
# Charge Hub

Presented by :

George Ayman

Youssef Salem

Ismail Ayman

Thomas Nazih

Presented to : Eng/ Mohamed Shoshan

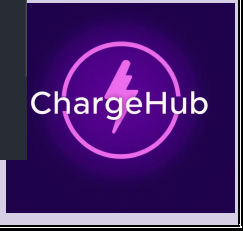
# Idea :

After a great discussion with our teammates, we agreed that the coming technology is electric cars so we decided to help the users that need to charge their cars but we also decided to help the old people  to make the app more viral and used by many users

## How we implement the code?

First of the app we need to make a splash screen to make the app and the user satisfied

```dart
import 'package:flutter/material.dart';
import 'dart:async';
import 'package:chargehub/pages/Login.dart'; // Import your login page here


class SplashScreen extends StatefulWidget {
  @override
  _SplashScreenState createState() => _SplashScreenState();
}

class _SplashScreenState extends State<SplashScreen> {
  @override
  void initState() {
    super.initState();
    // Navigate to the Login screen after 3 seconds
    Timer(Duration(seconds: 3), () {
      Navigator.of(context).pushReplacement(
        MaterialPageRoute(
          builder: (context) => Login(), // Navigate to Login page
        ),
      );
    });
  }

```

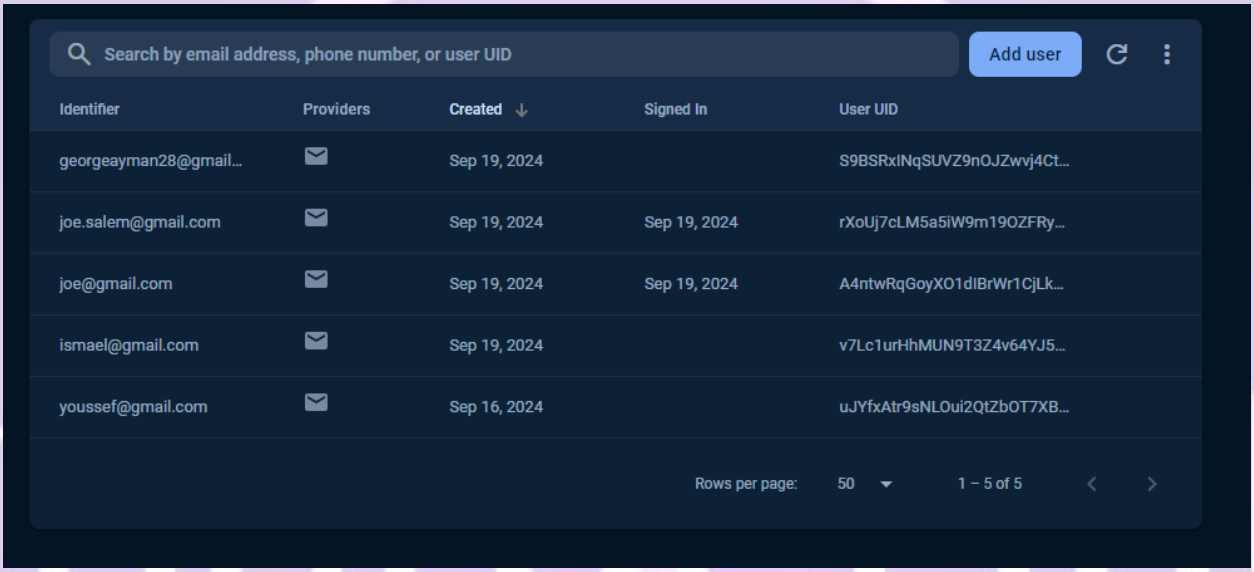


```dart
@override
Widget build(BuildContext context) {
  return Scaffold(
    backgroundColor: Color.fromRGBO(31, 2, 75, 1.0), // Dark background color
    body: Center(
      child: Column(
        mainAxisAlignment: MainAxisAlignment.center,
        children: [
          // Splash screen image or logo
          Image.asset(
            'assets/images/chargeHub.png', // Update with your spl
            height: 500,
            width: 500,
          ),  // Image.asset
          SizedBox(height: 20),
          // Optional: Add a loading spinner or splash text
          CircularProgressIndicator(
            color: Colors.grey,
          ),  // CircularProgressIndicator
        ],
      ),  // Column
    ),  // Center
  );  // Scaffold
  }
}
```

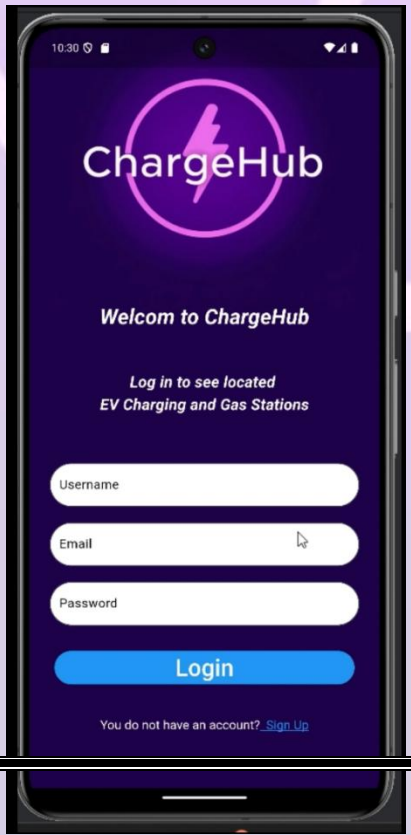

this is the code of the splash screen and the implementation

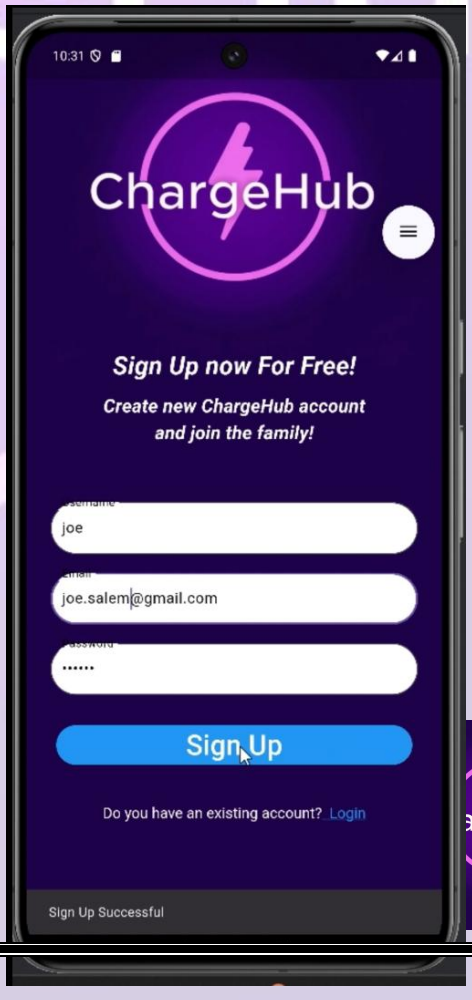
After that we need a login and sign-up page we used Firebase to authenticate and save the data and check it so,

## Authentication :




## Login and Sign-up



# The implemented code :

```dart
import 'package:chargehub/pages/evHomePage.dart';
import 'package:flutter/material.dart';
import 'package:firebase_auth/firebase_auth.dart';
import '../repeated/button.dart'; // Assuming this is a custom button widget
import 'SignUp.dart';

class Login extends StatefulWidget {
  @override
  State<Login> createState() => _LoginState();
}

class _LoginState extends State<Login> {
  final FirebaseAuth _auth = FirebaseAuth.instance;

  // Adding a controller for the username
  final _usernameController = TextEditingController();
  final _emailController = TextEditingController();
  final _passwordController = TextEditingController();

  @override
  void dispose() {
    _usernameController.dispose(); // Dispose the username controller
    _emailController.dispose();
    _passwordController.dispose();
    super.dispose();
  }
```

```dart
@override
Widget build(BuildContext context) {
  return Scaffold(
    backgroundColor: const Color.fromRGBO(31, 2, 75, 1.0), // Dark background
    body: ListView(
      padding: const EdgeInsets.symmetric(horizontal: 16.0),
      children: [
        const SizedBox(height: 20),
        Padding(
          padding: const EdgeInsets.all(10.0),
          child: Container(
            width: 300, // Set your desired width
            height: 300, // Set your desired height
            child: FittedBox(
              fit: BoxFit.cover, // Use BoxFit.fill or other options if needed
              child: Image.asset(
                "assets/images/chargeHub.png",
              ), // Image.asset
            ), // FittedBox
          ), // Container
        ), // Padding
        const SizedBox(height: 10),
        const Center(
          child: Text(
            'Welcom to ChargeHub',
            style: TextStyle(
              fontSize: 27,
              color: Colors.white, // Highlighted text color
              fontWeight: FontWeight.bold,
              fontStyle: FontStyle.italic, // Added italic style
            ), // TextStyle
          ), // Text
        ), // Center
```

```
Padding(
  padding: const EdgeInsets.all(10.0),
  child: TextFormField(
    style: const TextStyle(color: Colors.black),
    // Text color inside the field
    controller: _usernameController,
    // Username controller
    decoration: InputDecoration(
      filled: true,
      fillColor: const Color(0xFFFFFFFF),
      // Field background
      border: OutlineInputBorder(
        borderRadius: BorderRadius.circular(50),
        borderSide:
            const BorderSide(color: Colors.black), // Border color
      ),  // OutlineInputBorder
      labelText: 'Username',
      hintText: 'Enter your name...',
      // Username label
      labelStyle: const TextStyle(color: Colors.black),
    ),  // InputDecoration
  ),  // TextFormField
),  // Padding
// Email Input Field
Padding(
  padding: const EdgeInsets.all(10.0),
  child: TextFormField(
    style: const TextStyle(color: Colors.black),
    // Text color inside the field
    controller: _emailController,
    decoration: InputDecoration(
      filled: true,
      fillColor: const Color(0xFFFFFFFF),
      // Field background
```

```
const SizedBox(height: 50),
const Center(
  child: Text(
    'Log in to see located ',
    style: TextStyle(
      fontSize: 20,
      color: Colors.white, // Highlighted text color
      fontWeight: FontWeight.bold,
      fontStyle: FontStyle.italic, // Added italic style
    ),  // TextStyle
  ),  // Text
),  // Center
const Center(
  child: Text(
    'EV Charging and Gas Stations',
    style: TextStyle(
      fontSize: 20,
      color: Colors.white, // Highlighted text color
      fontWeight: FontWeight.bold,
      fontStyle: FontStyle.italic, // Added italic style
    ),  // TextStyle
  ),  // Text
),  // Center
const SizedBox(height: 50),
// New Username Input Field
```

ChargeHub

```
            // Field background
            border: OutlineInputBorder(
              borderRadius: BorderRadius.circular(50),
              borderSide:
                  const BorderSide(color: Colors.black), // Border color
            ),  // OutlineInputBorder
            labelText: 'Email',
            labelStyle: const TextStyle(color: Colors.black),
            hintText: 'Enter Email...'
          ),  // InputDecoration
        ),  // TextFormField
      ),  // Padding
      // Password Input Field
      Padding(
        padding: const EdgeInsets.all(10.0),
        child: TextFormField(
          style: const TextStyle(color: Colors.black),
          obscureText: true,
          controller: _passwordController,
          decoration: InputDecoration(
            filled: true,
            fillColor: const Color(0xFFFFFFFF),
            border: OutlineInputBorder(
              borderRadius: BorderRadius.circular(50),
              borderSide: const BorderSide(color: Colors.black),
            ),  // OutlineInputBorder
            labelText: 'Password',
            labelStyle: const TextStyle(color: Colors.black),
              hintText: 'Enter Password...'
          ),  // InputDecoration
        ),  // TextFormField
      ),  // Padding
      const SizedBox(height: 20),
```

```
      Padding(
        padding: const EdgeInsets.symmetric(horizontal: 16.0),
        child: btnCal(
          c: Colors.blue,
          text: "Login",
          event: _login,
        ),
      ),  // Padding
      Padding(
        padding: const EdgeInsets.all(40.0),
        child: Center(
          child: InkWell(
            onTap: () {
              Navigator.of(context).push(
                MaterialPageRoute(
                  builder: (context) {
                    return SignUp(); // This navigates to the Sign-up page
                  },
                ),  // MaterialPageRoute
              );
            },
            child: RichText(
              text: const TextSpan(
                text: 'You do not have an account?',
                style: TextStyle(
                  color: Colors.white, // Main text color
                  fontSize: 16.0,
                ),  // TextStyle
                children: <TextSpan>[
```

```
                    TextSpan(
                      text: '  Sign Up',
                      style: TextStyle(
                        color: Colors.blue, // Underlined Login text
                        decoration: TextDecoration.underline,
                      ),  // TextStyle
                    ),  // TextSpan
                  ],  // <TextSpan>[]
                ),  // TextSpan
              ),  // RichText
            ),  // InkWell
          ),  // Center
        ),  // Padding
      ],
    ),  // ListView
  );  // Scaffold
}

void _login() async {
  String username = _usernameController.text; // Capture the username
  String email = _emailController.text;
  String password = _passwordController.text;

  try {
    UserCredential userCredential = await _auth.signInWithEmailAndPassword(
      email: email,
      password: password,
    );

    if (userCredential.user != null) {
      Navigator.of(context).pushReplacement(
        MaterialPageRoute(
          builder: (context) {
            return HomePage(
```

```
  } catch (e) {
    _showErrorDialog('An error occurred. Please try again.');
  }
}

void _showSignUpPrompt() {
  showDialog(
    context: context,
    builder: (BuildContext context) {
      return AlertDialog(
        title: const Text('No Account Found'),
        content: const Text(
            'No account found for this email. Would you like to sign
        actions: [
          TextButton(
            onPressed: () {
              Navigator.of(context).pop(); // Close the dialog
            },
            child: const Text('Cancel'),
          ),  // TextButton
          TextButton(
            onPressed: () {
              Navigator.of(context).pop();
              Navigator.of(context).pushReplacement(
                MaterialPageRoute(
                  builder: (context) => SignUp(), // Navigate to Sig
                ),  // MaterialPageRoute
              );
            },
            child: const Text('Sign Up'),
          ),  // TextButton
        ],
      );  // AlertDialog
    },
  );
}

void _showErrorDialog(String message) {
  showDialog(
    context: context,
    builder: (BuildContext context) {
      return AlertDialog(
        title: const Text('Error'),
```

```dart
  void _showSignUpPrompt() {
    showDialog(
      context: context,
      builder: (BuildContext context) {
        return AlertDialog(
          title: const Text('No Account Found'),
          content: const Text(
              'No account found for this email. Would you like to sign up?'),  // Text
          actions: [
            TextButton(
              onPressed: () {
                Navigator.of(context).pop(); // Close the dialog
              },
              child: const Text('Cancel'),
            ),  // TextButton
            TextButton(
              onPressed: () {
                Navigator.of(context).pop();
                Navigator.of(context).pushReplacement(
                  MaterialPageRoute(
                    builder: (context) => SignUp(), // Navigate to Sign-up page
                  ),  // MaterialPageRoute
                );
              },
              child: const Text('Sign Up'),
            ),  // TextButton
          ],
        );  // AlertDialog
      },
    );
  }

  void _showErrorDialog(String message) {
    showDialog(
      context: context,
      builder: (BuildContext context) {
        return AlertDialog(
          title: const Text('Error'),
          content: Text(message),
          actions: [
            TextButton(
              onPressed: () {
                Navigator.of(context).pop();
              },
              child: const Text('OK'),
            ),  // TextButton
          ],
        );  // AlertDialog
      },
    );
  }
}
```

# Sign-up code :

```
import 'package:flutter/material.dart';
import 'package:firebase_auth/firebase_auth.dart';
import '../repeated/button.dart'; // Assuming this is a custom button widget
import 'login.dart'; // Importing the login page

class SignUp extends StatefulWidget {
  @override
  State<SignUp> createState() => _SignUpState();
}

class _SignUpState extends State<SignUp> {
  final FirebaseAuth _auth = FirebaseAuth.instance;

  var _usernameController = TextEditingController();
  var _emailController = TextEditingController();
  var _passwordController = TextEditingController();

  @override
  void dispose() {
    _usernameController.dispose();
    _emailController.dispose();
    _passwordController.dispose();
    super.dispose();
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: const Color.fromRGBO(31, 2, 75, 1.0), // Match login screen background
      body: ListView(
        padding: const EdgeInsets.symmetric(horizontal: 16.0),
        children: [
          const SizedBox(height: 20),
          Padding(
            padding: const EdgeInsets.all(10.0),
            child: Container(
              width: 300, // Set the same width and height as in login
              height: 300,
              child: FittedBox(
                fit: BoxFit.cover, // Same BoxFit as login screen
                child: Image.asset("assets/images/chargeHub.png"),
              ),
            ),
          ),
          const Center(
            child: Text(
              'Sign Up now For Free!',
              style: TextStyle(
                fontSize: 27,
                color: Colors.white, // White text color
                fontWeight: FontWeight.bold,
                fontStyle: FontStyle.italic, // Italic to match login
              ),
            ),
```

```
),
const SizedBox(height: 10),
const Center(
  child: Text(
    'Create new ChargeHub account',
    style: TextStyle(
      fontSize: 20,
      color: Colors.white, // White text color
      fontWeight: FontWeight.bold,
      fontStyle: FontStyle.italic,
    ),
  ),
),
const Center(
  child: Text(
    'and join the family!',
    style: TextStyle(
      fontSize: 20,
      color: Colors.white, // White text color
      fontWeight: FontWeight.bold,
      fontStyle: FontStyle.italic,
    ),
  ),
),
const SizedBox(height: 50),
// Username Input Field
Padding(
  padding: const EdgeInsets.all(10.0),
  child: TextFormField(
    style: const TextStyle(color: Colors.black),
    controller: _usernameController,
    decoration: InputDecoration(
      filled: true,
      fillColor: const Color(0xFFFFFFFF), // White field background
      border: OutlineInputBorder(
        borderRadius: BorderRadius.circular(50),
        borderSide: const BorderSide(color: Colors.black),
      ),
      labelText: 'Username',
      hintText: 'Enter your name...',
      labelStyle: const TextStyle(color: Colors.black),
    ),
  ),
),
// Email Input Field
Padding(
  padding: const EdgeInsets.all(10.0),
  child: TextFormField(
    style: const TextStyle(color: Colors.black),
    controller: _emailController,
    decoration: InputDecoration(
      filled: true,
      fillColor: const Color(0xFFFFFFFF), // White field background
      border: OutlineInputBorder(
        borderRadius: BorderRadius.circular(50),
        borderSide: const BorderSide(color: Colors.black),
      ),
```

```
      labelText: 'Email',
      labelStyle: const TextStyle(color: Colors.black),
      hintText: 'Enter Email...',
    ),
  ),
),
// Password Input Field
Padding(
  padding: const EdgeInsets.all(10.0),
  child: TextFormField(
    style: const TextStyle(color: Colors.black),
    obscureText: true,
    controller: _passwordController,
    decoration: InputDecoration(
      filled: true,
      fillColor: const Color(0xFFFFFFFF), // White field background
      border: OutlineInputBorder(
        borderRadius: BorderRadius.circular(50),
        borderSide: const BorderSide(color: Colors.black),
      ),
      labelText: 'Password',
      labelStyle: const TextStyle(color: Colors.black),
      hintText: 'Enter Password...',
    ),
  ),
),
const SizedBox(height: 20),
Padding(
  padding: const EdgeInsets.symmetric(horizontal: 16.0),
  child: btnCal(
    c: Colors.blue, // Blue button color to match login
    text: "Sign Up",
    event: _signUp,
  ),
),
Padding(
  padding: const EdgeInsets.all(40.0),
  child: Center(
    child: InkWell(
      onTap: () {
        Navigator.of(context).pushReplacement(
          MaterialPageRoute(
            builder: (context) {
              return Login(); // Navigate to the Login page
            },
          ),
        );
      },
      child: RichText(
        text: const TextSpan(
          text: 'Do you have an existing account?',
          style: TextStyle(
            color: Colors.white, // White text color
            fontSize: 16.0,
          ),
          children: <TextSpan>[
            TextSpan(
```

```
                    text: '  Login',
                    style: TextStyle(
                      color: Colors.blue, // Blue text with underline
                      decoration: TextDecoration.underline,
                    ),
                  ),
                ],
              ),
            ),
          ),
        ),
      ),
    ),
  );
}

void _signUp() async {
  String email = _emailController.text.trim();
  String password = _passwordController.text.trim();
  String username = _usernameController.text.trim();

  if (email.isEmpty || password.isEmpty || username.isEmpty) {
    ScaffoldMessenger.of(context).showSnackBar(
      const SnackBar(content: Text('Please fill all fields')),
    );
    return;
  }

  try {
    UserCredential userCredential =
    await _auth.createUserWithEmailAndPassword(
      email: email,
      password: password,
    );

    if (userCredential.user != null) {
      ScaffoldMessenger.of(context).showSnackBar(
        const SnackBar(content: Text('Sign Up Successful')),
      );
      // Navigate to the home page or perform other actions
    }
  } on FirebaseAuthException catch (e) {
    ScaffoldMessenger.of(context).showSnackBar(
      SnackBar(content: Text('Error: ${e.message}')),
    );
  }
 }
}
```

- After Signing in you are redirected to the Home page :

This page consists of 3 main

Buttons

**1- <u>Charge hub:</u>**

Which used to see the map

Add stations and know where

The are allocated

**2- <u>Cars list:</u>**

Which used to help the

Users if they want to buy a

New electric car

**3- <u>Poll:</u>**

Contain log-out and

The previous buttons

To easily navigate through

The app

# Code for the home page :

```
import 'login.dart';
import 'splachScreen.dart';
import 'package:flutter/material.dart';
import 'cars.dart'; // Make sure to import your CarGalleryPage
import 'mapScreen.dart'; // Import MapScreen if not already imported

class HomePage extends StatelessWidget {
  final String username;

  const HomePage({super.key, required this.username});

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: const Color.fromRGBO(31, 2, 75, 1),
      appBar: AppBar(
        backgroundColor: const Color.fromRGBO(31, 2, 75, 1.0),
        title: Text('Welcome $username', style: const TextStyle(color: Colors.white)),
        centerTitle: true,
        leading: IconButton(
            icon: const Icon(Icons.arrow_back, color: Colors.white),
            onPressed: () {
              Navigator.of(context).push(
                MaterialPageRoute(
                  builder: (context) =>
                      Login(), // Navigate to CarGalleryPage
                ),
              );
            },
        ),
        actions: [
          PopupMenuButton<String>(
            color: const Color.fromRGBO(31, 2, 75, 0.6),
            icon: const Icon(Icons.menu, color: Colors.white),
            onSelected: (value) {
              switch (value) {
                case 'Map':
                  Navigator.of(context).push(
                    MaterialPageRoute(
                      builder: (context) => MapScreen(),
                    ),
```

```
            );
            break;
          case 'Cars':
            Navigator.of(context).push(
              MaterialPageRoute(
                builder: (context) => CarGalleryPage(),
              ),
            );
            break;
          case 'Log out':
            Navigator.of(context).push(
              MaterialPageRoute(
                builder: (context) =>
                    SplashScreen(), // Replace with your actual SignupPage class
              ),
            );
            break;
        }
      },
      itemBuilder: (context) => [
        const PopupMenuItem<String>(
          value: 'Map',
          child: Text('Map',
              style: TextStyle(color: Colors.white)), // Black text
        ),
        const PopupMenuItem<String>(
          value: 'Cars',
          child: Text('Cars',
              style: TextStyle(color: Colors.white)), // Black text
        ),
        const PopupMenuItem<String>(
          value: 'Log out',
          child: Text('Log out ',
              style: TextStyle(color: Colors.white)), // Black text
        ),
      ],
    ),
  ],
),
body: Column(
  children: [
    const SizedBox(height: 60),
    GestureDetector(
```

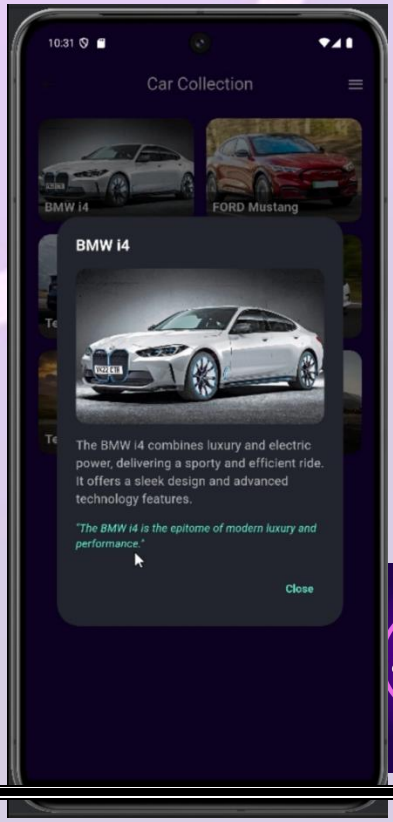
```
  onTap: () {
    Navigator.of(context).push(
      MaterialPageRoute(
        builder: (context) => MapScreen(), // Navigate to MapScreen
      ),
    );
  },
  child: Padding(
    padding: const EdgeInsets.all(10.0),
    child: Container(
      width: double.infinity,
      height: 250,
      // Adjust height as needed
      padding: const EdgeInsets.all(5),
      decoration: BoxDecoration(
        color: Colors.grey[850],
        borderRadius: BorderRadius.circular(15),
      ),
      child: ClipRRect(
        borderRadius: BorderRadius.circular(15),
        child: Image.asset(
          'assets/images/map.png',
          // Path to your static map image
          fit: BoxFit.cover,
        ),
      ),
    ),
  ),
),
const SizedBox(height: 40), // Adjust spacing between images
GestureDetector(
  onTap: () {
    Navigator.of(context).push(
      MaterialPageRoute(
        builder: (context) =>
            CarGalleryPage(), // Navigate to CarGalleryPage
      ),
    );
  },
  child: Padding(
    padding: const EdgeInsets.all(10.0),
    child: Container(
      width: double.infinity,
```

```
            height: 400,
            // Adjust height as needed
            padding: const EdgeInsets.all(5),
            decoration: BoxDecoration(
              color: const Color.fromRGBO(51, 49, 48, 1),
              borderRadius: BorderRadius.circular(15),
            ),
            child: ClipRRect(
              borderRadius: BorderRadius.circular(15),
              child: Image.asset(
                'assets/images/carList.png',
                // Replace with the path to your car image
                fit: BoxFit.cover,
              ),
            ),
          ),
        ),
      ),
    ],
  ),
 );
 }
}
```

---

## car list page:

the data of this cars are saved inside a list and can be updated


## code and imple

```
import 'package:flutter/material.dart';

import 'mapScreen.dart';
import 'splachScreen.dart';

class CarGalleryPage extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Color.fromRGBO(31, 2, 75, 1),
      appBar: AppBar(

        backgroundColor: Color.fromRGBO(31, 2, 75, 1),
        title: Text('Car Collection', style: TextStyle(color: Colors.white)),
        centerTitle: true,
        actions: [
          PopupMenuButton<String>(
            color: const Color.fromRGBO(31, 2, 75, 0.6),
            icon: const Icon(Icons.menu, color: Colors.white),
            onSelected: (value) {
              switch (value) {
                case 'Map':
                  Navigator.of(context).push(
                    MaterialPageRoute(
                      builder: (context) => MapScreen(),
                    ),
                  );
                  break;
                case 'Cars':
                  Navigator.of(context).push(
                    MaterialPageRoute(
                      builder: (context) => CarGalleryPage(),
                    ),
                  );
                  break;
                case 'Log out':
                  Navigator.of(context).push(
                    MaterialPageRoute(
                      builder: (context) =>
                          SplashScreen(), // Replace with your actual SignupPage class
                    ),
                  );
                  break;
              }
```

```
      },
      itemBuilder: (context) => [
        const PopupMenuItem<String>(
          value: 'Map',
          child: Text('Map',
              style: TextStyle(color: Colors.white)), // Black text
        ),
        const PopupMenuItem<String>(
          value: 'Cars',
          child: Text('Cars',
              style: TextStyle(color: Colors.white)), // Black text
        ),
        const PopupMenuItem<String>(
          value: 'Log out',
          child: Text('Log out ',
              style: TextStyle(color: Colors.white)), // Black text
        ),
      ],
    ),
  ],

),
body: Padding(
  padding: const EdgeInsets.all(16.0),
  child: GridView.builder(
    gridDelegate: SliverGridDelegateWithFixedCrossAxisCount(
      crossAxisCount: 2,
      crossAxisSpacing: 16.0,
      mainAxisSpacing: 16.0,
      childAspectRatio: 1.5,
    ),
    itemCount: _carImages.length,
    itemBuilder: (context, index) {
      final car = _carImages[index];
      return GestureDetector(
        onTap: () {
          _showCarDetailsDialog(context, car);
        },
        child: ClipRRect(
          borderRadius: BorderRadius.circular(15),
          child: Stack(
            fit: StackFit.expand,
            children: [
              Image.asset(
                car['imagePath']!,
                fit: BoxFit.cover,
              ),
```

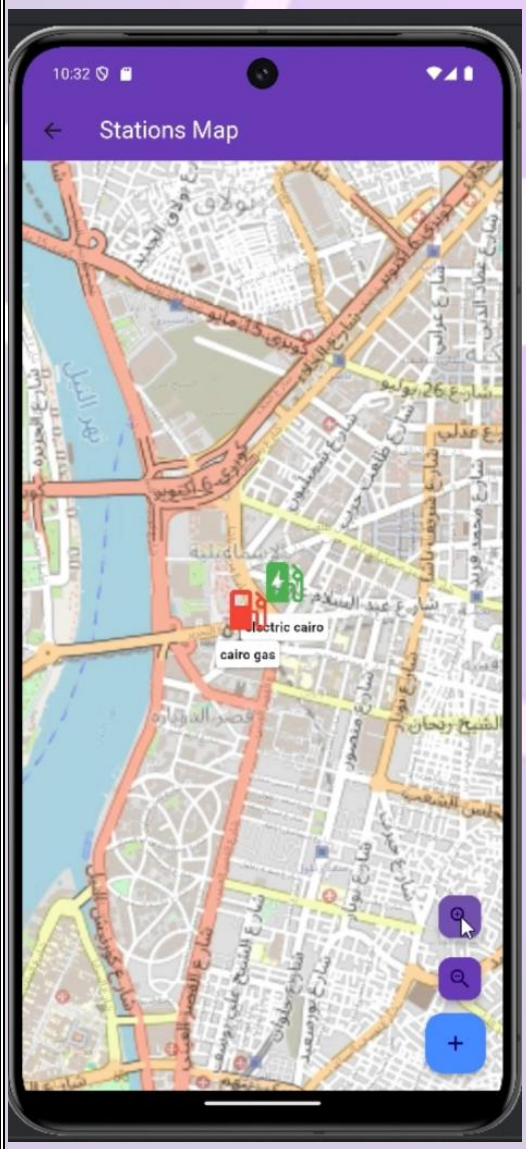
```
                Positioned(
                  bottom: 0,
                  left: 0,
                  right: 0,
                  child: Container(
                    padding: EdgeInsets.all(8.0),
                    color: Colors.black54,
                    child: Text(
                      car['name']!,
                      style: TextStyle(
                        color: Colors.white,
                        fontWeight: FontWeight.bold,
                        fontSize: 16,
                      ),
                      overflow: TextOverflow.ellipsis,
                    ),
                  ),
                ),
              ],
            ),
          ),
        );
      },
    ),
  );
}

final List<Map<String, String>> _carImages = [
  {'name': 'BMW i4', 'imagePath': 'assets/images/BMW i4.jpg'},
  {'name': 'FORD Mustang', 'imagePath': 'assets/images/ford mustang.jpg'},
  {'name': 'Tesla Model Y', 'imagePath': 'assets/images/Tesla model y.jpeg'},
  {'name': 'Tesla Model 3', 'imagePath': 'assets/images/Tesla model3.jpeg'},
  {'name': 'Tesla Model S', 'imagePath': 'assets/images/TESLA-MOTORS-Model-S-4693_64.jpg'},
  {'name': 'Tesla Model X', 'imagePath': 'assets/images/tesla model x.jpeg'},
];

void _showCarDetailsDialog(BuildContext context, Map<String, String> car) {
  String details = '';
  String quote = '';

  switch (car['name']) {
    case 'BMW i4':
      details = 'The BMW i4 combines luxury and electric power, delivering a sporty and efficient ride. It
offers a sleek design and advanced technology features.';
      quote = '"The BMW i4 is the epitome of modern luxury and performance."';
      break;
```

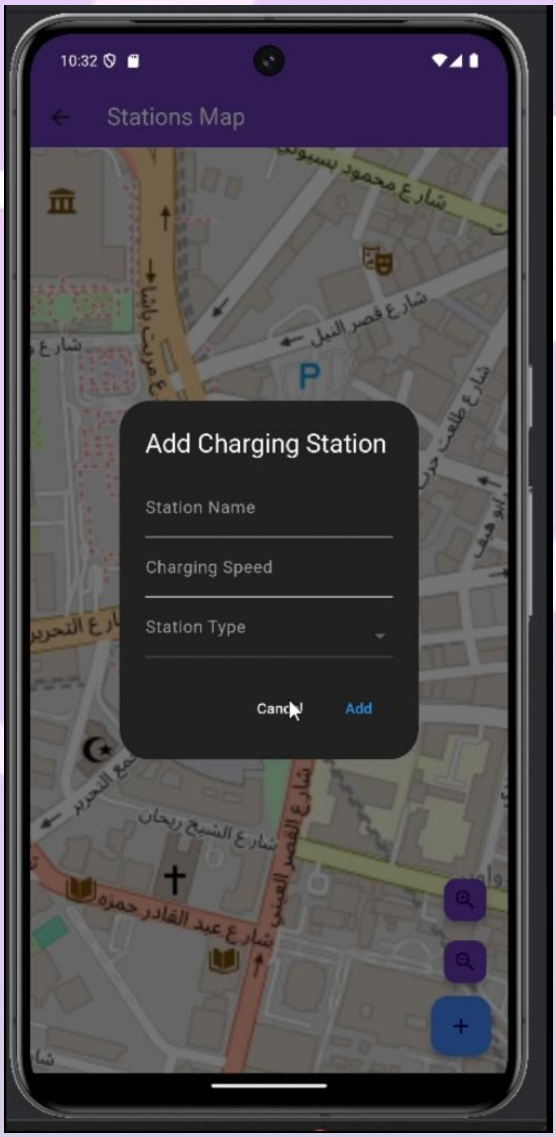
```
      case 'FORD Mustang':
        details = 'The FORD Mustang Mach-E is a high-performance electric SUV with classic Mustang styling. It provides a thrilling driving experience with cutting-edge tech.';
        quote = '"The Mustang Mach-E offers an exhilarating drive while being environmentally conscious."';
        break;
      case 'Tesla Model Y':
        details = 'The Tesla Model Y is a versatile electric crossover that combines efficiency with spaciousness. It features advanced autopilot capabilities and impressive range.';
        quote = '"The Model Y brings Tesla's innovation to a new level of versatility."';
        break;
      case 'Tesla Model 3':
        details = 'The Tesla Model 3 is a popular electric sedan known for its range, performance, and affordability. It offers a minimalist interior and cutting-edge technology.';
        quote = '"The Model 3 is a game-changer in the electric vehicle market."';
        break;
      case 'Tesla Model S':
        details = 'The Tesla Model S is a luxury electric sedan with high performance and a long range. It boasts a sleek design, high-tech features, and impressive acceleration.';
        quote = '"The Model S represents the pinnacle of electric vehicle engineering."';
        break;
      case 'Tesla Model X':
        details = 'The Tesla Model X is an electric SUV known for its distinctive falcon-wing doors and advanced technology. It offers a spacious interior and exceptional range.';
        quote = '"The Model X redefines what an electric SUV can be."';
        break;
      default:
        details = 'No details available for this car.';
        quote = 'No quote available.';
        break;
    }

    showDialog(
      context: context,
      builder: (BuildContext context) {
        return AlertDialog(
          backgroundColor: Color.fromRGBO(34, 37, 45, 1),
          title: Text(
            car['name']!,
            style: TextStyle(color: Colors.white, fontSize: 20, fontWeight: FontWeight.bold),
          ),
          content: SingleChildScrollView(
            child: Column(
              mainAxisSize: MainAxisSize.min,
              children: [
                ClipRRect(
                  borderRadius: BorderRadius.circular(15),
```

```
                child: Image.asset(
                  car['imagePath']!,
                  fit: BoxFit.cover,
                  height: 200,
                ),
              ),
              SizedBox(height: 16),
              Text(
                details,
                style: TextStyle(color: Colors.white70, fontSize: 16),
              ),
              SizedBox(height: 16),
              Text(
                quote,
                style: TextStyle(color: Colors.tealAccent, fontSize: 14, fontStyle: FontStyle.italic),
              ),
            ],
          ),
        ),
        actions: [
          TextButton(
            onPressed: () {
              Navigator.of(context).pop();
            },
            child: Text('Close', style: TextStyle(color: Colors.tealAccent)),
          ),
        ],
      );
    },
  );
 }
}
```

Map page:

In this page you can zoom in/out or add stations or to see the stations 1st screen for the whole screen 2nd screen for adding charging station you can add both charging or gas stations green for EV red for gas



# Here is the code for this screen:

```
import 'package:flutter/material.dart';
import 'package:flutter_bloc/flutter_bloc.dart';
import 'package:flutter_map/flutter_map.dart';
import 'package:latlong2/latlong.dart';
import 'package:url_launcher/url_launcher.dart';
import '../bloc/logic.dart';

class MapScreen extends StatefulWidget {
  @override
  _MapScreenState createState() => _MapScreenState();
}

class _MapScreenState extends State<MapScreen> {
  double _zoomLevel = 13.0; // Initial zoom level for the map
  LatLng _mapCenter = LatLng(30.0444, 31.2357); // Initial map center (Cairo)
  late MapController _mapController; // For controlling the map programmatically

  @override
  void initState() {
    super.initState();
    _mapController = MapController();
    // Fetch stations when the screen is initialized
    context.read<EVBloc>().add(FetchStationsEvent());
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Stations Map',style: TextStyle(color: Colors.white),),backgroundColor: Colors.deepPurple,
      ),
      body: BlocBuilder<EVBloc, EVState>(
        builder: (context, state) {
          if (state is EVLoading) {
            return Center(child: CircularProgressIndicator());
          } else if (state is EVStationsLoaded) {
            final stations = state.stations;

            return Stack(
              children: [
                // Flutter map
                FlutterMap(
                  mapController: _mapController,
                  options: MapOptions(
                    onTap: (tapPosition, latlng) {
                      _addStationDialog(context, latlng);
                    },
                  ),
                  children: [
                    TileLayer(
                      urlTemplate:
                          'https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png',
                      subdomains: ['a', 'b', 'c'],
                    ),
                    MarkerLayer(
                      markers: stations.map((station) {
                        double lat =
                            station['x'] ?? 0.0; // Use 'x' for latitude
                        double lng =
                            station['y'] ?? 0.0; // Use 'y' for longitude
                        String stationName =
```

```
            station['name'] ?? 'Unknown Station';
        String stationType = station['type'] ?? 'Unknown';

        // Refactored to use _StationMarkerWidget
        return Marker(
          width: 100.0, // Adjusted size for better visibility
          height: 100.0,
          point: LatLng(lat, lng),
          child: _StationMarkerWidget(
            icon: stationType == "EV"
                ? Icons.ev_station
                : Icons.local_gas_station,
            color:
                stationType == "EV" ? Colors.green : Colors.red,
            stationName: stationName,
            latitude: lat,
            longitude: lng,
            onTap: () {
              _showStationDetailsDialog(
                  context, stationName, lat, lng, stationType);
            },
          ),
        );
      }).toList(),
    ),
  ],
),
// Zoom in/out buttons at the bottom right corner
Positioned(
  bottom: 80, // Place it above the add station button
  right: 16, // Align to the right
  child: Column(
    children: [
      FloatingActionButton(
        heroTag: 'zoom_in',
        mini: true,
        backgroundColor: Colors.deepPurple,
        onPressed: () {
          setState(() {
            _zoomLevel = (_zoomLevel + 1).clamp(2.0, 18.0);
            _mapController.move(_mapCenter, _zoomLevel);
          });
        },
        child: Icon(Icons.zoom_in),
      ),
      SizedBox(height: 10),
      FloatingActionButton(
        heroTag: 'zoom_out',
        mini: true,
        backgroundColor: Colors.deepPurple,
        onPressed: () {
          setState(() {
            _zoomLevel = (_zoomLevel - 1).clamp(2.0, 18.0);
            _mapController.move(_mapCenter, _zoomLevel);
          });
        },
        child: Icon(Icons.zoom_out),
      ),
    ],
  ),
),
// Add Station button at the bottom right corner
Positioned(
  bottom: 16,
  right: 16,
```

```
              child: FloatingActionButton(
                heroTag: 'add_station',
                backgroundColor: Colors.blueAccent,
                onPressed: () {
                  _addStationDialog(context, _mapCenter);
                },
                child: Icon(Icons.add),
              ),
            ),
          ],
        );
      } else if (state is EVError) {
        return Center(child: Text('Error: ${state.message}'));
      }

      return Center(child: Text('Unknown state'));
    },
  ),
 );
}

void _addStationDialog(BuildContext context, LatLng position) {
  // Text editing controllers for additional fields
  TextEditingController nameController = TextEditingController();
  TextEditingController speedController = TextEditingController();

  // Initialize dropdown selection for station type
  String? selectedType;

  showDialog(
    context: context,
    builder: (BuildContext context) {
      return AlertDialog(
        backgroundColor: Colors.grey[900], // Dark background
        title: Text(
          'Add Charging Station',
          style: TextStyle(color: Colors.white), // White text
        ),
        content: SingleChildScrollView(
          child: Column(
            mainAxisSize: MainAxisSize.min,
            children: [
              // Text fields for station details
              TextField(
                controller: nameController,
                style: TextStyle(color: Colors.white), // White text input
                decoration: InputDecoration(
                  labelText: 'Station Name',
                  labelStyle: TextStyle(color: Colors.grey), // Label color
                  enabledBorder: UnderlineInputBorder(
                    borderSide: BorderSide(color: Colors.white),
                  ),
                  focusedBorder: UnderlineInputBorder(
                    borderSide: BorderSide(color: Colors.blue),
                  ),
                ),
              ),
              TextField(
                controller: speedController,
                style: TextStyle(color: Colors.white), // White text input
                decoration: InputDecoration(
                  labelText: 'Charging Speed',
                  labelStyle: TextStyle(color: Colors.grey), // Label color
                  enabledBorder: UnderlineInputBorder(
                    borderSide: BorderSide(color: Colors.white),
```

```
          ),
          focusedBorder: UnderlineInputBorder(
            borderSide: BorderSide(color: Colors.blue),
          ),
        ),
      ),
      // Dropdown for station type
      DropdownButtonFormField<String>(
        dropdownColor: Colors.grey[800],
        // Dark background for dropdown
        decoration: InputDecoration(
          labelText: 'Station Type',
          labelStyle: TextStyle(color: Colors.grey), // Label color
        ),
        value: selectedType,
        items: [
          DropdownMenuItem(
            value: "EV",
            child: Text("EV charging",
                style: TextStyle(color: Colors.white)),
          ),
          DropdownMenuItem(
            value: "Gas",
            child: Text("Gas station",
                style: TextStyle(color: Colors.white)),
          ),
        ],
        onChanged: (String? value) {
          setState(() {
            selectedType = value!;
          });
        },
        validator: (value) =>
            value == null ? 'Please select a type' : null,
      ),
    ],
  ),
 ),
 actions: [
  TextButton(
    onPressed: () {
      Navigator.of(context).pop();
    },
    child: Text('Cancel', style: TextStyle(color: Colors.white)),
  ),
  TextButton(
    onPressed: () {
      // Ensure station type is selected before proceeding
      if (selectedType != null) {
        // Dispatch AddStationEvent with position from the map
        context.read<EVBloc>().add(AddStationEvent(
              x: position.latitude,
              y: position.longitude,
              name: nameController.text,
              speed: speedController.text,
              type: selectedType!,
              available: true, // Set available to true by default
            ));
        Navigator.of(context).pop();
      }
    },
    child: Text('Add', style: TextStyle(color: Colors.blue)),
  ),
 ],
);
```

```
    },
  );
}

void _confirmDeleteStation(BuildContext context, String stationId,
    String stationName, double lat, double lng) {
  showDialog(
    context: context,
    builder: (BuildContext context) {
      return AlertDialog(
        title: Text('Station Details'),
        content: Column(
          mainAxisSize: MainAxisSize.min,
          crossAxisAlignment: CrossAxisAlignment.start,
          children: [
            Text('Name: $stationName'),
            SizedBox(height: 8),
            Text('Latitude: $lat'),
            Text('Longitude: $lng'),
            SizedBox(height: 16),
            Text('Do you want to delete this station or visit?'),
          ],
        ),
        actions: [
          TextButton(
            onPressed: () {
              _launchUrl(lat, lng); // Open Google Maps
            },
            child: Text('Visit'),
          ),
          TextButton(
            onPressed: () {
              context.read<EVBloc>().add(DeleteStationEvent(stationId));
              Navigator.of(context).pop(); // Close the dialog
            },
            child: Text('Delete'),
          ),
        ],
      );
    },
  );
}

// Function to launch Google Maps for a specific location
void _launchUrl(double lat, double lng) async {
  final String googleMapsUrl =
      'https://www.google.com/maps/search/?api=1&query=$lat,$lng';

  if (await canLaunch(googleMapsUrl)) {
    await launch(googleMapsUrl);
  } else {
    throw 'Could not launch $googleMapsUrl';
  }
}

// Add the missing method here
void _showStationDetailsDialog(
    BuildContext context, String name, double lat, double lng, String type) {
  showDialog(
    context: context,
    builder: (BuildContext context) {
      return AlertDialog(
        backgroundColor: Colors.grey[900], // Dark background
        title: Text(
          name,
```

```
            style: TextStyle(color: Colors.white), // White text for title
          ),
          content: Column(
            mainAxisSize: MainAxisSize.min,
            crossAxisAlignment: CrossAxisAlignment.start,
            children: [
              Text('Type: $type', style: TextStyle(color: Colors.white)),
              // White text
              Text('Latitude: $lat', style: TextStyle(color: Colors.white)),
              // White text
              Text('Longitude: $lng', style: TextStyle(color: Colors.white)),
              // White text
            ],
          ),
          actions: [
            TextButton(
              onPressed: () {
                Navigator.of(context).pop();
              },
              child: Text('Close', style: TextStyle(color: Colors.white)),
            ),
          ],
        );
      },
    );
  }
}

// Custom widget for displaying station markers
class _StationMarkerWidget extends StatelessWidget {
  final IconData icon;
  final Color color;
  final String stationName;
  final double latitude;
  final double longitude;
  final VoidCallback onTap;

  _StationMarkerWidget({
    required this.icon,
    required this.color,
    required this.stationName,
    required this.latitude,
    required this.longitude,
    required this.onTap,
  });

  @override
  Widget build(BuildContext context) {
    return GestureDetector(
      onTap: onTap, // Make the marker clickable
      child: Column(
        children: [
          Icon(
            icon,
            color: color,
            size: 50.0, // Adjusted size for better visibility
          ),
          SizedBox(height: 4),
          Container(
            padding: EdgeInsets.all(4),
            decoration: BoxDecoration(
              color: Colors.white,
              borderRadius: BorderRadius.circular(4),
              boxShadow: [
                BoxShadow(
```

```
              color: Colors.black26,
              blurRadius: 2,
              offset: Offset(0, 1),
            ),
          ],
        ),
        child: Text(
          stationName,
          style: TextStyle(
            fontSize: 12,
            fontWeight: FontWeight.bold,
          ),
        ),
      ),
    ],
  ),
 );
 }
}
```

---

## **according to our instructor instructions we didn't forget to make a state management for our project:**

- They are 2 files logic and state:

### 1st logic file :

```
import 'package:bloc/bloc.dart';
import 'package:cloud_firestore/cloud_firestore.dart';
import 'package:equatable/equatable.dart';
import 'package:latlong2/latlong.dart'; // Import LatLng

// Define the events
abstract class Event extends Equatable {
  @override
  List<Object> get props => [];
}

class FetchStationsEvent extends Event {}

class AddStationEvent extends Event {
  final double x;
  final double y;
  final String name;
  final String speed;
  final bool available;
  final String type;

  AddStationEvent({
    required this.x,
    required this.y,
    required this.name,
    required this.speed,
    required this.available,
    required this.type,
  });

  @override
  List<Object> get props => [x, y, name, speed, available, type];
```

```
}

class DeleteStationEvent extends Event {
  final String stationId;

  DeleteStationEvent(this.stationId);

  @override
  List<Object> get props => [stationId];
}

// Define the states
abstract class EVState extends Equatable {
  @override
  List<Object> get props => [];
}

class EVLoading extends EVState {}

class EVStationsLoaded extends EVState {
  final List<Map<String, dynamic>> stations;

  EVStationsLoaded(this.stations);

  @override
  List<Object> get props => [stations];
}

class EVError extends EVState {
  final String message;

  EVError(this.message);

  @override
  List<Object> get props => [message];
}

// Define the BLoC
class EVBloc extends Bloc<Event, EVState> {
  final FirebaseFirestore _firestore = FirebaseFirestore.instance;

  EVBloc() : super(EVLoading()) {
    on<FetchStationsEvent>((event, emit) async {
      await _fetchStations(emit);
    });

    on<AddStationEvent>((event, emit) async {
      await _addStation(
        event.x,
        event.y,
        event.name,
        event.speed,
        event.available,
        event.type,
        emit,
      );
    });

    on<DeleteStationEvent>((event, emit) async {
      await _deleteStation(event.stationId, emit);
    });
  }

  Future<void> _fetchStations(Emitter<EVState> emit) async {
    try {
```

```
    emit(EVLoading());
    QuerySnapshot snapshot = await _firestore.collection('stations').get();
    List<Map<String, dynamic>> stations = snapshot.docs.map((doc) {
      final data = doc.data() as Map<String, dynamic>;
      return {
        'id': doc.id,
        'x': data['x'] ?? 0.0, // Latitude
        'y': data['y'] ?? 0.0, // Longitude
        'name': data['name'] ?? 'Unknown Station',
        'speed': data['speed'] ?? 'Unknown Speed',
        'available': data['available'] ?? false,
        'type': data['type'] ?? 'Unknown',
      };
    }).toList();
    emit(EVStationsLoaded(stations));
  } catch (e) {
    emit(EVError('Error fetching stations: $e'));
  }
 }

 Future<void> _addStation(
    double x,
    double y,
    String name,
    String speed,
    bool available,
    String type,
    Emitter<EVState> emit,
    ) async {
  try {
    await _firestore.collection('stations').add({
      'x': x,  // Latitude
      'y': y,  // Longitude
      'name': name,
      'speed': speed,
      'available': available,
      'type': type,
    });

    // Fetch updated stations
    await _fetchStations(emit);
  } catch (e) {
    emit(EVError('Error adding station: $e'));
  }
 }

 Future<void> _deleteStation(String stationId, Emitter<EVState> emit) async {
  try {
    await _firestore.collection('stations').doc(stationId).delete();
    // Fetch updated stations
    await _fetchStations(emit);
  } catch (e) {
    emit(EVError('Error deleting station: $e'));
  }
 }
}
```

---

# 2nd State File :

```
// ev_state.dart
abstract class evState {}

class evInitial extends evState {}

class evLoading extends evState {}

class evFetchSuccess extends evState {
  final List<Map<String, dynamic>> stations;

  evFetchSuccess(this.stations);
}

class evError extends evState {
  final String error;

  evError(this.error);
}
```

---

## This was our project

## Thanks