for access.
- Endpoint: /api/loans/status
- Method: GET
- Description: Retrieves the status of the loan application for the logged-in user. Requires authentication for access.

4. Notifications:

- Endpoint: /api/notifications
- Method: GET
- Description: Retrieves notifications for the logged-in user, including event reminders, loan updates, and other important announcements. Requires authentication for access.

5. User Profile Management:

- Endpoint: /api/user/profile
- Method: GET
- Description: Retrieves the user's profile information, including personal details and contact information. Requires authentication for access.
- Endpoint: /api/user/profile/update
- Method: PUT
- Description: Allows users to update their profile information, such as contact details or address. Requires authentication for access.

6. Admin Privileges:

- Endpoint: /api/admin/events
- Method: POST
- Description: Enables admins to create new events by providing event details like name, description, date, time, location, and profit distribution. Requires admin authentication for access.
- Endpoint: /api/admin/events/{eventId}
- Method: DELETE
- Description: Allows admins to delete a specific event based on its unique eventId. Requires admin authentication for access.
- Endpoint: /api/admin/loans
- Method: POST
- Description: Enables admins to create new loan schemes with details like loan name, duration, interest rate, and maximum number of members. Requires admin authentication for access.
- Endpoint: /api/admin/loans/{loanId}
- Method: DELETE

- Description: Allows admins to delete a specific loan scheme based on its unique loanId. Requires admin authentication for access.

7. Error Handling:

- The API design includes proper error handling mechanisms to provide meaningful error messages and HTTP status codes for different scenarios.

8. Security Measures:

- The API design implements secure authentication mechanisms, such as JSON Web Tokens (JWT), to ensure the confidentiality and integrity of data.

9. Data Validation:

- The API design incorporates data validation to prevent invalid or malicious inputs and maintain data integrity.

The API design for the "Kshree App" follows RESTful principles and adheres to best practices for security and efficiency. It enables smooth communication between the app's frontend and backend, allowing seamless access to various functionalities for users and admins.

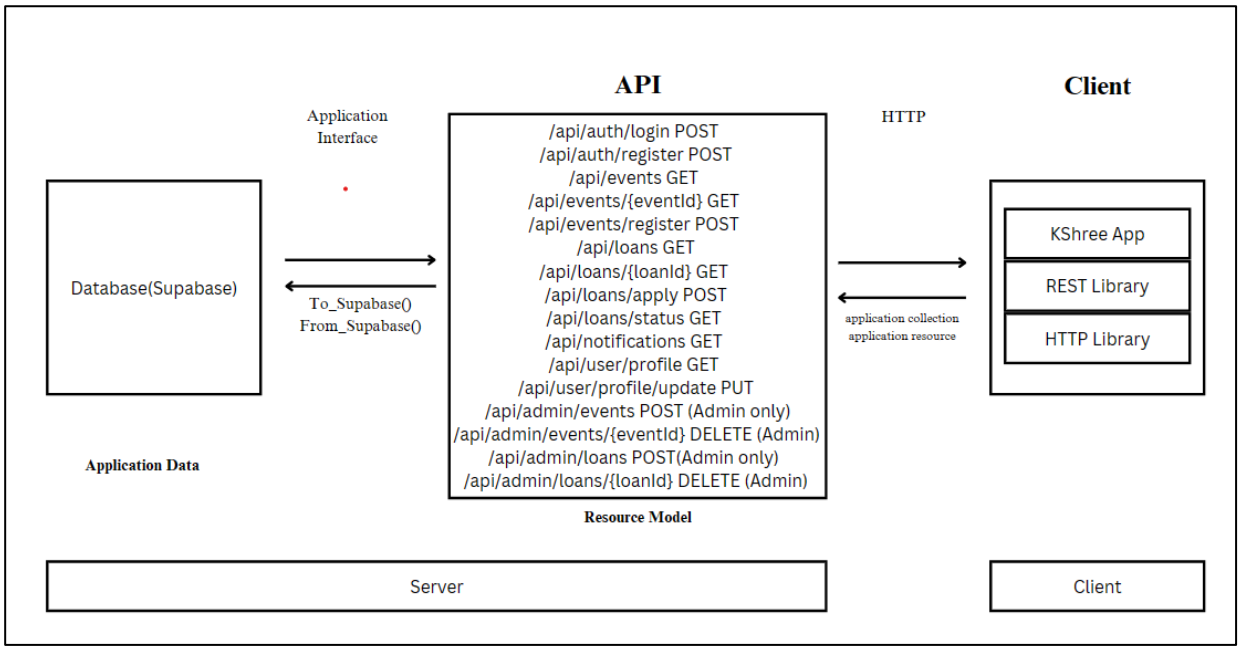


Figure 5.17: API Interaction Diagram

5.6. Technology Stack

The development of the KShree App relies on a robust and efficient technology stack, encompassing a selection of frameworks, programming languages, and tools that together form the foundation of the app's functionality. The technology stack for the KShree App includes:

Front-End Development:

React Native: The primary framework for building the app's front-end, providing cross-platform compatibility for both Android and iOS devices.[1]

JavaScript (JS): The programming language used in conjunction with React Native to develop the app's front-end logic and functionalities.

Material UI: A popular React component library for designing and creating visually appealing user interfaces with consistent design patterns.[5]

Back-End Development:

Supabase: The chosen backend-as-a-service platform that offers a seamless database integration solution. Supabase enables efficient data storage, retrieval, and real-time updates for the KShree App.[4]

Node.js: The back-end development is facilitated by Node.js, a JavaScript runtime environment that allows server-side execution of JavaScript code.

Database:

Supabase Database: The preferred database solution for storing and managing app-related data. Supabase Database offers real-time data synchronization and seamless integration with the backend.[4]

Integrated Development Environment (IDE):

Visual Studio Code (VSCode): The IDE of choice for the development team, offering a feature-rich and user-friendly coding environment with support for React Native and JavaScript.

Version Control:

Git: The widely used version control system for tracking code changes, collaborating with team members, and managing the development process.

GitHub: The repository hosting service for the KShree App project, providing version control and facilitating collaboration among developers.

Mobile Emulators:

Android Studio AVD: Android Studio's built-in emulator, enabling developers to test the app on virtual Android devices and assess its behavior in various scenarios.[2]

Performance Optimization:

Data Caching: Utilizing caching mechanisms to optimize data retrieval and reduce network requests, enhancing app performance and responsiveness.

Security:

Encryption: Employing encryption protocols to ensure the security and privacy of user data and sensitive information.

The carefully curated technology stack for the KShree App ensures a seamless and reliable user experience while providing a scalable and efficient development environment for the development team. The combination of modern frameworks, programming languages, and cloud services contributes to the app's success in empowering the Kudumbashree community and fulfilling their specific needs effectively.

CHAPTER 6

IMPLEMENTATION

6.1. Proposed Work

The Kshree App is envisioned as a transformative and user-centric platform dedicated to empowering the Kudumbashree community. The proposed working model encompasses a wide array of features and functionalities that promote transparency, inclusivity, and community development. At its core, the app seamlessly integrates features to support both administrators and Kudumbashree members (users), ensuring a holistic approach to community engagement and administrative efficiency.

Data Collection and User Registration:

The Kshree App will facilitate a user-friendly registration process, allowing individuals to create accounts with essential personal details. This information will include gender, marital status, and educational background, securely stored in the app's database to establish personalized user profiles.

Authentication and User Roles:

With a robust authentication system, the app will grant secure access, allowing only authorized users to log in. User roles will be clearly defined, distinguishing between administrators and regular users (Kudumbashree members). Each user will be granted appropriate privileges based on their role to ensure seamless access to relevant features.

User Module: Engaging the Kudumbashree Members

The app's user module will cater to the needs of Kudumbashree members, offering a comprehensive set of empowering functionalities. Members will have access to event registration, attendance management, and notification viewing, enabling active participation in

community events and initiatives. Moreover, the app will provide access to essential services that promote financial inclusion and community development.

Admin Module: Empowering Administrators

The app's admin module will serve as a centralized dashboard, empowering administrators with efficient tools for managing the Kudumbashree community. Administrators will oversee user accounts, approve new registrations, and maintain a well-organized record of event-related activities. The module will also include a streamlined system for processing loan applications, further enhancing financial support within the community.

Event Management: Strengthening Community Engagement

The app's event management system will play a pivotal role in strengthening community engagement. Users will be able to view upcoming events, register their participation, and stay updated with timely event-related notifications. Administrators will have the flexibility to schedule, update, and manage events seamlessly, fostering a sense of belonging and inclusivity within the community.

Notification System: Effective Communication and Updates

To ensure effective communication, the Kshree App will feature a reliable notification system. Users will receive timely updates, important announcements, and event reminders directly on their devices. This system will facilitate transparent communication, enabling users to stay informed and engaged.

User Support and Training: Enhancing User Experience

The Kshree App will prioritize user support and training to enhance the overall user experience. Comprehensive resources and assistance will be available to guide users through the app's functionalities. Ongoing support channels will be accessible to address user queries and provide solutions promptly.

Data Security and Privacy: Safeguarding User Information

Recognizing the significance of data security and privacy, the app will implement robust encryption protocols. Sensitive user information will be safeguarded, ensuring confidentiality and trust among users.

Continuous Improvement and Updates: Adapting to Evolving Needs

The Kshree App will remain agile and adaptive, embracing continuous improvement based on user feedback and evolving requirements. Regular updates will be introduced to enhance existing features and introduce new functionalities that cater to the ever-changing needs of the Kudumbashree community.

By integrating the proposed working model, the Kshree App will emerge as an indispensable platform for the Kudumbashree community. Its user-centric design, seamless administrative processes, and enhanced user engagement will contribute to financial inclusion, community development, and empowerment, reinforcing the mission and vision of the Kudumbashree initiative.

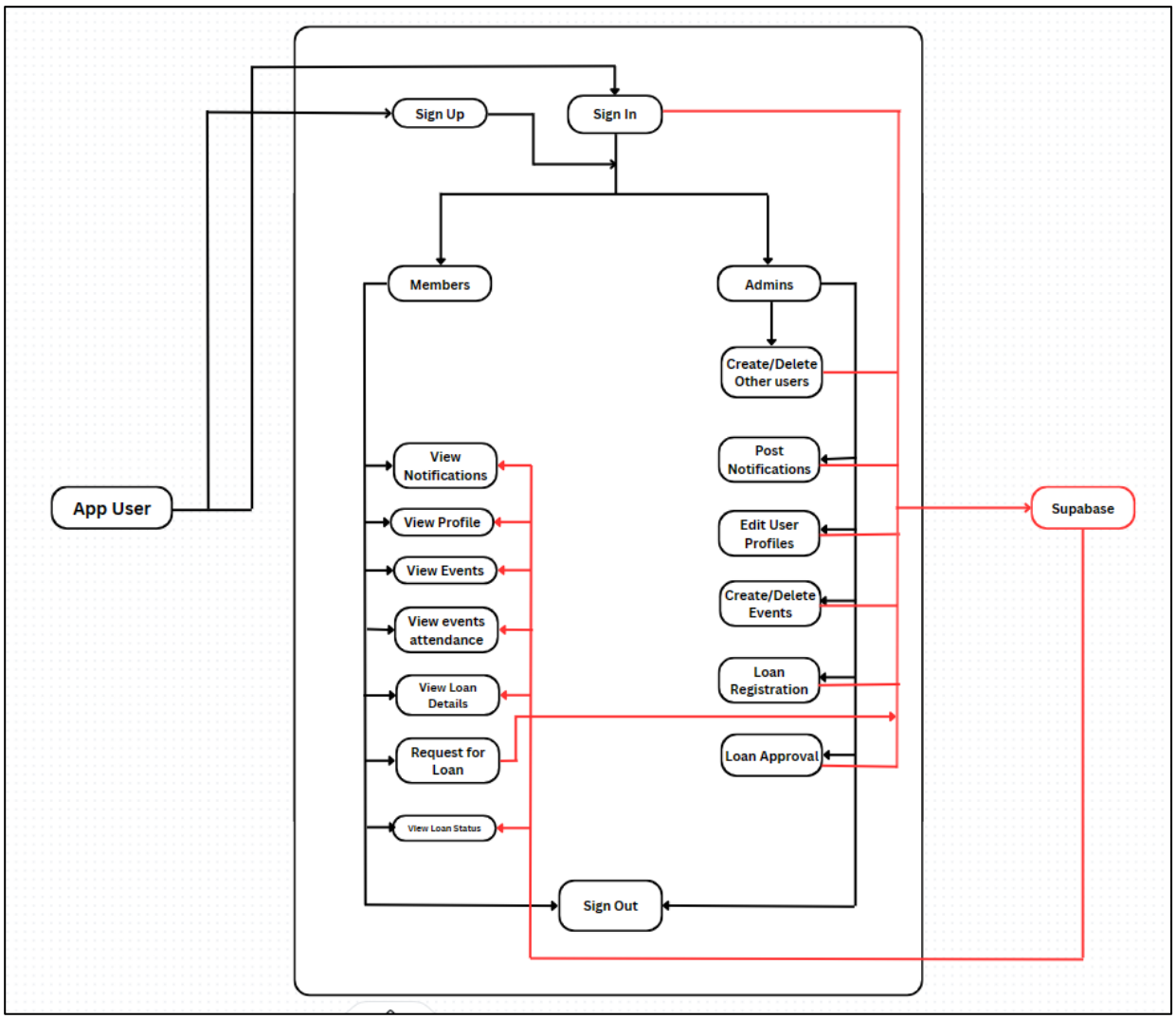


Figure 6.1: Application Flow Diagram

Flow Description:

1. Users register or log in to the "Kshree App" using their credentials.
2. The app authenticates the user and assigns the appropriate role based on login credentials (Admin or User).
3. If the user is an Admin, they are directed to the Admin Module with access to the admin dashboard.
4. Within the Admin Module, the admin can manage user accounts, approve new registrations, and oversee event-related activities.
5. Admins can efficiently process loan applications and review applicants' details for loan approval.
6. Admins can also schedule, update, and manage events, ensuring smooth event management.

7. Users, on the other hand, gain access to the User Module, where they can view essential services, register for events, and manage their attendance.
8. Users receive notifications for event updates and important announcements.
9. The app ensures data security and privacy with encryption protocols for sensitive information.
10. The app offers user support and training resources to help users navigate and utilize the app effectively.
11. The app undergoes continuous improvement based on user feedback, with regular updates to enhance features and user experience.

By following this flow diagram, the Kshree App offers a seamless and user-friendly experience for both administrators and Kudumbashree members, fostering community engagement and empowerment.

6.2. Modules Description

1. User Module:

The User Module in the KShree App serves as the primary interface for Kudumbashree members, offering a personalized and empowering experience. Upon launching the app, new users are prompted to register by providing their name, contact information, gender, marriage status, and educational status. To ensure secure access, user authentication is achieved through a verification email or OTP (One-Time Password) upon registration. Once authenticated, users gain access to their personalized profiles, where they can add self-employment details, including occupation and business information.

Within the User Module, attendance management is a key feature. Members can view a comprehensive calendar displaying upcoming events and meetings organized by Kudumbashree. With a simple tap, users can mark their attendance for the events they plan to attend. The app facilitates real-time updates, ensuring accurate attendance records for administrators and seamless event participation for users. Furthermore, event registration functionality enables users to explore event details and locations before registering for events of interest. Timely event

reminders are sent to users, ensuring they never miss important gatherings and fostering active community engagement.

Another essential aspect of the User Module is the loan application process. Users can apply for loans through the app by providing necessary financial information, including income details and the required loan amount. Loan applications are securely submitted to the administrators for review and processing. Users receive updates on the status of their loan applications, along with notifications about approval decisions. The app also provides users with loan repayment schedules, ensuring transparency and efficient loan management.

2. Admin Module:

The Admin Module equips Kudumbashree administrators with the necessary tools and controls to manage the app's operations effectively. Administrators gain access to a user management dashboard, where they can view and manage user registrations. They have the authority to verify user details and approve or reject user accounts to ensure secure and authenticated access to the app.

Attendance management becomes effortless for administrators through a dedicated section that provides a comprehensive overview of attendance records for Kudumbashree members across various events and meetings. Administrators can update attendance status in case of any discrepancies, ensuring accurate records and facilitating event organization.

Within the Admin Module, event management features play a pivotal role in keeping members informed and engaged. Administrators can create, edit, and manage events, customizing event details, dates, locations, and maximum attendee limits. They have the capability to send event invitations and notifications to registered users, maximizing event participation and community involvement.

The loan approval process is a critical aspect of the Admin Module, where administrators review loan applications submitted by users. They evaluate eligibility criteria and credit history before making approval decisions. Through effective communication channels, administrators inform users of their loan application status, ensuring transparency and efficient loan processing.

Lastly, the notification center serves as a centralized hub for administrators to send essential announcements, updates, and reminders to users. Notifications can be tailored to suit specific purposes, such as event invitations, loan approvals, and other critical information. The Admin Module empowers Kudumbashree administrators to streamline operations, engage with users, and foster a vibrant and connected community through the KShree App.

CHAPTER 7

RESULTS

The successful development and implementation of the KShree App for our college project has had a substantial impact on the Kudumbashree community. With a meticulous focus on meeting the specific needs of both Kudumbashree members and administrators, the app has transformed administrative processes and elevated community engagement. Time-consuming manual efforts and paperwork for administrators have been significantly reduced, allowing them to dedicate more time to strategic tasks. The attendance management process has become highly efficient, with real-time updates on member attendance for various events and meetings, ensuring accurate records and smoother event organization. The app's event registration feature has fostered increased participation in Kudumbashree events and activities. Users can view a comprehensive list of upcoming events and register their attendance with ease. Timely event reminders have proven effective in drawing attention to upcoming gatherings, resulting in higher attendance rates and promoting a sense of community unity.

Kudumbashree members now have enhanced empowerment through the app. It provides easy access to essential services such as event registrations and loan applications, with a user-friendly interface suitable for all members. The loan status feature offers financial transparency, notifying users of approval decisions and repayment schedules, instilling a sense of financial control and trust among members. Effective communication between administrators and users is facilitated through the app's notification center. Administrators can post important announcements, updates, and reminders, keeping users informed and engaged, and strengthening their connection with the Kudumbashree community.

The app's architecture has been thoughtfully designed to accommodate future growth and evolution. Its scalability allows for easy integration of additional features and services, ensuring the app remains relevant and adaptable over time. The positive feedback and high satisfaction ratings from users confirm the app's impact and potential for benefiting the Kudumbashree community. As developers of the KShree App, we are proud to have contributed to a

transformative platform that supports the objectives of Kudumbashree and empowers its members and administrators alike. The experience gained during the project has enhanced our technical skills, collaboration abilities, and project management proficiency. The KShree App holds the promise of making a meaningful and lasting impact on the lives of its users and the community it serves, contributing to the enduring success of the Kudumbashree movement.

CHAPTER 8

CONCLUSION & FUTURE SCOPE

8.1. Conclusion

In conclusion, the SRS for the Kudumbashree app mini project provides a comprehensive overview of its objectives, scope, and requirements. The app aims to empower women SHGs associated with the Kudumbashree mission by offering features such as user registration, SHG profile management, product catalogue, order management, payment processing, and reporting functionalities. Data security, scalability, and usability are emphasized. Thorough testing is essential to ensure reliability. The app has the potential to enhance visibility, expand the customer base, and streamline operations for women entrepreneurs. By adhering to the outlined requirements, the development team can confidently proceed with the app's design, development, and implementation while ensuring it aligns with the goals of the Kudumbashree initiative.

8.2. Future Scope

1. Integration with a Website: One potential future scope for the Kudumbashree app is to integrate it with a dedicated website. This integration would allow Kudumbashree committees at the district or municipality level to administer the app's functionalities through a web-based interface. It would provide an additional platform for managing members, loans, deposits, and other administrative tasks, making it more convenient and accessible for committee members.
2. Marketplace and Expense Management: To further enhance the app's capabilities, a marketplace feature can be added. This would enable Kudumbashree members to showcase and sell their products or services directly through the app. Additionally, incorporating an expense management module would allow members and administrators to track and manage expenses related to various activities and projects undertaken by Kudumbashree.
3. Digitalization of Loan and Deposit Payments: Currently, the app facilitates loan management, but to expand its functionality, it can be enhanced to enable digitalization of loan and deposit payments. This would allow members to make loan repayments and

deposits digitally, improving convenience and reducing the reliance on manual payment methods. Integration with popular payment gateways or mobile payment systems can be considered to enable secure and seamless transactions.

4. Online Payment Integration: Integrating online payment options within the app can be a significant future enhancement. By incorporating secure online payment gateways, members can easily make payments for various services, such as membership fees, program registrations, or marketplace purchases. This would streamline the payment process, enhance financial transparency, and provide a convenient and secure experience for users.
5. Enhanced Reporting and Analytics: Implementing robust reporting and analytics features within the app can offer valuable insights to both administrators and members. The app can generate detailed reports on loan repayments, savings, marketplace transactions, and other financial activities. These reports can help administrators make informed decisions, monitor the overall financial health of Kudumbashree, and identify areas for improvement.
6. Integration with Social Media Platforms: To broaden the reach and engagement of the Kudumbashree app, integrating it with popular social media platforms can be explored. This would allow members to share their achievements, promote their products or services, and foster community interaction. Integration with social media can help in creating a wider awareness of Kudumbashree initiatives and attract more users to the app.

By considering these future scope enhancements, the Kudumbashree app can continue to evolve and adapt to the changing needs and technological advancements. These enhancements would further empower Kudumbashree members, promote digital inclusion, and contribute to the socio-economic growth of the community.

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