

SOULSCRIBBLE – NOTES APP

A MINI PROJECT REPORT

Submitted by

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In partial fulfilment for the course

CS19611 – MOBILE APPLICATION DEVELOPMENT LABORATORY

Of the degree of

BACHELOR OF ENGINEERING

In

COMPUTER SCIENCE AND ENGINEERING



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MAY 2025

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BONAFIDE CERTIFICATE

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ACKNOWLEDGEMENT

Initially we thank the Almighty for being with us through every walk of our life and showering his blessings through the endeavour to put forth this report. Our sincere thanks to our Chairman **Mr. S.Meganathan, B.E, F.I.E.,** our Vice Chairman **Mr. Abhay Meganathan, B.E., M.S.,** and our respected Chairperson **Dr. (Mrs.) Thangam Meganathan, Ph.D.,** for providing us with the requisite infrastructure and sincere endeavouring in educating us in their premier institution.

Our sincere thanks to **Dr. S.N.Murugesan, M.E., Ph.D.,** our beloved Principal for his kind support and facilities provided to complete our work in time. We express our sincere thanks to **Dr. P.Kumar, M.E., Ph.D.,** Professor and Head of the Department of Computer Science and Engineering for his guidance and encouragement throughout the project work. We convey our sincere and deepest gratitude to our Project coordinator, **Mr.N.DURAI MURUGAN, M.Tech.,Ph.D.,** Professor, Department of Computer Science and Engineering, Rajalakshmi Engineering College for their valuable guidance throughout the course of the project.

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ABSTRACT

The Notes App developed in Kotlin using Android Studio is a modern and efficient tool for managing digital notes. Designed with both simplicity and functionality in mind, the app allows users to create, edit, update, and delete notes with ease. It also offers advanced features such as note locking for privacy and note pinning for prioritization. These functionalities help users keep their content secure and ensure that important notes are always easily accessible.

A key feature of the app is the calendar view, which enables users to view and organize notes based on their creation dates. This allows for better navigation and management of notes over time. Each note also includes a timestamp showing the exact date and time of creation, helping users keep track of when specific notes were written or updated.

The built-in search feature allows users to quickly locate notes by typing relevant keywords, significantly improving efficiency, especially when dealing with a large number of notes. Furthermore, the app includes a PDF export option, enabling users to convert their notes into PDF format and share them through WhatsApp, email, or other messaging platforms. This enhances usability and makes the app suitable for both personal and professional purposes.

The user interface is clean, intuitive, and responsive, making it easy for users of all ages to navigate and operate the app. Special attention has been given to visual elements and user experience to ensure a smooth interaction throughout.

Overall, the Notes App provides a complete solution for note-taking with strong emphasis on organization, privacy, and sharing. It is an ideal companion for students, professionals, and anyone who needs a secure and efficient way to manage their thoughts, reminders, and important information on their mobile device.

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LIST OF ABBREVIATIONS

ABBREVIATIONS	EXPANSION
MVVM	Model-View-ViewModel
UI	User Interface
OS	Operating System
CRUD	Create, Read, Update, Delete
SDK	Software Development Kit
IDE	Integrated Development Environment
API	Application Programming Interface
APK	Android Package Kit

CHAPTER 1

1. INTRODUCTION

1.1 GENERAL

In today's digital age, the ability to capture and organize information quickly and efficiently has become a necessity for individuals from all walks of life. Whether it's a student noting down lecture points, a professional managing daily tasks, or an individual recording personal thoughts or reminders, having an effective note-taking system is crucial. Traditional methods such as pen-and-paper diaries or notebooks, while still in use, often fall short when it comes to accessibility, security, and long-term organization. They can be misplaced, damaged, or become cumbersome when handling large volumes of content.

As the use of smartphones has become nearly universal, mobile applications have become the preferred platform for managing day-to-day activities, including note-taking. The convenience of digital notes — accessible anytime, easily editable, searchable, and shareable — has significantly transformed how users store and manage their information. Moreover, digital note-taking applications can incorporate advanced functionalities such as data encryption, cloud syncing, multimedia integration, and real-time notifications, making them far superior to traditional methods in terms of efficiency and versatility.

The development of Android applications using Kotlin — a modern, expressive, and officially supported language for Android — has opened up new possibilities for creating clean, efficient, and user-friendly apps. Taking advantage of Kotlin and Android Studio, this Notes App project has been designed to offer users a powerful and intuitive platform to manage their notes effectively.

This application goes beyond basic note-taking. It allows users to create, update, edit, and delete notes while offering several advanced features to enhance usability. Notably, users can **lock** sensitive notes with a **PIN** to protect private information, **pin** important notes to the top for quick access, and view notes based on their **creation date** using an integrated **calendar view**. Each note includes a **timestamp** to help track when it was created or modified, adding an organizational layer for better information management.

The app also includes a **search functionality** that allows users to quickly locate notes using keywords — an essential feature for users who manage a large number of notes. One of the standout features of this app is the **PDF export and sharing capability**, enabling users to share notes in a standardized format via platforms like WhatsApp, email, and cloud services.

With its modern UI and robust features, this Notes App serves as a comprehensive digital organizer tailored for users who seek productivity, security, and ease of access in their note-taking experience.

1.2 OBJECTIVE

The primary objective of this Notes App project is to develop a robust, user-friendly, and secure digital note-taking solution using **Kotlin** in **Android Studio**. As the need for organized digital information management continues to grow, especially on mobile platforms, the application aims to provide a comprehensive set of features that go beyond basic note-taking functionalities. The goal is to design an app that caters to the practical needs of users while also offering enhanced usability, privacy, and flexibility.

One of the main objectives is to allow users to **create, edit, update, and delete notes** in an intuitive and efficient manner. The app ensures a seamless writing

and editing experience by implementing smooth UI interactions, real-time updates, and responsive layout design.

Another critical goal is to **enhance privacy**. In today's digital environment, many users store sensitive or personal information in notes — from passwords and personal thoughts to confidential plans. To address this concern, the app incorporates a **note locking feature** that enables users to set a **PIN** for selected notes. This ensures that private notes remain inaccessible to unauthorized users, enhancing user trust and data security.

The application also includes the ability to **pin important notes**, which ensures that frequently accessed or high-priority notes always remain at the top of the list. This boosts productivity by minimizing the time users spend searching for essential information.

An important organizational feature integrated into the app is the **calendar view**, which allows users to sort and view notes based on their **creation date**. This feature supports users in managing their notes chronologically and retrieving them based on a specific day. To complement this, every note displays its **timestamp**, which provides context for when a note was written or last updated.

In terms of navigation and access, the app also includes a **search bar** functionality. This allows users to quickly search and find specific notes using keywords, especially helpful when handling a large volume of data.

To facilitate content sharing, the app provides the option to **export notes as PDF files**, which can then be shared via **WhatsApp, Gmail, and other platforms**. This makes the app suitable not only for personal use but also for professional or academic sharing needs.

Ultimately, the objective of the Notes App is to provide a **complete, secure, and modern note management solution** that balances simplicity with powerful features. It is designed for users who value efficiency, security, and organization in their digital lifestyles.

1.3 EXISTING SYSTEM

In the current digital landscape, there are numerous note-taking applications available on both Android and iOS platforms. Popular apps such as **Google Keep**, **Microsoft OneNote**, **Evernote**, and **Samsung Notes** dominate the market. These applications offer a range of features from simple text-based note-taking to advanced multimedia and cloud-sync capabilities. However, despite their popularity and wide usage, these systems still exhibit several limitations when it comes to user privacy, accessibility, offline capabilities, and streamlined usability for basic note management.

Google Keep, for example, offers color-coded notes, reminders, and synchronization with Google Drive. While it provides a clean and lightweight interface, it lacks **individual note-level security**. Any note stored in Google Keep can be accessed by anyone with access to the device, which is a serious limitation for users who store sensitive or personal information. Similarly, **Microsoft OneNote** is powerful and rich in features, including multimedia integration and collaboration tools, but it often feels bloated for users seeking a lightweight, fast, and offline-capable solution. Its heavy interface and cloud dependency can hinder usability, especially for users with limited internet access.

Most existing apps also **lack built-in PDF export** functionalities. While some allow exporting through cloud services or external formats, the process is often unintuitive or locked behind premium versions. Users looking to convert their

notes into PDFs for sharing through WhatsApp, email, or printing may find this process unnecessarily complex.

In terms of **organization**, many applications do not offer a **calendar view** for notes, which can be very helpful in locating notes based on the date they were created. Without such features, users are forced to scroll through long lists or rely heavily on search bars to retrieve older notes. Also, **note timestamping**—though supported in some apps—is not always prominently displayed or used effectively to assist in sorting or filtering.

Another significant drawback in many existing systems is the **lack of personalized features**, such as **pinning important notes** to the top of the list. While some apps provide folders or labels, they do not offer visual prioritization for frequently used notes. Additionally, many note apps require **account sign-in or internet access**, making them unusable in offline scenarios or for users who prefer local data storage for privacy reasons.

Overall, while the existing systems provide a base-level note-taking experience, they often fall short when it comes to **privacy, flexibility, offline support, and ease of use**. This creates a demand for a lightweight yet feature-rich application that focuses on **security, local storage, intuitive UI, and enhanced productivity tools**—needs that the proposed Notes App aims to fulfill.

1.4 PROPOSED SYSTEM

The proposed system is a **Kotlin-based Notes App** developed in **Android Studio**, designed to overcome the limitations of existing note-taking applications by offering a secure, efficient, and user-friendly solution tailored to the modern needs of mobile users. This system focuses on delivering essential note management features along with additional functionality that enhances productivity, privacy, and usability—all while maintaining simplicity and speed.

At the core of the proposed app is the ability to **add, edit, update, and delete notes** quickly through a clean and responsive user interface. Unlike many existing apps that require sign-in or internet access, this application is designed to work **fully offline**, with data stored locally on the user's device, ensuring privacy and constant availability.

One of the standout features of this system is the **Note Locking Mechanism**. Users can choose to lock specific notes using a **PIN-based security system**, preventing unauthorized access to sensitive or personal content. This is especially useful for storing confidential information such as passwords, personal thoughts, financial data, or private reminders.

The app also introduces the ability to **Pin Notes**, allowing important notes to remain at the top of the list for quick access. This simple yet effective feature helps users prioritize critical tasks or frequently referenced content without having to search or scroll repeatedly.

To further support organization, the app includes a **Calendar View** that displays notes based on the date they were created. Users can simply select a date to view all notes associated with it, enabling chronological sorting and better time-based navigation. Additionally, each note includes an automatically generated **timestamp**, indicating when it was created or last modified.

The system also features an intelligent **Search Function**, allowing users to retrieve notes using keywords instantly. This is particularly helpful for users who manage a large number of notes and need a fast way to locate specific entries.

A key enhancement in the proposed system is the **Export as PDF** feature. Users can convert any note into a **PDF file** and share it directly through **WhatsApp, Gmail, or any other sharing platform**. This makes the app not only suitable for

personal use but also for professional environments where formal sharing of notes is necessary.

With a focus on **modern UI/UX design**, the app maintains an elegant and minimal interface that adapts well across various screen sizes. The proposed system ensures that users of all levels—students, professionals, or casual users—can efficiently manage their notes in a secure and structured manner.

CHAPTER 2

2. LITERATURE SURVEY

2.1 GENERAL

With the increasing adoption of smartphones, mobile applications have become integral to everyday life, offering solutions for communication, productivity, education, and organization. Among these, **note-taking applications** have emerged as essential tools for users who need to record, manage, and retrieve information quickly and securely. The evolution from traditional paper-based notes to digital notes has enabled features like real-time editing, cloud backup, offline access, advanced search, and integration with other digital services.

The success of a notes app depends not just on its ability to store text, but on how it supports **organization**, **security**, and **usability**. Furthermore, with the rise of modern Android development, **Kotlin** has become the preferred language for developing intuitive, robust, and efficient mobile applications. The literature in this domain highlights the growing demand for apps that offer privacy-focused features, smooth user interfaces, export options, and intelligent organization tools.

1. Digital Note-Taking Behaviour

A study of user behaviour in note-taking apps revealed that users prefer minimalistic designs with high performance and essential features such as tagging, search, and export [1]. Security was a major concern, especially for users storing personal data.

2. Security and Data Privacy in Notes Apps

Research emphasized that many existing apps lack adequate security measures like password or PIN protection for individual notes. Apps with granular-level security mechanisms significantly improve user trust and adoption [2].

3. Mobile App Development Using Kotlin

Kotlin's concise syntax, null safety, and full Android compatibility make it ideal for building stable, maintainable applications. Developers reported reduced bugs and faster development cycles using Kotlin over Java [3].

4. UI/UX in Productivity Apps

User satisfaction is highly dependent on interface design. A clean, responsive UI that avoids clutter is more likely to retain users. Calendar views and colour coding enhance navigability and note retrieval [4].

5. Integration of Calendar-Based Sorting

Integrating calendar views helps users manage notes chronologically. This is especially useful in apps designed for daily task logging or journal-style entries [5].

6. Keyword-Based Search in Mobile Apps

Studies on content-heavy apps show that efficient keyword-based search functions significantly improve user experience. Indexed searching enables fast retrieval even with large note databases [6].

7. Offline Access and Local Storage

Users in areas with limited internet connectivity prefer apps that function entirely offline. Local storage not only ensures data privacy but also offers continuous access [7].

8. Export to PDF in Note Applications

Export features, particularly in PDF format, are essential for professionals and students who need to print or share formatted notes. Apps that offer built-in export options are considered more flexible [8].

9. Lightweight Apps for Better Performance

Literature shows that users prefer lightweight applications that do not consume excessive memory or require mandatory cloud sync or logins [9]. Performance optimization is critical for user retention.

10. Multi-Platform Sharing Features

Applications that support sharing notes via WhatsApp, email, and cloud services provide added value. These features make note apps more versatile in academic and professional environments [10].

CHAPTER 3

3. SYSTEM DESIGN

3.1 GENERAL

The Notes App is developed with a focus on simplicity, security, and performance, using modern mobile development standards. The system is built using **Android Studio** and the **Kotlin** programming language, which offers a more concise and safer alternative to Java. The app architecture follows the **MVVM (Model-View-ViewModel)** pattern, which helps separate the data layer, UI components, and application logic. This design choice improves maintainability, scalability, and testability of the codebase.

To handle data storage efficiently, the app uses the **Room Database**, an abstraction layer over SQLite. This allows for smooth local storage and retrieval of notes, including metadata such as timestamps, lock status, and pinned state. Since the app is designed with an **offline-first approach**, users can access and manage their notes without requiring an internet connection, which enhances both **data privacy** and **usability in low-connectivity environments**.

The **user interface** is designed using XML layouts, based on **Google's Material Design** guidelines to ensure a clean, intuitive, and responsive user experience. The interface incorporates components like RecyclerView for listing notes, Calendar View for date-based filtering, and Search View for quick keyword-based access. The **PIN lock system** adds an extra layer of privacy by allowing users to secure individual notes, without needing cloud accounts or external authentication.

The app lets users export notes as PDFs and share them via WhatsApp, Gmail, and more. It offers smooth performance with a lightweight, secure, and user-friendly design.

3.1.1 SYSTEM FLOW DIAGRAM

Fig 3.1.1 represents a system flow diagram that illustrates the core functionality of the Notes App. When the user launches the app, they access the main screen, which provides access to features like viewing the note list, searching by keywords, or using the calendar view to filter notes by date. Users can create, edit, delete, or pin/unpin notes, all of which are stored in a local database with metadata like timestamps, lock status, and creation date.

For privacy, notes can be locked, requiring authentication via PIN or biometrics. Users can also export notes to PDF format and share them through platforms like WhatsApp or email. The database plays a central role in managing note data and supports synchronization across various features like search, calendar filtering, and PDF export.

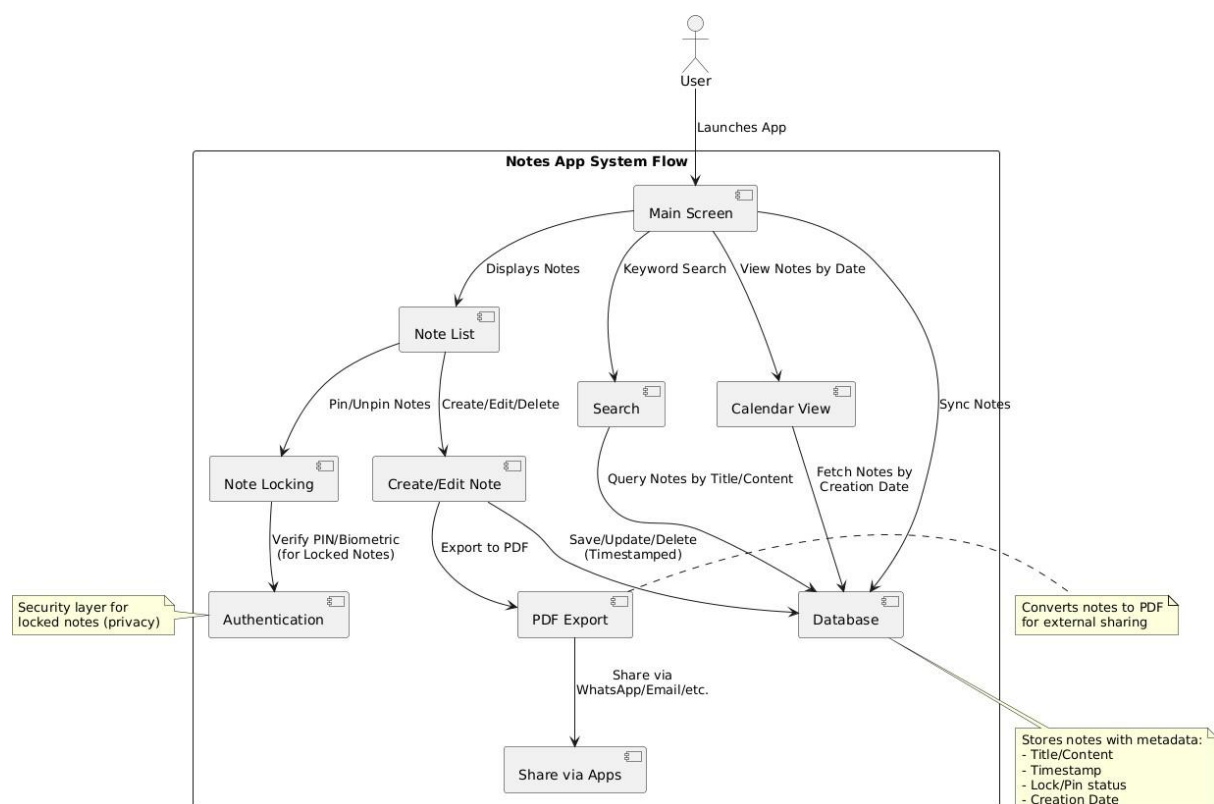


Fig 3.1.1 System Flow Diagram

3.1.2 ARCHITECTURE DIAGRAM

Fig 3.1.2 represents an architecture diagram of the Notes App follows a layered structure integrating the **UI Layer**, **Business Logic Layer**, **Services**, and **Core Features**. The UI layer includes screens such as the Notes List, Detail View, Calendar, and Search Interface. These components interact with the **Note Repository**, which bridges the UI and business logic by managing requests and responses.

The **Note Manager** in the logic layer coordinates with services like **Security**, **Search**, **PDF Export**, and the **Local Database** to perform operations such as saving, querying, and exporting notes. Core features—such as **CRUD operations**, **note locking**, **pinning**, **calendar integration**, **search**, and **PDF generation**—are implemented through dedicated modules.

The system also interacts with **Android OS components** like the file system, notification system, and app permissions. Finally, **external systems** such as WhatsApp, email clients, and messaging platforms are used for sharing notes exported as PDFs.

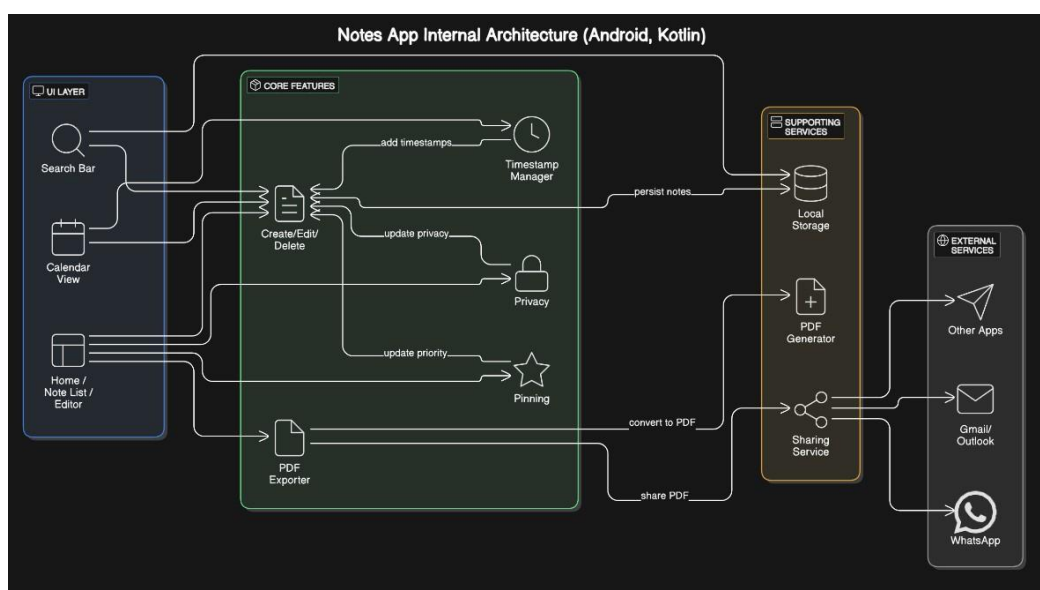


Fig 3.1.2 Architecture Diagram

3.1.3 USE CASE DIAGRAM

Fig 3.1.3 represents use case diagram illustrates how a **mobile user** interacts with the core functionalities of the Notes App. The user can create, edit, update, delete, and pin/unpin notes, as well as view them by timestamp or via a calendar. Key features include **searching notes**, **locking/unlocking sensitive notes** using **PIN or biometric authentication**, and **exporting notes as PDF files**. After exporting, users can **share** notes through external apps like **WhatsApp or Email**. The diagram emphasizes privacy, with authentication included in the lock/unlock process, and highlights workflows for **data security**, **date-based navigation**, and **external sharing**.

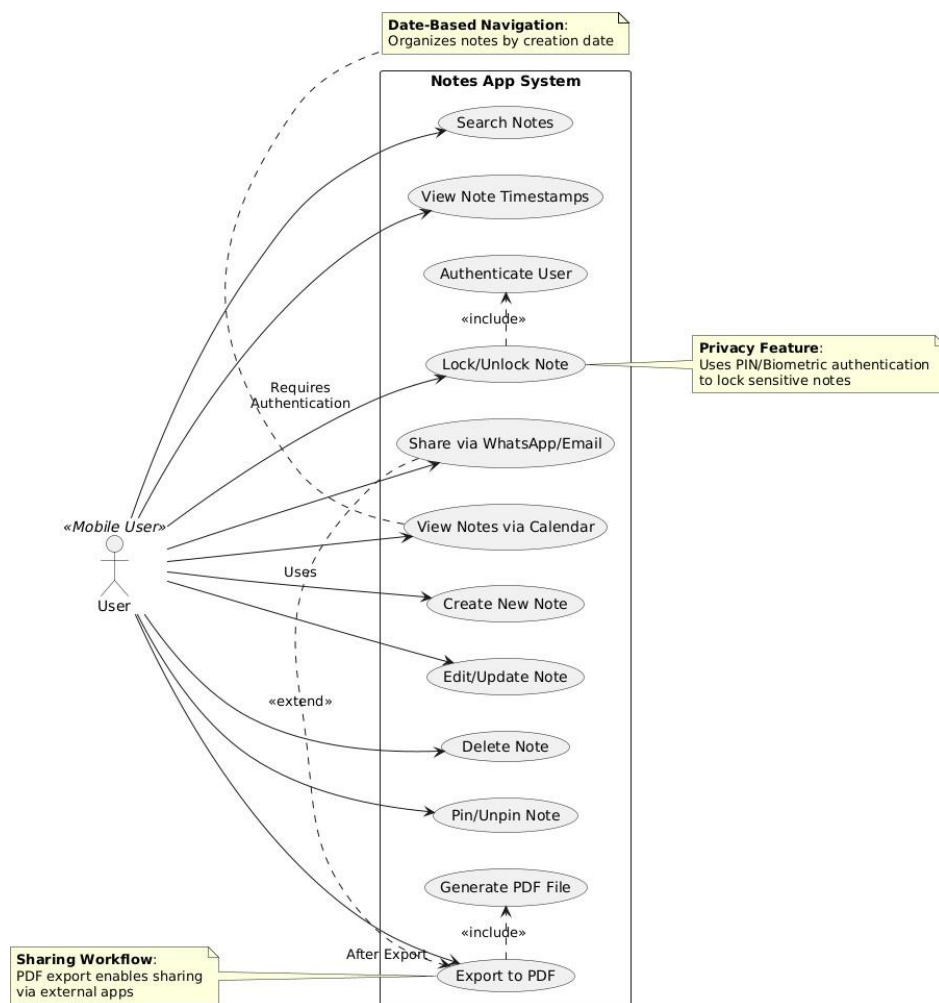


Fig 3.1.3 Use Case Diagram

CHAPTER 4

4. PROJECT DESCRIPTION

The **Notes App** is a secure and user-friendly Android application developed in **Kotlin** using **Android Studio**, designed to help users manage personal notes efficiently. It allows users to create, edit, delete, pin, and search notes, all stored locally for full offline access. A key highlight is its **note-locking feature** using **PIN or biometric authentication**, ensuring privacy for sensitive content. Additional features include **calendar-based note viewing**, **timestamp tracking**, and the ability to **export notes as PDFs** for sharing via platforms like WhatsApp and Email. With a clean, modern interface and lightweight design, the app is ideal for students, professionals, and anyone needing a reliable note-taking tool.

4.1 METHODOLOGIES

The development of the Notes App followed a **structured and modular approach**, combining best practices from mobile application development and software engineering. The methodology includes stages such as requirement analysis, system design, development, testing, and deployment.

1. Requirement Analysis

The first step involved gathering and analysing the needs of users who require a lightweight, secure, and functional note-taking app. Key requirements identified were: note creation and editing, offline storage, note locking with PIN, search, calendar-based filtering, PDF export, and sharing capabilities.

2. Technology Selection

- **Programming Language:** Kotlin, due to its modern syntax and compatibility with Android.

- **IDE:** Android Studio, the official IDE for Android development.
- **Database:** Room Database for efficient local storage and offline access.
- **UI Design:** Material Design components were chosen to ensure a clean and intuitive user experience.

3. System Architecture

The app is built using the **MVVM (Model-View-ViewModel)** architecture, separating data handling, business logic, and UI elements. This ensures better code organization, testability, and easier maintenance.

4. Feature Implementation

- **Note CRUD operations** (Create, Read, Update, and Delete) were implemented with proper validation.
- **Note Locking** uses PIN or biometric authentication for securing individual notes.
- **Search Function** uses keyword matching to filter notes by title/content.
- **Calendar View** organizes notes by creation date.
- **PDF Export** uses Android's PdfDocument API.
- **Sharing Feature** uses Android's Intent system for exporting notes to platforms like WhatsApp or Gmail.

5. Testing and Validation

The app was tested on various Android devices and emulators to ensure compatibility, performance, and smooth functionality. Unit testing was done for ViewModels and data handling components, while UI tests validated user interactions.

6. Deployment

Once all functionalities were validated, the app was prepared for deployment. APK builds were generated for testing on real devices. The app is optimized for offline use, eliminating the need for login or cloud sync.

4.1.1 MODULES

1. User Interface Module

This module handles the visual components and layout of the application using XML and Material Design principles. It includes the home screen (note list), add/edit note screens, calendar view, search bar, and dialogs for PIN entry and confirmations.

2. Note Management Module

This is the core functionality module that allows users to **create, read, update, and delete (CRUD)** notes. It interacts with the Room Database to perform these operations and updates the UI accordingly.

3. Pin & Lock Module

This module allows users to **pin important notes** and **lock sensitive notes** using a 4-digit **PIN**. Locked notes are hidden until unlocked, ensuring data privacy.

4. Calendar View Module

It provides a **date-based filtering** system where users can select a date to view notes created on that specific day. This module integrates the calendar with the Room Database to fetch and display relevant entries.

5. Search Module

Enables **real-time search** through the note list using keywords in titles or content. This improves usability, especially for users with large numbers of notes.

6. Export & Sharing Module

Handles the **conversion of notes to PDF** using Android's PdfDocument API and supports **sharing** through platforms like WhatsApp, Gmail, and others using Android Intents.

7. Local Database Module

Implements **Room Database** for storing all note-related data, including content, creation date, pinned/locked status, and timestamps. Ensures full **offline access** with fast data retrieval.

8. Security Module

Manages **PIN setup, verification**, and secure access to locked notes. It ensures only authenticated users can access protected content, enhancing privacy without requiring cloud login.

CHAPTER 5

5. CONCLUSION

5.1 GENERAL

The Notes App, developed using Kotlin in Android Studio, offers a reliable, secure, and user-friendly solution for managing personal and professional notes. It includes essential features such as creating, editing, deleting, pinning, and locking notes. All data is stored locally using Room Database, enabling full offline access while ensuring data privacy. Users can view notes based on creation dates using the calendar view, search notes by keywords, and export them as PDFs for easy sharing via platforms like WhatsApp and Gmail.

A key strength of the app is its emphasis on **security and simplicity**. With PIN-based locking for sensitive notes, users can protect private content without relying on cloud storage or account logins. The user interface follows Material Design principles, offering a clean, responsive, and intuitive experience.

While the current version meets core note-taking needs, the app has room for future enhancement. Planned features include **biometric authentication** (fingerprint or facial recognition) for faster secure access, **cloud synchronization** for cross-device access, and **voice-to-text** input for faster note creation. Additional improvements like **note categories**, **colour labels**, and **reminder notifications** can further enhance usability.

In conclusion, the Notes App serves as a strong foundation for digital note management. With future upgrades, it can evolve into a more powerful productivity tool for modern mobile users.

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APPENDICES

APPENDIX A: Source Code Snippets

1. Add Note Function

```
package com.example.thenotesapp.fragments

import android.os.Bundle

import android.view.*

import android.widget.Toast

import androidx.core.view.MenuHost

import androidx.core.view.MenuProvider

import androidx.fragment.app.Fragment

import androidx.lifecycle.Lifecycle

import androidx.navigation.findNavController

import com.example.thenotesapp.MainActivity

import com.example.thenotesapp.R

import com.example.thenotesapp.databinding.FragmentAddNoteBinding

import com.example.thenotesapp.model.Note

import com.example.thenotesapp.viewmodel.NoteViewModel

class AddNoteFragment : Fragment(R.layout.fragment_add_note), MenuProvider {

    private var addNoteBinding: FragmentAddNoteBinding? = null

    private val binding get() = addNoteBinding!!

    private lateinit var notesViewModel: NoteViewModel
```

```

override fun onCreateView(
    inflater: LayoutInflater, container: ViewGroup?,
    savedInstanceState: Bundle?
): View {
    addNoteBinding = FragmentAddNoteBinding.inflate(inflater, container, false)
    return binding.root
}

override fun onViewCreated(view: View, savedInstanceState: Bundle?) {
    super.onViewCreated(view, savedInstanceState)

    val menuHost: MenuHost = requireActivity()
    menuHost.addMenuProvider(this, viewLifecycleOwner, Lifecycle.State.RESUMED)

    notesViewModel = (activity as MainActivity).noteViewModel

    // 🖱 Show/Hide PIN input based on Lock checkbox
    binding.lockCheckBox.setOnCheckedChangeListener { _, isChecked ->
        binding.pinEditText.visibility = if (isChecked) View.VISIBLE else View.GONE
    }
}

private fun saveNote() {

```

```

val noteTitle = binding.addNoteTitle.text?.toString()?.trim() ?: ""

val noteDesc = binding.addNoteDesc.text?.toString()?.trim() ?: ""


val isPinned = binding.pinCheckBox.isChecked

val isLocked = binding.lockCheckBox.isChecked

val pinCode = if (isLocked) binding.pinEditText.text?.toString()?.trim() else null


if (noteTitle.isEmpty()) {

    Toast.makeText(requireContext(), "Please enter note title",
Toast.LENGTH_SHORT).show()

    return

}


if (isLocked && pinCode.isNullOrEmpty()) {

    Toast.makeText(requireContext(), "Please set a PIN for locked note",
Toast.LENGTH_SHORT).show()

    return

}


val note = Note(

    noteTitle = noteTitle,

    noteDesc = noteDesc,

    isPinned = isPinned,

    isLocked = isLocked,

    pinCode = pinCode

```

)

```
notesViewModel.addNote(note)
```

```
Toast.makeText(requireContext(), "Note Saved", Toast.LENGTH_SHORT).show()
```

```
requireView().findNavController().popBackStack(R.id.homeFragment, false)
```

```
}
```

```
override fun onCreateMenu(menu: Menu, menuInflater: MenuInflater) {
```

```
    menu.clear()
```

```
    menuInflater.inflate(R.menu.menu_add_note, menu)
```

```
}
```

```
override fun onOptionsItemSelected(menuItem: MenuItem): Boolean {
```

```
    return when (menuItem.itemId) {
```

```
        R.id.saveMenu -> {
```

```
            saveNote()
```

```
            true
```

```
        }
```

```
        else -> false
```

```
    }
```

```
}
```

```
override fun onDestroyView() {
```

```
    super.onDestroyView()
```



```
        addNoteBinding = null
    }
}
```

2. Edit Note Function

```
package com.example.thenotesapp.fragments

import android.os.Bundle
import android.view.*
import android.widget.EditText
import android.widget.Toast
import androidx.appcompat.app.AlertDialog
import androidx.core.view.MenuHost
import androidx.core.view.MenuProvider
import androidx.fragment.app.Fragment
import androidx.lifecycle.Lifecycle
import androidx.navigation.findNavController
import androidx.navigation.fragment.navArgs
import com.example.thenotesapp.MainActivity
import com.example.thenotesapp.R
import com.example.thenotesapp.databinding.FragmentEditNoteBinding
import com.example.thenotesapp.model.Note
import com.example.thenotesapp.viewmodel.NoteViewModel
```

```

class EditNoteFragment : Fragment(R.layout.fragment_edit_note), MenuProvider {

    private var editNoteBinding: FragmentEditNoteBinding? = null

    private val binding get() = editNoteBinding!!

    private lateinit var notesViewModel: NoteViewModel

    private lateinit var currentNote: Note

    private val args: EditNoteFragmentArgs by navArgs()

    override fun onCreateView(
        inflater: LayoutInflater, container: ViewGroup?,
        savedInstanceState: Bundle?
    ): View {
        editNoteBinding = FragmentEditNoteBinding.inflate(inflater, container, false)
        return binding.root
    }

    override fun onViewCreated(view: View, savedInstanceState: Bundle?) {
        super.onViewCreated(view, savedInstanceState)

        val menuHost: MenuHost = requireActivity()
        menuHost.addMenuProvider(this, viewLifecycleOwner, Lifecycle.State.RESUMED)
    }
}

```

```

notesViewModel = (activity as MainActivity).notesViewModel

args.note?.let { note ->

    currentNote = note

    if (note.isLocked && !note.pinCode.isNullOrEmpty()) {

        showPinDialog(note)

    } else {

        showNoteContent(note)

    }

    binding.editNoteFab.setOnClickListener {

        saveUpdatedNote()

    }

} ?: run {

    Toast.makeText(requireContext(), "Error: Note not found",
Toast.LENGTH_SHORT).show()

    view.findNavController().popBackStack()

}

}

private fun showPinDialog(note: Note) {

    val input = EditText(requireContext())

    input.hint = "Enter PIN"

```

```
input.inputType = android.text.InputType.TYPE_CLASS_NUMBER or  
android.text.InputType.TYPE_NUMBER_VARIATION_PASSWORD
```

```
AlertDialog.Builder(requireContext())  
  
    .setTitle("Unlock Note")  
  
    .setMessage("This note is locked. Please enter the PIN.")  
  
    .setView(input)  
  
    .setPositiveButton("Unlock") { _, _ ->  
  
        val enteredPin = input.text.toString()  
  
        if (enteredPin == note.pinCode) {  
  
            showNoteContent(note)  
  
        } else {  
  
            Toast.makeText(context, "Incorrect PIN", Toast.LENGTH_SHORT).show()  
  
            view?.findNavController()?.popBackStack()  
  
        }  
  
    }  
  
    .setNegativeButton("Cancel") { _, _ ->  
  
        view?.findNavController()?.popBackStack()  
  
    }  
  
    .setCancelable(false)  
  
    .show()  
  
}  
  
private fun showNoteContent(note: Note) {  
  
    binding.editNoteTitle.setText(note.noteTitle)
```

```

binding.editNoteDesc.setText(note.noteDesc)

// Optionally show pin/lock states (if visible in layout)
binding.editPinCheckBox.isChecked = note.isPinned
binding.editLockCheckBox.isChecked = note.isLocked
}

private fun saveUpdatedNote() {

    val noteTitle = binding.editNoteTitle.text.toString().trim()
    val noteDesc = binding.editNoteDesc.text.toString().trim()
    val isPinned = binding.editPinCheckBox.isChecked
    val isLocked = binding.editLockCheckBox.isChecked

    if (noteTitle.isNotEmpty()) {
        val updatedNote = currentNote.copy(
            noteTitle = noteTitle,
            noteDesc = noteDesc,
            isPinned = isPinned,
            isLocked = isLocked,
            pinCode = if (isLocked) currentNote.pinCode else null
        )
        notesViewModel.updateNote(updatedNote)
        view?.findNavController()?.popBackStack(R.id.homeFragment, false)
    } else {

```

```

        Toast.makeText(context, "Please enter a Note Title",
        Toast.LENGTH_SHORT).show()

    }

}

```

```

override fun onCreateMenu(menu: Menu, menuInflater: MenuInflater) {

    menu.clear()

    menuInflater.inflate(R.menu.menu_edit_note, menu)

}

```

```

override fun onOptionsItemSelected(menuItem: MenuItem): Boolean {

    return when (menuItem.itemId) {

        R.id.deleteMenu -> {

            deleteNote()

            true

        }

        else -> false

    }

}

```

```

private fun deleteNote() {

    AlertDialog.Builder(requireContext()).apply {

        setTitle("Delete Note")

        setMessage("Do you want to delete this note?")

        setPositiveButton("Delete") { _, _ ->

```

```

        notesViewModel.deleteNote(currentNote)

        Toast.makeText(context, "Note deleted successfully",
            Toast.LENGTH_SHORT).show()

        view?.findNavController()?.popBackStack(R.id.homeFragment, false)
    }

    setNegativeButton("Cancel", null)
}.create().show()
}

override fun onDestroyView() {
    super.onDestroyView()
    editNoteBinding = null
}
}

```

3. Calendar View Function

```

package com.example.thenotesapp.fragments

import android.os.Bundle
import android.view.LayoutInflater
import android.view.View
import android.view.ViewGroup
import android.widget.CalendarView
import androidx.fragment.app.Fragment
import androidx.recyclerview.widget.StaggeredGridLayoutManager
import com.example.thenotesapp.MainActivity

```

```

import com.example.thenotesapp.adapter.NoteAdapter

import com.example.thenotesapp.databinding.FragmentCalendarBinding

import com.example.thenotesapp.model.Note

import com.example.thenotesapp.viewmodel.NoteViewModel

import java.util.*

class CalendarFragment : Fragment() {

    private var _binding: FragmentCalendarBinding? = null

    private val binding get() = _binding!!

    private lateinit var viewModel: NoteViewModel

    private lateinit var noteAdapter: NoteAdapter

    override fun onCreateView(

        inflater: LayoutInflater, container: ViewGroup?,

        savedInstanceState: Bundle?

    ): View {

        _binding = FragmentCalendarBinding.inflate(inflater, container, false)

        return binding.root

    }

    override fun onViewCreated(view: View, savedInstanceState: Bundle?) {

        super.onViewCreated(view, savedInstanceState)

```



```
viewModel = (activity as MainActivity).noteViewModel
```

```
noteAdapter = NoteAdapter(  
    onNoteClick = { note ->  
        // Optional: navigate to EditNoteFragment  
    },  
    onNoteUpdate = { viewModel.updateNote(it) }  
)
```

```
binding.notesRecyclerView.apply {  
    layoutManager = StaggeredGridLayoutManager(2,  
StaggeredGridLayoutManager.VERTICAL)  
    adapter = noteAdapter  
}
```

```
val today = Calendar.getInstance().apply {  
    set(Calendar.HOUR_OF_DAY, 0)  
    set(Calendar.MINUTE, 0)  
    set(Calendar.SECOND, 0)  
    set(Calendar.MILLISECOND, 0)  
}.timeInMillis
```

```
loadNotesByDate(today)
```

```
binding.calendarView.setOnDateChangeListener { _: CalendarView, year, month,
dayOfMonth ->
```

```
    val selectedCalendar = Calendar.getInstance()

    selectedCalendar.set(year, month, dayOfMonth, 0, 0, 0)

    selectedCalendar.set(Calendar.MILLISECOND, 0)

    val selectedDate = selectedCalendar.timeInMillis

    loadNotesByDate(selectedDate)

}

}
```

```
private fun loadNotesByDate(dateMillis: Long) {
```

```
    val oneDayMillis = 24 * 60 * 60 * 1000

    val startOfDay = dateMillis

    val endOfDay = dateMillis + oneDayMillis - 1
```

```
    viewModel.getNotesByDateRange(startOfDay,
endOfDay).observe(viewLifecycleOwner) { notes: List<Note> ->
```

```
        noteAdapter.differ.submitList(notes)

    }

}
```

```
override fun onDestroyView() {
```

```
    super.onDestroyView()

    _binding = null

}
```

```
}
```

4. Home Function

```
package com.example.thenotesapp.fragments

import android.content.Intent

import android.graphics.pdf.PdfDocument

import android.os.Bundle

import android.view.*

import android.widget.Toast

import androidx.appcompat.widget.SearchView

import androidx.core.content.FileProvider

import androidx.core.view.MenuHost

import androidx.core.view.MenuProvider

import androidx.fragment.app.Fragment

import androidx.lifecycle.Lifecycle

import androidx.navigation.findNavController

import androidx.recyclerview.widget.StaggeredGridLayoutManager

import com.example.thenotesapp.MainActivity

import com.example.thenotesapp.R

import com.example.thenotesapp.adapter.NoteAdapter

import com.example.thenotesapp.databinding.FragmentHomeBinding

import com.example.thenotesapp.model.Note

import com.example.thenotesapp.viewmodel.NoteViewModel

import java.io.File

import java.io.FileOutputStream
```

```

import java.util.*

class HomeFragment : Fragment(R.layout.fragment_home),
    SearchView.OnQueryTextListener, MenuProvider {

    private var homeBinding: FragmentHomeBinding? = null

    private val binding get() = homeBinding!!

    private lateinit var notesViewModel: NoteViewModel

    private lateinit var noteAdapter: NoteAdapter

    override fun onCreateView(
        inflater: LayoutInflater, container: ViewGroup?,
        savedInstanceState: Bundle?
    ): View {
        homeBinding = FragmentHomeBinding.inflate(inflater, container, false)
        return binding.root
    }

    override fun onViewCreated(view: View, savedInstanceState: Bundle?) {
        super.onViewCreated(view, savedInstanceState)

        val menuHost: MenuHost = requireActivity()

        menuHost.addMenuProvider(this, viewLifecycleOwner, Lifecycle.State.RESUMED)
    }

```

```
notesViewModel = (activity as MainActivity).notesViewModel
```

```
setupRecyclerView()
```

```
binding.addNoteFab.setOnClickListener {  
    it.findNavController().navigate(R.id.action_homeFragment_to_addNoteFragment)  
}  
}
```

```
private fun setupRecyclerView() {
```

```
    noteAdapter = NoteAdapter(  
        onNoteClick = { note ->  
            view?.findNavController()
```

```
?.navigate(HomeFragmentDirections.actionHomeFragmentToEditNoteFragment(note))
```

```
    },
```

```
    onNoteUpdate = { note ->  
        notesViewModel.updateNote(note)
```

```
    }
```

```
)
```

```
binding.homeRecyclerView.apply {
```

```
    layoutManager = StaggeredGridLayoutManager(2,  
    StaggeredGridLayoutManager.VERTICAL)
```

```

        setHasFixedSize(true)

        adapter = noteAdapter
    }

    notesViewModel.getAllNotes().observe(viewLifecycleOwner) { notes ->

        noteAdapter.differ.submitList(notes)

        updateUI(notes)
    }
}

private fun updateUI(notes: List<Note>?) {
    if (!notes.isNullOrEmpty()) {
        binding.emptyNotesImage.visibility = View.GONE

        binding.homeRecyclerView.visibility = View.VISIBLE
    } else {
        binding.emptyNotesImage.visibility = View.VISIBLE

        binding.homeRecyclerView.visibility = View.GONE
    }
}

private fun searchNote(query: String?) {
    val searchQuery = "%$query%"

    notesViewModel.searchNote(searchQuery).observe(viewLifecycleOwner) { list ->

        noteAdapter.differ.submitList(list)
    }
}

```

```
    }  
}
```

```
override fun onQueryTextSubmit(query: String?): Boolean = false
```

```
override fun onQueryTextChange(newText: String?): Boolean {  
    if (!newText.isNullOrEmpty()) {  
        searchNote(newText)  
    }  
    return true  
}
```

```
override fun onCreateMenu(menu: Menu, menuInflater: MenuInflater) {  
    menu.clear()  
    menuInflater.inflate(R.menu.home_menu, menu)  
  
    val searchItem = menu.findItem(R.id.searchMenu)  
    val searchView = searchItem.actionView as? SearchView  
    searchView?.isSubmitButtonEnabled = false  
    searchView?.setQueryTextListener(this)  
}
```

```
override fun onMenuItemSelected(menuItem: MenuItem): Boolean {  
    return when (menuItem.itemId) {
```

```

R.id.exportNotes -> {

    exportSelectedNotesToPdf()

    true

}

R.id.calendarView -> {

view?.findNavController()?.navigate(R.id.action_homeFragment_to_calendarFragment)

    true

}

else -> false

}

}

private fun exportSelectedNotesToPdf() {

    val selectedNotes = noteAdapter.getSelectedNotes()

    if (selectedNotes.isEmpty()) {

        Toast.makeText(requireContext(), "No notes selected",
Toast.LENGTH_SHORT).show()

        return

    }

    val fileName = "SelectedNotes_${System.currentTimeMillis()}.pdf"

    val file = File(requireContext().cacheDir, fileName)

    val pdfDocument = PdfDocument()

```



```

val paint = android.graphics.Paint()

val pageInfo = PdfDocument.PageInfo.Builder(595, 842, 1).create()

val page = pdfDocument.startPage(pageInfo)

val canvas = page.canvas


var y = 50

selectedNotes.forEach { note ->

    canvas.drawText("Title: ${note.noteTitle}", 10f, y.toFloat(), paint)

    y += 20

    canvas.drawText("Description: ${note.noteDesc}", 10f, y.toFloat(), paint)

    y += 20

    canvas.drawText("Created: ${Date(note.createdDate)}", 10f, y.toFloat(), paint)

    y += 30

}


pdfDocument.finishPage(page)

pdfDocument.writeTo(FileOutputStream(file))

pdfDocument.close()


val uri = FileProvider.getUriForFile(

    requireContext(),

    "${requireContext().packageName}.provider",

    file

)

```

```

        val shareIntent = Intent(Intent.ACTION_SEND).apply {

            type = "application/pdf"

            putExtra(Intent.EXTRA_STREAM, uri)

            addFlags(Intent.FLAG_GRANT_READ_URI_PERMISSION)

        }

        startActivity(Intent.createChooser(shareIntent, "Share Selected Notes via PDF"))

    }

    override fun onDestroyView() {

        super.onDestroyView()

        homeBinding = null

    }
}

```

5. MAIN ACTIVITY KOTLIN

```

package com.example.thenotesapp

import android.os.Bundle

import androidx.appcompat.app.AppCompatActivity

import androidx.core.view.WindowCompat

import androidx.lifecycle.ViewModelProvider

import com.example.thenotesapp.database.NoteDatabase

import com.example.thenotesapp.repository.NoteRepository

import com.example.thenotesapp.viewmodel.NoteViewModel

import com.example.thenotesapp.viewmodel.NoteViewModelFactory

class MainActivity : AppCompatActivity() {

```

```
lateinit var noteViewModel: NoteViewModel
```

```
override fun onCreate(savedInstanceState: Bundle?) {
```

```
    super.onCreate(savedInstanceState)
```

```
    // ✔ Enables drawing behind system bars (status bar, nav bar)
```

```
    WindowCompat.setDecorFitsSystemWindows(window, false)
```

```
    setContentView(R.layout.activity_main)
```

```
    setupViewModel()
```

```
}
```

```
private fun setupViewModel() {
```

```
    val noteRepository = NoteRepository(NoteDatabase(this))
```

```
    val viewModelProviderFactory = NoteViewModelFactory(application, noteRepository)
```

```
    noteViewModel = ViewModelProvider(this,  
viewModelProviderFactory)[NoteViewModel::class.java]
```

```
}
```

```
}
```

APPENDIX B: Tools and Technologies Used

Category	Tool/Technology	Purpose/Usage
IDE	Android Studio	Primary development environment for coding, testing, and debugging the application.
Programming Language	Kotlin	Main language used for app development due to its concise syntax and null safety.
UI Design	XML	Designing user interface layouts, including main screens, dialogs, and navigation.
Database	Room Database	Local storage for notes, enabling offline data access and structured data management.
Architecture	MVVM	Implements separation of data logic, UI, and interaction logic for maintainability.
PDF Generation	PdfDocument API	Converts notes to PDF format for exporting and sharing.
Data Sharing	Android Intents	Enables sharing of notes via WhatsApp, Gmail, and other apps.
Data Storage	SharedPreferences	Stores user settings such as PIN configurations for secure access.

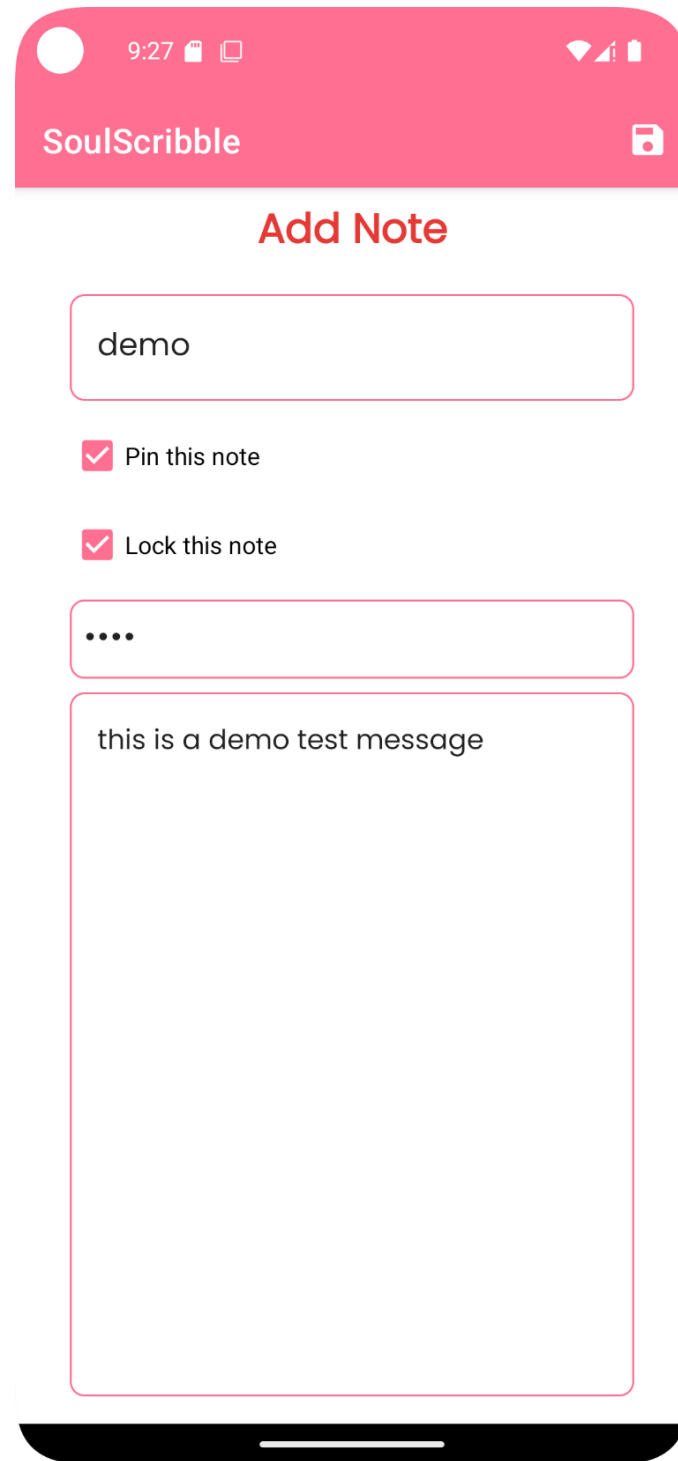
APPENDIX C: Application Screenshots

1. Home Screen



Fig 1 Home Screen

2. Add Note Screen



The image shows a mobile app interface for adding a note. At the top is a pink header bar with a white circle icon, the time 9:27, battery and signal icons, the app name 'SoulScribble', and a save icon. Below the header is the title 'Add Note' in red. A text input field contains the word 'demo'. Below this are two checkboxes, both checked: 'Pin this note' and 'Lock this note'. Under the checkboxes is a small text input field with four dots. Below that is a large text area containing the text 'this is a demo test message'. The entire interface is shown within a white rounded rectangle representing a smartphone screen, with a black home indicator bar at the bottom.

SoulScribble

Add Note

demo

☒ Pin this note

☒ Lock this note

....

this is a demo test message

Fig 2 Add Note Screen

3. Edit Note Screen



Fig 3 Edit Note Screen

4. Calendar View Screen

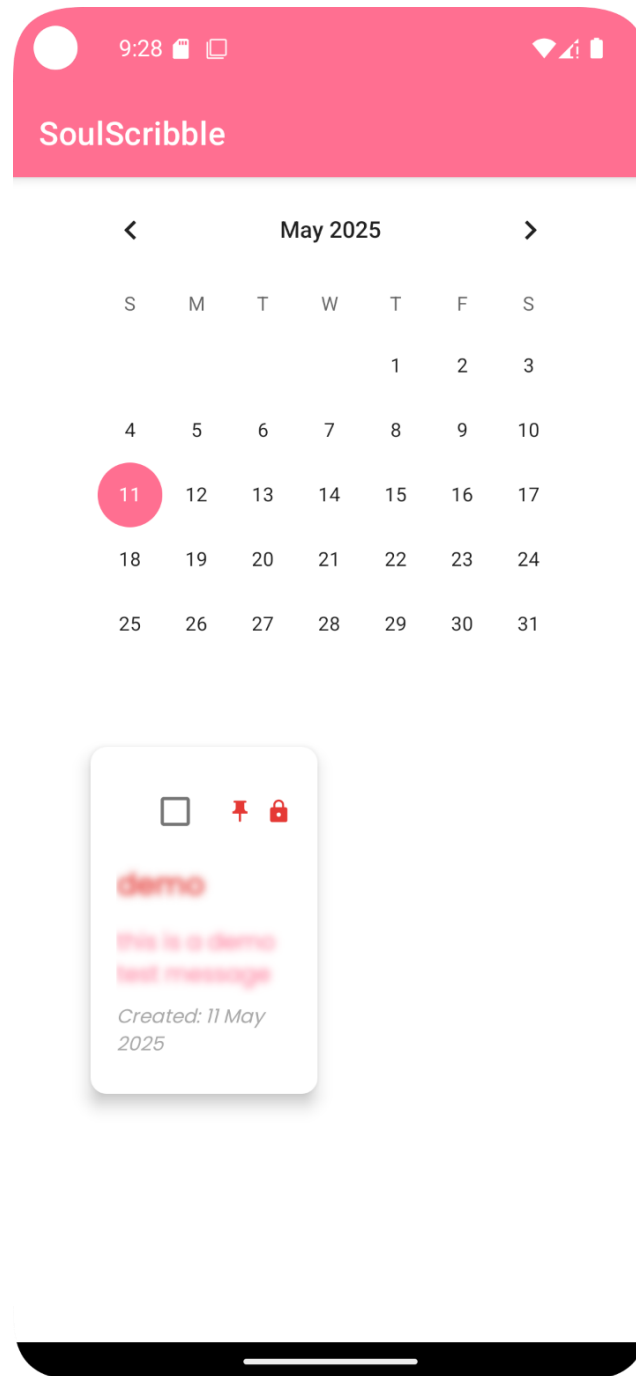
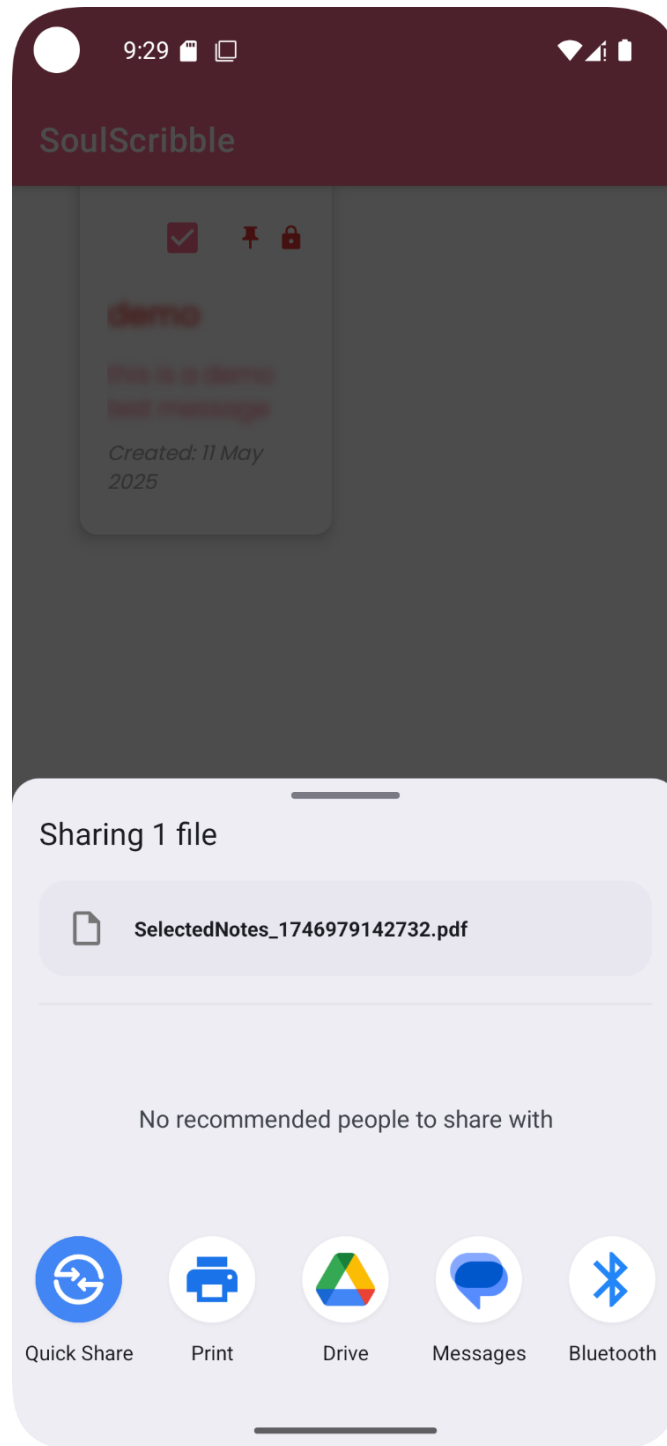


Fig 4 Calendar View Screen

5. Export Note Screen



**Fig 5 Export Note
Screen**

