

TOUR GUIDANCE APP INTERDISCIPLINARY PROJECT

Submitted in partial fulfillment of the
requirements for the award of
Bachelor of Technology degree in Information Technology

by

JOSHINA VICTOR J (41120080)



DEPARTMENT OF INFORMATION TECHNOLOGY

SCHOOL OF COMPUTING

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Category-1 University by UGC

Accredited with Grade “A++” by NAAC

12B Status by UGC |Approved by AICTE

JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119

MAY - 2024



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DEPARTMENT OF INFORMATION TECHNOLOGY

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **JOSHINA VICTOR J (41120080)** who carried out the project entitled **"TOUR GUIDANCE APP"** under my supervision from January 2024 to May 2024.

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08/05/24

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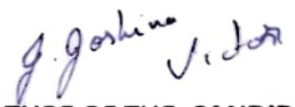
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DECLARATION

I JOSHINA VICTOR J hereby declare that the Project Report entitled "TOUR GUIDANCE APP" done by me under the guidance of **Dr.C.GEETHA,M.Tech., Ph.D.**, is submitted in partial fulfillment of the requirements for the award of Bachelor of Technology degree in Information Technology.

DATE: 8.5.2024

PLACE: CHENNAI


SIGNATURE OF THE CANDIDATE

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to **Board of Management** of **SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr. T.Sasikala, M.E., Ph.D., Dean**, School of Computing **Dr.R.Subhashini, M.E.,Ph.D.,**Head of the Department of Information Technology for providing me necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to my Project Guide **Dr.C.Geetha, M.Tech., Ph.D.,** for her valuable guidance, suggestions and constant encouragement paved way for the successful completion of my project work.

I wish to express my thanks to all Teaching and Non-teaching staff members of the **Department of Information Technology** who were helpful in many ways for the completion of the project.

CERTIFICATE OF COMPLETION



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CERTIFICATE FOR INTERNSHIP

TO WHOMSOEVER IT MAY CONCERN

This is to Certify that **J Joshina victor (Reg No: 41120080)** student of Sathyabama Institute of Science and Technology, B. Tech Information Technology, has successfully completed the Internship at Hackwit Technologies from 22nd January to 30th January 2024.

During the internship, **J Joshina victor** has closely worked as a part of the **Flutter** by carrying out the project entitled "**TOUR GUIDANCE APP**".

She demonstrated good developing and learning skill with self-motivated attitude to learn new things. Her contribution to implement the Flutter was good. We wish her all the best for her future endeavors.

Best Regards,

Ravikumar S
CEO & Managing Director
Hackwit Technologies Pvt Ltd



COURSE COMPLETION
CERTIFICATE

THIS CERTIFICATE IS PRESENTED TO

J JOSHINA VICTOR

has successfully completed the 40 Hrs hands-on certification
courses on Flutter App Development at
Sathyabama Institute of Science and Technology
from 22.01.2024 to 30.01.2024.

A handwritten signature in black ink, appearing to be 'J. Victor', written over a horizontal line.

DIRECTOR

A handwritten signature in black ink, appearing to be 'H. Gub...', written over a horizontal line.

INSTRUCTOR

ABSTRACT

TOUR GUIDANCE APP is a cutting-edge mobile application developed using Flutter, designed to enhance and simplify the tourist experience. This app provides an intuitive and interactive platform for tourists to explore new destinations with comprehensive guided tours. Leveraging Flutter's cross-platform capabilities, FlutterTour ensures a consistent and engaging user experience on both iOS and Android devices.

Immersive Tours: FlutterTour offers immersive guided tours with rich multimedia content, including audio guides, images, and historical facts, providing users with a captivating and educational experience.
Location-Based Guidance: Utilizing GPS technology, the app delivers real-time location-based guidance, ensuring users receive relevant information as they navigate through the destination.

Multilingual Support: To cater to a diverse audience, FlutterTour supports multiple languages, allowing users to enjoy guided tours in their preferred language.
Offline Access: Recognizing the importance of connectivity during travel, the app offers offline access to downloaded tours, enabling users to explore even in areas with limited or no internet connectivity.
Interactive Ratings: Users can provide feedback and ratings for tours, contributing to a community-driven platform that helps others make informed decisions about their travel experiences.

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LIST OF ABBREVIATIONS

ABBREVIATION	EXPANSION
UI	-User Interface
UX	- User Experience
iOS	- iPhone Operating System
UAT	- User Acceptance Testing
IDE	- Integrated Development Environment

LIST OF FIGURES

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CHAPTER 1

INTRODUCTION

Embark on a journey like never before with FlutterTour – the ultimate tour guidance app crafted with Flutter's dynamic capabilities. Whether you're a seasoned traveler or a first-time explorer, FlutterTour is your companion for immersive and personalized adventures. Immerse yourself in captivating guided tours that unfold the rich tapestry of your chosen destination. FlutterTour goes beyond the conventional travel experience, leveraging GPS technology for real-time, location-based guidance. Explore historical landmarks, hidden gems, and cultural treasures with ease, as our app seamlessly integrates with your device to provide a holistic tour experience.

Customize your exploration by selecting from curated routes or tailor your itinerary to match your interests and preferences. FlutterTour adapts to your pace, ensuring you make the most of every moment. With support for multiple languages, our app breaks down language barriers, making travel accessible to a global audience. No need to worry about connectivity – FlutterTour empowers you with offline access to downloaded tours. Whether you're strolling through bustling city streets or wandering off the beaten path, our app keeps you informed and engaged even in areas with limited internet access.

Navigate with confidence using interactive maps that guide you through the intricacies of your chosen route. Share your travel tales, discoveries, and tips with friends and fellow adventurers through seamless social integration. FlutterTour isn't just an app; it's a community-driven platform that amplifies the joy of exploration.

1.1 FLUTTER

Flutter is a popular open-source UI toolkit created by Google for building natively compiled applications for mobile, web, and desktop from a single codebase. It uses the Dart programming language and offers a rich set of pre-built widgets, tools, and libraries that make it efficient for developing modern and visually appealing applications. For a tour guidance app specifically, Flutter provides several advantages:

- Cross-Platform Development:** Flutter allows you to develop a single codebase that can run on both Android and iOS platforms, reducing development time and effort.
- Native Performance:** Flutter apps are compiled directly to native machine code, providing high performance and smooth animations similar to native applications.
- Rich UI Components**

Flutter offers a wide range of customizable widgets for building user interfaces, including buttons, text inputs, lists, maps, and more. This makes it easy to create interactive and engaging tour guide interfaces.

To get started with Flutter for your tour guidance app, you can follow these steps:

- Install Flutter** Install Flutter on your development machine by following the instructions in the Flutter documentation.
- Set up IDE:** Choose an IDE or code editor for Flutter development, such as Visual Studio Code or Android Studio, and install the necessary Flutter and Dart plugins.
- Create a New Flutter Project:** Use the Flutter CLI or IDE to create a new Flutter project. You can start with a basic template and gradually add features for your tour guidance app.

1.2 DART

i) Unified Codebase:

Tour guidance app relies on Dart, a client-optimized programming language, for implementing backend logic and server-side operations. Dart's versatility enables developers to maintain a unified codebase for both the frontend (Flutter) and backend, fostering consistency and ease of collaboration.

ii) Asynchronous Programming:

Dart's support for asynchronous programming is crucial for handling concurrent operations efficiently. This feature ensures that tour guidance app can seamlessly manage multiple tasks, such as handling user requests, database operations, and external API calls, without causing delays or disruptions in the application's responsiveness.

iii) Scalability:

Dart's scalability is instrumental in accommodating the potential growth of tour guidance app. As the user base expands and the demand for mentorship increases, Dart's ability to scale allows the platform to handle higher traffic, ensuring a smooth and responsive experience for all users.

iv) Strong Typing System:

Dart's strong typing system enhances code reliability and maintainability in tour guidance app. By catching potential errors during the development phase, Dart enables developers to write robust and error-resistant code, reducing the likelihood of runtime issues and enhancing the overall stability of the application.

1.1 FIREBASE

i) Real-time Data Synchronization:

Firebase Cloud Firestore supports real-time data synchronization, allowing seamless updates across multiple devices. This feature is crucial for the tour guidance app, enabling mentors and students to experience instant changes in discussions, mentorship requests, and collaborative interactions.

ii) Firebase Authentication for User Security:

Firebase Authentication provides a secure and straightforward user authentication process. The tour guidance app leverages this feature to ensure that only authorized users, both mentors and students, can access the platform. Multi-factor authentication and identity verification contribute to a robust security layer.

iii) Serverless Cloud Functions:

Firebase offers serverless cloud functions that enable the execution of backend logic without managing servers. The tour guidance app utilizes these functions for various tasks, such as sending notifications, updating user data, and handling asynchronous operations. This serverless architecture enhances scalability and efficiency.

iv) Firebase Cloud Storage for Media Assets:

Storing media assets, such as profile pictures and discussion attachments, is streamlined with Firebase Cloud Storage. The tour guidance app utilizes this feature to efficiently manage and serve multimedia content, ensuring a smooth and responsive user experience for both mentors and students.

1.1. PROBLEM STATEMENT

In the realm of travel and exploration, tourists often face challenges in accessing comprehensive and engaging guided tours that cater to their diverse interests and preferences. Existing tour guidance apps often lack a seamless user experience, fail to provide real-time location-based information, and may not support multiple languages, limiting the accessibility for a global audience. Additionally, the reliance on constant internet connectivity poses a significant obstacle, preventing users from exploring destinations in areas with limited or no network coverage.

There is a pressing need for a sophisticated tour guidance app that leverages advanced technologies like Flutter to address these pain points. Such an application should offer immersive, customizable, and offline-accessible guided tours, ensuring a seamless and enriching experience for travelers worldwide. By tackling these challenges head-on, a new tour guidance app can redefine the way people explore destinations, fostering a sense of connection and discovery in their travels.

Furthermore, the lack of inclusivity in existing platforms restricts the diversity of perspectives and experiences available to users. Many students, despite having valuable insights to share, find themselves on the periphery of collaborative learning environments. The current platforms also often fail to foster inclusivity, sidelining valuable contributors such as students with unique perspectives and experiences. This exclusionary nature stifles the collaborative potential of learning environments and limits the diverse range of insights available to users.

User Authentication: Implement user authentication to allow travelers to create accounts, log in, and access personalized features.

Destination Information: Provide detailed information about various tourist destinations, including descriptions, images, historical significance, popular attractions, and nearby amenities (hotels, restaurants, transportation options). Local Guides: Connect travelers with local guides who can offer personalized tours, insights, and recommendations based on their expertise and knowledge of the area.

Customized Recommendations: Utilize user preferences, travel history, and interests to generate personalized recommendations for attractions, activities, and experiences. Interactive Maps: Integrate interactive maps to help users navigate and explore destinations, mark points of interest, and plan their itinerary. Reviews and Ratings: Allow users to rate and review destinations, attractions, and tour guides, providing valuable feedback for other travelers. Notifications Implement push notifications to keep users informed about upcoming tours, special offers, travel advisories.

1.2. OBJECTIVES

User Engagement The primary objective is to engage users effectively by providing them with valuable information, personalized recommendations, and interactive features that enhance their travel planning and exploration experience.

Information Accessibility Ensure that travelers have easy access to detailed information about tourist destinations, attractions, amenities, and local guides, enabling them to make informed decisions and plan their trips efficiently.

Personalization Implement personalized features based on user preferences, travel history, and interests, offering tailored recommendations, tour suggestions, and relevant content that matches their needs and preferences.

Local Expertise Connect travelers with local guides who can offer authentic experiences, insider knowledge, and personalized tours, creating memorable and immersive travel experiences.

Ease of Use: Design the app with a user-friendly interface, intuitive navigation, and responsive layouts to provide a seamless and enjoyable user experience across different devices and screen sizes.

Offline Capability: Ensure that essential information, maps, and guides are accessible offline, allowing travelers to use the app even in areas with limited internet connectivity or during travel without data access.

Feedback and Engagement: Implement features for user feedback, reviews, ratings, and social sharing, encouraging user engagement, community participation, and valuable insights for continuous app improvement.

Key Challenges:

Data Integration: Integrating and managing large amounts of data such as destination information, maps, images, user preferences, and real-time updates can be challenging. Use Firebase or other backend services for efficient data storage, retrieval, and synchronization.

Offline Functionality: Providing offline access to essential app features, data, and resources is crucial, especially in areas with limited connectivity. Implement caching mechanisms, pre-fetching data, and local storage solutions to enable offline functionality.

User Experience: Ensuring a smooth and intuitive user experience across different devices, screen sizes, and orientations requires careful design and testing. Use responsive layouts, adaptive design principles, and usability testing to optimize user experience.

Security and Privacy: Handling user data, authentication, and secure communication are critical aspects. Implement strong security measures, encryption techniques, and adhere to privacy regulations to protect user information.

Performance Optimization: Flutter apps should be optimized for performance, including fast loading times, smooth animations, and minimal resource usage. Use code optimization techniques, lazy loading, and performance profiling tools to identify and address performance bottlenecks.

Integration with Third-party APIs: Integrating with external APIs for maps, weather data, location services, and other functionalities requires thorough understanding and implementation. Follow API documentation, handle API rate limits, and monitor API usage for efficient integration.

CHAPTER 2

METHODOLOGY

2.1. INITIAL PROJECT REQUIREMENTS

i) Project Scope:

- 1) Develop a mobile application named "Tour Guidance App".
- 2) Create a platform that connects people seeking for good guidance in tour.
- 3) Develop wireframes and mockups to visualize the app's layout, navigation flow, and user interface design.

ii) Technologies:

- 1) Flutter: Utilize Flutter for cross-platform mobile app development, ensuring a consistent user experience on both iOS and Android.
- 2) Dart: Employ the Dart programming language as the primary language for Flutter app development.
- 3) Firebase: Integrate Firebase for backend services, including authentication, real-time database (Firestore), and cloud storage.

iii) Functionalities:

User Authentication:

Allow users to create accounts, log in, and manage their profiles securely. Implement authentication methods such as email/password, social login (Google, Facebook), and OTP verification for phone numbers.

Destination Information: Provide detailed information about tourist destinations, including descriptions, images, historical significance, operating hours, contact details, and reviews.

Local Guides: Connect users with local guides who can offer personalized tours, insights, recommendations, and commentary based on their expertise and knowledge.

iv) Packages Used:

i) get:

Version: 4.6.6

Purpose: State management and navigation framework.

ii) firebase_core:

Version: 2.25.3

Purpose: Firebase initialization and core functionality.

iii) firebase_auth:

Version: 4.17.3

Purpose: User authentication with Firebase.

iv) cloud_firestore:

Version: 4.15.3

Purpose: Interaction with Cloud Firestore for real-time data.

v) cloud_firestore_web:

Version: 3.10.3

Purpose: Web implementation of Cloud Firestore.

vi) firebase_auth_web:

Version: 5.9.3

Purpose: Web implementation of Firebase Authentication.

vii) firebase_core_web:

Version: 2.11.3

Purpose: Web implementation of Firebase Core.

viii) google_sign_in:

Version: 5.2.1

Purpose: Google Sign-In authentication.

ix) toast:

Version: 0.3.0

Purpose: Displaying simple toast notifications.

x) fluttertoast:

Version: 8.0.7

Purpose: Displaying customizable toast messages.

xi) image_picker:

Version: 1.0.7

Purpose: Picking images from the gallery or taking photos.

2.2. PROPOSED APPLICATION ARCHITECTURE

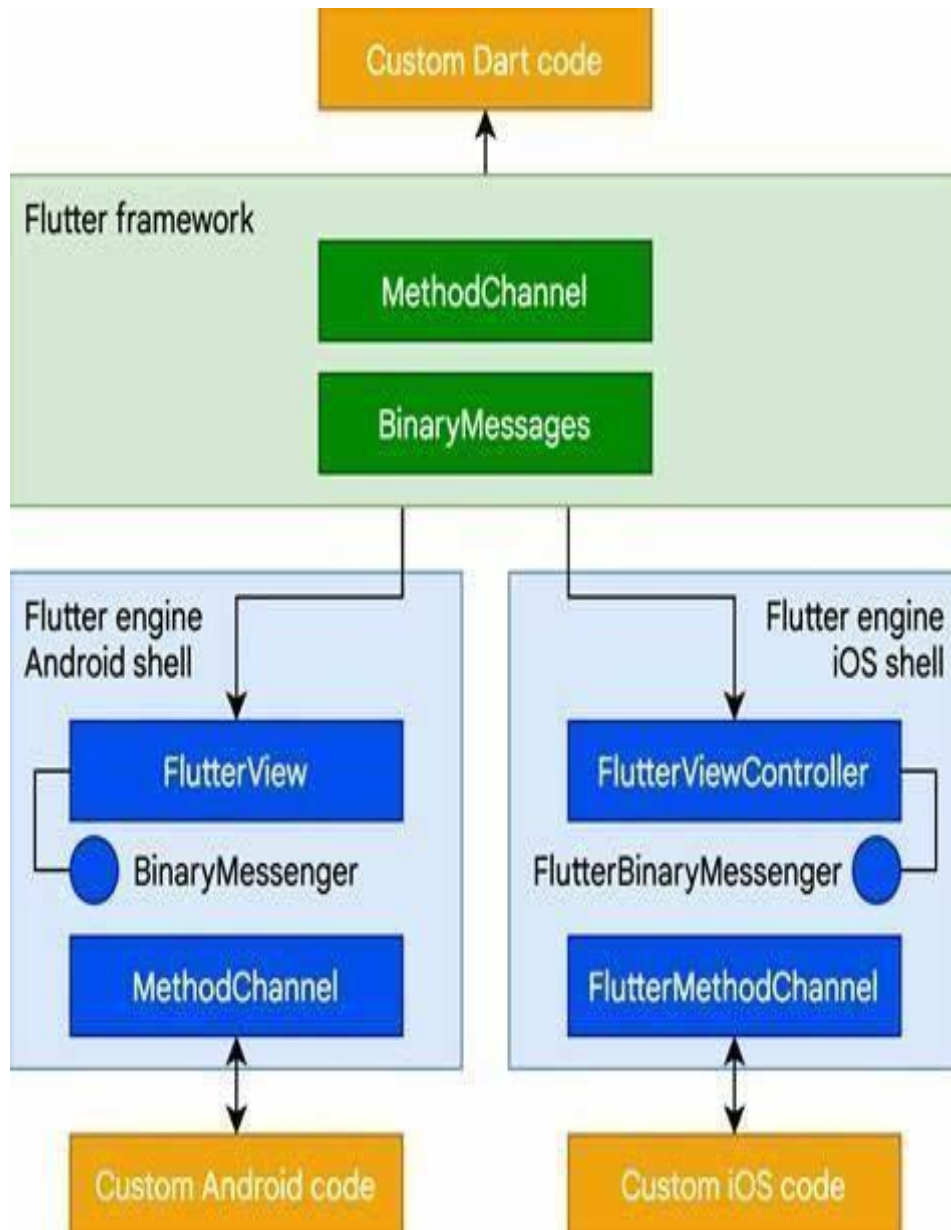


Fig:2.1: Proposed Application Architecture

1. Custom Dart Code:

This represents any custom code you write in Dart specifically for your Flutter app. It could be business logic, UI components, or any other functionality unique to your application. The custom Dart code interacts with the Flutter framework to achieve various tasks.

2. Flutter Framework:

The Flutter framework is the heart of your app. It provides a rich set of widgets, tools, and APIs for building cross-platform mobile applications.

3. MethodChannel:

The MethodChannel allows communication between Dart code and native platform code (Android or iOS). When we invoke a method on the MethodChannel from Dart, it triggers a corresponding method call on the native side.

4. BinaryMessages:

BinaryMessages is another channel for communication between Dart and native code. It enables the exchange of binary data (such as images, files, or serialized objects) between the two sides.

5. Flutter Engine Android Shell:

On the Android side, the Flutter engine runs within an Android shell.

- i) FlutterView: This is the Android view that displays your Flutter UI.
- ii) BinaryMessenger: It handles communication between the Flutter engine and the Android platform.

6. Flutter Engine iOS Shell:

On iOS, the Flutter engine runs within an iOS shell.

- i) FlutterViewController: The iOS view controller responsible for displaying your Flutter UI.
- ii) FlutterBinaryMessenger: Handles communication between the Flutter engine and the iOS platform.

7. Custom Android Code and Custom iOS Code:

These represent platform-specific code written in Java/Kotlin (for Android) and Objective-C/Swift (for iOS). You'll write custom code here to interact with native features or APIs that aren't directly accessible from Flutter.

8. Firebase:

Firebase

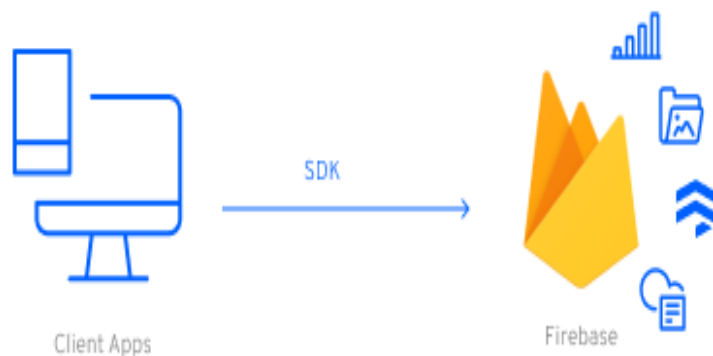


Fig:2.2: Firebase Architecture

i) Firebase Authentication:

Firebase Authentication offers ready-to-use authentication services. It integrates seamlessly with Flutter, allowing users to sign up, sign in, and manage their accounts. MFA (Multi-factor Authentication) can be enabled to enhance security by requiring additional verification steps (e.g., SMS codes, email, or biometrics).

ii) Firestore (Realtime Database):

Firestore is a NoSQL database provided by Firebase. It stores structured data in collections and documents. You can use Firestore to store user profiles, chat messages, app settings, and more.

iii) Firebase Storage:

Firebase Storage provides secure cloud storage for files (e.g., images, videos, documents). You can upload and download files directly from your Flutter app. Data-at-rest encryption ensures sensitive files are protected.

iv) Firebase Analytics:

Firebase Analytics tracks user behavior, app usage, and events. You can gain insights into user engagement, retention, and conversion rates. Use analytics data to make informed decisions about app improvements.

9. To integrate Firebase with your Flutter app:

Add the necessary Firebase plugins (e.g., `firebase_core`, `firebase_auth`, `cloud_firestore`, etc.) to your `pubspec.yaml`. Initialize Firebase in your app (usually in the `main` function). Use Flutter widgets to build UI that interact with Firebase services.

2.3. FLOW DIAGRAM

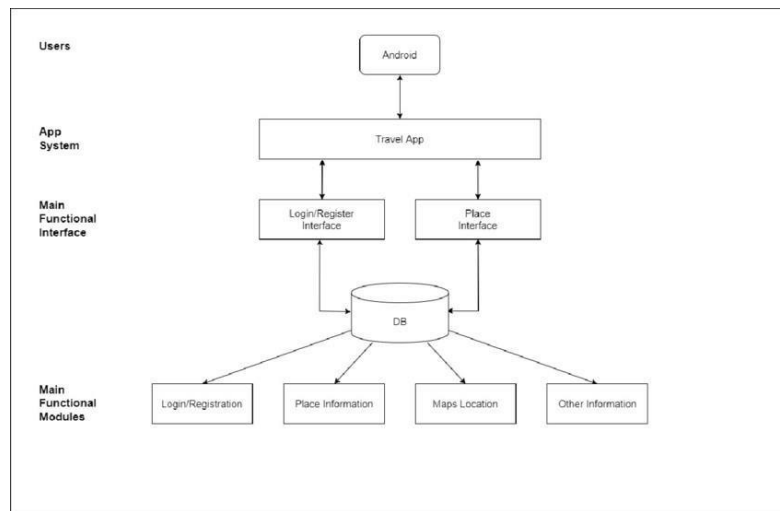


Fig:2.3: Flow Diagram

The following steps are used to describe the above flow diagram:

- i) The user opens the mobile app.
- ii) The app prompts the user to log in or sign up if they don't have an account yet.
- iii) If the user chooses to sign up, they will be taken to the sign-up page.
- iv) If the user is already registered, they can log in directly.
- v) Once the user is logged in, they will be taken to the home page.
- vi) From the home page, the user can access various features of the app such as their profile page, feedback page, message page, places selection page, and details page.
- vii) The Tour selection page allows the user to choose a places and view their details.
- viii) The details page provides information about the place.
- ix) The user can also leave feedback on the app.
- x) The chat feature allows the user to communicate with their agencies.

2.4. MODULES

2.4.1. USER MANAGEMENT:

Provides a comprehensive registration form(signup) with fields for personal information, contact details, and interests, enhancing user profile completeness.

Algorithm:

i) Display Registration Form: The signup process begins by displaying a user-friendly registration(Signup) form on the Tour Guidance app platform. The form includes fields for personal information, contact details, and interests, ensuring a comprehensive profile setup.

ii) Collect User Information: When a user accesses the registration form, they are prompted to fill in essential information such as their full name, email address, password, date of birth, and areas of interest. These details are crucial for creating a personalized and relevant user profile.

iii) Validate Input Data: As users enter their information, the system performs validation checks to ensure the accuracy and completeness of the data. For example, it verifies that the email format is correct and that the password meets security requirements (e.g., minimum length, inclusion of special characters).

iv) Create User Account: After successful validation, the system creates a new user account using the provided information. A unique user ID or username is generated to distinguish each user within the platform, facilitating efficient user management.

2.4.2. AUTHENTICATION:

Implements secure login functionality with email/password or social login options, providing users with seamless access to the platform.

Algorithm:

i) Display Login Interface: Upon accessing the platform, users are presented with a login interface that allows them to enter their credentials for authentication.

ii) Verify User Credentials: When users attempt to log in, the system verifies their credentials, such as their email address and password, against the stored data in the database. For social login, the system validates the authentication tokens provided by the respective platforms.

iii) Grant Access: If the entered credentials or authentication tokens are valid, the system grants the user access to the platform, allowing them to explore Tour guidance app's features and functionalities.

iv) Session Management: Upon successful authentication, the system creates a session or issues a token to maintain the user's logged-in state. This session/token management ensures secure and seamless user interactions throughout their session on the platform.

2.4.3. PROFILE MANAGEMENT:

Enables users to update profiles, upload pictures, set availability, and manage notifications, enhancing personalization and user control.

Algorithm:

i) Access Profile Settings: Users can access their profile settings through a dedicated interface within Tour guidance app, providing them with centralized control over their profile information and preferences.

ii) Update Profile Information: The profile management functionality allows users to update their profile details, such as their name, contact information, interests, and any additional information relevant to their mentorship experience.

iii) Upload Profile Picture: Users have the option to upload profile pictures or avatars, adding a personal touch to their profiles. The system securely stores these images and associates them with the respective user profiles.

iv) Manage Availability: Users can set their availability status (e.g., online/offline) to indicate when they are open to contact.

2.4.4. AGENCY SELECTION:

Implements collaborative filtering algorithms considering user preferences, mentor expertise, availability, and ratings, enhancing accurate Agency matches.

Algorithm:

- i) Data Collection: Gather user preferences, agency attributes, availability schedules, and historical ratings or feedback from the database. Capture user interests, agency expertise areas, preferred session timings, and past interaction patterns.
- ii) User-Driven Selection Process: Design a user-friendly interface for browsing and exploring recommended agency, showcasing relevant information such as agency profiles, expertise areas, availability, ratings, and reviews.
- iii) User Feedback: Allow users to review and provide feedback on recommended agency, enabling them to express preferences and refine their selection criteria.
- iv) Interactive Selection: Implement interactive features such as filtering, sorting, and bookmarking mentors to facilitate informed and personalized agency selection.
- v) Real-Time Assistance: Integrate a chat support feature to assist users in their agency selection process, answering questions, providing guidance, and addressing concerns in real time.

2.4.5. MESSAGING AND COLLABORATION :

Integrates real-time messaging using WebSockets or Firebase, enabling instant communication and collaboration between mentors and agency. Facilitates file uploads and downloads during messaging sessions, enhancing collaboration and resource sharing.

Algorithm:

- i) Real-Time Messaging Setup: Initialize real-time messaging using WebSockets or Firebase Realtime Database. Connect users to messaging channels based on their roles and conversations (individual chats, group chats).
- ii) Message Sending: agency or mentees compose and send messages through the messaging interface. Messages are formatted, timestamped, and sent to the recipient(s) within the messaging channel.
- iii) Message Reception: Recipients receive incoming messages in real time. Messages are displayed in the conversation thread with sender details, timestamps, and message content.
- iv) File Uploads: Users initiate file uploads by selecting files from their devices. Uploaded files are transmitted securely and stored temporarily or permanently based on user preferences.
- v) Collaborative Features: Implement collaborative tools like shared whiteboards or document editors within specific conversation threads. Allow real-time collaboration on shared documents, with version control and concurrent editing capabilities.

2.5. DEVELOPMENT AND DEPLOYMENT SETUP

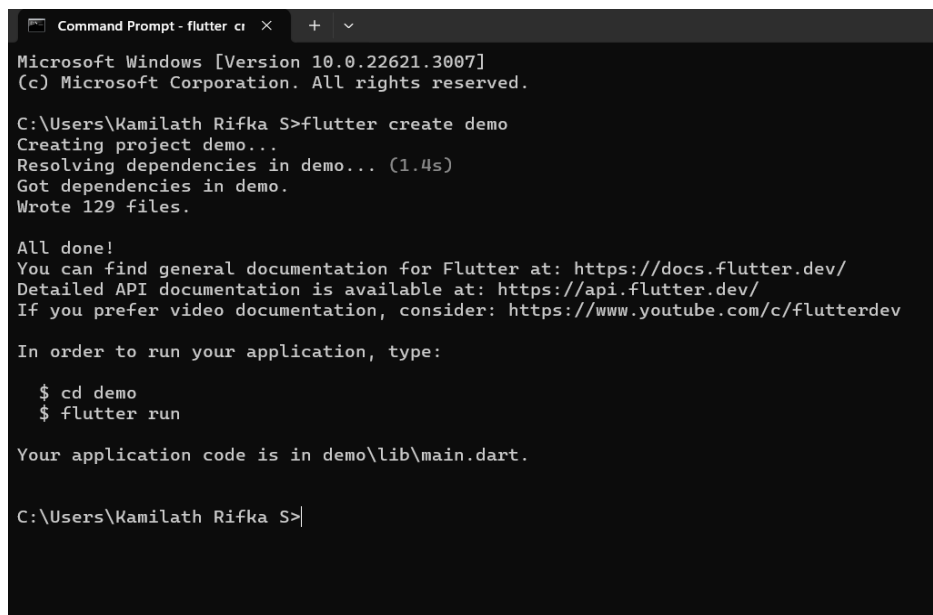
1. Development Environment:

Flutter and Dart need to be installed on the developer's machine.

IDEs like Visual Studio Code or Android Studio for coding.

2. Create Project:

>>flutter create project_name



```
Command Prompt - flutter ci x + v
Microsoft Windows [Version 10.0.22621.3007]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Kamilath Rifka S>flutter create demo
Creating project demo...
Resolving dependencies in demo... (1.4s)
Got dependencies in demo.
Wrote 129 files.

All done!
You can find general documentation for Flutter at: https://docs.flutter.dev/
Detailed API documentation is available at: https://api.flutter.dev/
If you prefer video documentation, consider: https://www.youtube.com/c/flutterdev

In order to run your application, type:

$ cd demo
$ flutter run

Your application code is in demo\lib\main.dart.

C:\Users\Kamilath Rifka S>
```

Fig:2.4: Project Creation

3. Dependency Management:

Project dependencies specified in the pubspec.yaml file.

Key packages include:

- firebase_core for Firebase integration.
- firebase_auth for user authentication.
- cloud_firestore for real-time data synchronization.
- Other packages like get, toast, image_picker, etc., for additional functionalities.

4. Firebase Configuration:

Firebase project created and configured for the application.

Firebase Hosting used for deploying the Flutter web application.

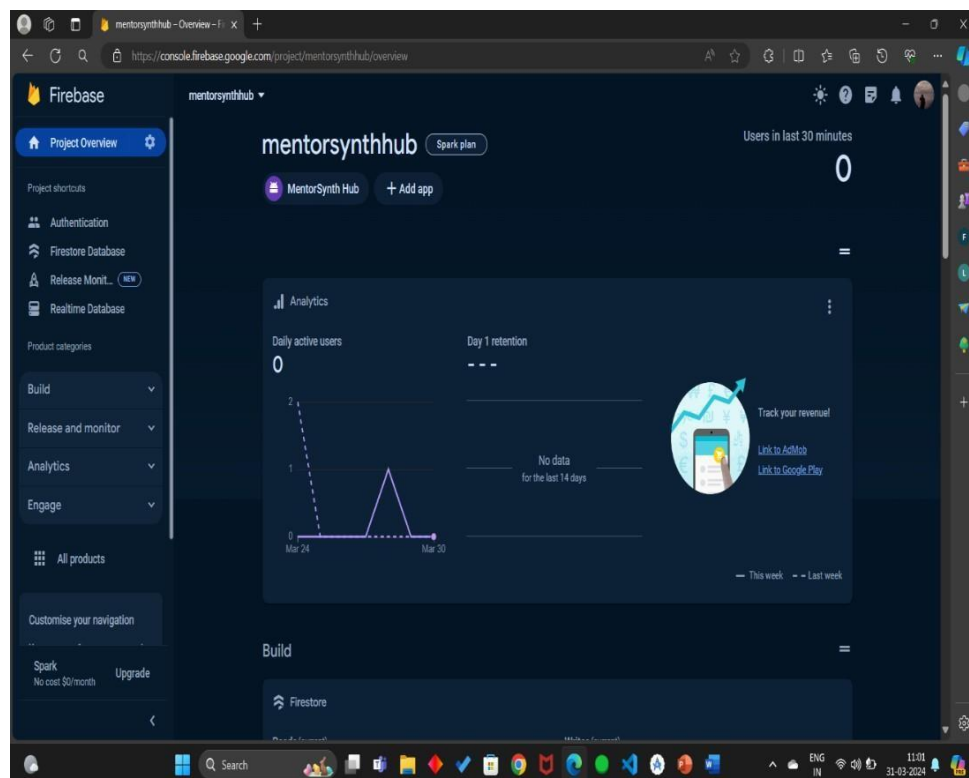


Fig:2.5: Firebase Connection

5. Firebase Authentication:

Firebase Authentication set up for secure user login and identity verification.

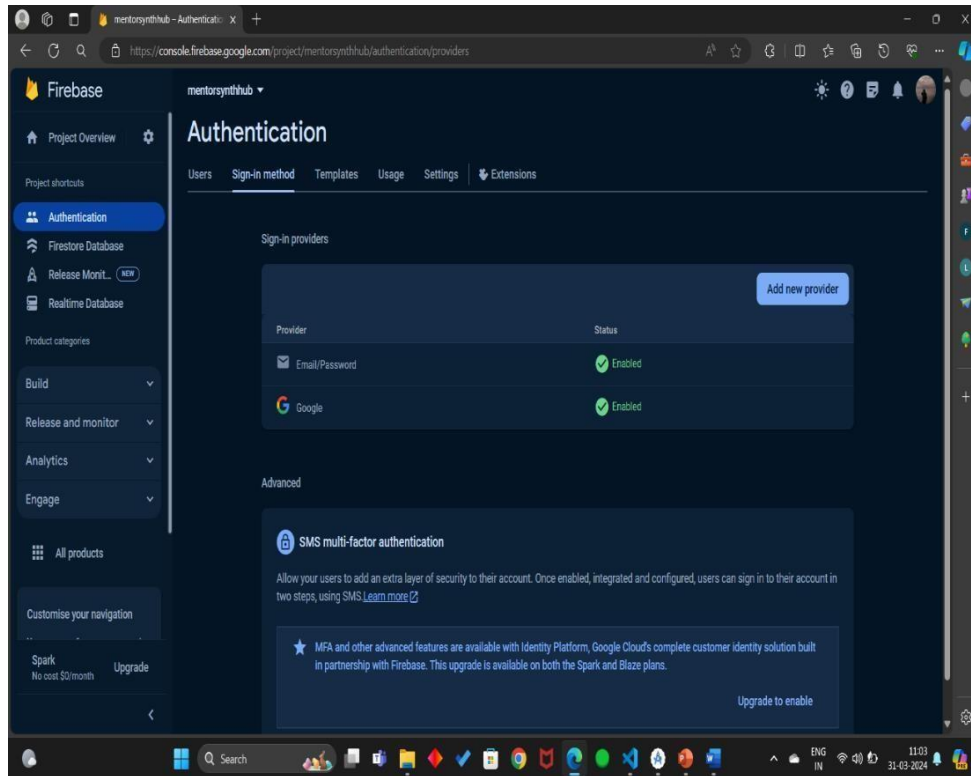


Fig:2.6: Firebase Authentication

6. Development Tools:

Flutter commands used for testing and building the application. Real-time testing on Android and iOS devices.

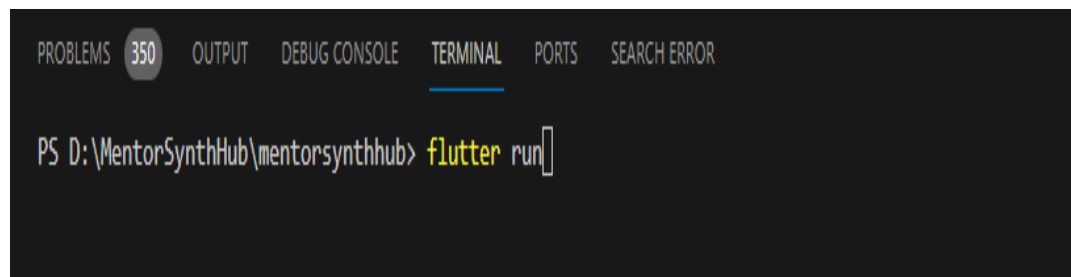


Fig:2.7: Flutter Run

7. Deployment Process:

Firebase used for hosting the web version of the application.

Seamless deployment using Flutter and Firebase commands.

8. Supported Platforms:

Cross-platform support for Android, iOS, and web.

9. Integrated Development Environment (IDE):

Developers can choose between Visual Studio Code or Android Studio for coding.

10. User Authentication:

Firebase Authentication ensures secure user login.

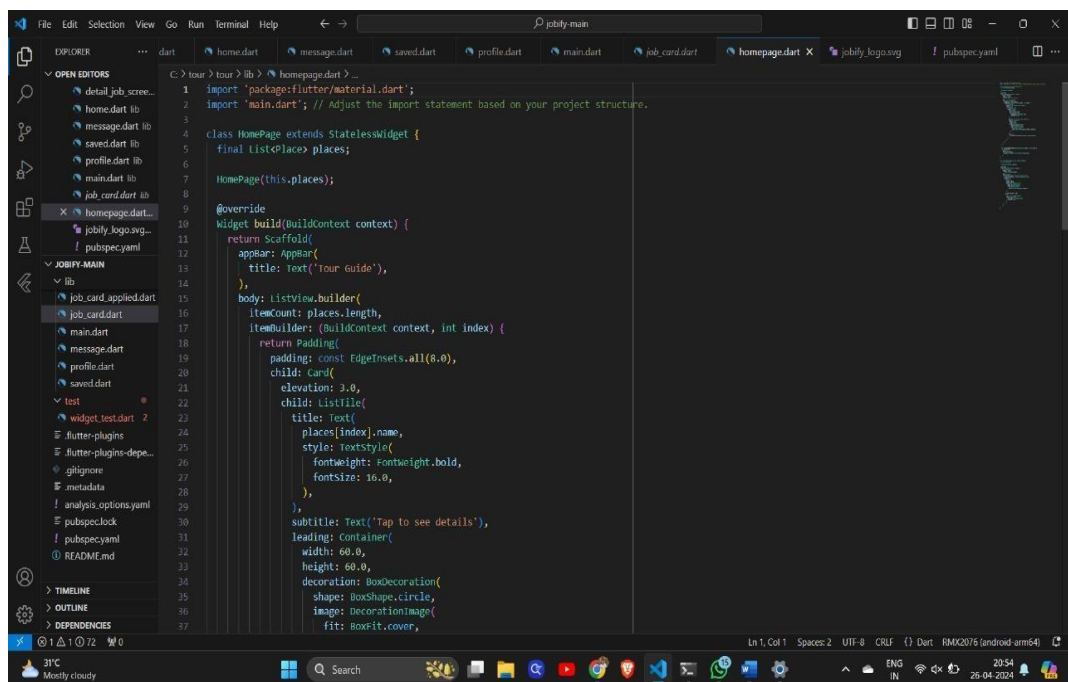
CHAPTER 3

RESULTS AND DISCUSSION

DART CODES:

i) main.dart: This file is typically the entry point of a Flutter application. It initializes the app, sets up necessary configurations, and runs the main application widget.

ii) loginPage.dart: This file likely contains the UI and logic for user login. It includes form fields for entering credentials and a mechanism to authenticate users.



```
1 import 'package:flutter/material.dart';
2 import 'main.dart'; // Adjust the import statement based on your project structure.
3
4 class HomePage extends StatelessWidget {
5   final List<Place> places;
6
7   HomePage(this.places);
8
9   @override
10  Widget build(BuildContext context) {
11    return Scaffold(
12      appBar: AppBar(
13        title: Text('Tour Guide'),
14      ),
15      body: ListView.builder(
16        itemCount: places.length,
17        itemBuilder: (BuildContext context, int index) {
18          return Padding(
19            padding: const EdgeInsets.all(8.0),
20            child: Card(
21              elevation: 3.0,
22              child: ListTile(
23                title: Text(
24                  places[index].name,
25                  style: TextStyle(
26                    fontWeight: FontWeight.bold,
27                    fontSize: 16.0,
28                  ),
29                ),
30                subtitle: Text('Tap to see details'),
31                leading: Container(
32                  width: 60.0,
33                  height: 60.0,
34                  decoration: BoxDecoration(
35                    shape: BoxShape.circle,
36                    image: DecorationImage(
37                      fit: BoxFit.cover,
```

Fig:3.1: DART CODE

iii) signupPage.dart: Similar to the login file, signupPage.dart is likely responsible for handling user registration. It includes form fields for users to create accounts.

iv) homePage.dart: This file represents the main content of your app after a successful login or signup. It contains messages,profilePage ,feedbackPage and mentorSelection Page with various features.

v) profilePage.dart: The file is likely responsible for displaying and editing user profiles. It includes information about the user, such as their name, profile picture, and additional details.

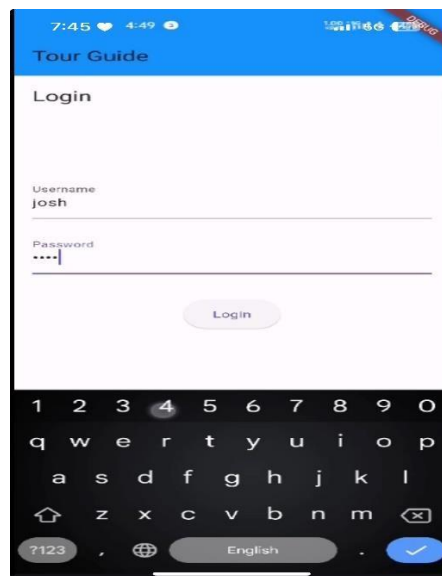


Fig:3.2: LOGIN PAGE

- vi) messagePage.dart: This file could represent a page where users can exchange messages.
- vii) message_model.dart: This file defines the structure of a Message model.
- viii) messageForm.dart: This file represents a form for users to send messages.
- ix) messageList.dart: This file creates a list to display messages.
- x) messageCard.dart: This file defines a card to display individual messages.
- xi) agency.dart: This file defines the structure of a agency model.
- xii) PalcesSelectionPage.dart: This file represents a page where Places are listed for selection.

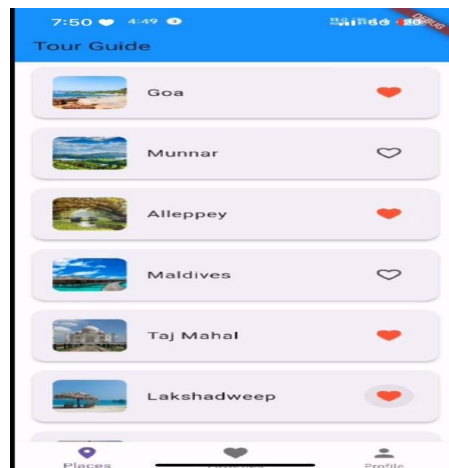


Fig:3.4: SELECTING FAVORITE PLACES

- xiii) mentorCard.dart: This file represents a card to display individual mentors
- xiv) mentorDetailsPage.dart: This file creates a details page for an individual mentor.
- xv) Selected places page: This page stores the selected places.

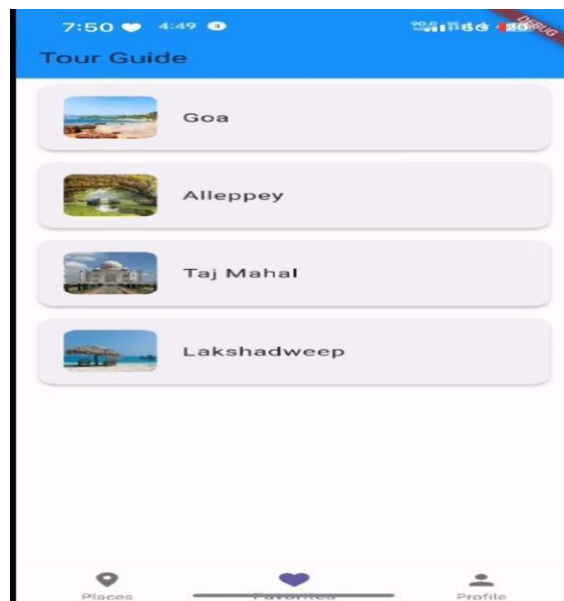


Fig:3.4: SELECTED PLACES

FIREBASE:

i) Create a Firebase Project:

1. Go to the Firebase Console.
2. Click on "Add Project" and follow the setup instructions.

ii) Configure Flutter Project:

1. Add the Firebase configuration files to your Flutter project.
2. Follow the instructions provided in the Firebase Console to add google-services.json for Android and GoogleService-Info.plist for iOS.
3. These files contain configuration details needed for your app to connect to Firebase services.

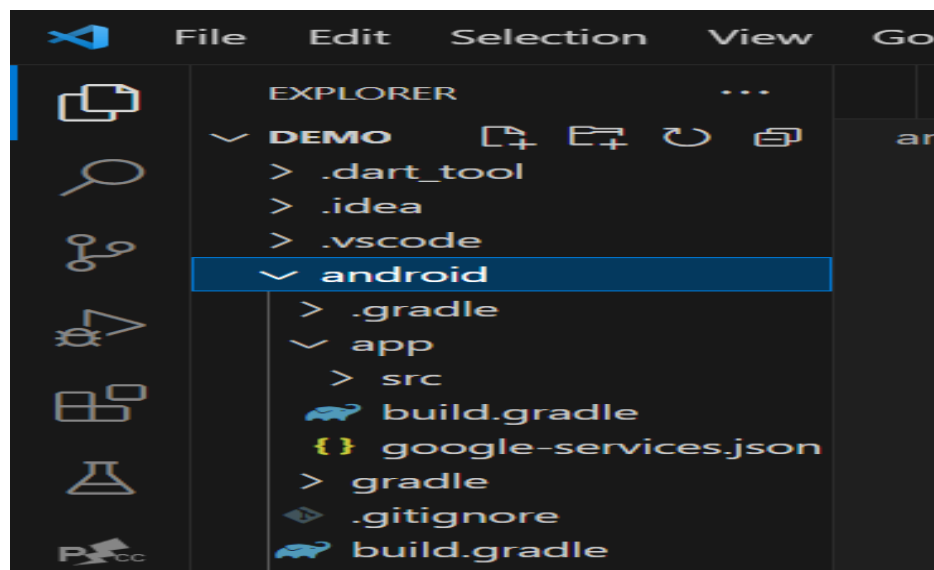


Fig:3.5: Firebase Configurations

iii) Add Firebase Dependencies:

Open the pubspec.yaml file and add the following dependencies:

yaml code:

dependencies:

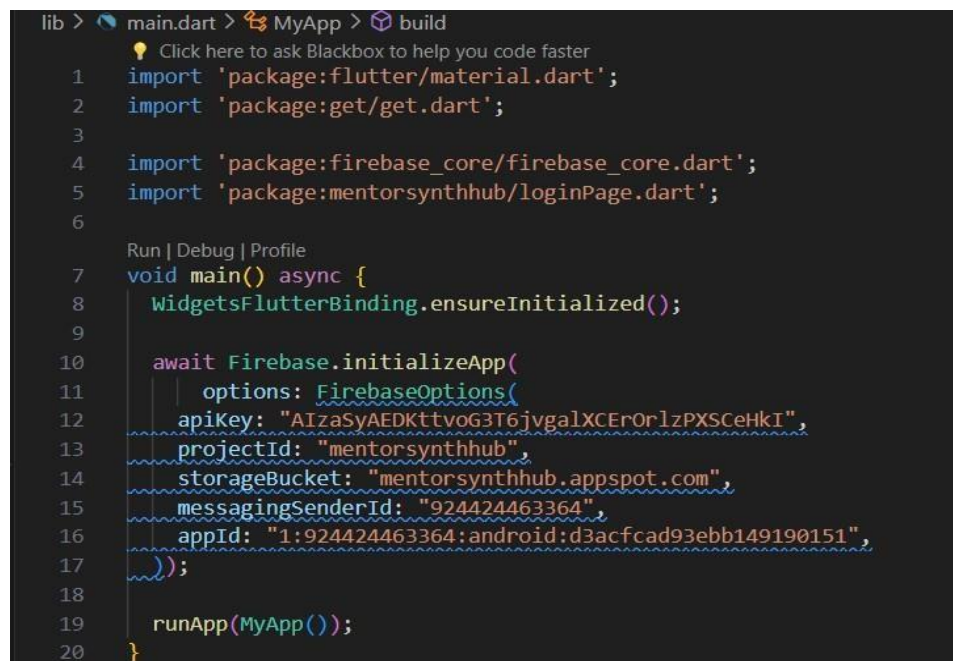
firebase_core: ^2.25.3

firebase_auth: ^4.17.5

iv) Initialize Firebase:

In your main.dart or wherever you initialize your Flutter app, make sure to initialize Firebase. If you want to implement user authentication, Firebase provides the firebase_auth package. You can use it to sign in users using various methods like email/password, Google Sign-In, etc.

Dart code:



```
lib > main.dart > MyApp > build
Click here to ask Blackbox to help you code faster
1 import 'package:flutter/material.dart';
2 import 'package:get/get.dart';
3
4 import 'package:firebase_core/firebase_core.dart';
5 import 'package:mentorsynthhub/loginPage.dart';
6
7 void main() async {
8   WidgetsFlutterBinding.ensureInitialized();
9
10  await Firebase.initializeApp(
11    options: FirebaseOptions(
12      apiKey: "AIzaSyAEDKttvoG3T6jvgalXCeOrlzPXScEhKI",
13      projectId: "mentorsynthhub",
14      storageBucket: "mentorsynthhub.appspot.com",
15      messagingSenderId: "924424463364",
16      appId: "1:924424463364:android:d3acfcad93ebb149190151",
17    ));
18
19  runApp(MyApp());
20 }
```

Fig:3.6: Initializing Firebase

CHAPTER 4

CONCLUSION AND FUTURE WORK

4.1. CONCLUSION

Achievements: Summarize the key accomplishments during the app development, such as completing the login page, integrating location services, and designing a user-friendly interface.

User Feedback: Mention any user feedback or testing results that have helped refine the app's functionality and user experience.

Future Potential: Highlight the app's potential to grow and evolve with additional features and content.

4.2. FUTURE WORK

Collaborate with educational platforms or content providers to integrate learning resources directly into the app, providing users with access to tutorials, courses, and industry-specific materials.

Enhanced Features: Plan to add features like personalized recommendations based on user preferences, real-time updates on events and attractions, and interactive maps for navigation.

Content Expansion: Continue adding more places of interest, updating information regularly, and collaborating with local businesses for promotions and partnerships.

Social Integration: Integrate social media features for users to share their experiences, reviews, and photos, enhancing community engagement.

Monetization Strategies: Explore monetization options such as premium content, in-app purchases for tours or experiences, and partnerships with tourism agencies or advertisers.

1. Gamification Elements:

Introduce gamification elements, such as achievement badges, leaderboards, or challenges, to incentivize user engagement and recognize contributions within the Tour guidance app community.

2. Machine Learning for Recommendation:

Explore the use of machine learning algorithms to enhance mentor recommendations based on historical user data, preferences, and successful agency interactions.

3. Mobile App Accessibility:

Ensure the app's accessibility by incorporating features like voiceover support, larger text options, and other accessibility improvements to cater to a diverse user base.

4. Feedback and Rating System:

Implement a comprehensive feedback and rating system for both mentors and students, allowing users to provide reviews and ratings after contacting agency to build a reputation system.

5. Multi-Language Support:

Expand the application's reach by incorporating multi-language support, allowing users from different linguistic backgrounds to use Tour guidance app comfortably.

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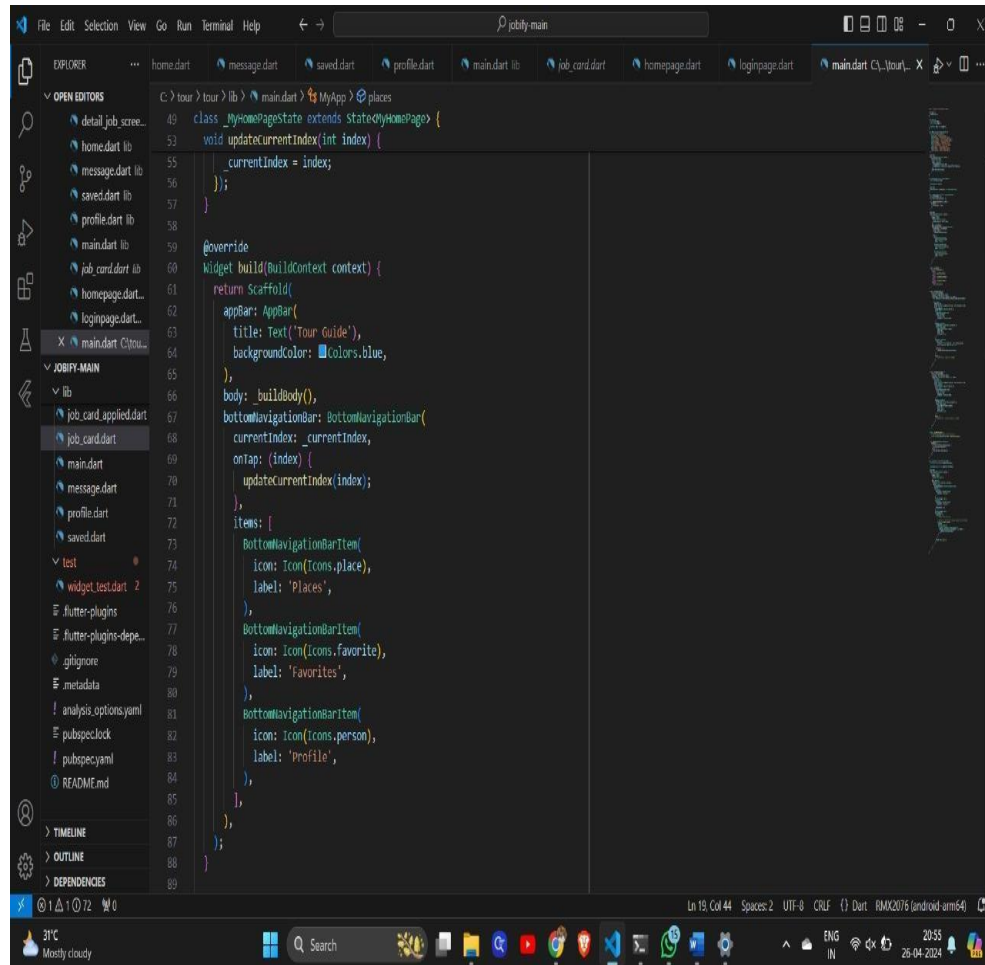
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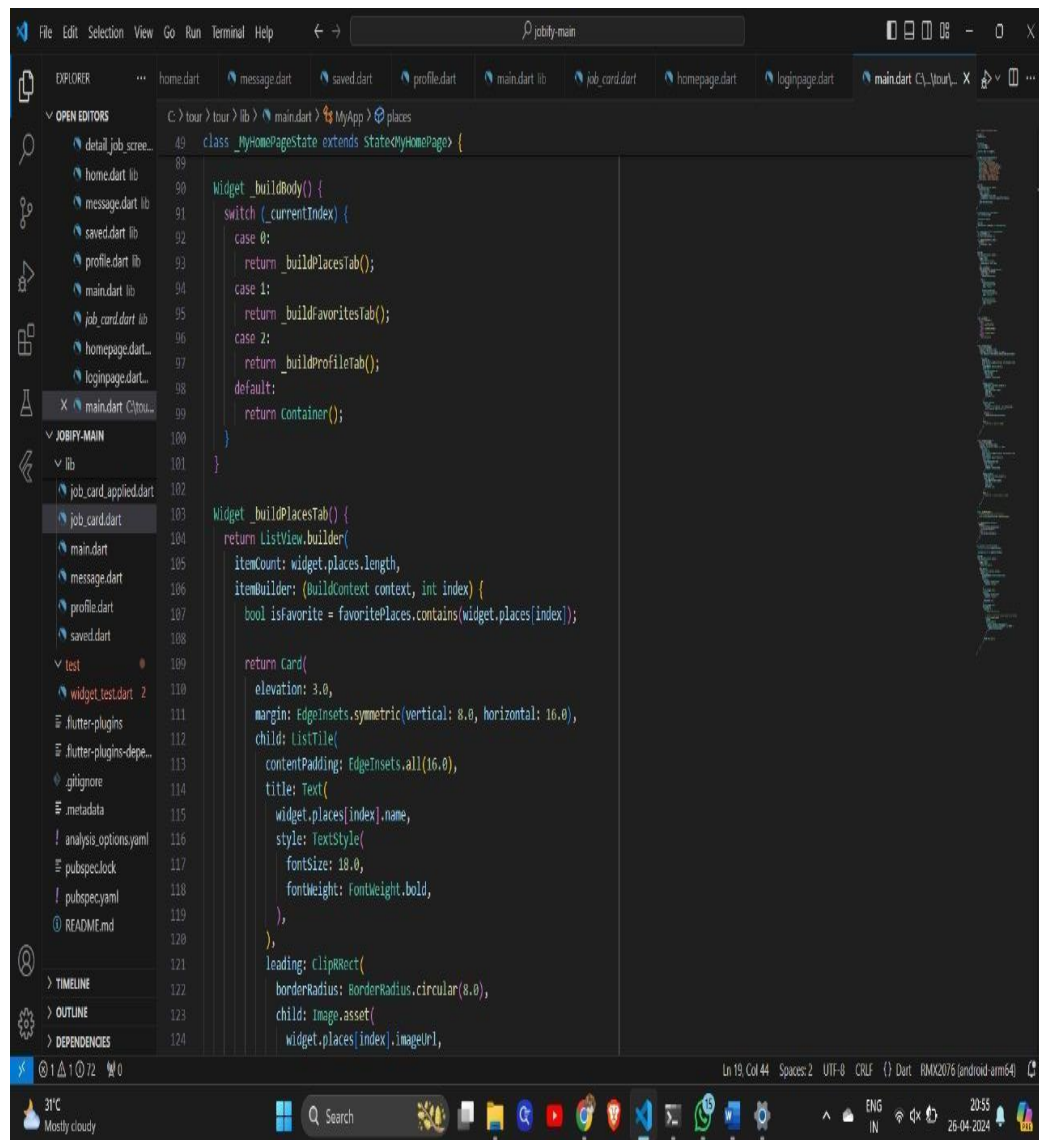
APPENDICES

SAMPLE CODE

Main Code:

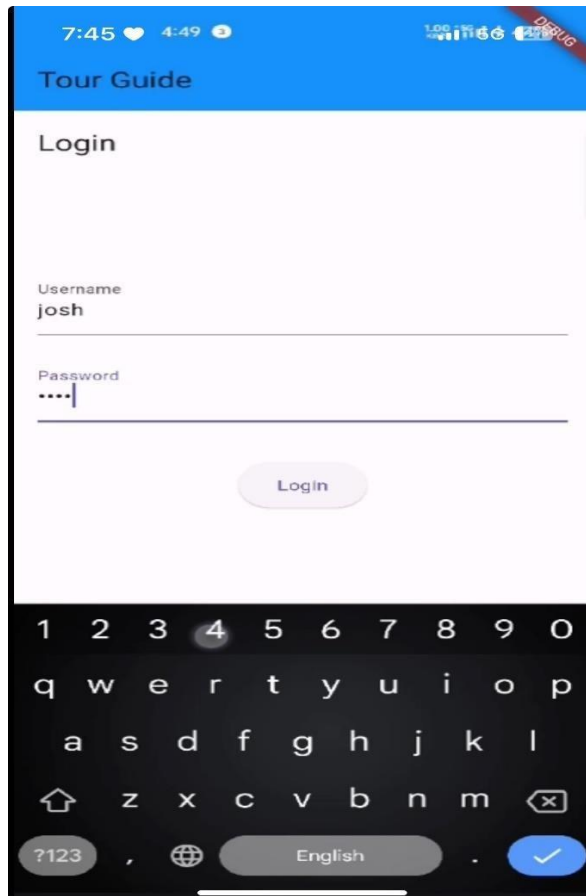


```
49 class _MyHomePageState extends State<MyHomePage> {
50   void updateCurrentIndex(int index) {
51     _currentIndex = index;
52   });
53 }
54
55 @override
56 Widget build(BuildContext context) {
57   return Scaffold(
58     appBar: AppBar(
59       title: Text('Tour Guide'),
60       backgroundColor: Colors.blue,
61     ),
62     body: _buildBody(),
63     bottomNavigationBar: BottomNavigationBar(
64       currentIndex: _currentIndex,
65       onTap: (index) {
66         updateCurrentIndex(index);
67       },
68       items: [
69         BottomNavigationBarItem(
70           icon: Icon(Icons.place),
71           label: 'Places',
72         ),
73         BottomNavigationBarItem(
74           icon: Icon(Icons.favorite),
75           label: 'Favorites',
76         ),
77         BottomNavigationBarItem(
78           icon: Icon(Icons.person),
79           label: 'Profile',
80         ),
81       ],
82     ),
83   );
84 }
```

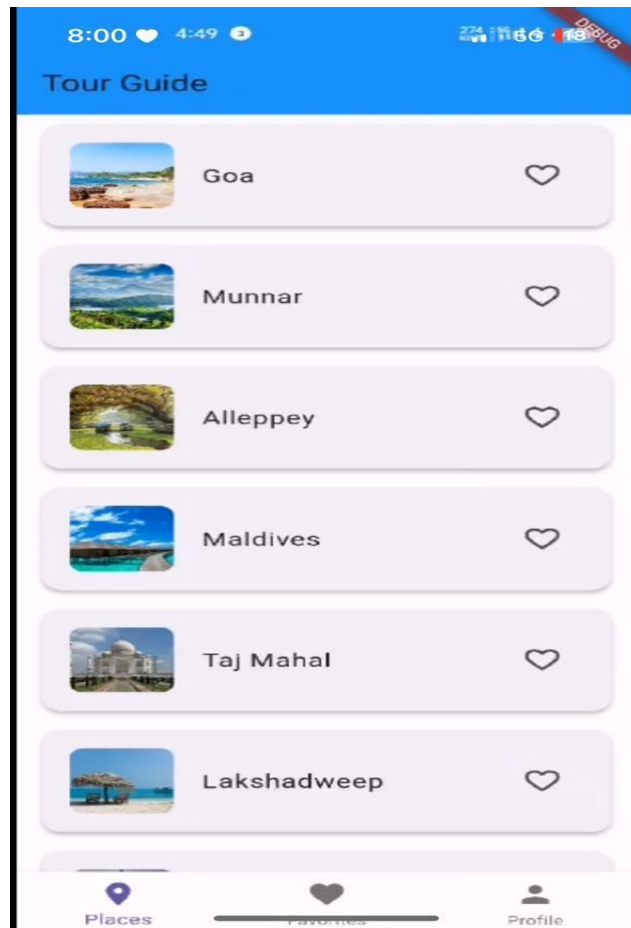


SCREENSHOTS

Login page



Homepage



Select the places:

