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Mini Project Report On

SmartLife Planner

Submitted in partial fulfillment of the requirements for the award of the degree of

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in

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CERTIFICATE

This is to certify that the mini project report entitled ***"SmartLife Planner"*** *is a bonafide record of the work done by* ***Heinz Abraham Koshy (U2103102)***, ***Juniot Mariyam Thomas (U2103119)***, ***Maria Diya Fiju (U2103130)***, ***Mathew Jagan Thomas (U2103131)***, *submitted to the APJ Abdul Kalam Technological University in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology (B. Tech.) in Computer Science and Engineering during the academic year 2023-2024.*

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Abstract

SmartLife Planner is designed to redefine and enhance user productivity and organization. With a user-friendly interface, the app integrates innovative functionalities such as a voice assistant, search bar, document scan,task addition with productivity analsyis and deletion, calendar with addition and deletion of events, adding notes, alarms and timers.The intelligent voice assistant allows for hands-free planning, adapting to natural language and efficiently organizing schedules, tasks, and reminders.The powerful search bar facilitates seamless navigation through plans, enabling users to instantly locate specific events, tasks, or notes with a quick keyword search.Furthermore, the document scan feature digitizes physical documents using the device's camera, ensuring a secure and organized digital repository for essential materials.The voice assistant feature enables users to effortlessly interact with the app using spoken commands, promoting efficiency and facilitating on-the-go note-taking.SmartLife Planner's comprehensive set of tools caters to professionals seeking to optimize their workday and individuals striving for a more organized personal life. Whether for professionals or individuals, SmartLife Planner stands out as a tailored solution for taking control of daily life with ease. In conclusion, SmartLife Planner emerges as a pivotal instrument, seamlessly integrating advanced features to refine and elevate the contemporary paradigm of daily planning and organization.

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Chapter 1

Introduction

1.1 Background

SmartLife Planner is a mobile application that aims to improve productivity and organization for users in various domains. In today's fast-paced world, people face countless tasks, appointments, and responsibilities, both personal and professional. Managing these can be challenging and often leads to stress, inefficiency, and missed opportunities. Traditional methods of organization, such as paper planners or basic digital calendars, lack the flexibility and intelligence required to adapt to the dynamic nature of modern life.

Currently, individuals rely on a combination of tools and methods to manage their daily schedules and tasks. These may include physical planners, digital calendars, to-do lists, note-taking apps, and voice assistants. However, these tools often operate in isolation, requiring users to switch between multiple applications and interfaces, leading to fragmentation and cognitive load. Additionally, existing solutions may lack advanced features such as natural language processing, document scanning, and voice-to-text conversion, limiting their effectiveness in addressing the diverse needs of users.

SmartLife Planner offers a comprehensive solution for managing schedules, tasks, and documents seamlessly. The app integrates innovative functionalities such as an intelligent voice assistant, powerful search capabilities, document scanning, and voice-to-text conversion. This not only saves time and effort but also reduces the mental burden on users, allowing them to focus on higher-value activities and achieve their goals more effectively.

Furthermore, SmartLife Planner is designed to meet diverse user needs with tailored features for professionals, entrepreneurs, students, and individuals across demographics.

The app offers intuitive interfaces for managing work projects, personal events, and staying organized on the go.

1.2 Problem Definition

In today's fast-paced world, individuals often struggle to effectively manage their time and tasks, leading to decreased productivity and disorganization. Without effective tools to streamline their workflows, they may find themselves overwhelmed with juggling multiple tasks, appointments, and deadlines. The aim of the SmartLife Planner project is to address these challenges by developing a comprehensive mobile application. By integrating innovative functionalities such as an intelligent voice assistant, powerful search capabilities, document scanning, and voice-to-text conversion, the SmartLife Planner seeks to provide users with a centralized platform to enhance their productivity and organization. Without the use of such an app, individuals may continue to face the consequences of fragmented workflows and inefficient task management, leading to heightened stress levels and missed opportunities. Ultimately, the SmartLife Planner aims to empower users to take control of their daily routines and information management, alleviating the stress and inefficiencies associated with modern-day productivity challenges.

1.3 Scope and Motivation

1. Scope:

The scope of the SmartLife Planner project encompasses the development of a feature-rich mobile application targeting users across diverse demographics and use cases. The application will include functionalities such as scheduling events, managing tasks, organizing documents, and facilitating seamless communication. It will support cross-platform compatibility, enabling users to access their data and features across multiple devices, including smartphones, tablets, and desktop computers. Additionally, the application will prioritize user experience and accessibility, with intuitive interfaces and customizable settings to cater to individual preferences.

2. Motivation:

The motivation behind the SmartLife Planner project stems from the growing need for

efficient organization and productivity tools in today's fast-paced world. With increasingly busy schedules and a multitude of tasks to manage, individuals require a comprehensive solution that can adapt to their dynamic lifestyles and streamline their daily routines. By integrating advanced features such as an intelligent voice assistant, document scanning, and voice-to-text conversion, the SmartLife Planner aims to address these challenges and empower users to take control of their lives with ease. Ultimately, the motivation is to enhance user productivity, reduce stress, and promote a more organized and fulfilling lifestyle.

Sl.No	**Features**	**Sub Features**
1	Manage Tasks	Add Task Edit Task Delete Task View Tasks
2	Schedule	Add Event Edit Event Delete Event Set Reminder View Schedule
3	Search Bar	Search Notes Search Tasks Search Events
4	Document Scanner	Scan Document View Scanned Documents
5	Voice Assistant	Voice Commands
6	Settings	Change Theme Notifications Preferences

Table 1.1: System Features

1.4 Objectives

1. Develop an intuitive and user-friendly interface for the SmartLife Planner application, ensuring ease of navigation and accessibility for users across various demographics.

2. Implement advanced functionalities such as an intelligent voice assistant, powerful search capabilities, document scanning, and voice-to-text conversion to enhance user productivity and organization.

3. Enable seamless synchronization and data sharing across multiple devices, allowing users to access their schedules, tasks, and documents from anywhere, at any time.

4. Incorporate customizable settings and preferences to cater to individual user needs and preferences, enhancing the overall user experience and satisfaction.

5. Ensure robust security measures to protect user data and privacy, adhering to industry standards and regulations to instill trust and confidence in the application.

6. Continuously iterate and improve the SmartLife Planner based on user feedback and emerging technologies, striving for innovation and excellence in meeting user needs and expectations.

1.5 Challenges

The primary challenge in developing the SmartLife Planner lies in integrating multiple complex functionalities such as natural language processing, document scanning, and cross-platform synchronization seamlessly within a single application. Additionally, ensuring optimal performance and usability across various devices and operating systems presents a significant technical hurdle. Furthermore, maintaining a balance between feature richness and simplicity while addressing diverse user needs adds complexity to the project.

1.6 Assumptions

1. Users will have access to devices with sufficient hardware capabilities to support the advanced features of the SmartLife Planner application, such as voice recognition and document scanning.

2. The availability and reliability of internet connectivity will be assumed for seamless synchronization and data sharing across devices.

3. Users will engage with the application in a manner consistent with its intended use, including providing accurate and relevant input for tasks such as scheduling events and organizing documents

1.7 Societal / Industrial Relevance

The SmartLife Planner project has significant relevance both in societal and industrial contexts. In society, the application can be applied to individuals across various demographics, helping them manage their daily lives more efficiently and reducing stress associated with disorganization and forgetfulness. Busy professionals, students, parents, and caregivers can all benefit from the app's features, enabling them to stay on top of their schedules, tasks, and documents with ease.

In the industrial realm, the SmartLife Planner can be leveraged by businesses and organizations to enhance productivity and collaboration among employees. Teams can use the app to coordinate schedules, track tasks, and share documents seamlessly, leading to improved efficiency and communication. Moreover, the app's advanced features, such as voice assistance and document scanning, can streamline workflow processes and reduce manual workload, ultimately driving operational excellence and competitiveness in the market.

1.8 Organization of the Report

In the introduction section, we provide a comprehensive overview of the SmartLife Planner project, covering its background, problem definition, scope, motivation, objectives, challenges, assumptions, societal/industrial relevance, and the organization of the report.

The background delves into the challenges individuals face in managing their daily schedules and tasks efficiently, highlighting the need for a comprehensive productivity and organization tool like SmartLife Planner. We define the aim of the project in the problem definition, outlining the challenges users encounter and the significance of developing a solution to streamline these processes. The scope and motivation section delineates the functionalities and features to be implemented, explaining how SmartLife Planner aims to improve user productivity and organization across various domains. Subsequently, we list the specific objectives of the project, which serve as a roadmap for its development and implementation. Identifying and briefly discussing the challenges involved in developing SmartLife Planner is done in the challenges subsection, considering technical, organizational, and user-related aspects. The assumptions section outlines the assumptions made during project planning and development, providing context for decision-making and resource allocation. Describing the societal/industrial relevance of SmartLife Planner, we highlight its potential applications and benefits for users, emphasizing its importance in addressing real-world needs. Finally, we outline the organization of the report, detailing the contents of each section and their respective objectives, ensuring clarity and facilitating navigation for readers.

In the software requirements specification for SmartLife Planner, the introduction section offers an overview of the document's purpose and target audience, emphasizing the necessity of establishing clear and comprehensive requirements for the application's successful development. Moving into the overall description, we explore the application's functionalities, features, and user interactions, providing a high-level overview of its scope and key components. Subsequently, the external interface requirements section delves into the specifics of user interfaces, hardware interfaces, and software interfaces, ensuring consistency and accessibility across different platforms. Enumerating the system features, we outline the functionalities and capabilities users can anticipate, categorized according to task management, event scheduling, document scanning, voice assistance, and settings customization. Finally, detailing the nonfunctional requirements, we address performance, reliability, security, and usability considerations, specifying metrics, targets, measures, and guidelines to ensure alignment with user expectations and industry standards.

In the section on System Architecture and Design, we offer a comprehensive overview of SmartLife Planner's architecture and design components. We begin with a System Overview, detailing the layers and components such as the client-side application, backend server, database management, and external service integration. This provides a holistic understanding of how these elements collaborate to deliver SmartLife Planner's functionality. Moving on to Architectural Design, we delve deeper into the technology choices, frameworks, and patterns utilized, emphasizing React Native for the client-side application and Node.js for the backend server, along with security measures for user data protection. Within this subsection, we incorporate a Use Case Diagram to visually illustrate user interactions and system functionalities. Additionally, we discuss the identified dataset's properties and relevance, methodologies, and algorithms employed in development, and user interface design considerations, including wireframe designs and principles. Finally, the Database Design section outlines the schema, tables, relationships, and constraints used to organize and store user data efficiently.

Chapter 2

Software Requirements Specification

2.1 Product Perspective

SmartLife Planner is introduced as a novel and self-contained product, developed to redefine the landscape of productivity and organization applications. Unlike being a follow-on member of an existing product family or a replacement for specific systems, it emerges as an independent solution to address the evolving needs of users seeking enhanced efficiency in daily planning.

Origin and Context: The product's origin lies in recognizing the limitations of traditional planning methods and the increasing demand for intuitive, feature-rich tools in the digital age. SmartLife Planner is a response to the need for a versatile, user-friendly app that seamlessly integrates innovative features to cater to both professionals and individuals striving for improved productivity.

Relation to Larger Systems: While SmartLife Planner operates as a standalone product, it can be integrated into the broader ecosystem of digital productivity tools. In the larger system context, it complements existing applications and services, contributing to a holistic approach to digital organization. For instance, it interfaces with calendar applications, task management tools, and cloud storage services to enhance the overall user experience.

2.1.1 Product Functions

High-Level Summary of the major functions:

1. User-Friendly Interface:

   Intuitive design for easy navigation.

Accessible layout for efficient interaction.

2. Intelligent Voice Assistant/Voice Command Recognition:

   Allows users to interact with the app using spoken commands.

   Transcribes spoken words into text using speech-to-text technology.

   Parses text to identify keywords or phrases corresponding to specific actions or tasks.

   Executes corresponding tasks based on recognized commands.

   Hands-free planning using natural language.

   Organization of schedules, tasks, and reminders.

3. Powerful Search Bar:

   Instant location of events, tasks, or notes.

4. Document Scan:

   Digitization of physical documents using the device's camera.

   Creation of a secure and organized digital repository.

5. Comprehensive Tools:

   Tailored solutions for professionals and individuals.

   Optimization of workdays and personal lives.

6. Security Measures:

   Ensuring the secure handling of user data.

   Safeguarding confidential documents and information.

2.1.2 Operating Environment

The SmartLife Planner app will primarily operate on mobile devices running Android (version 6.0 and above) and will also support iOS (version 12.0 and above) as a secondary platform.

2.2 Design and Implementation Constraints

Several items and considerations will limit the options available to the developers of SmartLife Planner. These include:

1. Hardware Limitations: Compatibility constraints with older hardware versions may limit the range of devices that can effectively run the application. Timing and memory requirements for resource-intensive features, such as document scanning, may impact the performance on certain devices.

2. Databases: The selection of databases for data storage and retrieval may be influenced by existing organizational preferences, security requirements, and scalability considerations.

3. Communications Protocols:

   Adherence to specific communication protocols, especially for features like real-time collaboration or cloud synchronization, to ensure data integrity and security.

4. Platform-specific Design Guidelines and Standards:

   Adherence to Material Design for Android and Human Interface Guidelines for iOS ensures consistency and familiarity for users on their respective platforms.

5. Integration with Third-party APIs and Libraries:

   Utilizing third-party APIs for voice recognition, document scanning, and other functionalities requires careful consideration of dependencies, licensing, and reliability.

6. Compatibility with Various Device Hardware Configurations and Screen Sizes: Ensuring the app functions smoothly across different devices and screen sizes is crucial for providing a consistent user experience.

7. Scalability and Performance Optimization: Designing the app architecture for scalability and optimizing performance ensures it can handle increasing user demands and maintain responsiveness.

8. Offline Functionality and Synchronization: Providing offline functionality with data synchronization capabilities allows users to access and modify data even without an internet connection.

9. Documentation and Code Maintainability: Comprehensive documentation and well-maintained code facilitate future updates, collaboration, and troubleshooting.

2.3 Assumptions and Dependencies

Assumed Factors:

1. Data Security

   Assumption: User data is assumed to be protected and secure.User data is stored securely, whether it's stored locally on the device or in a remote server/database. Utilize secure storage mechanisms and protocols to prevent unauthorized access or data breaches.

2. Secure Communication

   Assumption: Communication protocols (e.g., HTTPS) to encrypt data transmitted between the app and any backend servers or APIs are implemented.

3. Data Backup and Recovery

   Assumption: Data backup and recovery mechanisms to ensure that user data can be recovered in case of data loss or corruption.

4. Unique Data

   Assumption: Data is assumed to be distinct from each other in order to provide lower search complexity.

5. Silent Environment

   Assumption: Voice data is assumed to be taken in a noiseless environment.

External Dependencies:

1. Reuse of External Software Code: Integration and reuse of specific software code from external sources.

2. Programming Libraries and Frameworks: Rely on external libraries and frameworks to expedite development and add functionality to your app.(UI frameworks/libraries like React Native)

3. Documentation and Tutorials: Rely on external documentation, tutorials, and resources to learn new concepts, troubleshoot issues, and accelerate development process.

   It is crucial to regularly validate these assumptions and dependencies throughout the project lifecycle to mitigate potential risks and ensure that the development aligns with the evolving landscape of external factors.

2.4 External Interface Requirements

2.4.1 User Interfaces

Logical Characteristics of User Interfaces:

1. Main Interface:

   Description: The primary screen where users access and navigate through the main functionalities of SmartLife Planner. Characteristics: Intuitive design, with easy-to-access features such as the calendar, task lists, and options for voice assistance.

2. Voice Assistant:

   Description: The interface allowing users to interact with the voice assistant for hands-free planning and organization. Characteristics: Voice command recognition, natural language processing, and visual cues indicating the voice assistant's responsiveness.

3. Search Bar:

   Description: The interface for users to perform quick keyword searches across plans, tasks, and notes. Characteristics: Instant search results, autocomplete suggestions, and a clear indication of search filters.

4. Dcument Scan:

   Description: The interface enabling users to digitize physical documents using the device's camera. Characteristics: Real-time document preview, adjustable scan settings, and options for organizing scanned documents.

5. Comprehensive Tools:

   Description: Interfaces for tailored solutions catering to professionals and individuals.

   Characteristics: Customizable dashboards, task categorization, and features optimized for specific user needs.

GUI Standards and Style Guides:

- Consistent use of color schemes, typography, and iconography for a cohesive visual experience.
- Adherence to platform-specific design guidelines for iOS, Android, Windows, and macOS to ensure a native look and feel.
- Standard buttons and functions, such as "Save," "Cancel," and "Settings," maintaining uniformity across the application.
- Screen Layout Constraints:

  Responsive design ensuring optimal user experience across various screen sizes and resolutions.

  Clear and organized layout for each interface, prioritizing essential information and actions.

- Standard Buttons and Functions:

  Common buttons like "Save," "Cancel," and "Back" for consistent navigation.

  Help buttons or tooltips to provide contextual assistance.

  Settings options accessible from the main interface for user customization.

- Error Message Display Standards:

  Clear and user-friendly error messages with descriptive explanations.

  Consistent error message formatting and placement to ensure easy identification

2.4.2 Hardware Interfaces

- Utilization of device microphone for voice input, compatible with Android and iOS APIs.
- Camera access for document scanning functionality, compatible with Android and iOS APIs.

2.4.3 Software Interfaces

- Integration with Android and iOS operating system APIs for voice and text input.
- Integration with speech-to-text API (e.g., Google Cloud Speech-to-Text for Android,Apple Speech Framework for iOS) for voice recognition.
- Integration with document scanning libraries (e.g., OpenCV for Android, Google Vision API for iOS) for document scanning functionality.

2.4.4 Communication Interfaces

Communication Requirements:

1. Real-time Collaboration:

   Functionality: Users should be able to collaborate in real-time, sharing updates and changes instantly.

2. Cloud Synchronization:

   Functionality: Automatic synchronization of data with cloud storage services.

3. Voice Assistant Interaction:

   Functionality: Interaction with the voice assistant for hands-free planning and organization.

   Communication Protocol: Direct integration with device-specific voice recognition APIs.

4. Document Scan and Retrieval:

   Functionality: Uploading documents to cloud storage and retrieving scanned documents.

5. User Notifications:

   Functionality: Sending push notifications for reminders and updates.

6. Data Transfer Rates:

   Requirement: Responsive communication for real-time collaboration and instant updates.

7. User Authentication and Authorization: Functionality: User authentication and authorization for secure access to features.

8. Message Formatting:

   Requirement: Consistent and standardized message formats for communication. Specification: JSON (JavaScript Object Notation) for data interchange, ensuring easy parsing and readability.

9. Integration with External APIs: Functionality: Interaction with third-party APIs (e.g., voice recognition, cloud storage).

These communication requirements and protocols are crucial for ensuring the seamless functioning of SmartLife Planner, promoting secure and efficient data exchange, and providing users with a responsive and collaborative experience.

2.5 System Features

2.5.1 Voice Assistant/Voice Command Recognition

Description and Priority

- **Description:** The voice assistant feature enables users to interact with the app using spoken commands, providing hands-free operation and enhanced accessibility.
- **Priority:** High.

Stimulus/Response Sequences

- **Stimulus:** User speaks a command.
- **Response:** Voice recognition system converts speech to text.

- **Response:** System parses text to identify keywords.
- **Response:** App executes corresponding task based on recognized command.

Functional Requirements

- **REQ-1:** Implement speech-to-text functionality for voice input using a reliable API.
- **REQ-2:** Develop parsing algorithm to identify keywords or phrases from transcribed text.
- **REQ-3:** Integrate with task execution system to execute corresponding tasks based on recognized commands.

2.5.2 Search Bar Functionality

Description and Priority

- **Description:** The search bar functionality enables users to quickly search for specific tasks, notes, or events within the app, enhancing productivity and ease of navigation.
- **Priority:** Medium.

Stimulus/Response Sequences

- **Stimulus:** User enters search query in the search bar.
- **Response:** App displays relevant search results matching the query.
- **Response:** User selects a search result to view details or take action.

Functional Requirements

- **REQ-4:** Implement search functionality with support for keyword-based and partial matching search queries.
- **REQ-5:** Develop algorithm to filter and rank search results based on relevance and user preferences.

- **REQ-6:** Integrate search bar with existing app components for seamless navigation and user experience.

2.5.3 Document Scan Feature

Description and Priority

- **Description:** The document scan feature allows users to capture and digitize physical documents using their device camera, facilitating easy storage, organization, and sharing of documents.
- **Priority:** High.

Stimulus/Response Sequences

- **Stimulus:** User selects document scan feature from the app interface.
- **Response:** App activates device camera for document scanning.
- **Response:** App processes and converts the scanned document into digital format.
- **Response:** User saves or shares the digitized document as needed.

Functional Requirements

- **REQ-7:** Implement document scanning functionality with real-time preview and capture capabilities.
- **REQ-8:** Develop image processing algorithm to enhance document clarity and readability.
- **REQ-9:** Integrate document scan feature with file management system for seamless document storage and retrieval.

2.6 Other Nonfunctional Requirements

2.6.1 Performance Requirements

Response time for voice recognition should be less than 1 second to ensure real-time interaction.

App should be able to handle concurrent user requests efficiently to prevent performance degradation.

2.6.2 Safety Requirements

Ensure user privacy by securely handling voice data and implementing data encryption measures.

Implement error handling mechanisms to prevent unintended actions and ensure system reliability.

2.6.3 Security Requirements

Encrypt communication between app and external services to protect user data and prevent unauthorized access.

Implement user authentication mechanisms to ensure secure access to app features and functionalities.

2.6.4 Software Quality Attributes

- **Usability:** Ensure intuitive user interface design and clear feedback mechanisms for enhanced user experience.
- **Reliability:** Minimize system downtime and errors through rigorous testing and error handling mechanisms.
- **Maintainability:** Design modular and well-documented codebase to facilitate future updates and enhancements.

Chapter 3

System Architecture and Design

3.1 System Overview

- SmartLife Planner aims to revolutionize the way people manage their daily schedules and tasks. This user-friendly productivity app boasts an intelligent voice assistant, powerful search functionality, document scanning capabilities, and voice-to-text conversion, all designed to seamlessly integrate into users' lives and optimize their planning.

- Envisioned as a standalone product, SmartLife Planner fills the gap in traditional planning methods by offering a feature-rich solution for both professionals and individuals. The intuitive interface prioritizes ease of use, with features readily accessible from the main screen. Users can leverage the intelligent voice assistant for hands-free planning, issuing commands and receiving spoken confirmations.

- For those who prefer text-based interaction, the powerful search bar allows for quick and efficient retrieval of events, tasks, or notes using relevant keywords. SmartLife Planner goes beyond traditional planning apps by incorporating a document scanning feature. This functionality transforms physical documents into digital files, creating a secure and organized repository within the app.

- On-the-go note-taking becomes effortless with the voice-to-text conversion capability. Simply speak your thoughts and ideas, and SmartLife Planner will transcribe them into editable text, ensuring your thoughts are captured and easily accessible.

- Behind the scenes, SmartLife Planner prioritizes user privacy and data security. Secure communication protocols and encryption measures safeguard sensitive infor-

mation. The app is designed to function seamlessly on popular mobile devices, with primary support for Android (version 6.0 and above) and iOS (version 12.0 and above).

- However, the development process considers various constraints. Hardware limitations of older devices and resource-intensive features like document scanning may affect performance on certain phones. The selection of databases and communication protocols will depend on factors like security requirements and existing organizational preferences.

- Furthermore, the app needs to adhere to platform-specific design guidelines to ensure a familiar user experience across Android and iOS. Integrating with third-party APIs for functionalities like voice recognition and document scanning requires careful consideration of factors like reliability, licensing, and potential dependencies.

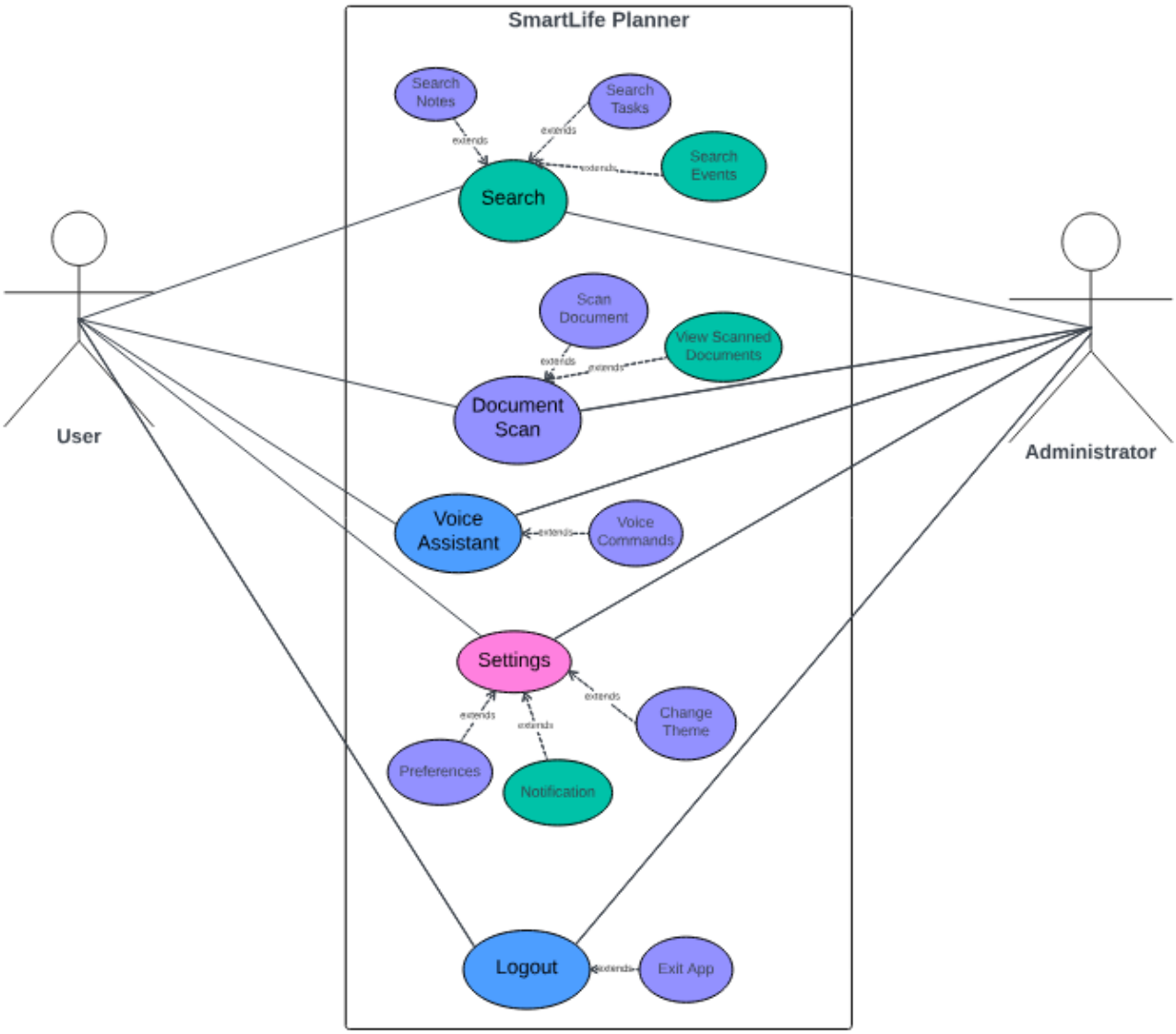
- To guarantee a consistent experience across various screen sizes, a responsive design approach is crucial. Scalability is also a priority, as the app should be able to handle increasing user demands while maintaining responsiveness. Even when offline, SmartLife Planner allows users to access and modify data, with synchronization capabilities ensuring updates reflect across all devices once reconnected.

- SmartLife Planner takes user experience to heart. Comprehensive documentation and well-maintained code ensure a smooth development process, facilitating future updates and troubleshooting. The user interfaces prioritize clear and intuitive design, with features like standard buttons and tooltips promoting user familiarity and ease of use.

- By combining innovative features with a focus on user experience and security, SmartLife Planner is poised to become an indispensable tool for anyone seeking to optimize their daily planning and organization.

3.2 Architectural Design

3.2.1 Use Case Diagram



3.3 Dataset identified

SmartLife planner thrives on user-generated data and hence does not require a pre-existing data set. As users interact with the app, they create their own personal data such as tasks, events, notes, and scanned documents. This data is stored securely within the app and facilitates functionalities like search and voice assistant interactions tailored to the individual user. SmartLife Planner could utilize a pre-trained voice recognition model stored on the device or accessed through the cloud. These models are trained

on massive datasets of speech recordings and their corresponding text. Popular options include Google Speech-to-Text.

3.4 Proposed Methodology/Algorithms

Voice to Text conversion algorithm

While Voice input is being received

1. Install Dependencies Install the expo-speech package, which provides access to speech recognition APIs in Expo projects:

   expo install expo-speech

2. Configure Permissions

   Expo manages permissions through the app.json configuration file. Ensure that your app has the necessary permissions to use the microphone for speech recognition:

   Open your app.json file in the root directory of your Expo project.

   Add the "microphone" permission under the "permissions" key:

3. Implement Speech Recognition In your React Native component, import the expo-speech module and use it to perform speech recognition:

4. Start and Stop Speech Recognition Call the startSpeechRecognition() function to begin speech recognition and the stopSpeechRecognition() function to stop it when needed.

5. Testing Test your app on both Android and iOS devices to ensure that speech recognition works correctly and that the microphone permission is requested and granted.

Voice command recognition algorithm

Installation

Install the necessary packages for audio input and speech-to-text conversion:

* 'react-native-voice': Provides audio input functionality.

'react-native-voice-to-text': Enables speech-to-text conversion.

Algorithm Steps

The algorithm follows these steps:

1. Set Up Voice Input: - Initialize and configure the ‘react-native-voice‘ package within your React Native component. - This involves functions to start and stop voice recording based on user interaction.

2. Convert Audio Input to Text: - Utilize the ‘react-native-voice-to-text‘ package or a similar solution. - Capture the audio input stream, send it to a speech-to-text API, and receive the converted text as a response.

3. Analyze Converted Text for Keywords: - Define a list of keywords or phrases your app should recognize (e.g., ”create event,” ”set alarm”). - Analyze the converted text from step 2 for the presence of these predefined keywords.

4. Identify User’s Intent: - Based on the recognized keywords, determine the user’s intended action. - For example, ”create event” indicates a request to create a new event in the app.

5. Execute Corresponding Action: - Implement logic based on the identified intent. - This may involve updating the UI, calling relevant functions or APIs, and handling the user’s request accordingly.

Search bar functionality algorithm:

While User input is being received:

1. Install Required Packages:

   -bash

   -npm install react-native-elements react-native-vector-icons

2. Import Dependencies in Your Component:

   -import React, useState from ’react’;

   -import View, TextInput, StyleSheet from ’react-native’;

   -import Icon from ’react-native-elements’;

3. Create SearchBar Component:

Document Scan algorithm Packages Used

- - ‘react-native-document-scanner‘: Provides components and functions for capturing document images.
- - ‘react-native-camera‘: Accesses the device’s camera to capture images.
- - ‘react-native-image-crop-picker‘: Handles cropping and manipulating images.
- - ‘react-native-permissions‘: Manages permissions related to camera access.

Steps

1. **Install Required Packages**

   - Use npm or yarn to install the necessary packages:
   “‘bash
   npm install react-native-document-scanner react-native-camera react-native-image-crop-picker react-native-permissions
   or
   yarn add react-native-document-scanner react-native-camera react-native-image-crop-picker react-native-permissions “‘

2. **Set Up Permissions**

   - Ensure camera access permissions are set up in your app’s initialization.

3. **Implement Document Scan Screen**

   - Create a new component for document scanning and use ‘react-native-document-scanner‘ and ‘react-native-camera

4. **Integrate Cropping (Optional)**

3.5 User Interface Design

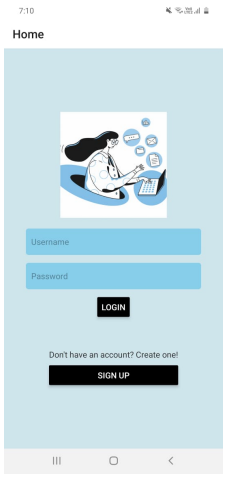


Figure 3.1: Login

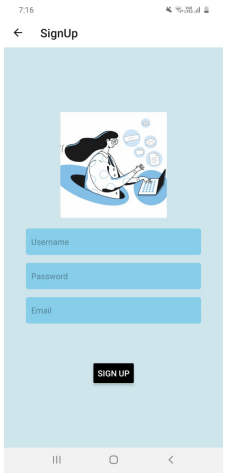


Figure 3.2: Sign up

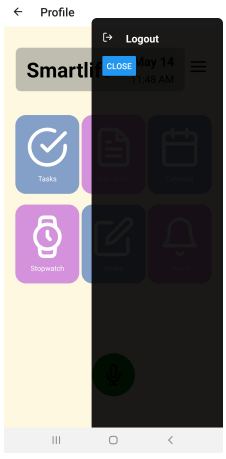


Figure 3.3: Logout

3.6 Database Design

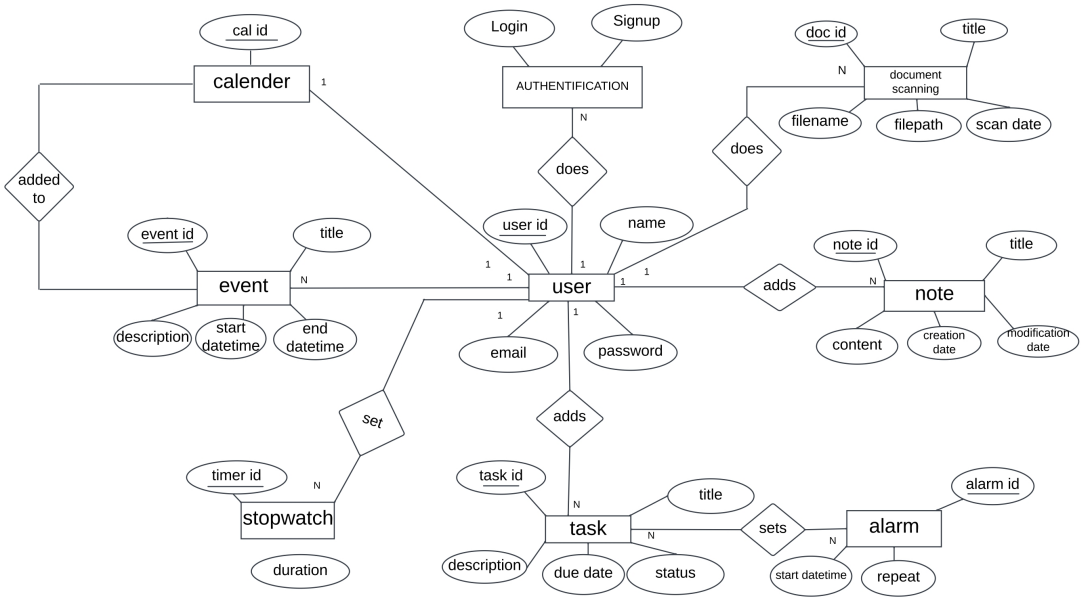


Figure 3.4: ER Diagram of SmartLife Planner

3.7 Description of Implementation Strategies

- User Interface (UI):

  Clean and Simple Design: Prioritize a clear and user-friendly interface that avoids clutter.

  Visually Appealing: Incorporate a visually appealing design with a consistent color scheme and fonts.

  Intuitive Layout: Organize elements logically and use clear labels for easy navigation.

- Core Functionalities:

- Search Bar:

  Implement a search bar that allows users to quickly find tasks, notes, or specific information within the planner. Consider offering search filters like date, category, or keyword for more refined searches.

- Voice Assistant:

  Integrate a voice assistant functionality for hands-free interaction. Users should be able to add tasks, set reminders, or dictate notes using voice commands.

- Voice to Text:

  Offer voice-to-text functionality for creating tasks and notes directly through voice dictation. This can be particularly helpful for users who prefer not to type.

- Document Scan:

  Allow users to scan physical documents using their device's camera. The scanned document can be converted to text or saved as an image within the planner.

- Task Management:

  Implement a system for creating tasks with due dates, priorities, and labels. Users should be able to mark tasks as complete and track progress. Consider offering subtasks and recurring tasks for better organization.

- Note Taking:

  Provide a dedicated section for taking notes with rich text formatting options (bold, italics, etc.). Allow users to categorize notes, add images, and create checklists.

Additional Considerations:

- Customization:

  Offer some level of customization, such as allowing users to change the background theme or color scheme.

- Accessibility:

Ensure your app is accessible for users with disabilities by incorporating features like text scaling and screen reader compatibility.

- Offline Functionality: Consider allowing users to access basic functionalities like note-taking and task management even when offline. Data can then be synced when the device regains internet connection.

- Testing and Feedback:

  Throughout the development process, conduct user testing to gather feedback and iterate on your design.

3.8 Module Division

SmartLife Planner benefits from a modular design, allowing for easier development, maintenance, and future expansion. Here's a breakdown of the core modules and their functionalities:

1. User Interface (UI) Module

   Description: This module handles the visual elements of the app, including screens, buttons, layouts, and overall user experience.
   Responsibilities:

   Designing and developing all screens and layouts within the app.
   Implementing UI elements like buttons, text fields, and progress bars.
   Ensuring a consistent and intuitive user experience across different platforms (Android, iOS).

2. Data Management Module Description: This module handles storing, retrieving, and manipulating user data. It interacts with the chosen database to manage tasks, notes, events, and user information.
   Responsibilities: Establishing connections to the database.
   Implementing functions to add, edit, delete, and retrieve user data.
   Ensuring data integrity and consistency through proper data validation and error handling.

3. Voice Assistant Module

   Description: This module handles voice recognition and interaction functionalities. It might integrate with pre-trained speech recognition models or APIs (e.g., Google Speech-to-Text) to allow users to interact with the app through voice commands.
   Responsibilities:
   Integrating chosen speech recognition API(s).
   Handling user voice commands for creating tasks, adding notes, setting reminders, and other functionalities.
   Providing spoken feedback or confirmations for user actions.

4. Search Functionality Module

   Description: This module enables users to quickly find tasks, notes, and events using relevant keywords. It implements algorithms to search through user data and display relevant results.
   Responsibilities:
   Implementing search algorithms .
   Enabling users to enter search queries.
   Displaying search results in a clear and organized manner.

5. Additional Modules

   Document Scanning Module: This module would handle capturing and processing scanned documents using image pre-processing techniques and integrating with OCR (Optical Character Recognition) libraries to extract text from scanned documents. Notifications Module: This module would manage notifications for upcoming tasks, deadlines, or reminders.

Module Assignment

1. Mathew Jagan: User Interface (UI) Module
2. Juniot: Data Management Module,Document Scan feature
3. Heinz: Voice Assistant Module

4. Maria: Search Functionality Module

5. Team (all): Additional functionalities and overall integration

3.9 Work Schedule - Gantt Chart

Figure 3.5: Gantt Chart

Chapter 4

Results and Discussions

4.1 Overview

The project yielded significant achievements across multiple fronts, manifesting in a cohesive and feature-rich application. Commencing with an engaging splash screen, users seamlessly navigated through a streamlined get-started process, progressing to an intuitive login/signup interface. The robustness of the home screen provided a solid foundation for users to explore further functionalities, including a dynamic calendar module facilitating event management, supplemented by a comprehensive note-taking feature. The integration of an efficient search bar enhanced user accessibility, while the task list functionality not only enabled task organization but also facilitated productivity analysis through customizable priority settings and task deletion. Further enhancements, including the incorporation of alarm, stopwatch/timer, and voice assistant functionalities, augmented the application's utility. Additionally, the image scanner feature offered a novel dimension, empowering users to capture, save, or discard images seamlessly. Concluding with a secure logout page, the project's holistic approach ensured a user-centric experience, underpinned by functionality, efficiency, and innovation.

4.2 Testing

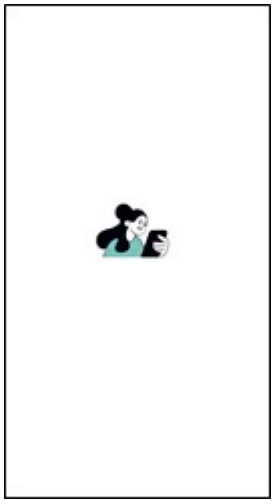


Figure 4.1: Splash screen

Figure 4.2: Getstarted

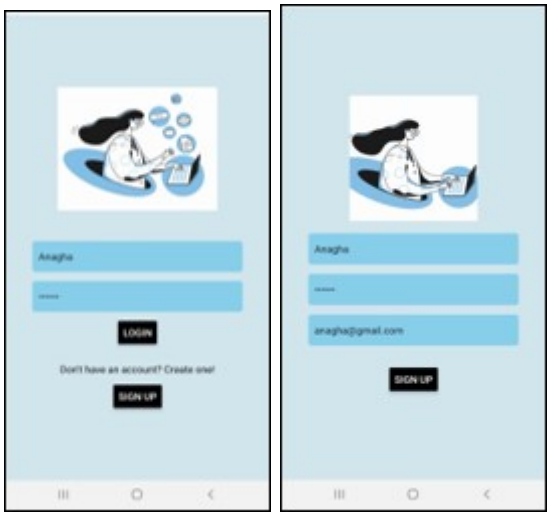


Figure 4.3: Login and Signup

Figure 4.4: Home screen with Voice Assistant(green mic)

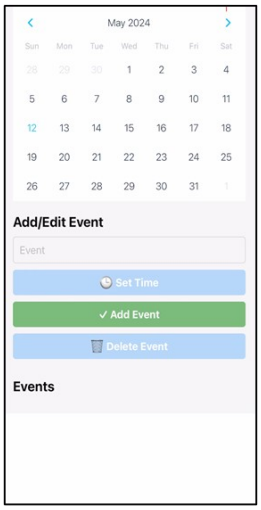


Figure 4.5: Calendar

Figure 4.6: Adding an event

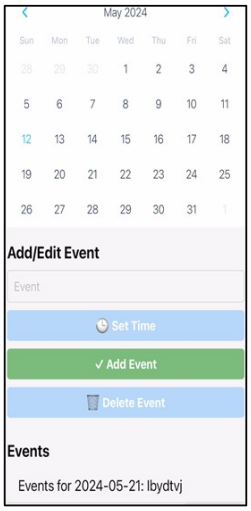


Figure 4.7: Display added event

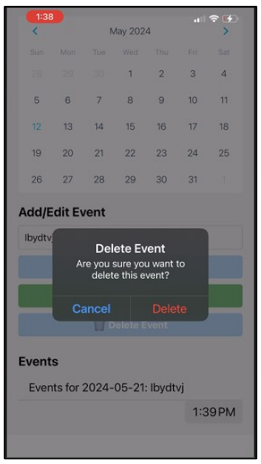


Figure 4.8: Deleting selected event

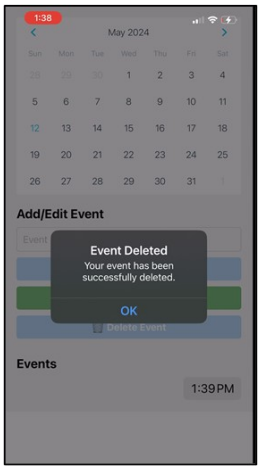


Figure 4.9: Display event deleted

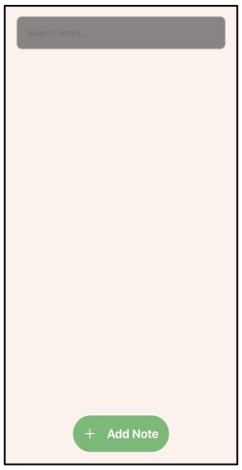


Figure 4.10: Notes screen

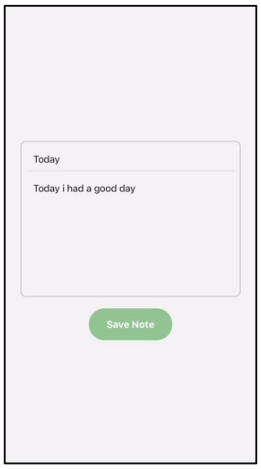


Figure 4.11: Add a note

Figure 4.12: Display added note

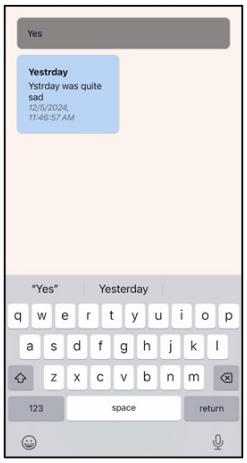


Figure 4.13: Searchbar

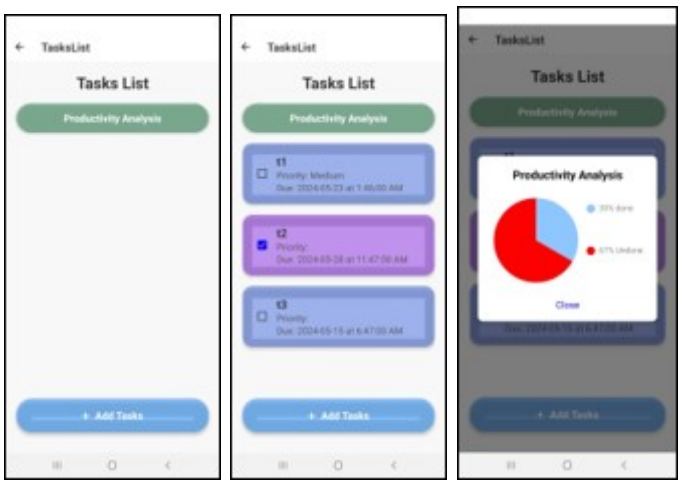


Figure 4.14: Task list

Figure 4.15: Adding a task

Figure 4.16: Deleting a task

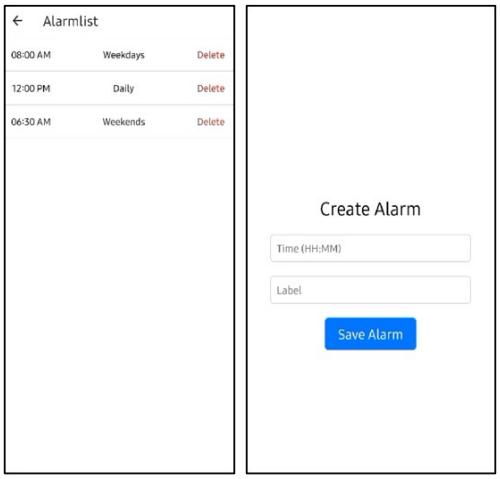


Figure 4.17: Alarm

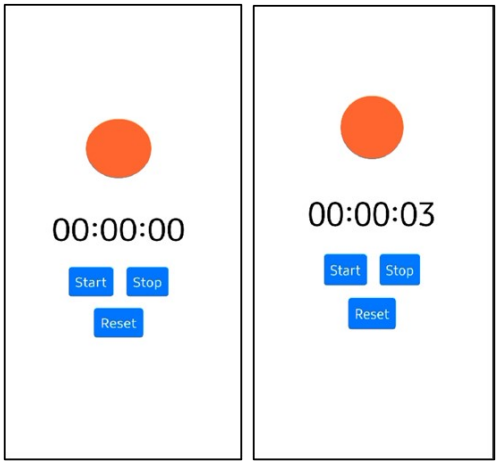


Figure 4.18: Stopwatch/Timer

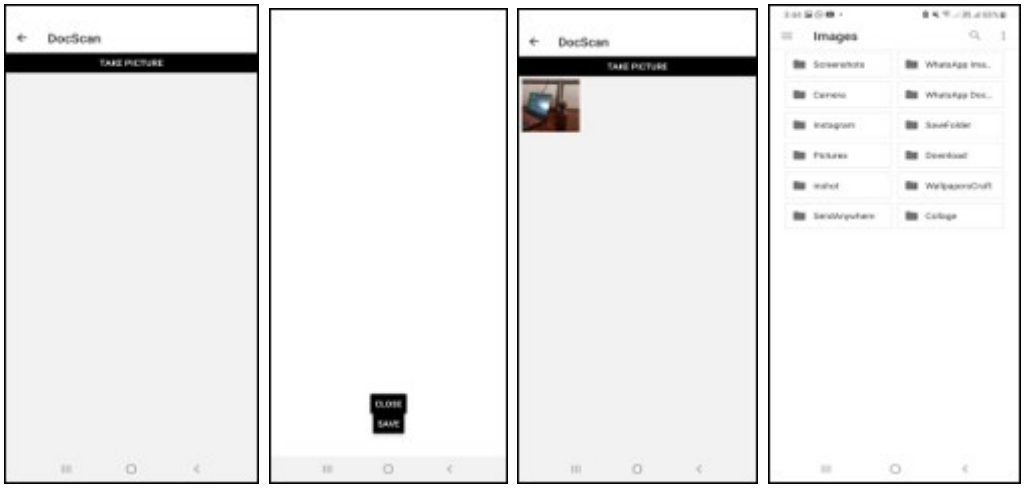


Figure 4.19: Image Scanner

4.3 Discussion

The SmartLife Planner App has yielded impressive results across its various components, embodying its mission to streamline and enhance users' daily lives. From the captivating splash screen to the seamless login/signup process, the application's design prioritizes user engagement and accessibility. The deviation, if any, from expected results may have arisen from the complexities inherent in integrating multifaceted features such as the task list with customizable priority settings or the image scanner functionality. However, the project team's commitment to iterative development and user-centric design likely facilitated the mitigation of such challenges, ensuring that the final product aligns closely with initial expectations. By offering a comprehensive suite of features, including calendar management, note-taking capabilities, and productivity analysis tools, the SmartLife Planner empowers users to optimize their time and resources efficiently. Overall, the project's outcomes underscore its commitment to enhancing users' daily routines and fostering productivity and organization in their lives.

Chapter 5

Conclusion

5.1 Conclusion

In conclusion, the development of SmartLife Planner marks a significant advancement in productivity and organization tools, offering users a seamless and efficient solution for managing their daily tasks and schedules. Through the integration of innovative features such as the intelligent voice assistant, powerful search bar, document scan functionality, and user-friendly interface, the application provides a holistic approach to task management and organization. Users can effortlessly plan their schedules, organize tasks, and digitize essential documents, promoting productivity and reducing the cognitive load associated with daily planning.

5.2 Future Scope

In the future, SmartLife Planner could expand its capabilities by incorporating features such as collaborative task management, allowing multiple users to collaborate on shared projects and tasks in real-time. Integration with third-party productivity tools and platforms could enhance interoperability and extend the application's usefulness to a broader user base. Additionally, incorporating machine learning algorithms for personalized task recommendations and predictive scheduling could further optimize user productivity. Exploring mobile device integrations, such as wearable technology or augmented reality, could offer innovative ways for users to interact with the application and manage their tasks seamlessly on-the-go. Finally, continuous user feedback and iteration would drive ongoing enhancements, ensuring that SmartLife Planner remains at the forefront of productivity and organization tools, evolving to meet the changing needs of its users.

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[4] https://youtu.be/8KWB6EnfljU?si=pjT9vw6oI5pv36vG

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[6] https://github.com/CodeCompleteYT/rea...

Appendix A: Presentation

SmartLife Planner

Name of the Guide
Ms Sherine Sebastian

Heinz Abraham Koshy
Juniot Mariyam Thomas
Maria Diya Fiju
Mathew Jagan Thomas

Contents

Introduction

- Our project operates within the realm of productivity and organization, catering to the dynamic needs of modern individuals.
- SmartLife Planner is an application designed to streamline tasks, events, and documents seamlessly.
- It serves as a digital assistant, aiding users in coordinating personal events, managing their documents/work projects and staying organized on the go.

Problem Definition

- In a fast-paced world, managing tasks efficiently is challenging, leading to decreased productivity. Despite various productivity tools available, their fragmented nature adds to user frustration.

- To address this, we aim to develop SmartLife Planner, integrating advanced features like an intelligent voice assistant, document scanning, task, calendar, and event management. This cohesive platform enhances productivity by seamlessly managing work projects, personal events, tasks, notes, alarms, and documents, simplifying users' daily lives.

Objectives

- Develop the user interface for SmartLife Planner, ensuring intuitive navigation and accessibility for users across various demographics.

- Implement advanced functionalities such as an intelligent voice assistant, powerful search capabilities, document scanning, and note taking alongside essential features such as a calendar, alarms, stopwatches, task and event management.

Scope and Relevance

Scope:

- SmartLife Planner aims to redefine and enhance user productivity and organization through its innovative features and user-friendly interface.
- SmartLife Planner enhances productivity with its intelligent voice assistant for hands-free planning, a powerful search bar for quick navigation, and a user-friendly interface.

Relevance:

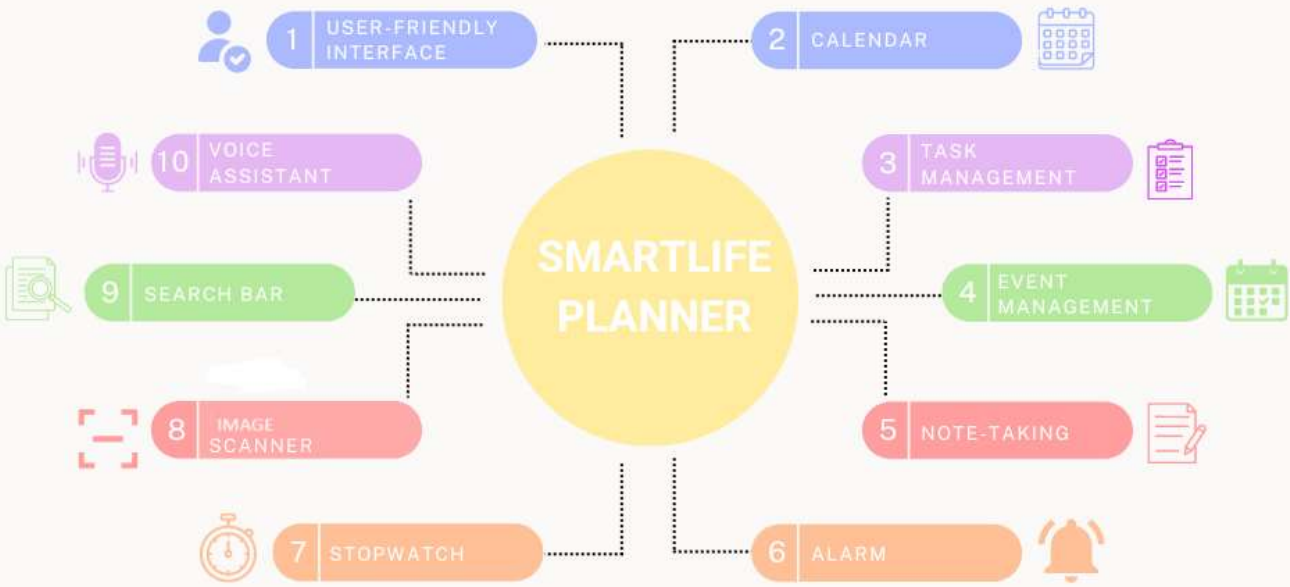
- SmartLife Planner caters to professionals and individuals seeking to optimize their workday and personal life by providing a comprehensive set of tools for efficient planning and organization.
- It offers promoting productivity and reducing stress.

Application/Usefulness:

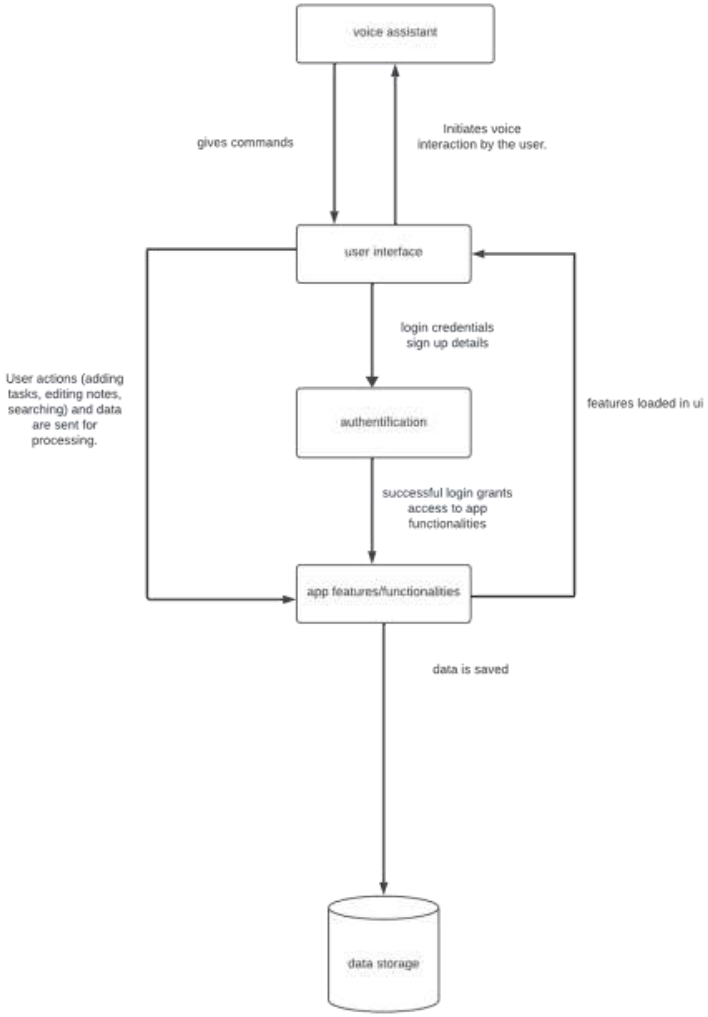
- Professionals: Professionals can optimize their workday by efficiently organizing schedules, tasks, and documents, thereby enhancing productivity and reducing time spent on administrative tasks.
- Individuals: Individuals striving for a more organized personal life can benefit from SmartLife Planner's features for managing daily tasks, events, and notes, leading to a more structured and stress-free lifestyle.

System Design

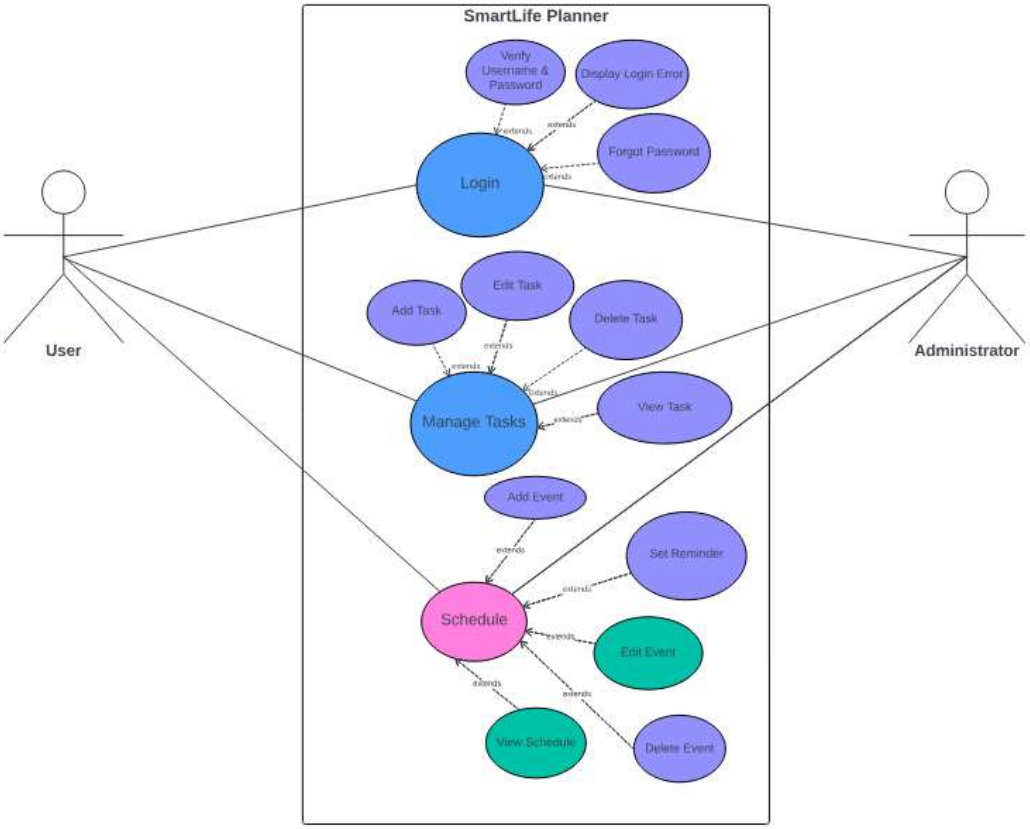
System Overview

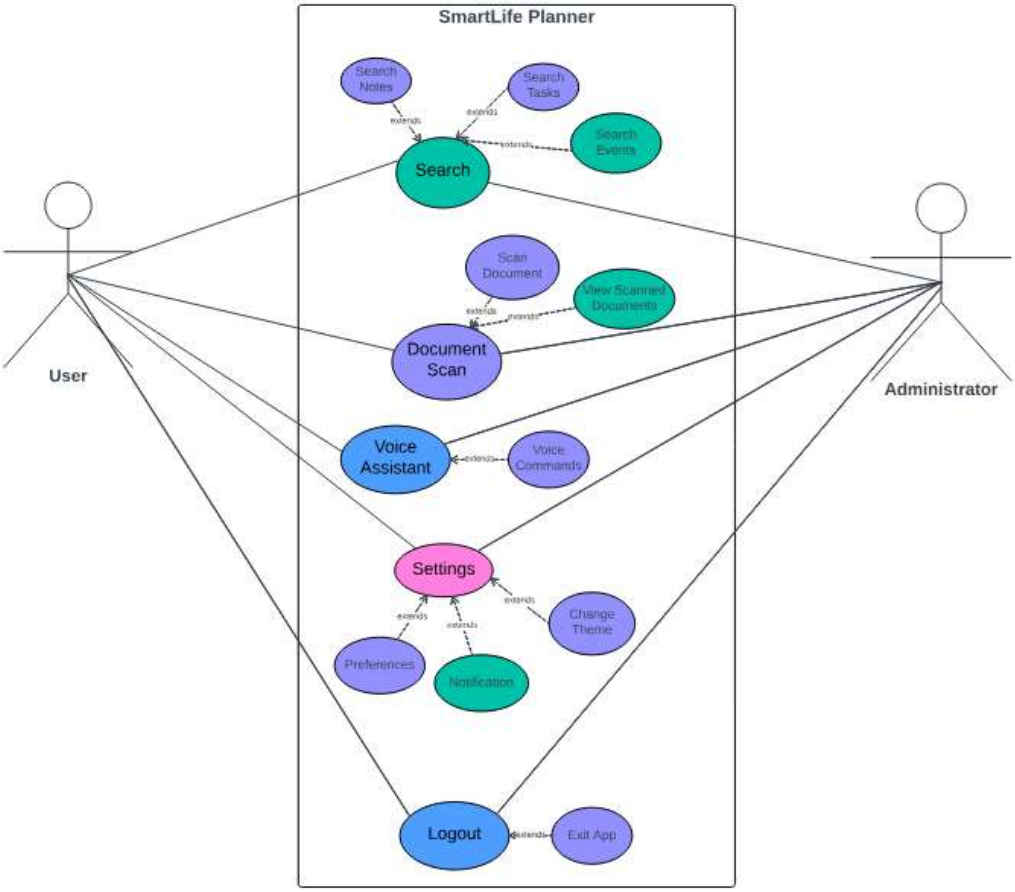

SMARTLIFE PLANNER
1 USER-FRIENDLY INTERFACE
2 CALENDAR
3 TASK MANAGEMENT
4 EVENT MANAGEMENT
5 NOTE-TAKING
6 ALARM
7 STOPWATCH
8 IMAGE SCANNER
9 SEARCH BAR
10 VOICE ASSISTANT

Architectural Design


voice assistant
gives commands
Initiates voice interaction by the user.
user interface
login credentials
sign up details
User actions (adding tasks, editing notes, searching) and data are sent for processing.
authentification
features loaded in ui
successful login grants access to app functionalities
app features/functionalities
data is saved
data storage

Design Model – Use Case Diagram


SmartLife Planner
Verify Username & Password
Display Login Error
Forgot Password
Login
Edit Task
Add Task
Delete Task
Manage Tasks
View Task
Add Event
Set Reminder
Schedule
Edit Event
View Schedule
Delete Event
User
Administrator


SmartLife Planner
Search Notes
Search Tasks
Search Events
Search
Scan Document
View Scanned Documents
Document Scan
Voice Assistant
Voice Commands
Settings
Change Theme
Preferences
Notification
Logout
Exit App
User
Administrator

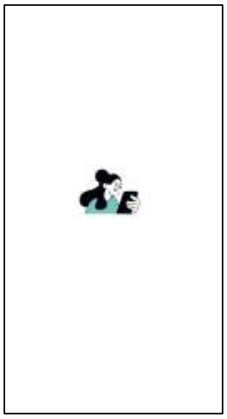
Work Division

Gantt Chart

Software/ Hardware Requirements

- **Software Requirements:**
  1. **Programming Languages**: JavaScript (ES6+)
  2. **Frontend Framework**: React Native
  3. **Backend Framework**: node.js
  4. **Database**: Asynchronous Storage,Expo File System
  5. **User Interface Design**: CSS, component libraries(Node package manager)
  6. **Development Tools**: Code Editor(VS code), Browser Developer Tools(React Native web)
  7. **Cross platform tool used**: Expo CLI
- **Hardware Requirements:**
  1. **Processor:** Intel Core i5 or higher
  2. **RAM:** 8GB or higher
  3. **Storage:** 256GB SSD or higher
  4. **Mobile OS:** Android or iOS

Results



Splash screen

Getstarted

Signup

Login

Home screen

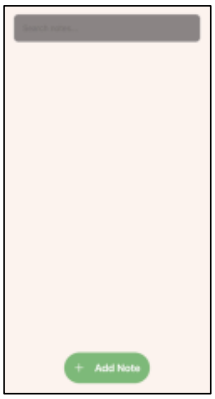
Calender with event

Event addition

Event added

Delete selected event

Event deleted



Notes screen

Add note

Added note

Added notes

Efficient searchbar

Task list

Task addition

Added tasks with priority of choice

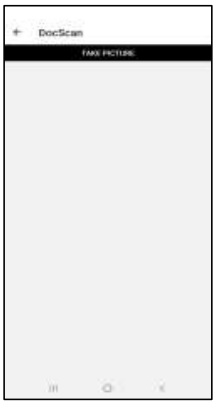
Productivity analysis

Delete task

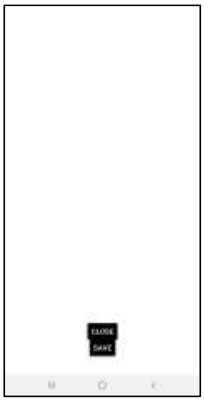
Alarm

Voice assistant(green mic)

Stopwatch/Timer



Take picture



Save or closed

Saved picture

Choose from files

Logout

Conclusion

- SmartLife Planner is a comprehensive mobile application designed to revolutionize productivity and organization.

Features:

- Seamlessly integrates an intelligent voice assistant, document scanning, and powerful search capabilities.
- Seamlessly integrates with users' calendar in the app allowing them to view and manage tasks, events, and appointments all in one place.

Future Enhancements

Collaborative Task Management: SmartLife Planner could evolve to support collaborative task management, enabling multiple users to work together on shared projects and tasks in real-time. This feature would enhance teamwork and productivity by providing a centralized platform for coordination and communication.

Integration with Third-Party Productivity Tools: Integrating with popular productivity tools and platforms would extend SmartLife Planner's usefulness to a broader audience. Seamless integration would allow users to leverage their existing tools while benefiting from SmartLife Planner's organizational capabilities, enhancing interoperability and user satisfaction.

Machine Learning for Personalized Recommendations: Incorporating machine learning algorithms could enable SmartLife Planner to provide personalized task recommendations and predictive scheduling. By analyzing user behavior and preferences, the application could offer tailored suggestions to optimize productivity and time management, enhancing the overall user experience.

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- https://youtu.be/MVsiihapHhw?si=uL8fKRXXzrHZW_Np
- https://youtu.be/8KWB6EnfljU?si=pjT9vw6oI5pv36vG

Appendix B: Vision, Mission, Programme Outcomes and Course Outcomes

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
RAJAGIRI SCHOOL OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)
RAJAGIRI VALLEY, KAKKANAD, KOCHI, 682039
(Affiliated to APJ Abdul Kalam Technological University)

Vision, Mission, Programme Outcomes and Course Outcomes

Institute Vision

To evolve into a premier technological institution, moulding eminent professionals with creative minds, innovative ideas and sound practical skill, and to shape a future where technology works for the enrichment of mankind.

Institute Mission

To impart state-of-the-art knowledge to individuals in various technological disciplines and to inculcate in them a high degree of social consciousness and human values, thereby enabling them to face the challenges of life with courage and conviction.

Department Vision

To become a centre of excellence in Computer Science and Engineering, moulding professionals catering to the research and professional needs of national and international organizations.

Department Mission

To inspire and nurture students, with up-to-date knowledge in Computer Science and Engineering, ethics, team spirit, leadership abilities, innovation and creativity to come out with solutions meeting societal needs.

Programme Outcomes (PO)

Engineering Graduates will be able to:

1. Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and Team work: Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.

10. Communication: Communicate effectively with the engineering community and with society at large. Be able to comprehend and write effective reports documentation. Make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team. Manage projects in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

Programme Specific Outcomes (PSO)

A graduate of the Computer Science and Engineering Program will demonstrate:

PSO1: Computer Science Specific Skills

The ability to identify, analyze and design solutions for complex engineering problems in multidisciplinary areas by understanding the core principles and concepts of computer science and thereby engage in national grand challenges.

PSO2: Programming and Software Development Skills

The ability to acquire programming efficiency by designing algorithms and applying standard practices in software project development to deliver quality software products meeting the demands of the industry.

PSO3: Professional Skills

The ability to apply the fundamentals of computer science in competitive research and to develop innovative products to meet the societal needs thereby evolving as an eminent researcher and entrepreneur.

Course Outcomes

After the completion of the course the student will be able to:

CO1:

Identify technically and economically feasible problems (Cognitive Knowledge Level: Apply)

CO2:
Identify and survey the relevant literature for getting exposed to related solutions and get familiarized with software development processes (Cognitive Knowledge Level: Apply)

CO3:
Perform requirement analysis, identify design methodologies and develop adaptable & reusable solutions of minimal complexity by using modern tools & advanced programming techniques (Cognitive Knowledge Level: Apply)

CO4:
Prepare technical report and deliver presentation (Cognitive Knowledge Level: Apply)

CO5:
Apply engineering and management principles to achieve the goal of the project (Cognitive Knowledge Level: Apply)

Appendix C: CO-PO-PSO Mapping

COURSE OUTCOMES:

After completion of the course the student will be able to

SL. NO	DESCRIPTION	Blooms' Taxonomy Level
CO1	Identify technically and economically feasible problems (Cognitive Knowledge Level: Apply)	Level 3: Apply
CO2	Identify and survey the relevant literature for getting exposed to related solutions and get familiarized with software development processes (Cognitive Knowledge Level: Apply)	Level 3: Apply
CO3	Perform requirement analysis, identify design methodologies and develop adaptable & reusable solutions of minimal complexity by using modern tools & advanced programming techniques (Cognitive Knowledge Level: Apply)	Level 3: Apply
CO4	Prepare technical report and deliver presentation (Cognitive Knowledge Level: Apply)	Level 3: Apply
CO5	Apply engineering and management principles to achieve the goal of the project (Cognitive Knowledge Level: Apply)	Level 3: Apply

CO-PO AND CO-PSO MAPPING

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO3
CO1	3	3	3	3		2	2	3	2	2	2	3	2	2	2
CO2	3	3	3	3	3	2		3	2	3	2	3	2	2	2
CO3	3	3	3	3	3	2	2	3	2	2	2	3			2
CO4	2	3	2	2	2			3	3	3	2	3	2	2	2
CO5	3	3	3	2	2	2	2	3	2		2	3	2	2	2

3/2/1: high/medium/low

JUSTIFICATIONS FOR CO-PO MAPPING

MAPPING	LOW/ MEDIUM/ HIGH	JUSTIFICATION
101003/CS622T.1-PO1	**HIGH**	Identify technically and economically feasible problems by applying the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
101003/CS622T.1-PO2	**HIGH**	Identify technically and economically feasible problems by analysing complex engineering problems reaching substantiated conclusions using first principles of mathematics.
101003/CS622T.1-PO3	**HIGH**	Design solutions for complex engineering problems by identifying technically and economically feasible problems.
101003/CS622T.1-PO4	**HIGH**	Identify technically and economically feasible problems by analysis and interpretation of data.
101003/CS622T.1-PO6	**MEDIUM**	Responsibilities relevant to the professional engineering practice by identifying the problem.
101003/CS622T.1-PO7	**MEDIUM**	Identify technically and economically feasible problems by understanding the impact of the professional engineering solutions.
101003/CS622T.1-PO8	**HIGH**	Apply ethical principles and commit to professional ethics to identify technically and economically feasible problems.
101003/CS622T.1-PO9	**MEDIUM**	Identify technically and economically feasible problems by working as a team.
101003/CS622T.1-PO10	**MEDIUM**	Communicate effectively with the engineering community by identifying technically and economically feasible problems.
101003/CS622T.1-P011	**MEDIUM**	Demonstrate knowledge and understanding of engineering and management principles by selecting the technically and economically feasible problems.
101003/CS622T.1-PO12	**HIGH**	Identify technically and economically feasible problems for long term learning.
101003/CS622T.1-PSO1	**MEDIUM**	Ability to identify, analyze and design solutions to identify technically and economically feasible problems.
101003/CS622T.1-PSO2	**MEDIUM**	By designing algorithms and applying standard practices in software project development and Identifying technically and economically feasible problems.
101003/CS622T.1-PSO3	**MEDIUM**	Fundamentals of computer science in competitive research can be applied to Identify technically and economically feasible problems.
101003/CS622T.2-PO1	**HIGH**	Identify and survey the relevant by applying the knowledge of mathematics, science, engineering fundamentals.

101003/CS622T.2-PO2	**HIGH**	Identify, formulate, review research literature, and analyze complex engineering problems get familiarized with software development processes.
101003/CS622T.2-PO3	**HIGH**	Design solutions for complex engineering problems and design based on the relevant literature.
101003/CS622T.2-PO4	**HIGH**	Use research-based knowledge including design of experiments based on relevant literature.
101003/CS622T.2-PO5	**HIGH**	Identify and survey the relevant literature for getting exposed to related solutions and get familiarized with software development processes by using modern tools.
101003/CS622T.2-PO6	**MEDIUM**	Create, select, and apply appropriate techniques, resources, by identifying and surveying the relevant literature.
101003/CS622T.2-PO8	**HIGH**	Apply ethical principles and commit to professional ethics based on the relevant literature.
101003/CS622T.2-PO9	**MEDIUM**	Identify and survey the relevant literature as a team.
101003/CS622T.2-PO10	**HIGH**	Identify and survey the relevant literature for a good communication to the engineering fraternity.
101003/CS622T.2-PO11	**MEDIUM**	Identify and survey the relevant literature to demonstrate knowledge and understanding of engineering and management principles.
101003/CS622T.2-PO12	**HIGH**	Identify and survey the relevant literature for independent and lifelong learning.
101003/CS622T.2-PSO1	**MEDIUM**	Design solutions for complex engineering problems by Identifying and survey the relevant literature.
101003/CS622T.2-PSO2	**MEDIUM**	Identify and survey the relevant literature for acquiring programming efficiency by designing algorithms and applying standard practices.
101003/CS622T.2-PSO3	**MEDIUM**	Identify and survey the relevant literature to apply the fundamentals of computer science in competitive research.
101003/CS622T.3-PO1	**HIGH**	Perform requirement analysis, identify design methodologies by using modern tools & advanced programming techniques and by applying the knowledge of mathematics, science, engineering fundamentals.
101003/CS622T.3-PO2	**HIGH**	Identify, formulate, review research literature for requirement analysis, identify design methodologies and develop adaptable & reusable solutions.

101003/CS622T.3-PO3	**HIGH**	Design solutions for complex engineering problems and perform requirement analysis, identify design methodologies.
101003/CS622T.3-PO4	**HIGH**	Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
101003/CS622T.3-PO5	**HIGH**	Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools.
101003/CS622T.3-PO6	**MEDIUM**	Perform requirement analysis, identify design methodologies and assess societal, health, safety, legal, and cultural issues.
101003/CS622T.3-PO7	**MEDIUM**	Understand the impact of the professional engineering solutions in societal and environmental contexts and Perform requirement analysis, identify design methodologies and develop adaptable & reusable solutions.
101003/CS622T.3-PO8	**HIGH**	Perform requirement analysis, identify design methodologies and develop adaptable & reusable solutions by applying ethical principles and commit to professional ethics.
101003/CS622T.3-PO9	**MEDIUM**	Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.
101003/CS622T.3-PO10	**MEDIUM**	Communicate effectively with the engineering community and with society at large to perform requirement analysis, identify design methodologies.
101003/CS622T.3-PO11	**MEDIUM**	Demonstrate knowledge and understanding of engineering requirement analysis by identifying design methodologies.
101003/CS622T.3-PO12	**HIGH**	Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change by analysis, identify design methodologies and develop adaptable & reusable solutions.
101003/CS622T.3-PSO3	**MEDIUM**	The ability to apply the fundamentals of computer science in competitive research and prior to that perform requirement analysis, identify design methodologies.
101003/CS622T.4-PO1	**MEDIUM**	Prepare technical report and deliver presentation by applying the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
101003/CS622T.4-PO2	**HIGH**	Identify, formulate, review research literature, and analyze complex engineering problems by preparing technical report and deliver presentation.

101003/CS622T.4-PO3	**MEDIUM**	Prepare Design solutions for complex engineering problems and create technical report and deliver presentation.
101003/CS622T.4-PO4	**MEDIUM**	Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions and prepare technical report and deliver presentation.
101003/CS622T.4-PO5	**MEDIUM**	Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools and Prepare technical report and deliver presentation.
101003/CS622T.4-PO8	**HIGH**	Prepare technical report and deliver presentation by applying ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
101003/CS622T.4-PO9	**HIGH**	Prepare technical report and deliver presentation effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.
101003/CS622T.4-PO10	**HIGH**	Communicate effectively with the engineering community and with society at large by prepare technical report and deliver presentation.
101003/CS622T.4-PO11	**MEDIUM**	Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work by prepare technical report and deliver presentation.
101003/CS622T.4-PO12	**HIGH**	Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change by prepare technical report and deliver presentation.
101003/CS622T.4-PSO1	**MEDIUM**	Prepare a technical report and deliver presentation to identify, analyze and design solutions for complex engineering problems in multidisciplinary areas.
101003/CS622T.4-PSO2	**MEDIUM**	To acquire programming efficiency by designing algorithms and applying standard practices in software project development and to prepare technical report and deliver presentation.
101003/CS622T.4-PSO3	**MEDIUM**	To apply the fundamentals of computer science in competitive research and to develop innovative products to meet the societal needs by preparing technical report and deliver presentation.
101003/CS622T.5-PO1	**HIGH**	Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
101003/CS622T.5-PO2	**HIGH**	Identify, formulate, review research literature, and analyze complex engineering problems by applying engineering and management principles to achieve the goal of the project.

101003/CS622T.5-PO3	**HIGH**	Apply engineering and management principles to achieve the goal of the project and to design solutions for complex engineering problems and design system components or processes that meet the specified needs.
101003/CS622T.5-PO4	**MEDIUM**	Apply engineering and management principles to achieve the goal of the project and use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
101003/CS622T.5-PO5	**MEDIUM**	Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools and to apply engineering and management principles to achieve the goal of the project.
101003/CS622T.5-PO6	**MEDIUM**	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities by applying engineering and management principles to achieve the goal of the project.
101003/CS622T.5-PO7	**MEDIUM**	Understand the impact of the professional engineering solutions in societal and environmental contexts, and apply engineering and management principles to achieve the goal of the project.
101003/CS622T.5-PO8	**HIGH**	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice and to use the engineering and management principles to achieve the goal of the project.
101003/CS622T.5-PO9	**MEDIUM**	Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings and to apply engineering and management principles to achieve the goal of the project.
101003/CS622T.5-PO11	**MEDIUM**	Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team. Manage projects in multidisciplinary environments and to apply engineering and management principles to achieve the goal of the project.
101003/CS622T.5-PO12	**HIGH**	Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change and to apply engineering and management principles to achieve the goal of the project.
101003/CS622T.5-PSO1	**MEDIUM**	The ability to identify, analyze and design solutions for complex engineering problems in multidisciplinary areas. Apply engineering and management principles to achieve the goal of the project.

101003/CS622T.5-PSO2	**MEDIUM**	The ability to acquire programming efficiency by designing algorithms and applying standard practices in software project development to deliver quality software products meeting the demands of the industry and to apply engineering and management principles to achieve the goal of the project.
101003/CS622T.5-PSO3	**MEDIUM**	The ability to apply the fundamentals of computer science in competitive research and to develop innovative products to meet the societal needs thereby evolving as an eminent researcher and entrepreneur and apply engineering and management principles to achieve the goal of the project.