Companion App: A Flutter-Based Mobile Application for Mental Health Tracking and Personalized Well-Being Support

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ABSTRACT: A Mental Health Tracker is a mobile application developed using the Flutter framework to address increasing mental health challenges associated with remote work, social isolation, and lifestyle changes. The application is designed using user-centered principles to provide a supportive and non-intrusive platform for monitoring and improving mental well-being. The system collects user responses through carefully designed reflective questions and analyzes these inputs to recommend personalized tasks aimed at promoting positive mental health practices. User progress is continuously tracked over time, enabling the generation of insights and actionable feedback to support self-awareness and long-term well-being improvement. Firebase is integrated to provide secure user authentication and cloud-based data storage, ensuring reliable data management and accessibility across devices. Key features of the application include Google Sign-In, an intuitive and welcoming user interface, and an algorithm-driven task recommendation mechanism. In addition to its practical utility, the application serves as a learning platform for intermediate developers to enhance their proficiency in Flutter, Firebase, and user-centric mobile application design. The Companion App demonstrates the potential of mobile health technologies to deliver accessible mental health support and offers a foundation for future expansion into a comprehensive digital healthcare solution through advanced analytics and extended feature integration.

KEYWORDS: Mental Health Monitoring, Mobile Health Application, Flutter, Firebase, User-Centric Design, Personalized Recommendations, Digital Well-Being.

1. INTRODUCTION

Flutter Introduction

Flutter is a software UI development toolkit. Mainly flutter used as User interface framework. Its works based on dart language that gives excessive capability via way of means of immediately imparting the person interface at the running device canvas as opposed to the local framework. Flutter design app using widgets, which are actually gather of classes. These widgets are enhanced for cellular environments and designing apps with widgets are as smooth as designing html. Widgets also supports animations and gestures.

Flutter Features

- Integration, flexibility and Scalability capabilities.

- Its use dart language which are same as other OOP like java. So, it's easy to learn.
- Platform independent: flutter can develop multiple platforms' app using a single code. It's very comfortable for developers because they don't have to learn many things.
- High performance output: flutter provides light weight UI using its rendering functions.

Flutter Advantages

- Due to the same code base. We can run app on different types of platforms simultaneously. its very cost effective.
- It has hot reloaded feature. So that when we design a UI using flutter framework, we can see real interface as output.
- Being an open-source platform, we can make app easily using its material, animation, Cupertino widget from flutters large library.
- Flutter framework dependencies based. So, it's run on low configuration pc easily.
- Flutter supports multiple languages.
- Flutter has a big dependencies library. (https://pub.dev). So, we can easily add any widget / function from here.
- It's easy to learn.
- Flutter has big community. So, there is 24/7 support for free.

Flutter Disadvantages

- Flutter generates big size app. Generally, its greater than 4 MB.
- Flutter is a google product. So, it faces some difficulties to run app on other opponent companies' platform like windows, iOS but google Inc. already solve problems and hope in early future there will be no difficulties.
- Flutter is dart base. In dart there is some difficult term. Because of this sometime increase programming task in app.
- Flutter does not support android TV / Apple TV.
- Other framework treats UI and logic separately. But in flutter it's combined. So, in flutter need to use advanced modules.

2. FLUTTER INSTALLATION

2.1 Understanding the Flutter Architecture

Flutter run app in virtual machine without recompile full code. Because flutter support hot load. Flutter apps compiled directly to machine code, whether Intel x64 or ARM instructions or to java-script if targeting the web. Flutter maintains a procedural architecture. Its design as a layered, extensible system. It exists independent libraries that each depend on the underlying layer. Every part of the framework is designed to be optional and replaceable. One of the functions of flutter is no layer has privileged access to the layer below. In flutter architecture, there are three layers.

- Framework
- Engine

- Embedded

Framework: framework includes Cupertino widget, material design widget, text button widget, animation widget, gesture widget, and color – painting widget foundation etc. the core code lies in flutter package which is in flutter repository / library. In flutter repository there is lots of library for different function. Such as dart: ui repository provides interfaces between the flutter framework and the engine, dart: math repository provides mathematical functions.

Engine: Engine mainly includes dart, text, skia graphics engine. Skia serves graphics engine for web browsers and different kind of OS. Dart includes Dart runtime, GC (Garbage collection). Text refers to text rendering which acts on libtxt library.

Embedded: It's an embedding layer that embeds Flutter into various platforms. Mainly itstask is rendering surface settings, plug ins and thread settings. Flutter has excellent cross terminal consistency.

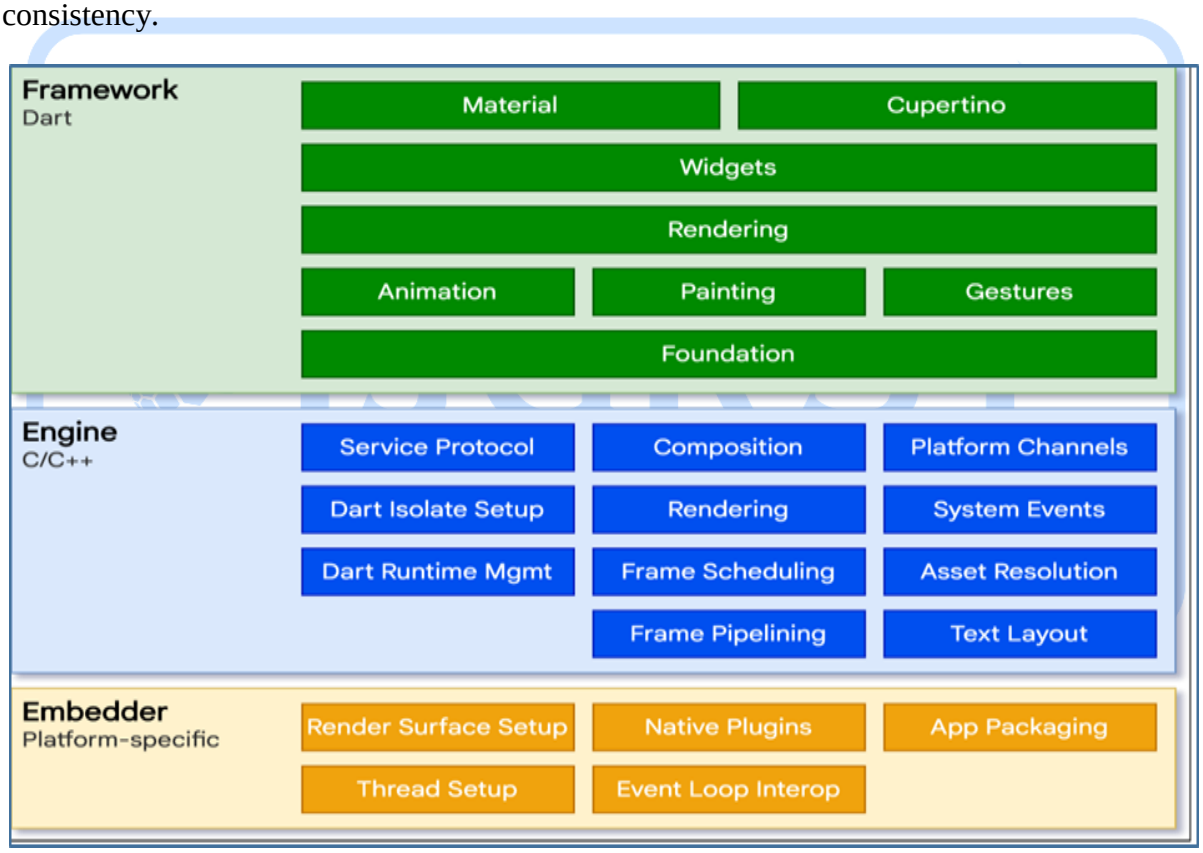

Figure 1: Flutter Architecture

2.2. Flutter Installation and setup

We can install and use flutter in all computer operating system. We learn and work on windows OS, because of its popularity in our country. So I will show the process for windows operating system.

Step 1: At first we need to download flutter SDK. For download – we need to go to official site of flutter and download latest version. URL ('https://docs.flutter.dev/get-

started/install/windows').

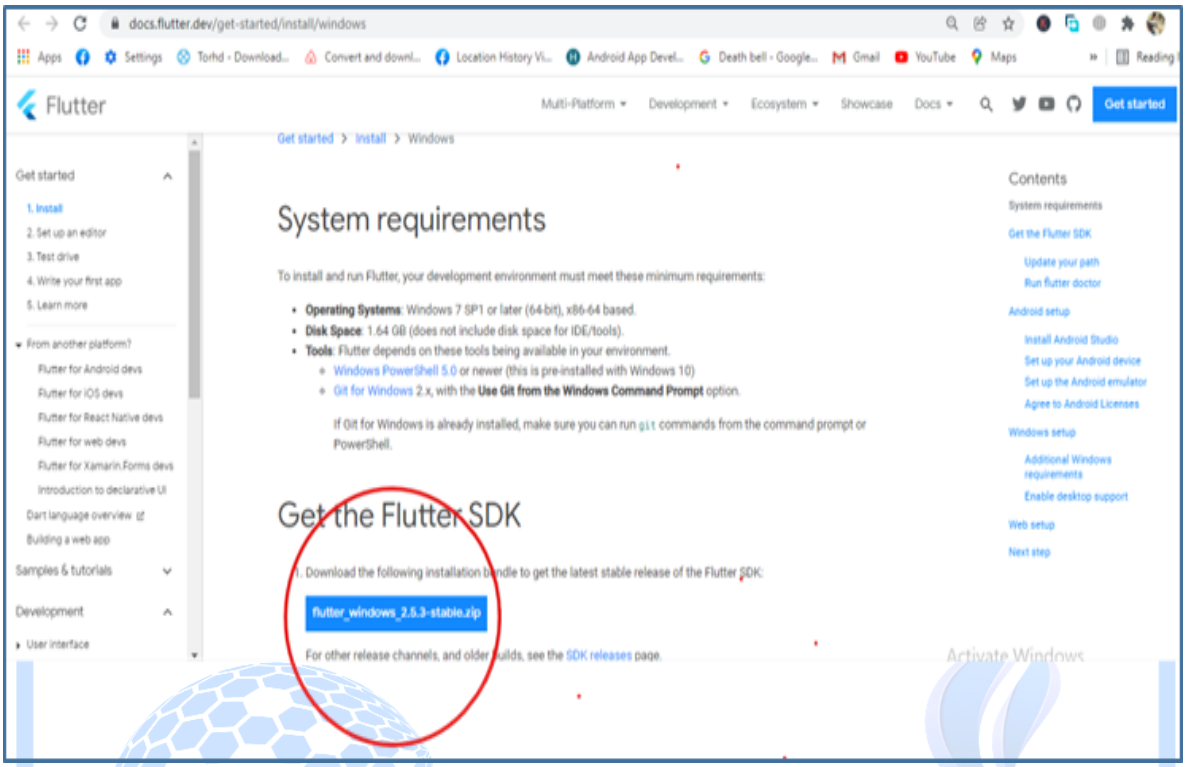

Figure 2: Flutter Download

Step 2: extract downloaded zip file in any directory. Flutter recommended('C:\Users\<your-user-name>\Documents')

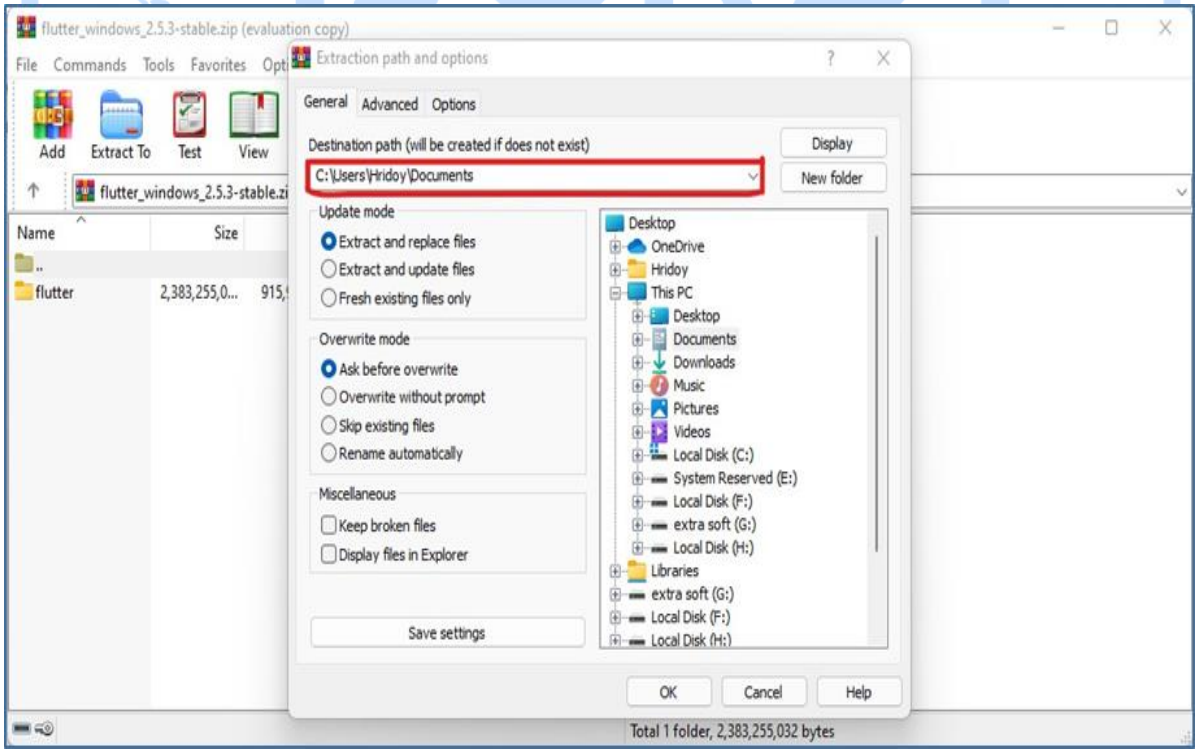

Figure 3: Extract Flutter SDK

Step 3: Update system path

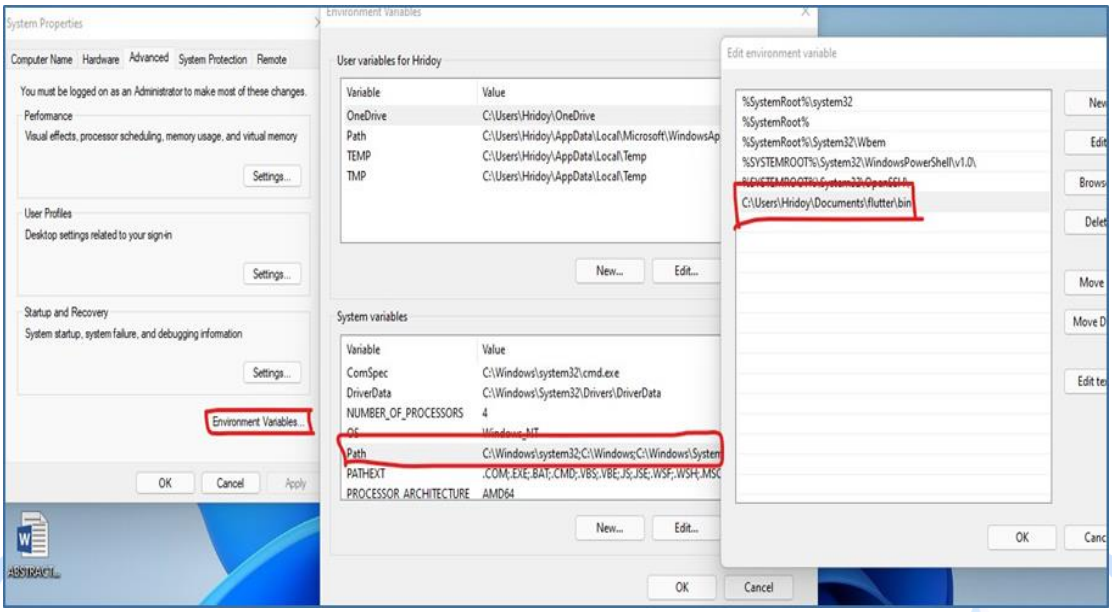

Figure 4: Path create in windows environment

Step 4: Flutter will provide a instruction set name "flutter - doctor" to check the status of flutter.

Figure 5: Check Flutter Availability

To check this, go to cmd and type flutter doctor. If result same as like below picture. It confirmed that flutter install successfully.

Step 5: Now we need a code editor (also compiler and app generator). We can use android studio, VS code. I use vs code so I will show the vs code process.

1. Download vs code from official site. https://code.visualstudio.com/download
2. Extract the zip file and double click on vs code icon. Vs code is ready to use.

3. Then just set flutter and dart plugin in vs code. Open vs. code. Then click on extensions and search for flutter and dart. It will show result, then install flutter anddart from the list.
4. Restart vs code.

3. CREATING SIMPLE APPLICATION

3.1 Creating Application Project in VS code

Let's create a project in vs code using flutter SDK.

Step 1: Open VS Code application

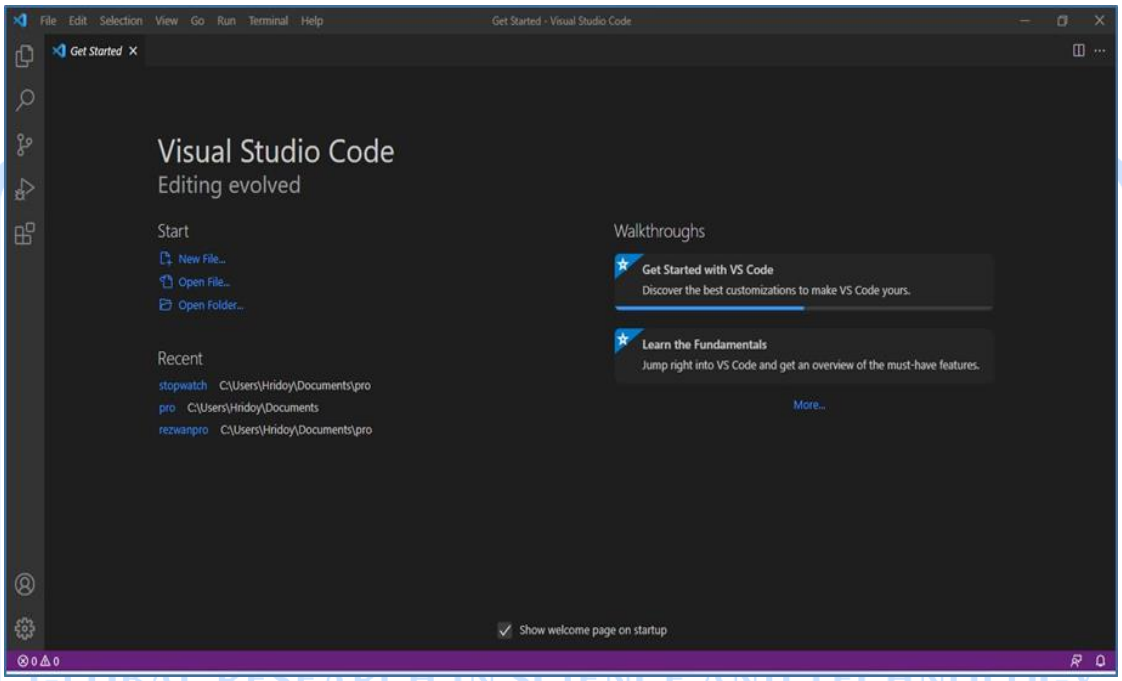

Figure 6: VS Code Open

Step 2: open a folder

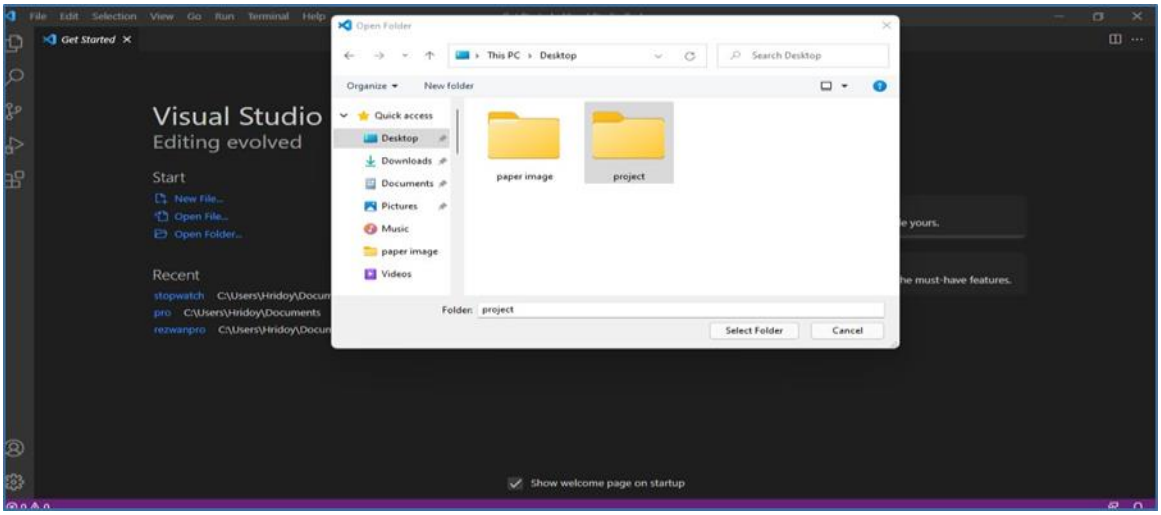

Figure 7: Open Folder in VS Code

Step 3: Go to terminal and type flutter create app name (place a project name instead ofapp name). And hit enter.

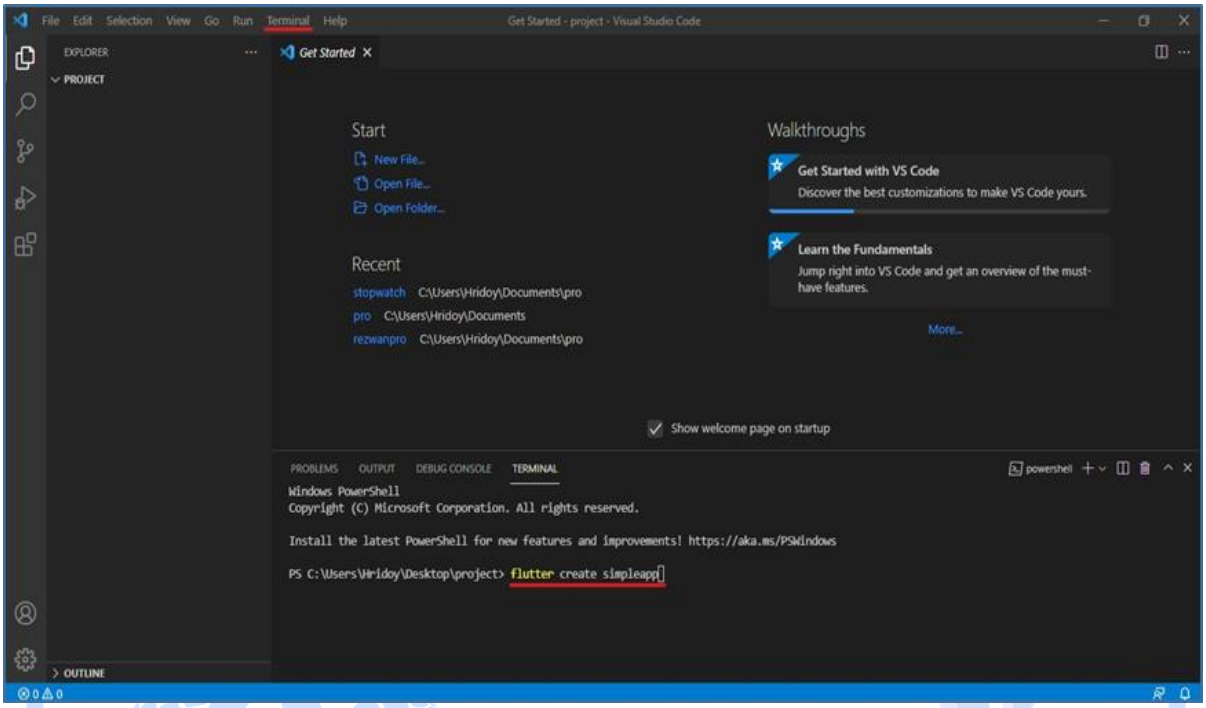

Figure 8: Create flutter Project

Step 4: We will see that left side of vs code screen, a project is added with some default folders and function. From there we need to go lib folder and open main. Art file to run or write code. After create project, flutter provide a default app. Here we will just run default app and see the result on emulator / web browser.

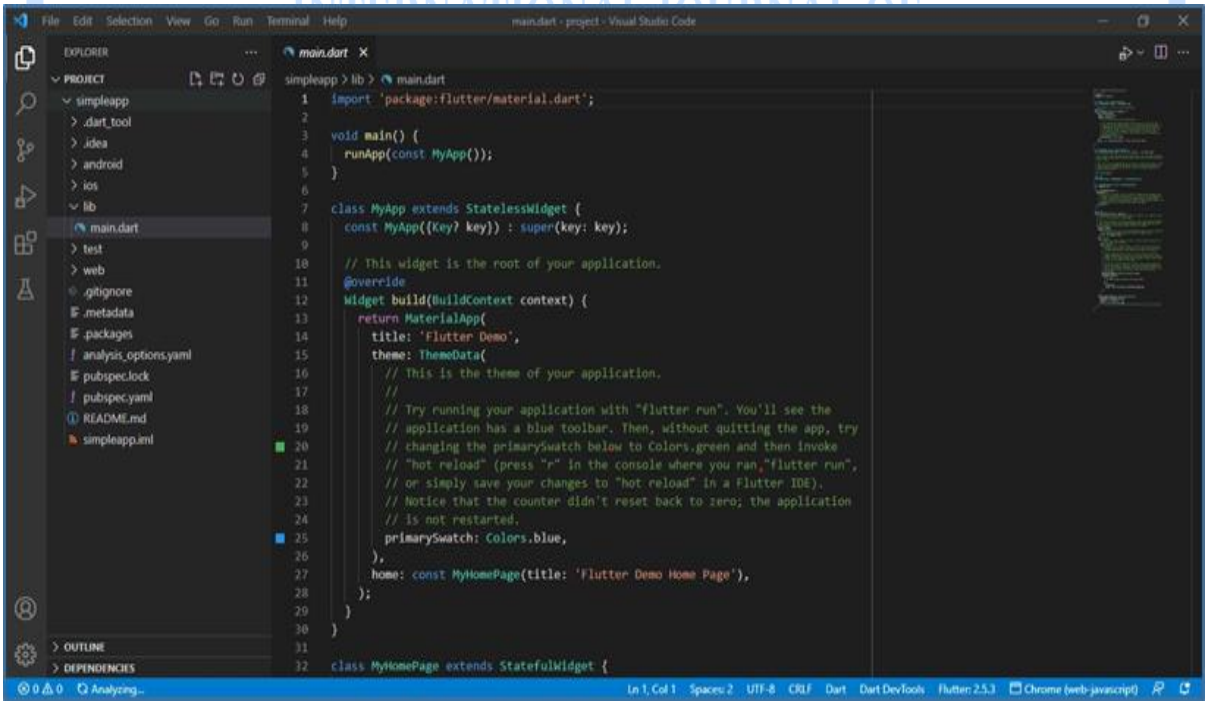

Figure 9: Default app code

Step 5: Finally, the output of default app:

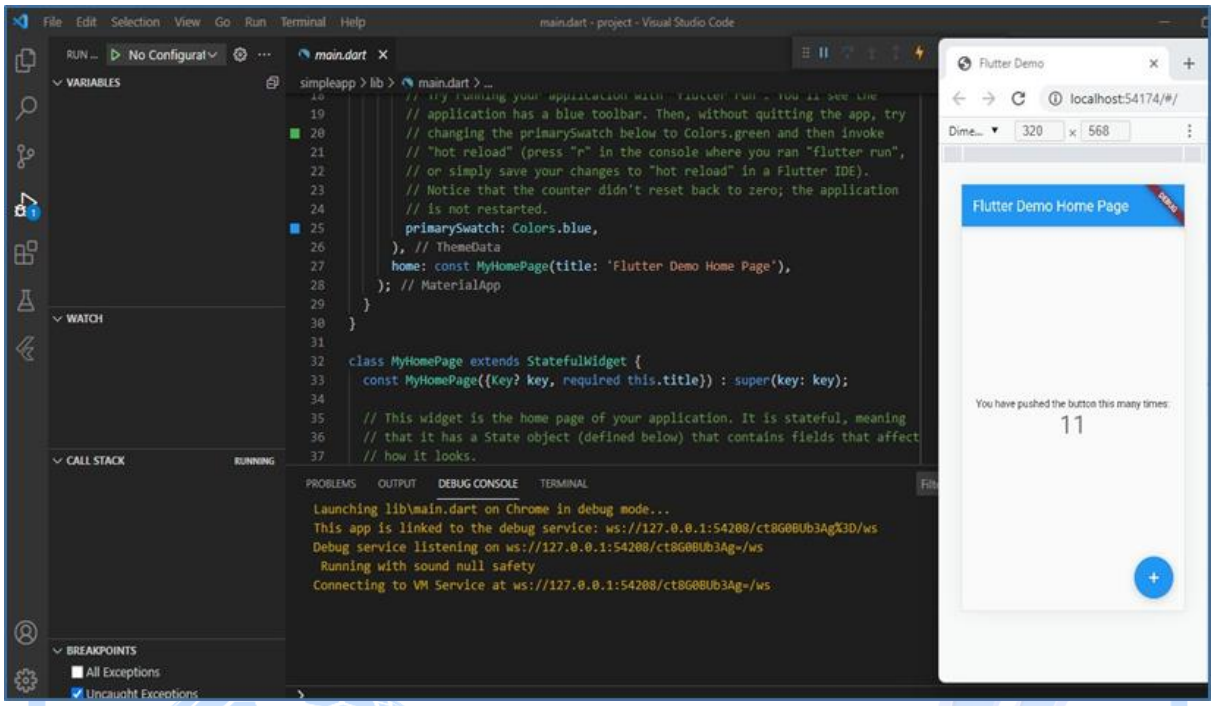

Figure 10: Default flutter app output

4. RESULTS AND DISCUSSION

4.1 Companion App: A Mental Health Tracker

The Companion App is a mobile application designed to support individuals in managing their mental health. It provides several features that are essential for maintaining emotional well-being, especially in today's digital age where mental health challenges are becoming increasingly prevalent. The app was developed using Flutter to ensure a smooth, responsive user experience across multiple platforms, ensuring accessibility for users everywhere.

The Companion App was built using a range of modern tools and technologies aimed at delivering a robust and secure experience for users:

- **Flutter**: The core framework used to develop the app, enabling a seamless cross-platform experience on both Android and iOS devices. Flutter's fast development cycle, beautiful UI components, and performance make it an ideal choice for creating mobile applications like the Companion App.
- **Firebase**: Firebase services were employed for authentication and cloud storage. Firebase Authentication ensures secure user logins, while Firestore is used to store user data such as mood logs, journal entries, and more. Firebase also provides robust security features to protect sensitive user data.
- **Dart**: As Flutter's primary programming language, Dart is used to write the app's logic and structure. Dart's performance and structure align well with Flutter's requirements, making it the perfect language for building reactive and performant mobile applications.

- **Firebase Cloud Messaging (FCM)**: FCM is used for sending notifications to users, such as reminders to log their moods or meditate, further enhancing the user experience and engagement with the app.
- **Google Fonts**: For a customizable and user-friendly UI, Google Fonts were utilized to give the app a modern, clean aesthetic that is consistent across platforms.
- **State Management (Provider)**: To manage the app's state efficiently and ensure that the UI updates reactively as the user interacts with the app, the **Provider** package is used. This package simplifies the handling of state across different parts of the app.

These technologies were chosen not only for their performance and reliability but also for their ability to scale with the app as new features are added. With a focus on data security, user experience, and performance, these tools have allowed us to create an app that helps users track and manage their mental health with ease.

4.2 Authentication

The foundation of the Companion App is its user authentication system. Security and privacy are of utmost importance, and the app uses Firebase Authentication to securely manage user accounts. This ensures that only the individual user has access to their mental health data. The authentication process is designed to be simple and user-friendly, utilizing Email Sign-In for quick logins. Additionally, features such as email verification and password recovery have been integrated to ensure users can recover their accounts without hassle.

Future Scope:

- **Multi-factor Authentication (MFA)**: In the future, the app can integrate additional layers of security through multi-factor authentication to further protect sensitive user data.
- **Social Media Logins**: Expanding login options to include Facebook, Apple, or other social media platforms could enhance accessibility and attract more users.

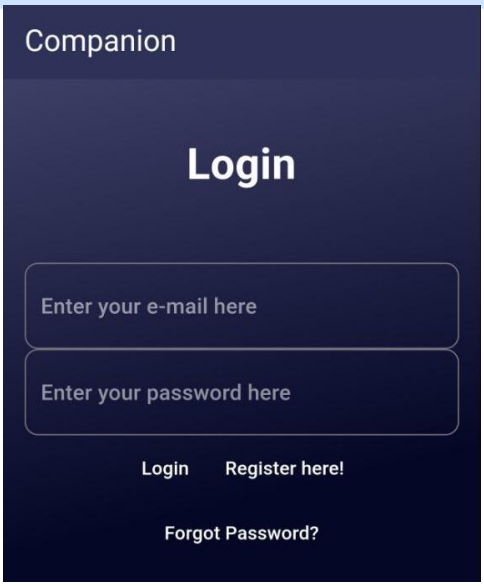

Figure 11: Authentication Page

4.3 Home Page Overview

The Home Page of the Companion App serves as the central hub for users, offering easy navigation to key features and providing a user-friendly interface for quick access. Here's a breakdown of what the Home Page includes:

- **Welcome Message & User Overview**: Upon logging in, users are greeted with a personalized welcome message, which includes their name, providing a sense of ownership and engagement right from the start.
- **Quick Access to Key Features**: The Home Page provides easy access to all the app's main features: mood tracking, journaling, meditation timer, and more. This allows users to navigate directly to the section they need, without unnecessary steps or confusion.
- **Mood Tracking Shortcut**: An important feature of the Companion App is its **Mood Tracker**, which is prominently displayed on the Home Page. This lets users quickly log their emotional state at any time, contributing to their ongoing mental health monitoring.
- **Navigation Drawer**: A sidebar or hamburger menu (depending on design) is included for easy access to other settings and features, such as account management, app settings, and more.
- **Motivational Quotes**: The Home Page is designed to motivate and encourage users. Displaying positive, uplifting messages or quotes can help set the tone for the user's mental health journey.
- **User-Friendly Design**: The design is clean, minimalistic, and easy to navigate, with the use of calming colors to promote a sense of well-being. Clear buttons and well-structured content ensure that the app is intuitive for all users.

Figure 112: Home Page of the Application

One can move to other sections of the app through side panel.

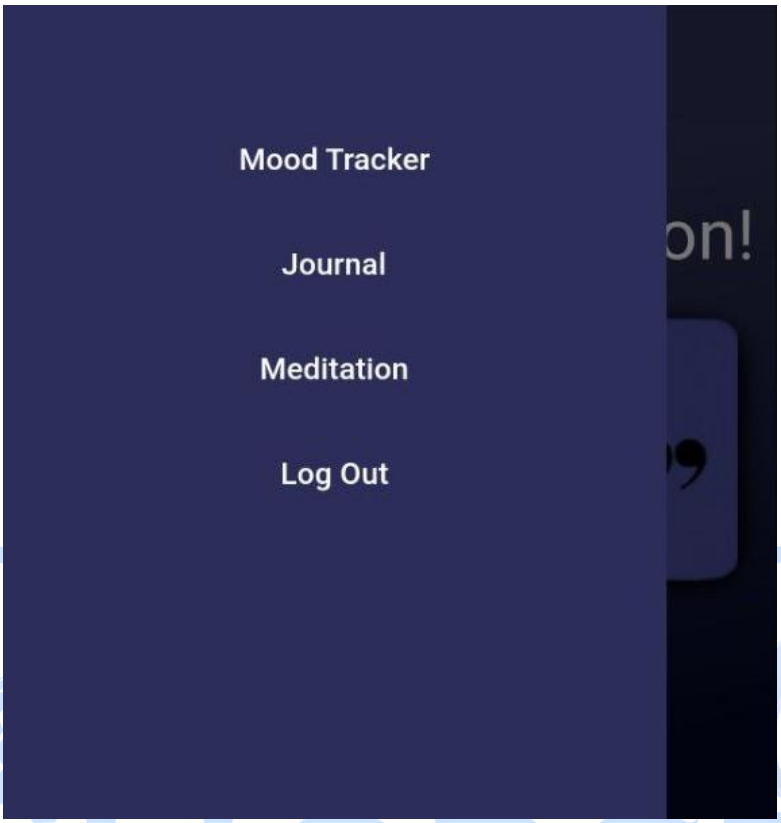

Figure 14: Side Panel

4.4 Mood Tracker

The Mood Tracker feature of the app enables users to log their moods throughout the day. This feature is designed to make it easy for users to reflect on their emotional state and understand patterns in their moods over time. The app offers a selection of emoticons that the user can choose from, representing their current emotional state. Along with the mood selection, users can also log the activity they were doing at the time, whether it was work, exercise, socializing, or something else.

This feature not only records data but also presents it visually with the help of graphs and charts, allowing users to identify emotional trends over time. These insights can help users reflect on how different activities and events impact their mood.

Future Scope:

- **AI Integration**: A future enhancement could involve integrating AI to analyze mood patterns and provide personalized recommendations based on the trends observed.
- **More Mood Options**: Adding more detailed mood categories can allow users to capture nuances in their emotional state.

Figure 13: Mood Tracker

The log of the mood (basically the mood tracks) are stored in the log field which can be accessed by just swiping up on the same page. An image to represent the log page:

Figure 15: Mood Log Page with Graphs

4.5 Journal

The Journal feature offers users a private and secure space to express their thoughts, feelings, and experiences. This feature encourages users to engage in expressive writing, which has been shown to have therapeutic benefits. Writing in a journal can help individuals process emotions, reduce stress, and enhance overall mental well-being. The Companion App makes this process even more accessible by offering a simple, easy-to-use interface where users can write freely and store their entries securely in the app.

Future Scope:

- **Voice-to-Text**: A potential future addition could be voice-to-text functionality, allowing users to record their thoughts instead of typing them, making journaling more accessible.

- **Mood Correlation**: Another improvement could be correlating journal entries with mood data, giving users a better understanding of how their emotional states relate to their thoughts and experiences.

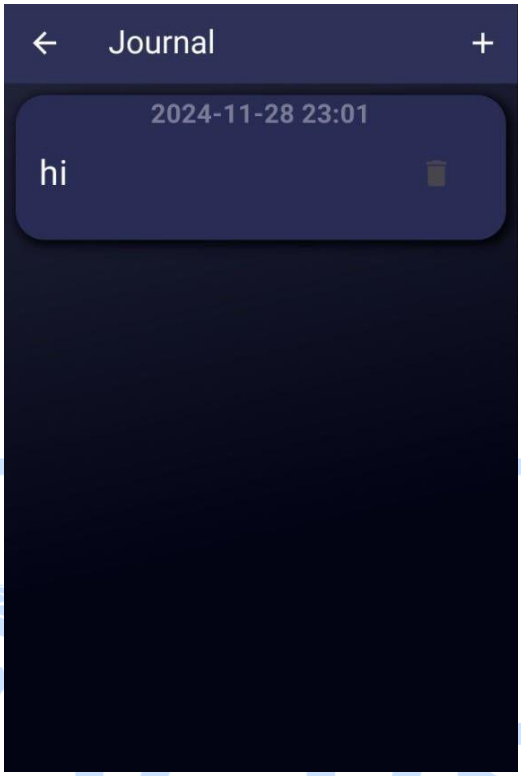

Figure 16: Journal History Page

4.6 Meditation Timer

The Meditation Timer feature is designed to help users maintain consistency in their meditation practice. Meditation is a powerful tool for managing stress, increasing mindfulness, and improving emotional well-being. The timer allows users to set their desired meditation duration, and once the session starts, a soothing sound or music plays to help the user relax and stay focused. When the session ends, a gentle notification signals the completion, ensuring that users do not exceed their planned time.

Additionally, the app displays a subtle animation or calming visuals during the meditation, enhancing the mindfulness experience. By integrating relaxing music that plays throughout the session, users can immerse themselves in the moment without worrying about time.

Future Scope:

- **Guided Meditation**: Future versions of the app could integrate guided meditation sessions with a voiceover, offering users a more structured meditation experience.
- **Custom Music Integration**: Allowing users to upload their own preferred meditation music could be a future enhancement.

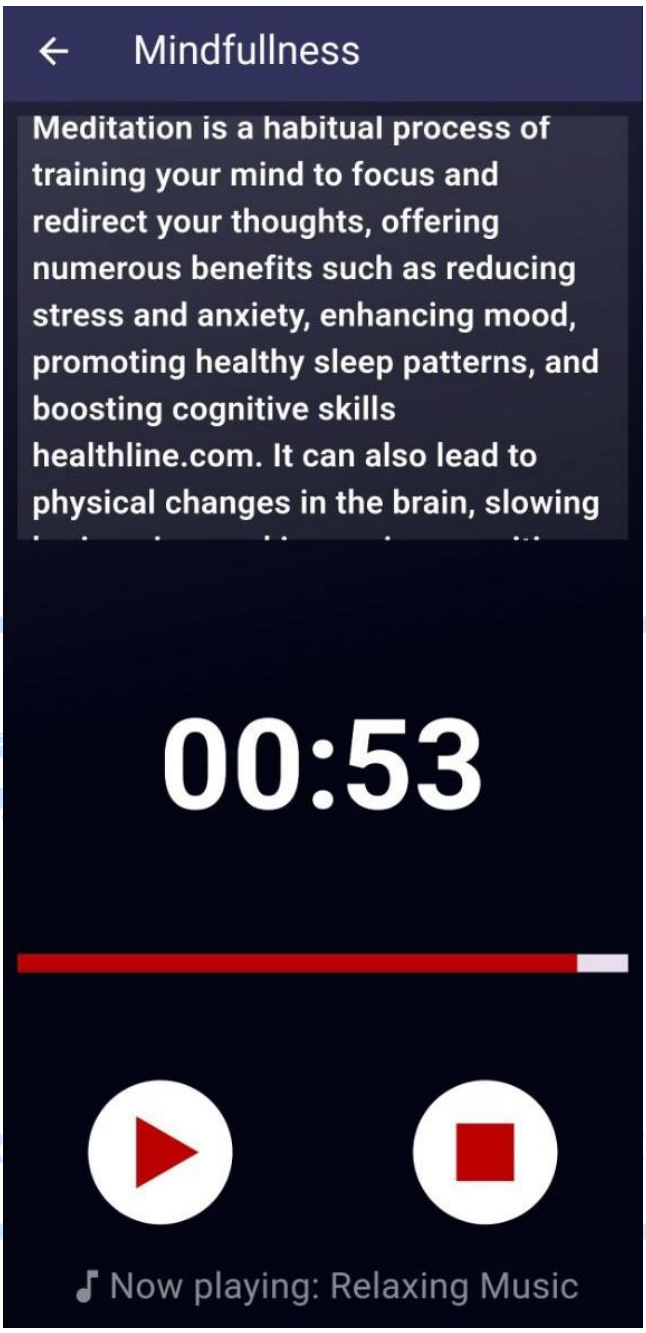

Figure 17: Meditation Page with Timer and Music

4.7 Future Scope

In addition to the features mentioned above, the Companion App could evolve to include more personalized tools for mental health support. Some of the possible future enhancements include:

- **Community Support**: Adding a feature for community support, such as group chats or forums, where users can discuss their experiences and offer support to each other.
- **AI-based Mental Health Assessment**: Implementing an AI system that can assess users' mental health based on mood patterns, journal entries, and other data, providing personalized advice or recommendations.

- **Integration with Wearables**: Future versions of the app could integrate with **fitness trackers** or **smartwatches**, collecting data such as heart rate, sleep patterns, and physical activity to give a more comprehensive view of the user's mental health.

5. CONCLUSION

The Companion App aims to provide users with a comprehensive tool to manage their mental health by offering a variety of features, including secure authentication, mood tracking, journaling, and meditation. These tools work together to create a holistic approach to mental well-being. By making mental health management accessible, the app has the potential to empower users to take control of their emotional health in a way that is simple, private, and effective.

As the app evolves, the incorporation of AI, social media integrations, and personalized recommendations will further enhance its ability to support users in their mental health journey. The Companion App is not just a mental health tool, but a step toward creating a community focused on well-being and emotional support.

REFERENCES

[1] A. Kalwar and R. Ajmera, "ARQI: A model for developing web applications," International Journal on Technical and Physical Problems of Engineering, vol. 13, no. 47, pp. 7–13, Jun. 2021.

[2] S. Sharma, V. Tailor, K. Paliwal, Kritika, "AutoPlace: A Web-Based Automated Placement Management System", International Journal of Global Research in Science and Technology, vol. 10, pp. 90-94, 2025.

[3] P. Upadhyay, K. K. Sharma, R. Dwivedi and P. Jha, "A Statistical Machine Learning Approach to Optimize Workload in Cloud Data Centre," 2023 7th International Conference on Computing Methodologies and Communication (ICCMC), pp. 276-280, 2023.

[4] A. Maheshwari, R. Ajmera and D. K. Dharamdasani, "Unmasking Embedded Text: A Deep Dive into Scene Image Analysis," 2023 International Conference on Advances in Computation, Communication and Information Technology (ICAICCIT), pp. 1403-1408, 2023.

[5] M. K. Jha, R. Ranjan, G. K. Dixit and K. Kumar, "An Efficient Machine Learning Classification with Feature Selection Techniques for Depression Detection from Social Media," 2023 International Conference on Communication, Security and Artificial Intelligence (ICCSAI), pp. 481-486, 2023.

[6] M. K. Jha, "Recent Trends and Emerging Applications of the Internet of Things: Transforming the Way We Live and Work", International Journal of Engineering Trends and Applications (IJETA), Vol. 12, Issue. 4, pp. 239-244, 2025.

[7] R. Ajmera and D. Dharamdasani, "Comparative study of existing food delivery applications," Global Research Journal, pp. 454–463, 2022.

[8] A. Bohra, K. Paliwal, S. Soni, “Online code editor: A cloud-based platform for real-time web development,” International Journal of Global Research in Science and Technology, vol. 9, pp. 52–76, 2024.

[9] A. Kalwar, R. Ajmera, and C. S. Lamba, “An empirical study in small firms for web application development and proposed new parameters,” International Journal of Innovative Technology and Exploring Engineering, vol. 8, no. 4, Feb. 2019.

[10] G. Jain, M. K. Jha, "Enhancing E-Commerce Intelligence through Machine Learning-Based Sentiment Analysis and Forecasting", International Journal of Global Research in Science and Technology, vol. 10, pp. 1-7, 2025.

[11] R. Ajmera, A. Kalwar, and C. S. Lamba, “A modern study on progressions and issues of web application development in small firms,” International Journal of Scientific Research in Science and Technology, vol. 3, no. 8, pp. 1–6, Nov.–Dec. 2017.

[12] A. Chauhan and R. Misra, “Outline of web development life cycle in software engineering,” in Proceedings of the International National Conference on Recent Trends in Engineering and Technology, 2023.

[13] M. Ramesh and P. Singh, "AI-Based Student Placement and Recruitment Solutions," Journal of Artificial Intelligence Research, vol. 15, no. 4, pp. 215-230, 2023.

[14] P. Jha, M. Mathur, A. Purohit, A. Joshi, and A. Johari, “LibUno: A React-based digital platform for smart library management,” International Journal of Global Research in Science and Technology, vol. 9, pp. 38–51, 2024.