MINI PROJECT
(2020-21)

A Flutter based e-quizz android application

MID-TERM REPORT

Institute of Engineering & Technology

Submitted by

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Contents

Abstract

This work deals with development of an android-based multiple-choice question examination system, namely: E- Quizz. This application is developed for educational purposes, allowing the users to prepare the multiple choice questions for different examinations conducted on provincial and national level. The main goal of the application is to enable users to practice for subjective tests conducted for admissions and recruitment, with focus on the Computer science field. This quiz application includes three main modules, namely (i) computer science, (ii) verbal, and (iii) analytical. The computer science and verbal modules contain various types of sub categories.It shows progress feedback during quiz play, and at the end, the app also shows the result.

Introduction

1.1 General Introduction to the topic

Development of android-based Quiz application is mainly required by students and learners to prepare themselves for different examinations directly through smartphones and tablets in hand. One of the major goals of our project is to facilitate students in learning, gaining and improving their knowledge skills. At the same time, our app provides them fun so that the users can prepare for interviews, entrance tests or any other corresponding purposes in a fresh mood and can't get bored or frustrated due to dullness of the app. We designed the application to facilitate the users to be able to take short quizzes using portable devices such as smartphones and tablets.

About E-Quizz App: -

Educational Technology is constantly evolving and growing, and this progression will continually offer new and interesting advances in the learning environment. Traditional E-Learning systems developed for laptop and desktop computers were based on stand-alone software application and web based application architecture. These applications have many limitations to use efficiently or we cannot use them easily since these applications need a computing device and network connectivity. With the advancement in mobile technology and availability of smart mobile devices and networks we can design a system which can be used to check the knowledge level of students in the classroom. Since mobile networks are available in large geographical areas so this can be used for the knowledge testing of any person specially candidates of software companies who need a specific skill for the job. Thus the main objective of the project is to develop an interactive mobile application based on android framework to conduct quiz sessions in the classroom for the various technical topics. This project deals with the prototype development of an Mobile quiz system, comprehensive evaluation system for the remote students or in a classroom. On further enhancement this app can be used for the recruitment process of software companies which will be able to save time and efforts to eliminate unwanted candidates to appear for personal interview by travelling a long distance.

How E-Quizz App Works: -

- First of All, it will take the email and password to sign in the App. If the User is not signed up, Then It would take the user to the Sign Up Page where the User can Sign Up using his Email ID and creating a strong Password.
- Then the home page of the app will be opened for the user which Signed in. The user has many options to solve any of the quizzes. We have planned to create lists of the quizzes based on various topics to be displayed on the homepage.
- Users can click on any quiz, after clicking the examination screen will get opened. This screen contains a top bar which will display the no of attempts, no of corrects answers, no of incorrect answers, etc. Then it has a whole screen which shows the questions and the options for the same. Users can choose the options as per their choices. The correct or incorrect is shown directly there.
- There is also a finish button which takes you to the result screen which shows you the result of the quiz.
- After Completion of the Examination, the Application will take the user to the Result Page where the results will be shown and the user will get to know his/her performance in the examination.

What is Flutter

Flutter is an open-source UI software development kit created by Google. It is used to develop applications for Android, iOS, Linux, Mac, Windows, Google Fuchsia, and the web from a single codebase.

The first version of Flutter was known as codename "Sky" and ran on the Android operating system. It was unveiled at the 2015 Dart developer summit, with the stated intent of being able to render consistently at 120 frames per second. During the keynote of Google Developer Days in Shanghai, Google announced Flutter Release Preview 2, which is the last big release before Flutter 1.0. On December 4, 2018, Flutter 1.0 was released at the Flutter Live event, denoting the first "stable" version of the Framework. On December 11, 2019, Flutter 1.12 was released at the Flutter Interactive event.

On May 6, 2020, the Dart SDK in version 2.8 and the Flutter in version 1.17.0 were released, where support was added to the Metal API, improving performance on iOS devices (approximately 50%), new Material widgets, and new network tracking tools.

What is Dart

Dart is an open-source general-purpose programming language. It was originally developed by Google and later approved as a standard by ECMA. Dart is a new programming language meant for the server as well as the browser. Introduced by Google, the Dart SDK ships with its compiler – the Dart VM. The SDK also includes a utility -dart2js, a transpiler that generates JavaScript equivalent of a Dart Script. This tutorial provides a basic level understanding of the Dart programming language.

Area of Computer Science

Our Project falls under the Category of App Development of Computer Science. App development means the process of designing, creating, testing and finally launching an app that is meant to satisfy the needs of many users. However, App development does not refer strictly to smartphone mobile applications. It can broadly go to installing the App in the Machine for a specific purpose like ATM machines.

An app is the common slang term for a software application or software program that can be run on a computer device to accomplish a task easier and more efficiently than we could do it ourselves as mere mortals. If you have a smartphone or computer tablet, you probably have used some game apps, news apps or even map apps to help you find the local coffee shop. Application development is the name of the profession that employs people who design, develop and deploy these computer applications.

1.3 Hardware Requirements

- Memory [8 GB RAM (or higher)]
- Intel core i5 64-bit Processor (or higher)

1.3 Software requirements

- Android Studio
- VS Code
- Flutter SDK
- Android Emulator

Objective

The objective and scope of the Project E-Quizz App is to record the details of various activities of the user. It will simplify the task and reduce the paperwork. The new E-Quizz App rolled out to your area of responsibility. The system is very user friendly and it is anticipated that functions of the system will be easily accessed by administrators "academics" students and applicants. Hence the application for the college management has been designed to remove all the deficiency from which the present system is suffering and to ensure.The purpose of the project is to build an application to reduce the manual work for managing the MCQ quiz and we will follow to achieve these objectives in this project.

- To create an appropriate platform for best managing of MCQ test;
- To overcome the time consuming issues and taking MCQ tests;
- To release the marks of the test taker as soon as possible;
- To manage the information of different tests.

Implementation Details

Part1: Design User Interface for the E-Quizz app. It involved creating different screens like Sign Up, Sign In, etc.
Part 2: Implementing the backend algorithm and connecting the app to firebase for the purpose of database and authentication.

Part 3: Designing the home screen, quiz screen, result screen, create quiz screen,etc.

Part 4: Implementing the backend like uploading the quiz to the firebase, fetching the quiz from firebase, logics for the correct options, logics for the results and interchanging of the data between different screens.

Progress

1.) Part 1 is completed

- Created SignIn screen.
- Created SignUp screen.
- Created various files like auth, authentication, user, database,etc.

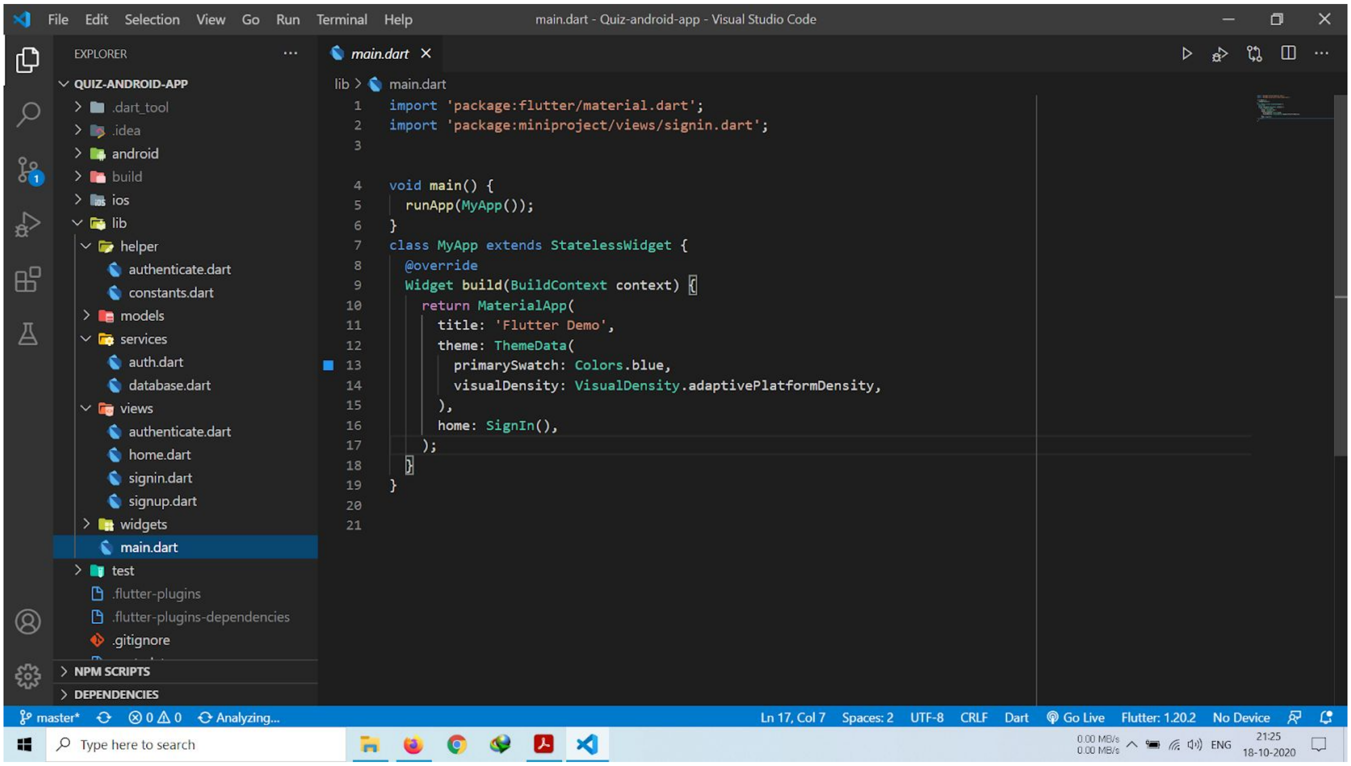
2.) Part 2 is completed

- Implementing SignIn with firebase.
- Implementing SignUp with firebase.

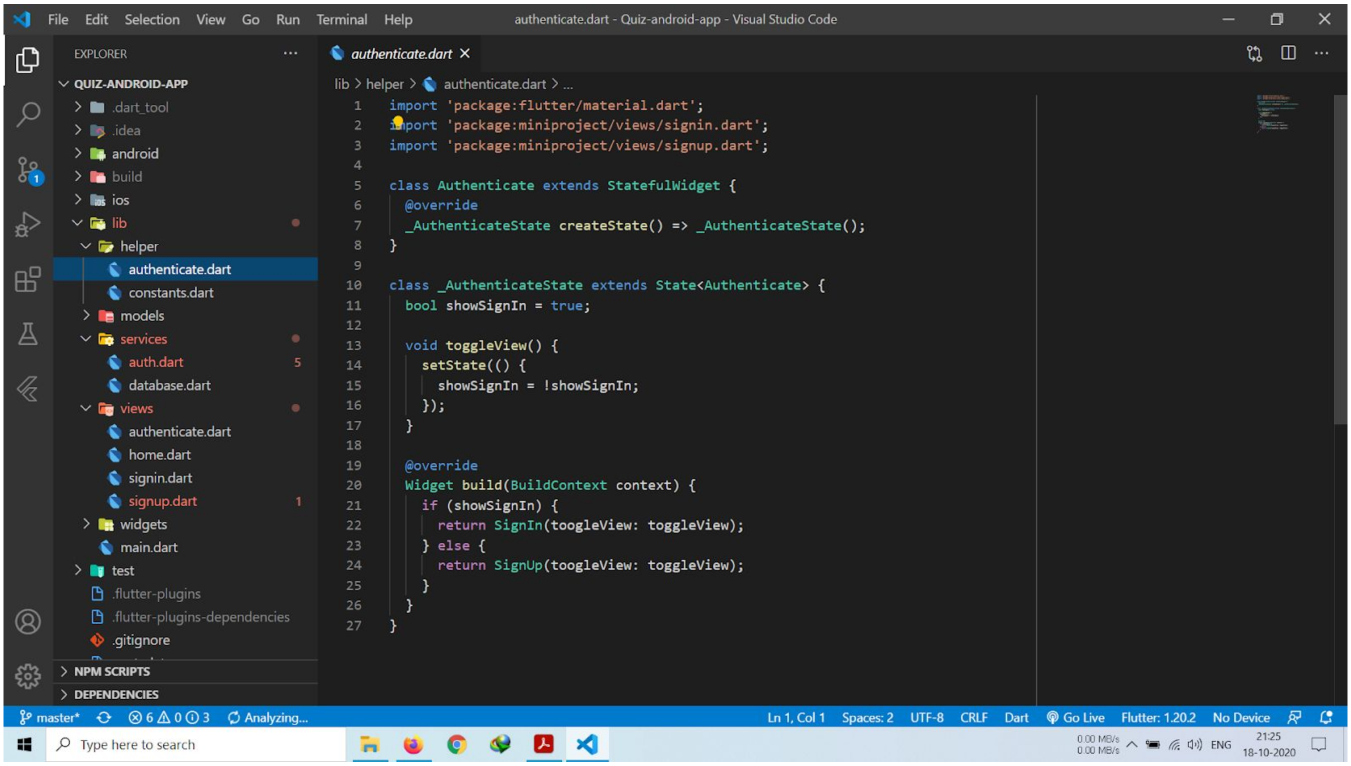
3.) Part 3 is remaining

4.) Part 4 is remaining

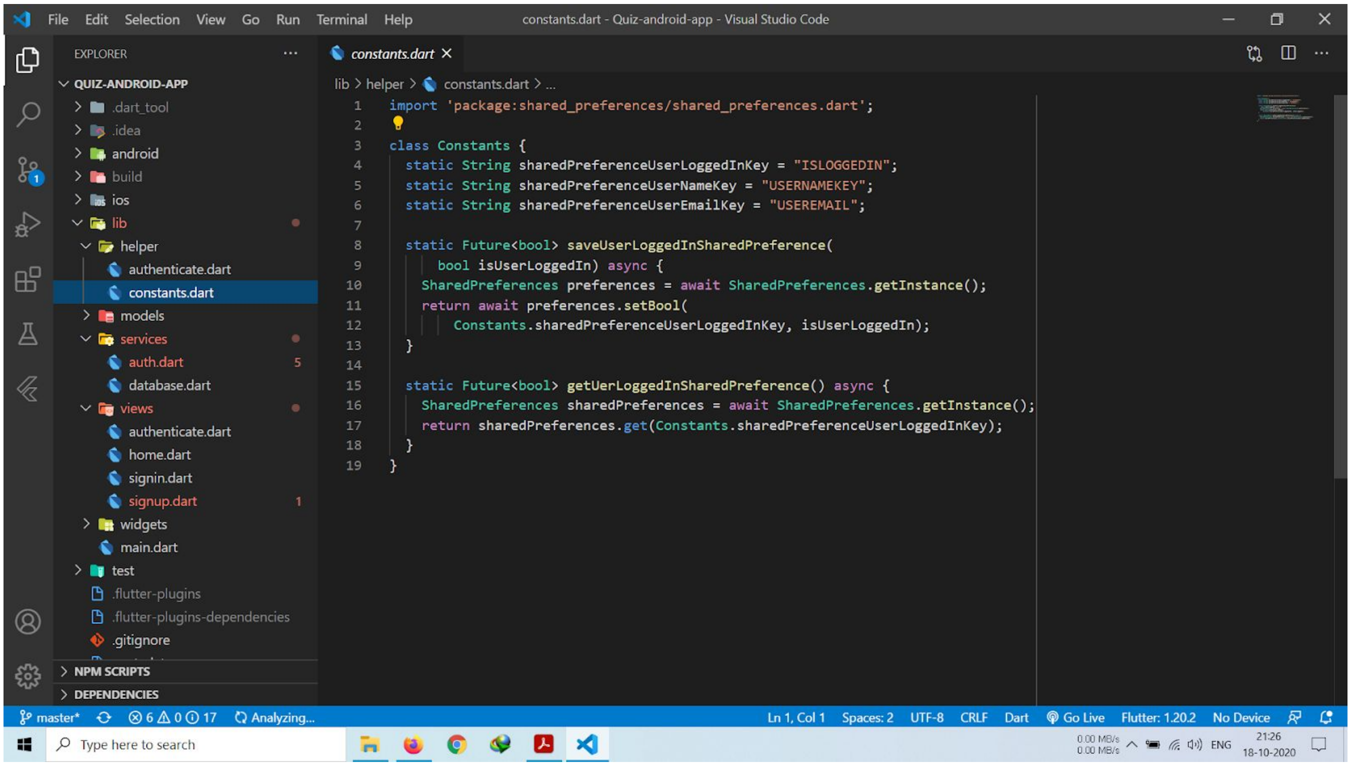
SCREENSHOTS



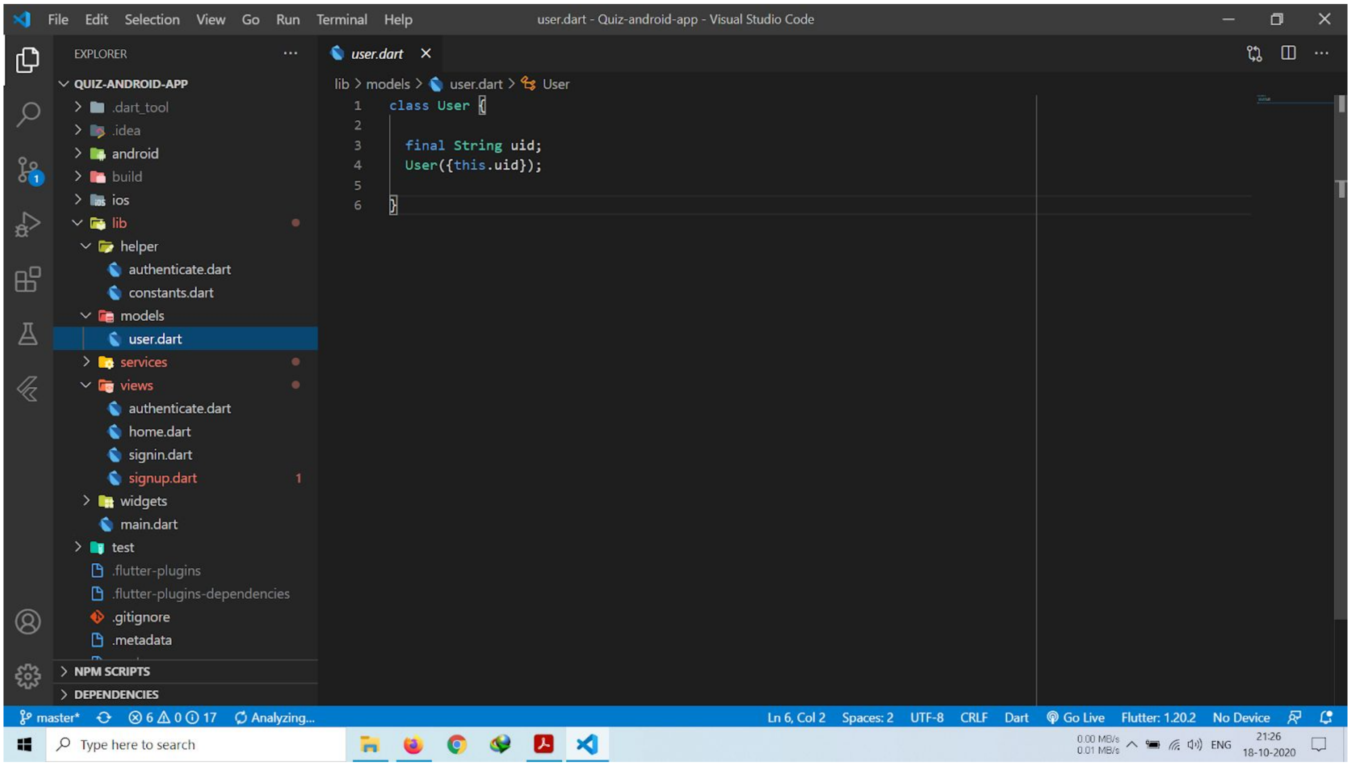
```
import 'package:flutter/material.dart';
import 'package:miniproject/views/signin.dart';

void main() {
  runApp(MyApp());
}
class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Flutter Demo',
      theme: ThemeData(
        primarySwatch: Colors.blue,
        visualDensity: VisualDensity.adaptivePlatformDensity,
      ),
      home: SignIn(),
    );
  }
}
```



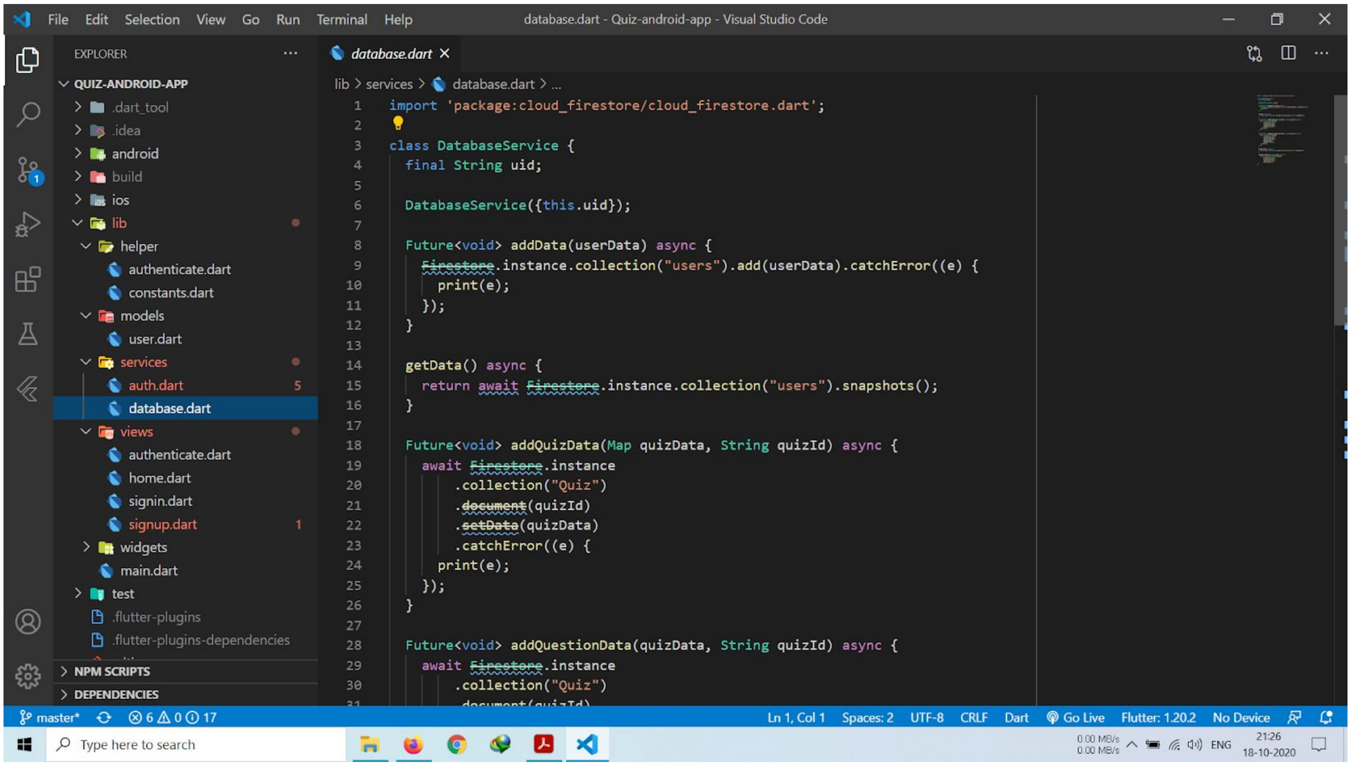
```dart
import 'package:flutter/material.dart';
import 'package:miniproject/views/signin.dart';
import 'package:miniproject/views/signup.dart';

class Authenticate extends StatefulWidget {
  @override
  _AuthenticateState createState() => _AuthenticateState();
}

class _AuthenticateState extends State<Authenticate> {
  bool showSignIn = true;

  void toggleView() {
    setState(() {
      showSignIn = !showSignIn;
    });
  }

  @override
  Widget build(BuildContext context) {
    if (showSignIn) {
      return SignIn(toogleView: toggleView);
    } else {
      return SignUp(toogleView: toggleView);
    }
  }
}
```



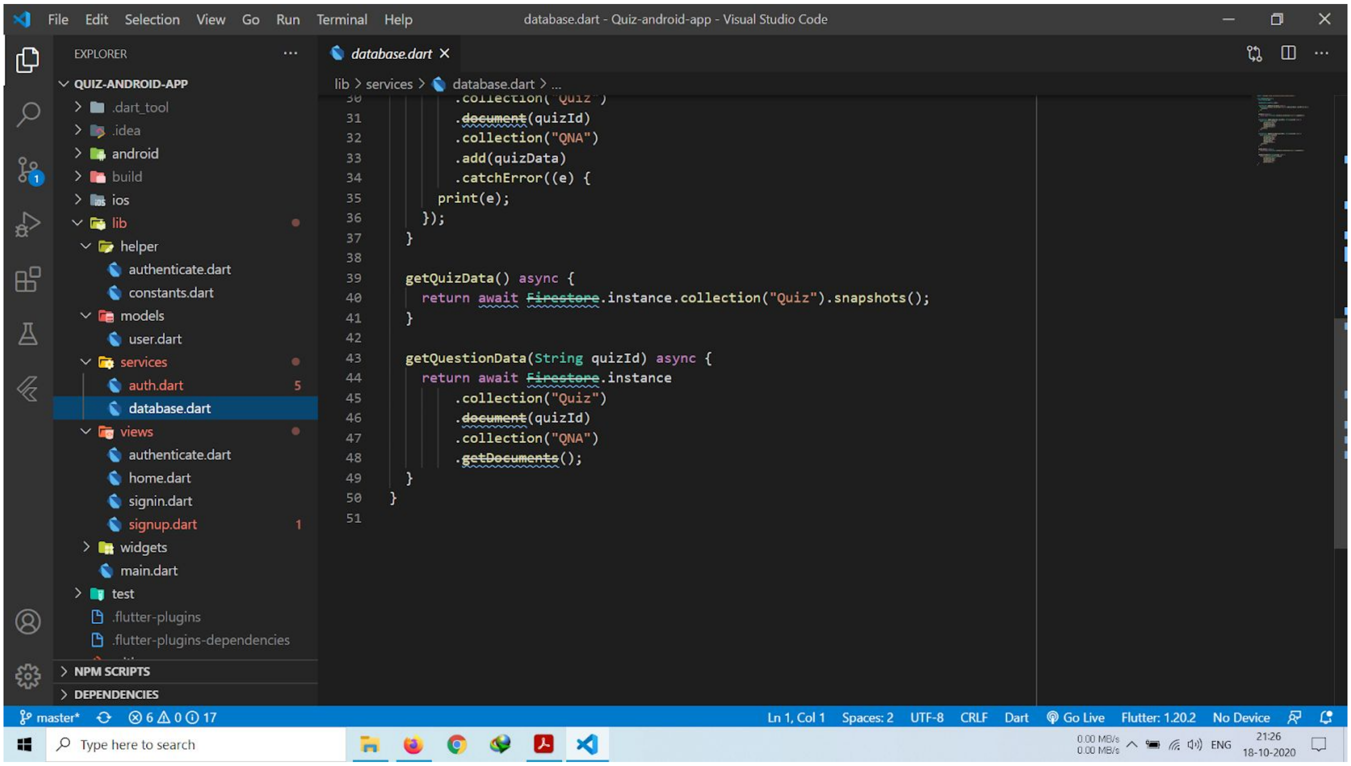
```dart
import 'package:shared_preferences/shared_preferences.dart';

class Constants {
  static String sharedPreferenceUserLoggedInKey = "ISLOGGEDIN";
  static String sharedPreferenceUserNameKey = "USERNAMEKEY";
  static String sharedPreferenceUserEmailKey = "USEREMAIL";

  static Future<bool> saveUserLoggedInSharedPreference(
      bool isUserLoggedIn) async {
    SharedPreferences preferences = await SharedPreferences.getInstance();
    return await preferences.setBool(
        Constants.sharedPreferenceUserLoggedInKey, isUserLoggedIn);
  }

  static Future<bool> getUerLoggedInSharedPreference() async {
    SharedPreferences sharedPreferences = await SharedPreferences.getInstance();
    return sharedPreferences.get(Constants.sharedPreferenceUserLoggedInKey);
  }
}
```



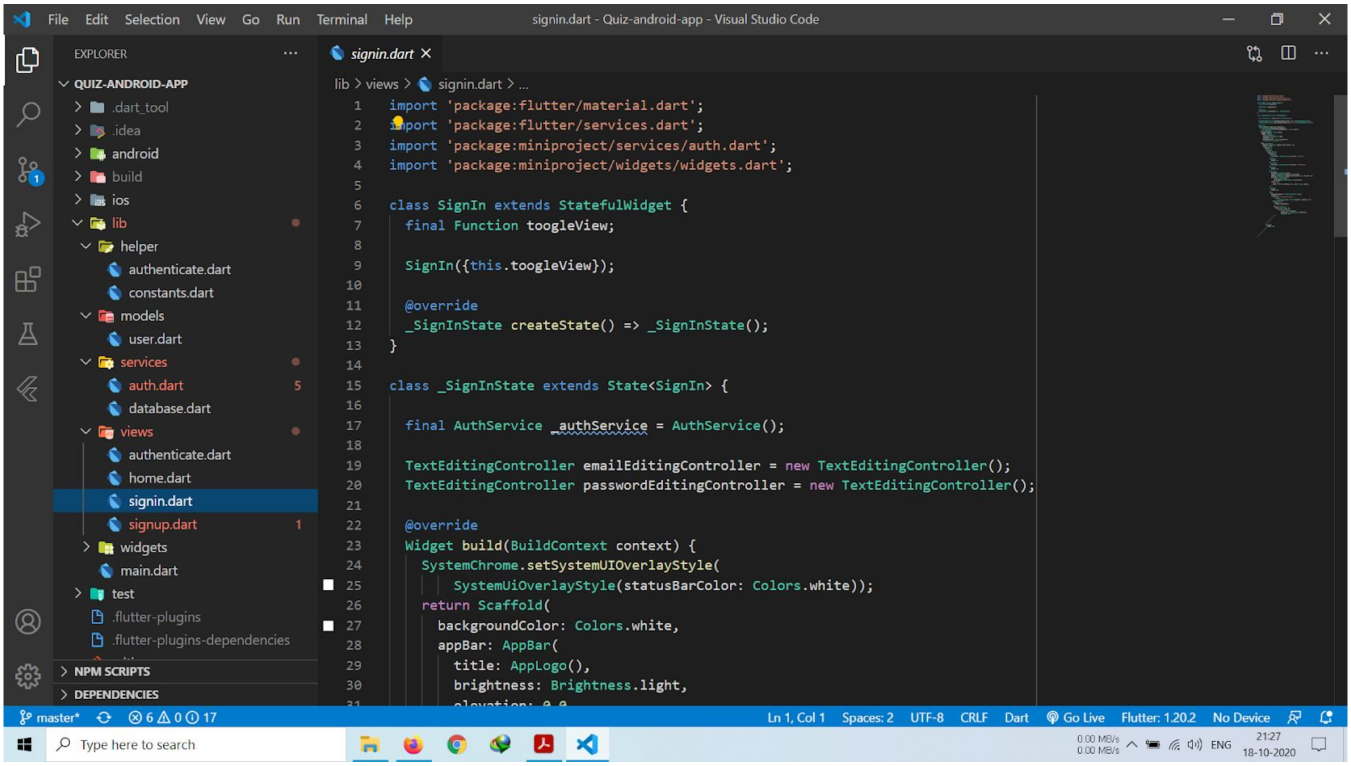
```dart
class User {

  final String uid;
  User({this.uid});

}
```



```dart
import 'package:cloud_firestore/cloud_firestore.dart';

class DatabaseService {
  final String uid;

  DatabaseService({this.uid});

  Future<void> addData(userData) async {
    Firestore.instance.collection("users").add(userData).catchError((e) {
      print(e);
    });
  }

  getData() async {
    return await Firestore.instance.collection("users").snapshots();
  }

  Future<void> addQuizData(Map quizData, String quizId) async {
    await Firestore.instance
        .collection("Quiz")
        .document(quizId)
        .setData(quizData)
        .catchError((e) {
      print(e);
    });
  }

  Future<void> addQuestionData(quizData, String quizId) async {
    await Firestore.instance
        .collection("Quiz")
        .document(quizId)
```



```
        .collection("Quiz")
        .document(quizId)
        .collection("QNA")
        .add(quizData)
        .catchError((e) {
      print(e);
    });
  }

  getQuizData() async {
    return await Firestore.instance.collection("Quiz").snapshots();
  }

  getQuestionData(String quizId) async {
    return await Firestore.instance
        .collection("Quiz")
        .document(quizId)
        .collection("QNA")
        .getDocuments();
  }
}
```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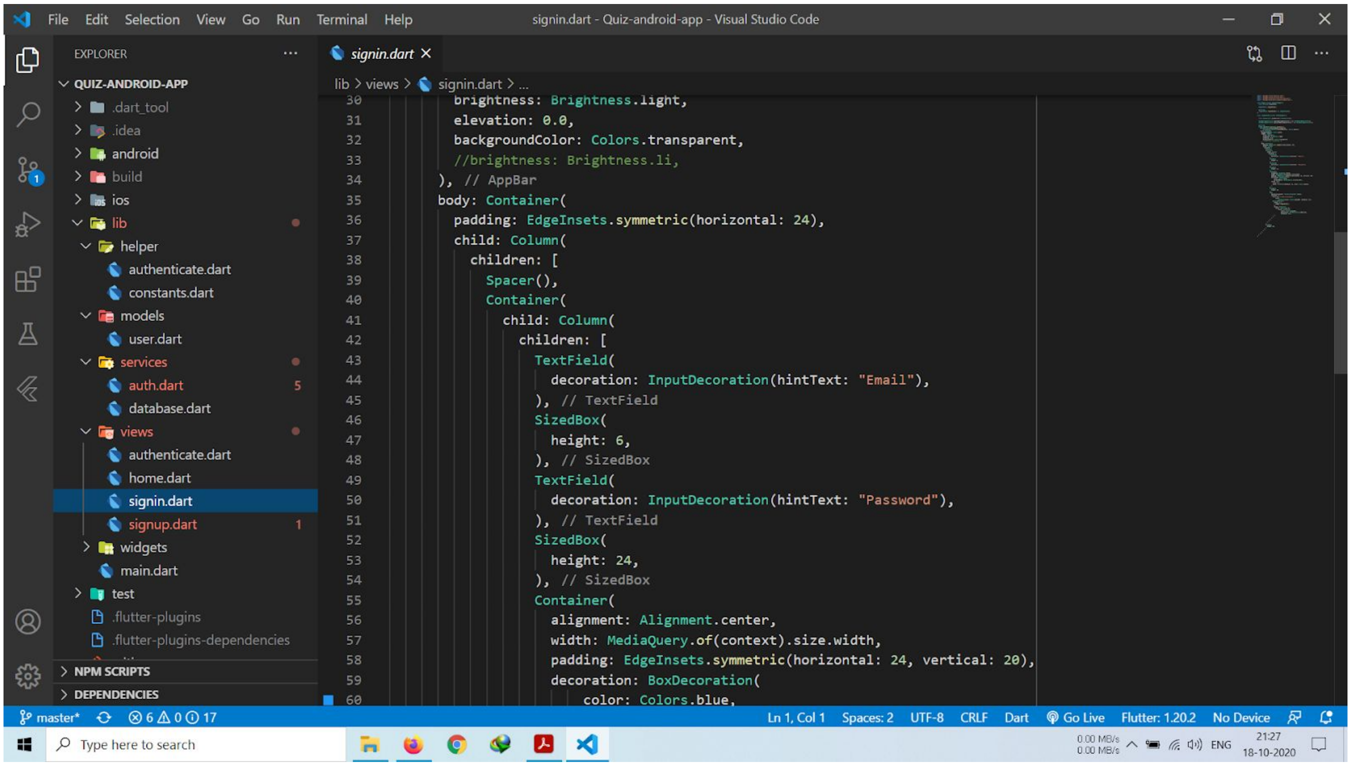
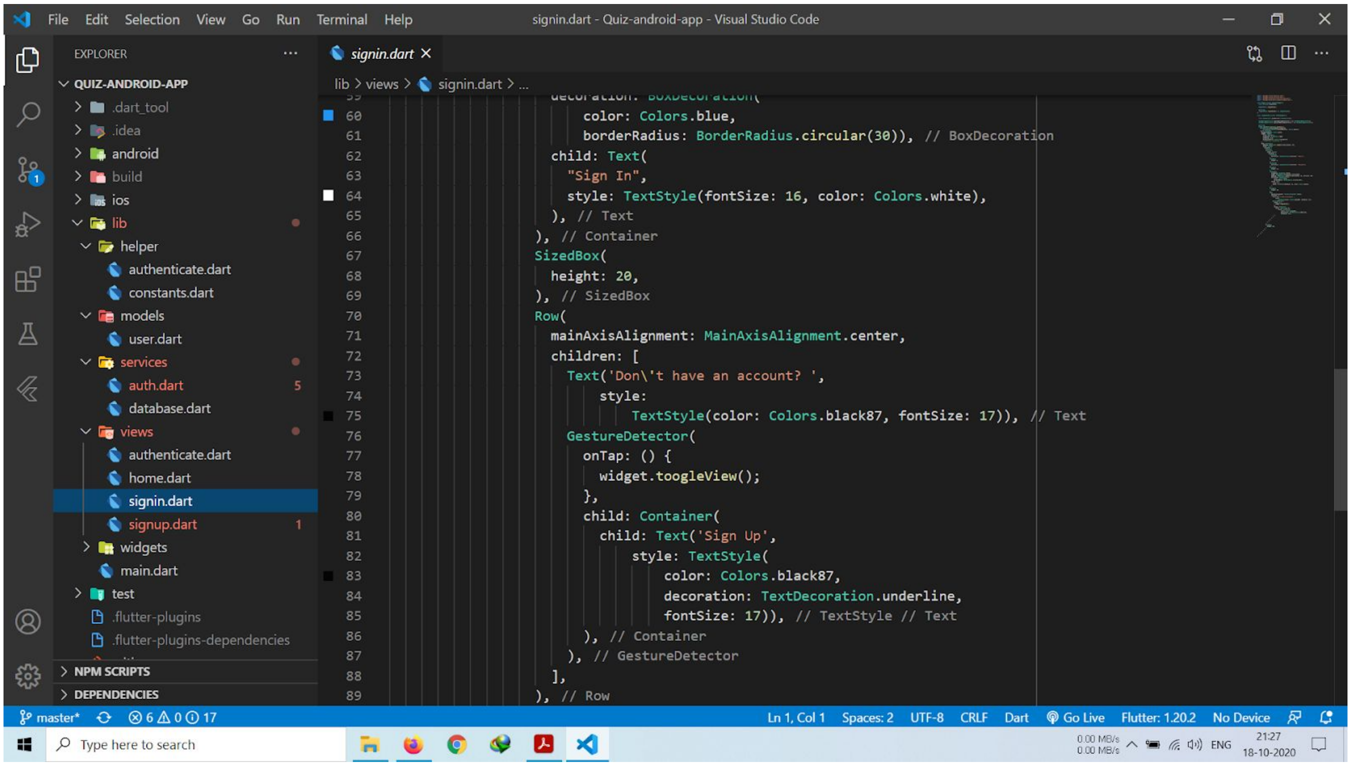
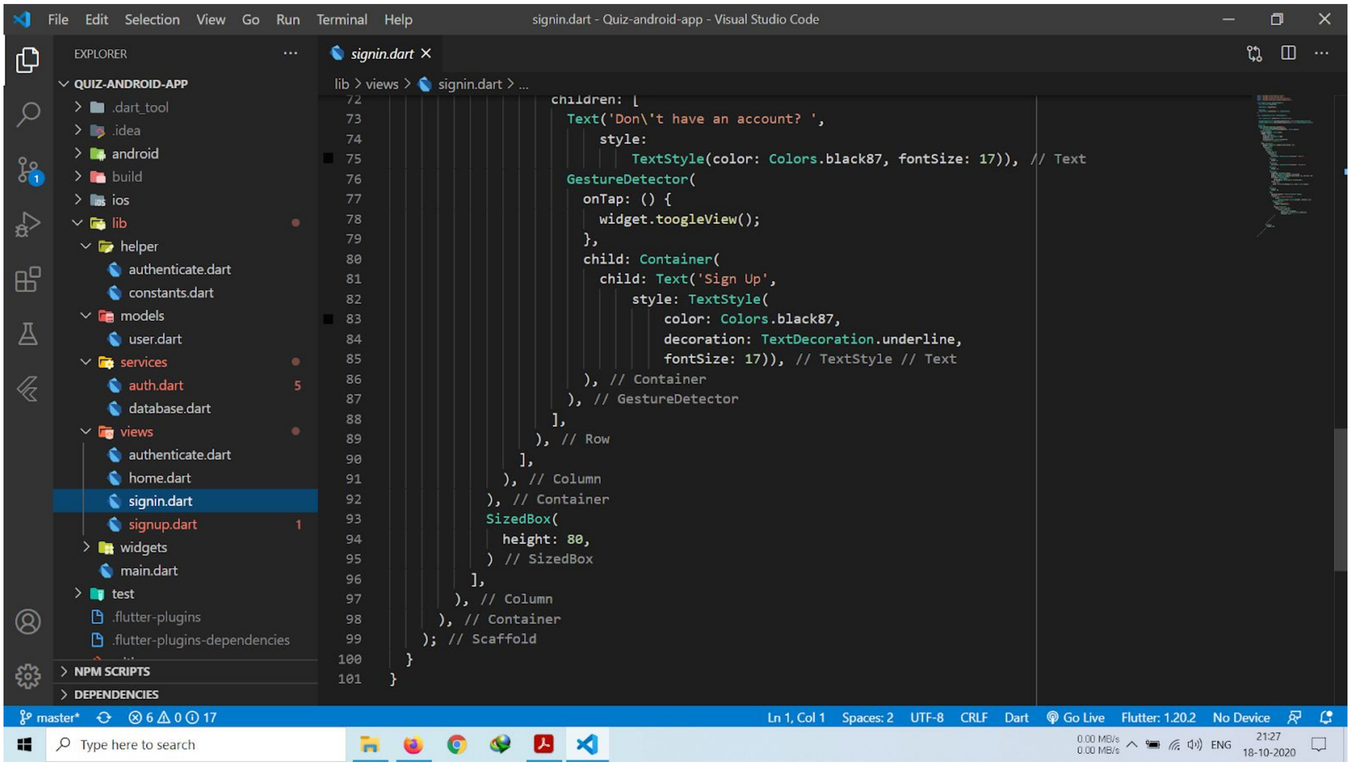
```
import 'package:flutter/material.dart';
import 'package:flutter/services.dart';
import 'package:miniproject/services/auth.dart';
import 'package:miniproject/widgets/widgets.dart';

class SignIn extends StatefulWidget {
  final Function toogleView;

  SignIn({this.toogleView});

  @override
  _SignInState createState() => _SignInState();
}

class _SignInState extends State<SignIn> {

  final AuthService _authService = AuthService();

  TextEditingController emailEditingController = new TextEditingController();
  TextEditingController passwordEditingController = new TextEditingController();

  @override
  Widget build(BuildContext context) {
    SystemChrome.setSystemUIOverlayStyle(
        SystemUiOverlayStyle(statusBarColor: Colors.white));
    return Scaffold(
      backgroundColor: Colors.white,
      appBar: AppBar(
        title: AppLogo(),
        brightness: Brightness.light,
```



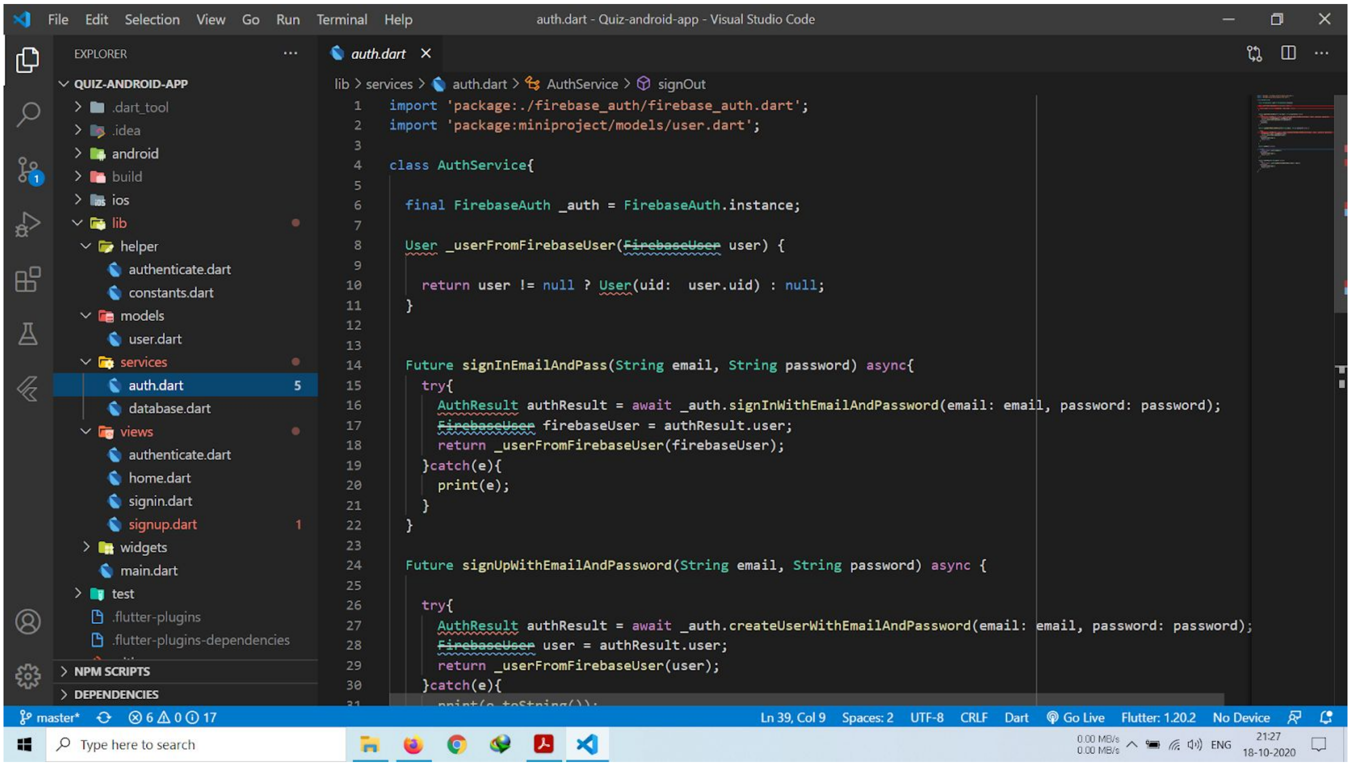
```
        brightness: Brightness.light,
        elevation: 0.0,
        backgroundColor: Colors.transparent,
        //brightness: Brightness.li,
      ), // AppBar
      body: Container(
        padding: EdgeInsets.symmetric(horizontal: 24),
        child: Column(
          children: [
            Spacer(),
            Container(
              child: Column(
                children: [
                  TextField(
                    decoration: InputDecoration(hintText: "Email"),
                  ), // TextField
                  SizedBox(
                    height: 6,
                  ), // SizedBox
                  TextField(
                    decoration: InputDecoration(hintText: "Password"),
                  ), // TextField
                  SizedBox(
                    height: 24,
                  ), // SizedBox
                  Container(
                    alignment: Alignment.center,
                    width: MediaQuery.of(context).size.width,
                    padding: EdgeInsets.symmetric(horizontal: 24, vertical: 20),
                    decoration: BoxDecoration(
                        color: Colors.blue,
```



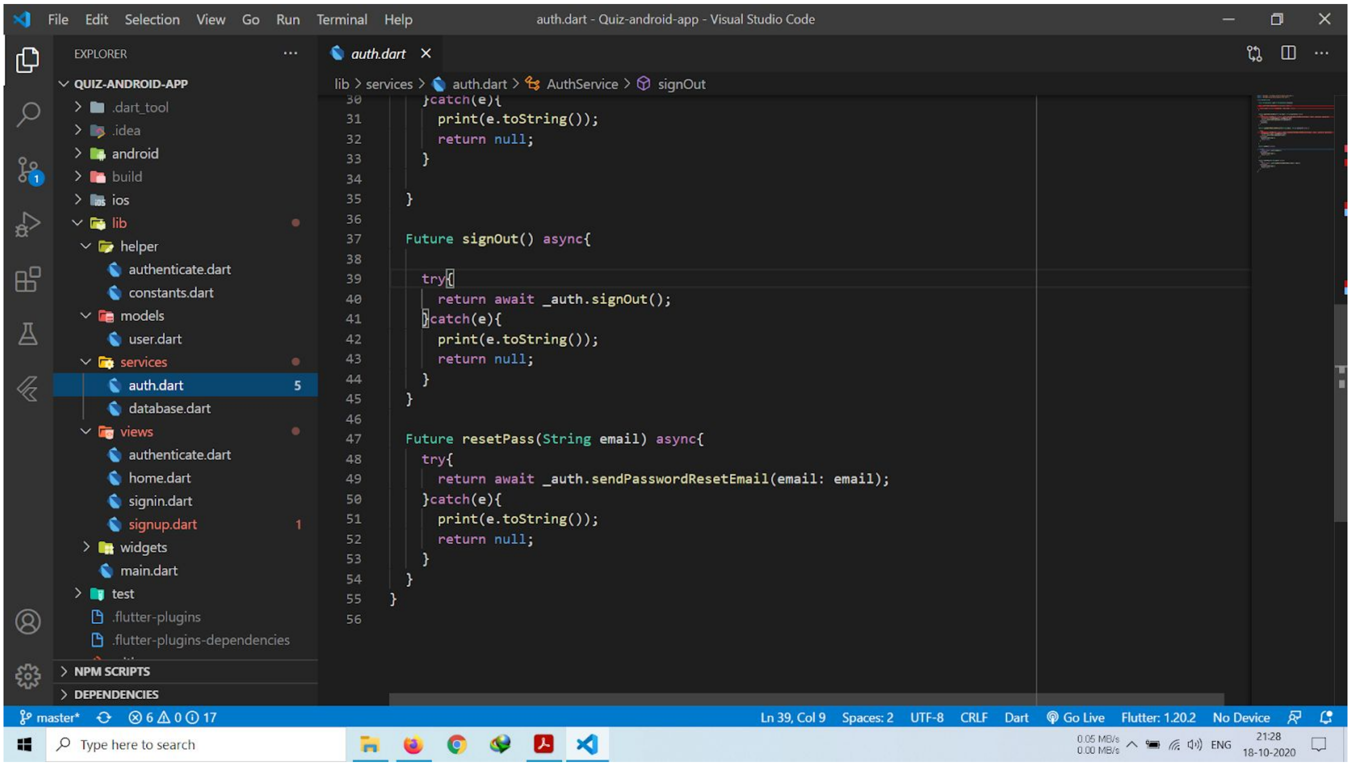
```
                    decoration: BoxDecoration(
                        color: Colors.blue,
                        borderRadius: BorderRadius.circular(30)), // BoxDecoration
                    child: Text(
                      "Sign In",
                      style: TextStyle(fontSize: 16, color: Colors.white),
                    ), // Text
                  ), // Container
                  SizedBox(
                    height: 20,
                  ), // SizedBox
                  Row(
                    mainAxisAlignment: MainAxisAlignment.center,
                    children: [
                      Text('Don\'t have an account? ',
                          style:
                              TextStyle(color: Colors.black87, fontSize: 17)), // Text
                      GestureDetector(
                        onTap: () {
                          widget.toogleView();
                        },
                        child: Container(
                          child: Text('Sign Up',
                              style: TextStyle(
                                  color: Colors.black87,
                                  decoration: TextDecoration.underline,
                                  fontSize: 17)), // TextStyle // Text
                        ), // Container
                      ), // GestureDetector
                    ],
                  ), // Row
```



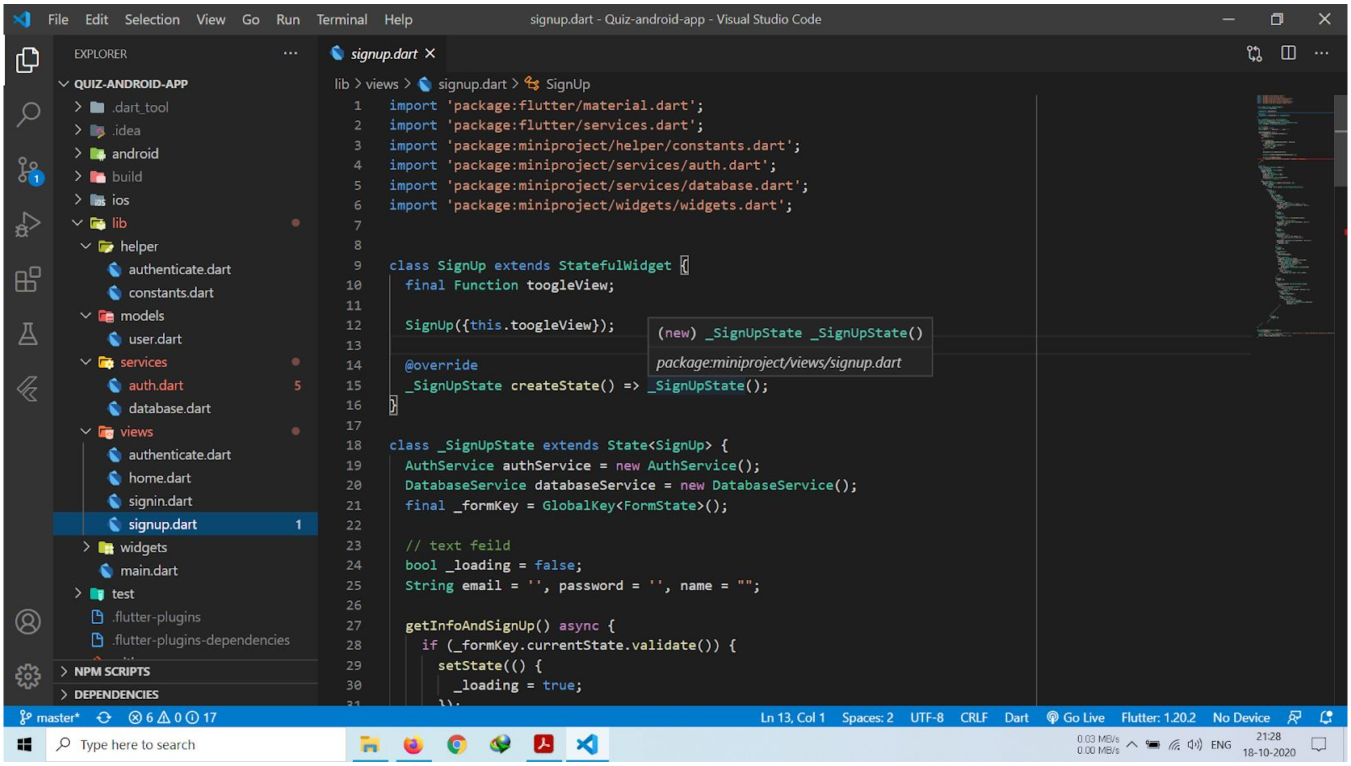
```
                    children: [
                      Text('Don\'t have an account? ',
                          style:
                              TextStyle(color: Colors.black87, fontSize: 17)), // Text
                      GestureDetector(
                        onTap: () {
                          widget.toogleView();
                        },
                        child: Container(
                          child: Text('Sign Up',
                              style: TextStyle(
                                  color: Colors.black87,
                                  decoration: TextDecoration.underline,
                                  fontSize: 17)), // TextStyle // Text
                        ), // Container
                      ), // GestureDetector
                    ],
                  ), // Row
                ],
              ), // Column
            ), // Container
            SizedBox(
              height: 80,
            ) // SizedBox
          ],
        ), // Column
      ), // Container
    ); // Scaffold
  }
}
```



```
import 'package:./firebase_auth/firebase_auth.dart';
import 'package:miniproject/models/user.dart';

class AuthService{

  final FirebaseAuth _auth = FirebaseAuth.instance;

  User _userFromFirebaseUser(FirebaseUser user) {

    return user != null ? User(uid:  user.uid) : null;
  }


  Future signInEmailAndPass(String email, String password) async{
    try{
      AuthResult authResult = await _auth.signInWithEmailAndPassword(email: email, password: password);
      FirebaseUser firebaseUser = authResult.user;
      return _userFromFirebaseUser(firebaseUser);
    }catch(e){
      print(e);
    }
  }

  Future signUpWithEmailAndPassword(String email, String password) async {

    try{
      AuthResult authResult = await _auth.createUserWithEmailAndPassword(email: email, password: password);
      FirebaseUser user = authResult.user;
      return _userFromFirebaseUser(user);
    }catch(e){
      print(e.toString());
```



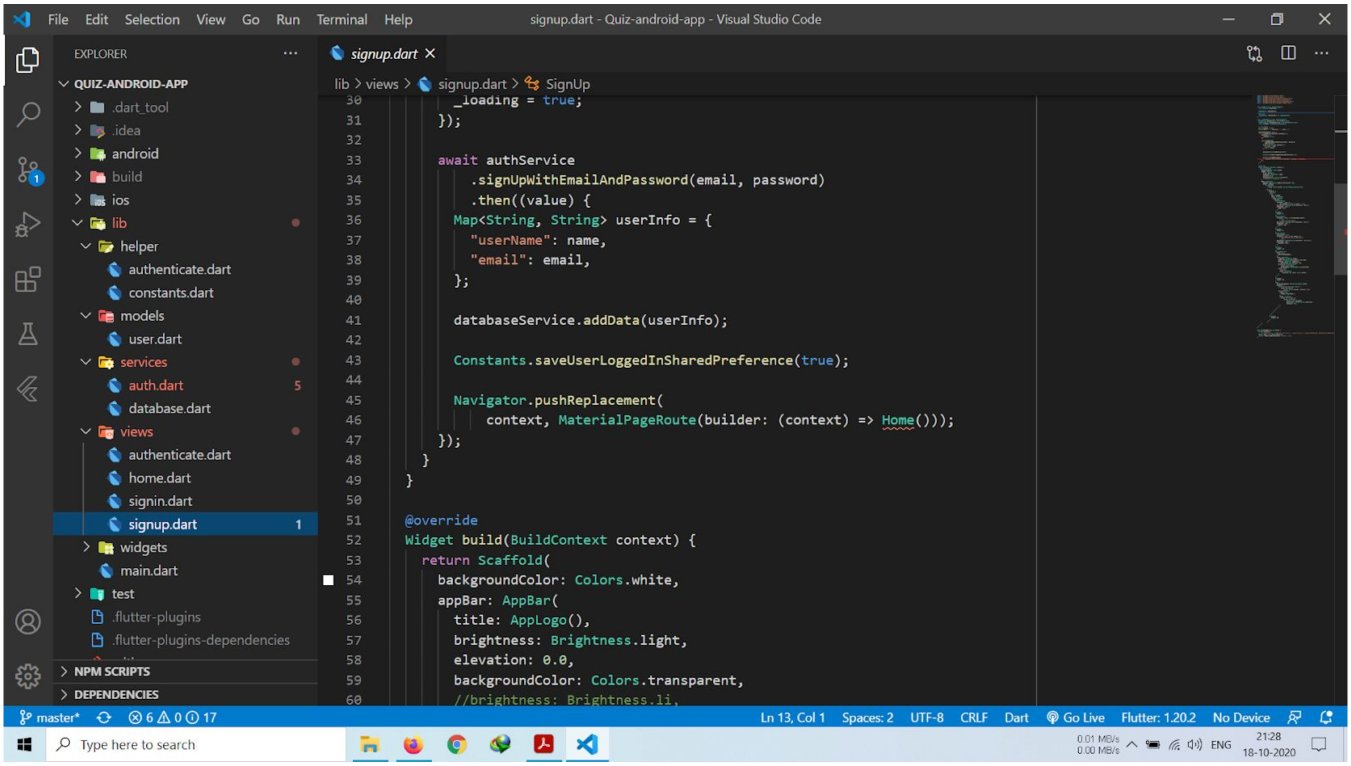
```
    }catch(e){
      print(e.toString());
      return null;
    }

  }

  Future signOut() async{

    try{
      return await _auth.signOut();
    }catch(e){
      print(e.toString());
      return null;
    }
  }

  Future resetPass(String email) async{
    try{
      return await _auth.sendPasswordResetEmail(email: email);
    }catch(e){
      print(e.toString());
      return null;
    }
  }
}

```



```
import 'package:flutter/material.dart';
import 'package:flutter/services.dart';
import 'package:miniproject/helper/constants.dart';
import 'package:miniproject/services/auth.dart';
import 'package:miniproject/services/database.dart';
import 'package:miniproject/widgets/widgets.dart';


class SignUp extends StatefulWidget {
  final Function toogleView;

  SignUp({this.toogleView});

  @override
  _SignUpState createState() => _SignUpState();
}

class _SignUpState extends State<SignUp> {
  AuthService authService = new AuthService();
  DatabaseService databaseService = new DatabaseService();
  final _formKey = GlobalKey<FormState>();

  // text feild
  bool _loading = false;
  String email = '', password = '', name = "";

  getInfoAndSignUp() async {
    if (_formKey.currentState.validate()) {
      setState(() {
        _loading = true;
      });
```

(new) _SignUpState _SignUpState()

package:miniproject/views/signup.dart


signup.dart - Quiz-android-app - Visual Studio Code
lib > views > signup.dart > SignUp
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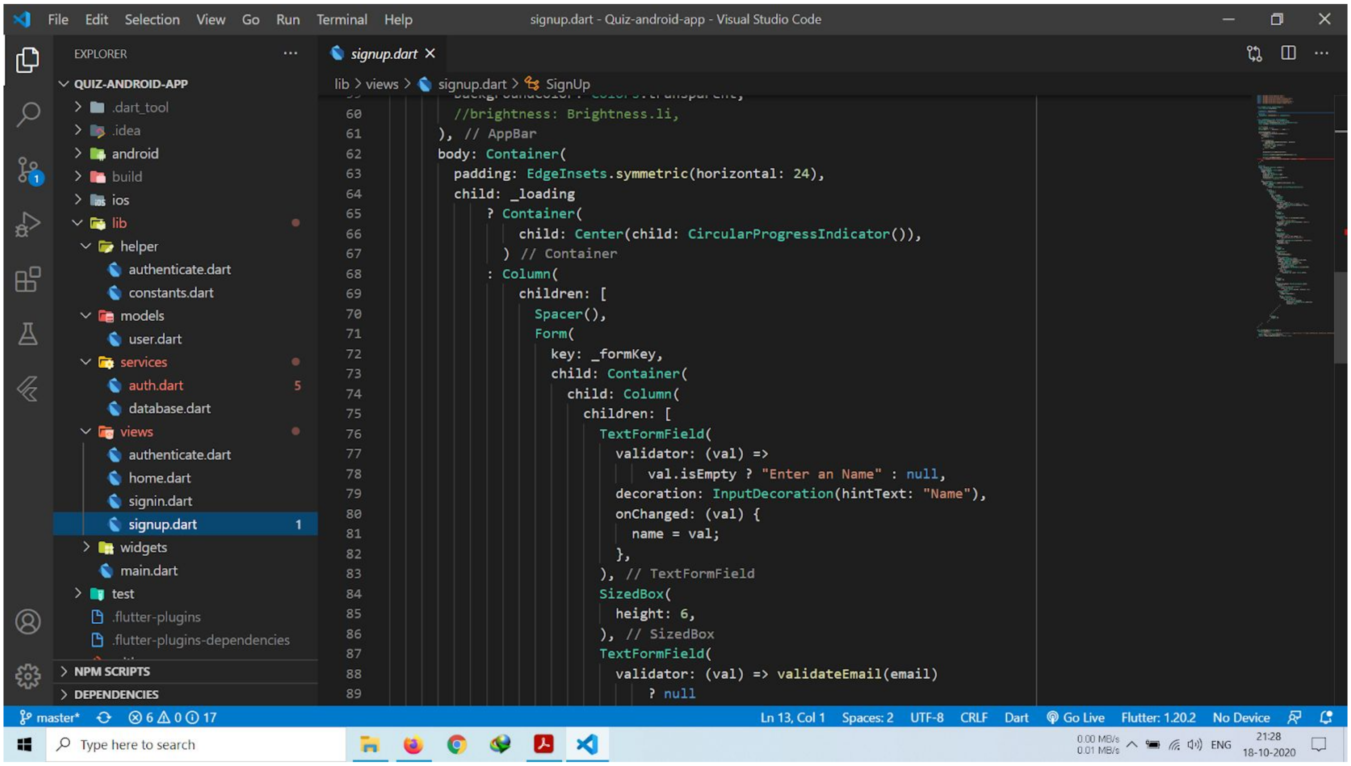
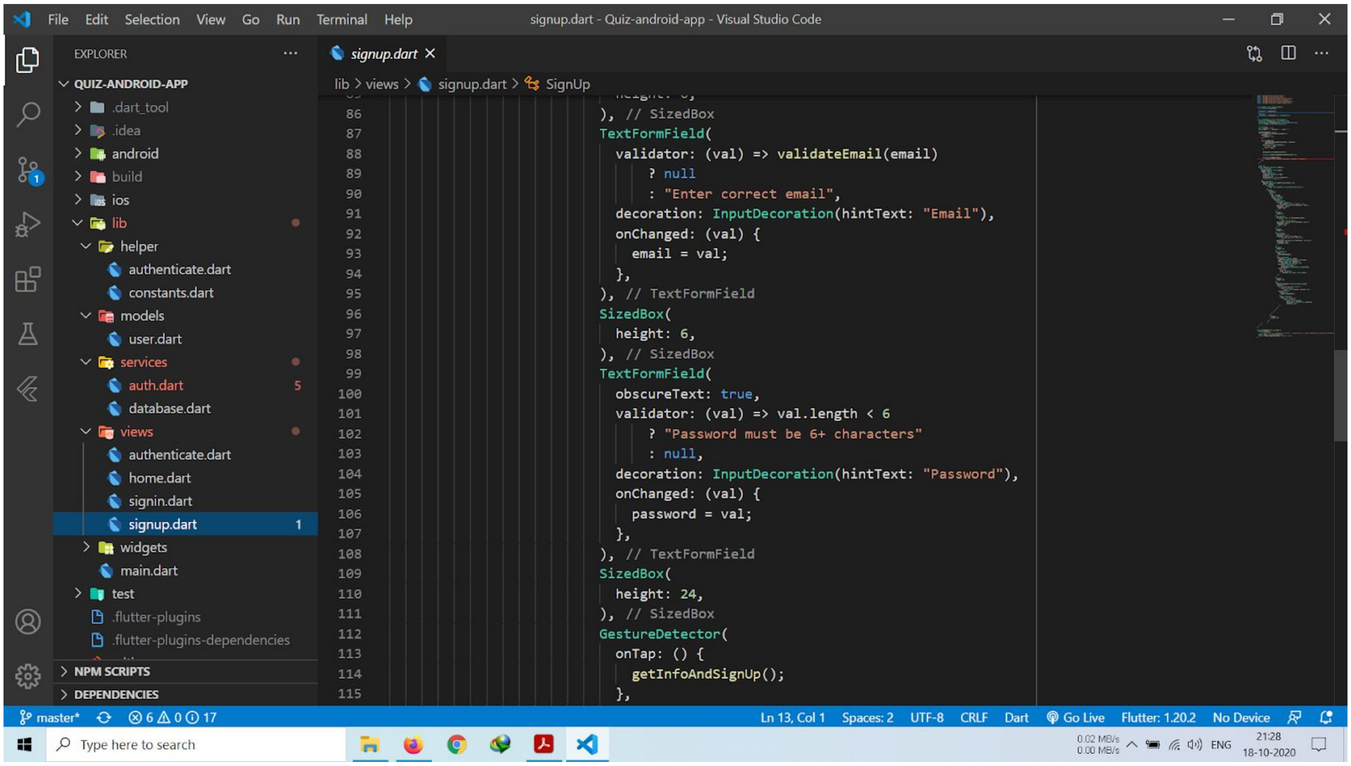
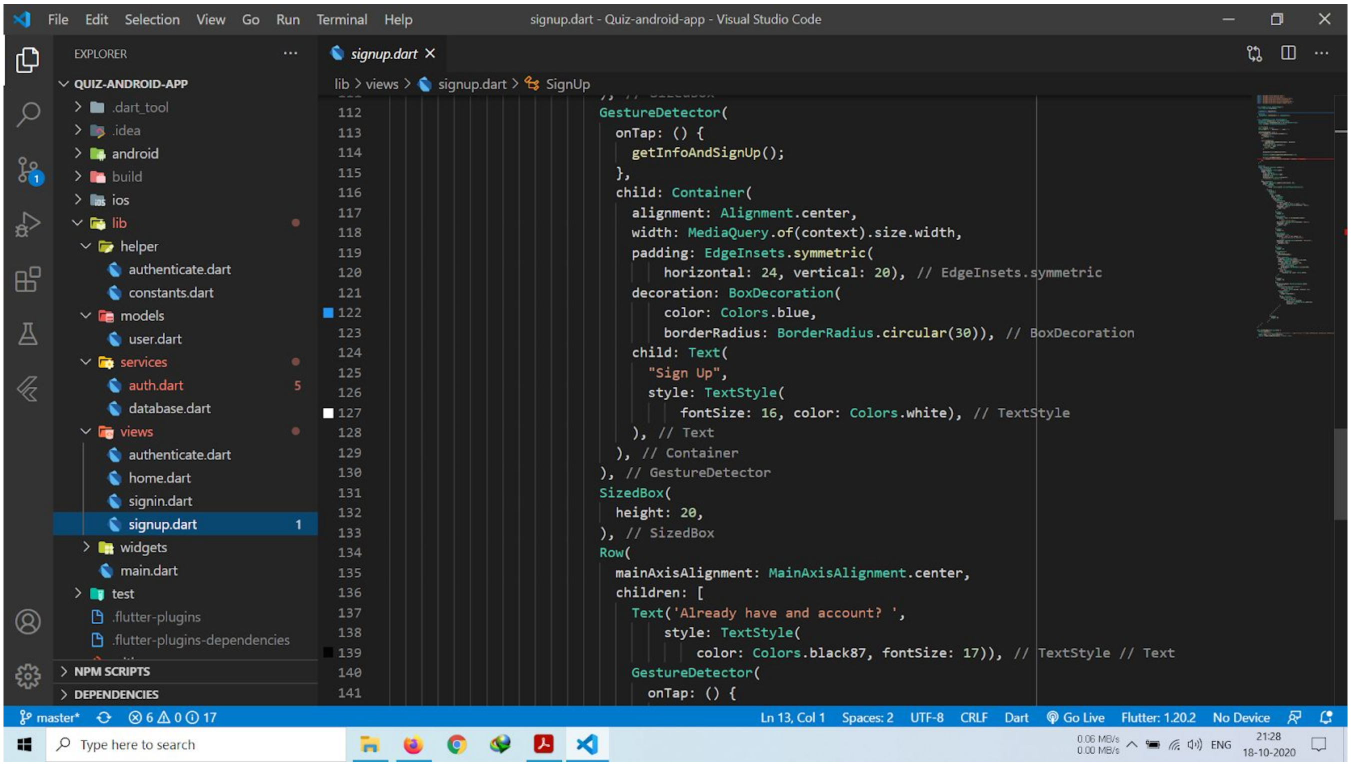
```
        _loading = true;
      });

      await authService
          .signUpWithEmailAndPassword(email, password)
          .then((value) {
        Map<String, String> userInfo = {
          "userName": name,
          "email": email,
        };

        databaseService.addData(userInfo);

        Constants.saveUserLoggedInSharedPreference(true);

        Navigator.pushReplacement(
            context, MaterialPageRoute(builder: (context) => Home()));
      });
    }
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.white,
      appBar: AppBar(
        title: AppLogo(),
        brightness: Brightness.light,
        elevation: 0.0,
        backgroundColor: Colors.transparent,
        //brightness: Brightness.li,
```


signup.dart - Quiz-android-app - Visual Studio Code
lib > views > signup.dart > SignUp
master*
Ln 13, Col 1 Spaces: 2 UTF-8 CRLF Dart Go Live Flutter: 1.20.2 No Device

```
        //brightness: Brightness.li,
      ), // AppBar
      body: Container(
        padding: EdgeInsets.symmetric(horizontal: 24),
        child: _loading
            ? Container(
                child: Center(child: CircularProgressIndicator()),
              ) // Container
            : Column(
                children: [
                  Spacer(),
                  Form(
                    key: _formKey,
                    child: Container(
                      child: Column(
                        children: [
                          TextFormField(
                            validator: (val) =>
                                val.isEmpty ? "Enter an Name" : null,
                            decoration: InputDecoration(hintText: "Name"),
                            onChanged: (val) {
                              name = val;
                            },
                          ), // TextFormField
                          SizedBox(
                            height: 6,
                          ), // SizedBox
                          TextFormField(
                            validator: (val) => validateEmail(email)
                                ? null
```



```
            ), // SizedBox
            TextFormField(
              validator: (val) => validateEmail(email)
                  ? null
                  : "Enter correct email",
              decoration: InputDecoration(hintText: "Email"),
              onChanged: (val) {
                email = val;
              },
            ), // TextFormField
            SizedBox(
              height: 6,
            ), // SizedBox
            TextFormField(
              obscureText: true,
              validator: (val) => val.length < 6
                  ? "Password must be 6+ characters"
                  : null,
              decoration: InputDecoration(hintText: "Password"),
              onChanged: (val) {
                password = val;
              },
            ), // TextFormField
            SizedBox(
              height: 24,
            ), // SizedBox
            GestureDetector(
              onTap: () {
                getInfoAndSignUp();
              },
```


File Edit Selection View Go Run Terminal Help
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EXPLORER
QUIZ-ANDROID-APP
lib > views > signup.dart > SignUp
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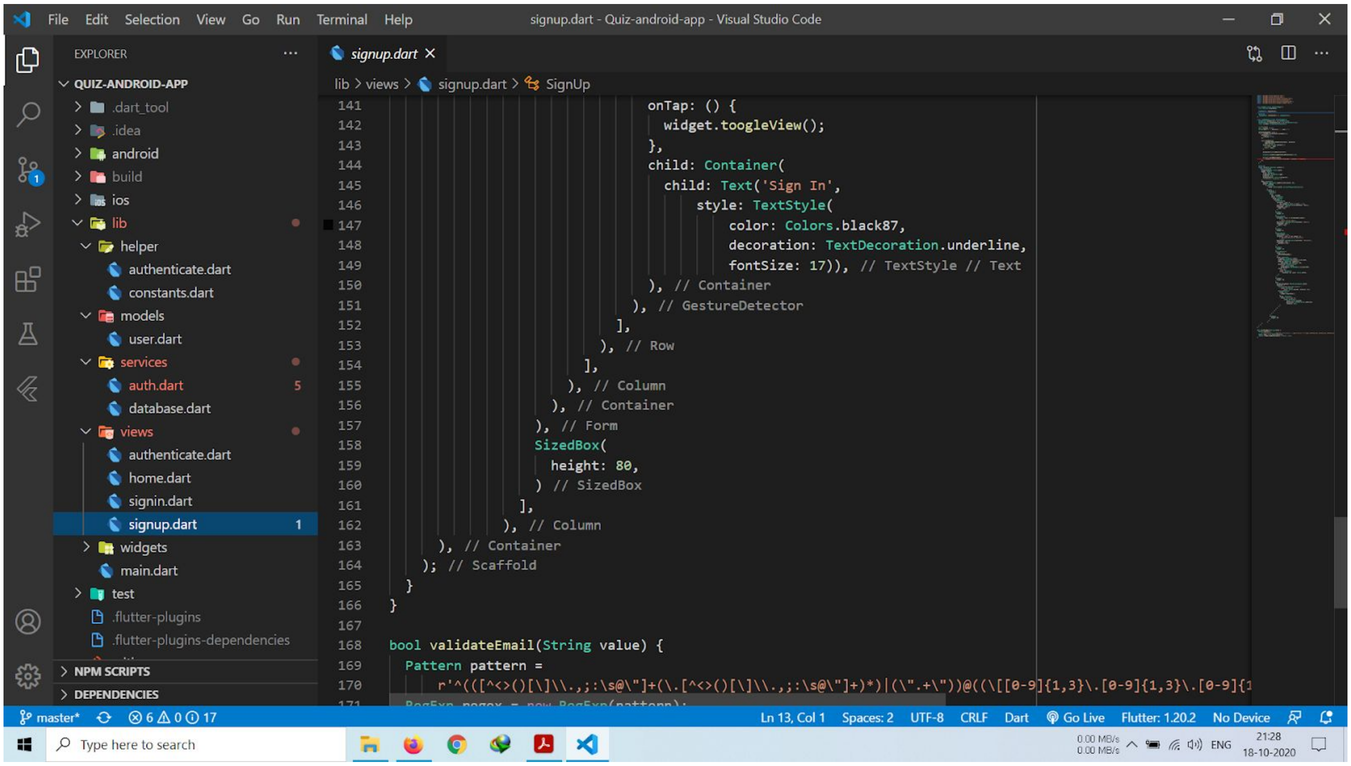
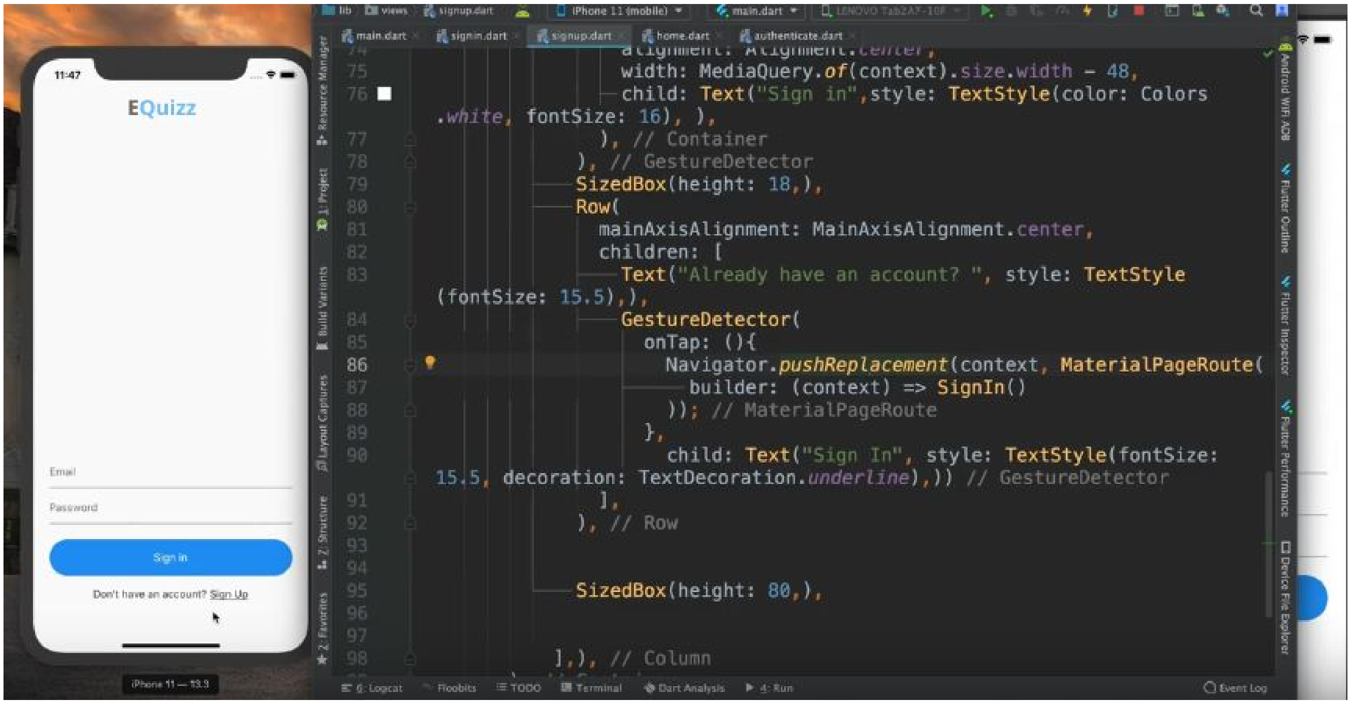
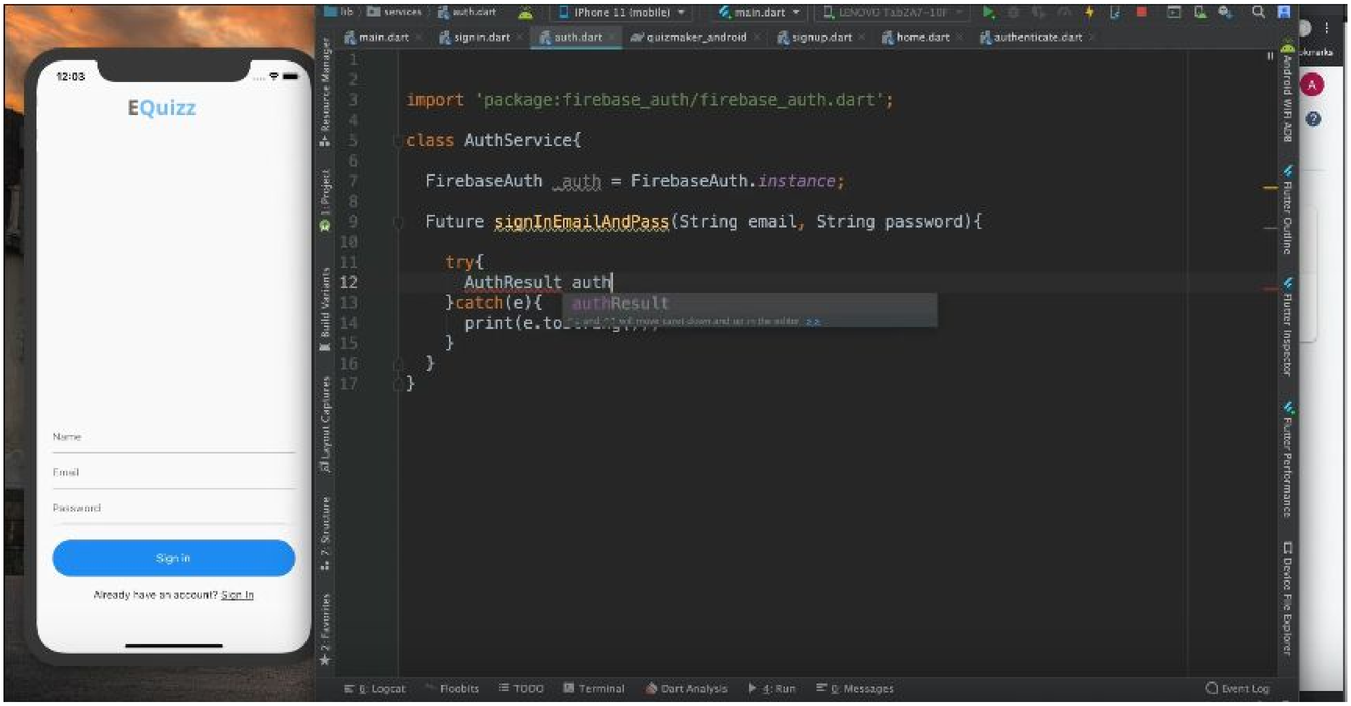
```
            GestureDetector(
              onTap: () {
                getInfoAndSignUp();
              },
              child: Container(
                alignment: Alignment.center,
                width: MediaQuery.of(context).size.width,
                padding: EdgeInsets.symmetric(
                    horizontal: 24, vertical: 20), // EdgeInsets.symmetric
                decoration: BoxDecoration(
                    color: Colors.blue,
                    borderRadius: BorderRadius.circular(30)), // BoxDecoration
                child: Text(
                  "Sign Up",
                  style: TextStyle(
                      fontSize: 16, color: Colors.white), // TextStyle
                ), // Text
              ), // Container
            ), // GestureDetector
            SizedBox(
              height: 20,
            ), // SizedBox
            Row(
              mainAxisAlignment: MainAxisAlignment.center,
              children: [
                Text('Already have and account? ',
                    style: TextStyle(
                        color: Colors.black87, fontSize: 17)), // TextStyle // Text
                GestureDetector(
                  onTap: () {
```



```
                                onTap: () {
                                  widget.toogleView();
                                },
                                child: Container(
                                  child: Text('Sign In',
                                      style: TextStyle(
                                          color: Colors.black87,
                                          decoration: TextDecoration.underline,
                                          fontSize: 17)), // TextStyle // Text
                                ), // Container
                              ), // GestureDetector
                            ],
                          ), // Row
                        ],
                      ), // Column
                    ), // Container
                  ), // Form
                  SizedBox(
                    height: 80,
                  ) // SizedBox
                ],
              ), // Column
            ), // Container
          ); // Scaffold
        }
      }

      bool validateEmail(String value) {
        Pattern pattern =
            r'^(([^<>()[\]\\.,;:\s@\"]+(\.[^<>()[\]\\.,;:\s@\"]+)*)|(\".+\"))@((\[[0-9]{1,3}\.[0-9]{1,3}\.[0-9]{1
```



```
              alignment: Alignment.center,
              width: MediaQuery.of(context).size.width - 48,
              child: Text("Sign in",style: TextStyle(color: Colors
  .white, fontSize: 16), ),
            ), // Container
          ), // GestureDetector
          SizedBox(height: 18,),
          Row(
            mainAxisAlignment: MainAxisAlignment.center,
            children: [
              Text("Already have an account? ", style: TextStyle
  (fontSize: 15.5),),
              GestureDetector(
                onTap: (){
                  Navigator.pushReplacement(context, MaterialPageRoute(
                    builder: (context) => SignIn()
                  )); // MaterialPageRoute
                },
                  child: Text("Sign In", style: TextStyle(fontSize:
  15.5, decoration: TextDecoration.underline),)) // GestureDetector
            ],
          ), // Row


          SizedBox(height: 80,),


        ],), // Column
```



```
import 'package:firebase_auth/firebase_auth.dart';

class AuthService{

  FirebaseAuth _auth = FirebaseAuth.instance;

  Future signInEmailAndPass(String email, String password){

    try{
      AuthResult auth
    }catch(e){        authResult
      print(e.toString());
    }
  }
}
```

References

- https://flutter.dev
- https://pub.dev/
- https://udemy.com
- https://stackoverflow.com
- https://coursera.org