Name - Mohit Shadija

D15B - 50

Experiment 6

Aim: To Connect Flutter UI with Firebase Database.

Objective:

To integrate Firebase Firestore with a Flutter application to store and retrieve data related to tasks, progress, and study sessions.

Requirements:

- Flutter SDK
- Dart Programming Language
- Firebase Firestore
- Android Studio/Visual Studio Code
- Google Firebase Account

Theory:

Firebase Firestore is a NoSQL cloud database that allows Flutter applications to store and sync data efficiently. It enables real-time updates and data persistence, making it an ideal choice for applications that require synchronization across devices.

Steps to Integrate Firebase Firestore:

1. **Setup Firebase Project:**
    - Go to Firebase Console
    - Create a new project and register your app (Android/iOS/Web)
    - Download the `google-services.json` file and place it in the `android/app` directory (for Android)
    - Enable Firestore Database under Firebase services

Add Dependencies to `pubspec.yaml`:

```
dependencies:
 flutter:
   sdk: flutter
 cloud_firestore: latest_version
 firebase_core: latest_version
```

2. Run `flutter pub get` to install dependencies.

Initialize Firebase in `main.dart`:

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

Future<void> main() async {
  WidgetsFlutterBinding.ensureInitialized();
  await Firebase.initializeApp();
  runApp(MyApp());
}
```

3.

Store Task and Session Data in Firestore:

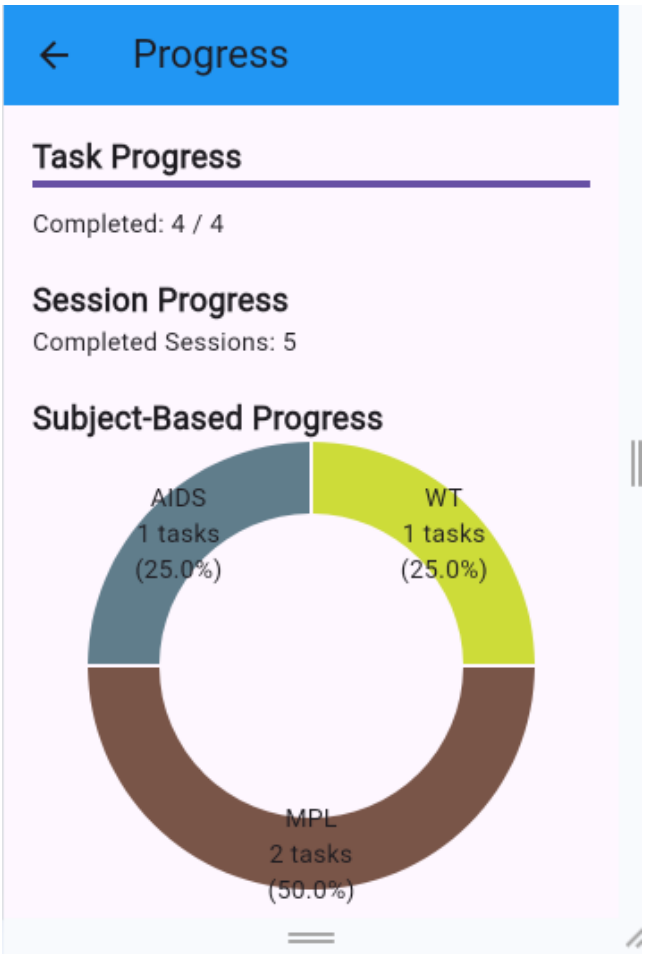
```
 import 'package:cloud_firestore/cloud_firestore.dart';

void saveSession(String sessionName, int duration) async {
  await FirebaseFirestore.instance.collection('sessions').add({
    'sessionName': sessionName,
    'duration': duration,
    'timestamp': FieldValue.serverTimestamp(),
  });
}
```

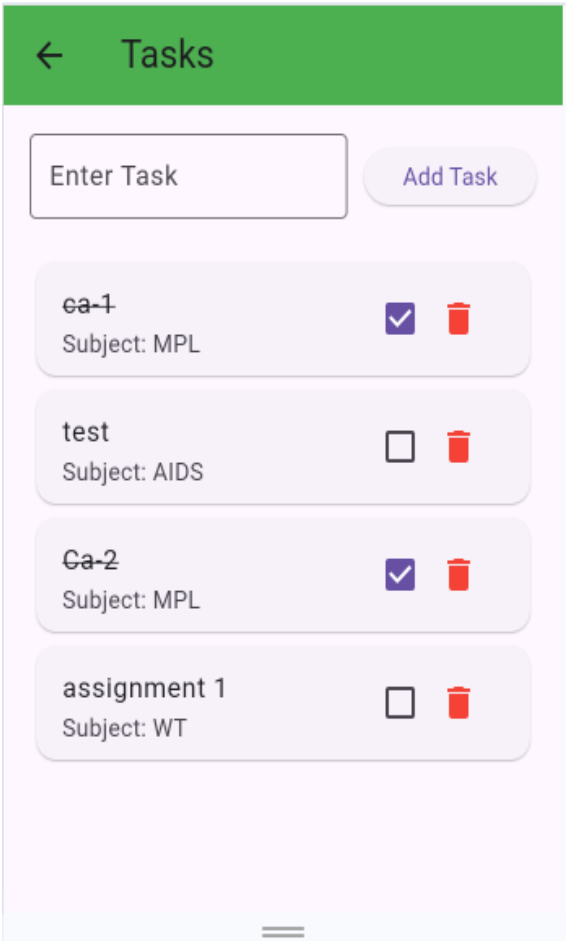
4.

Retrieve and Display Data:

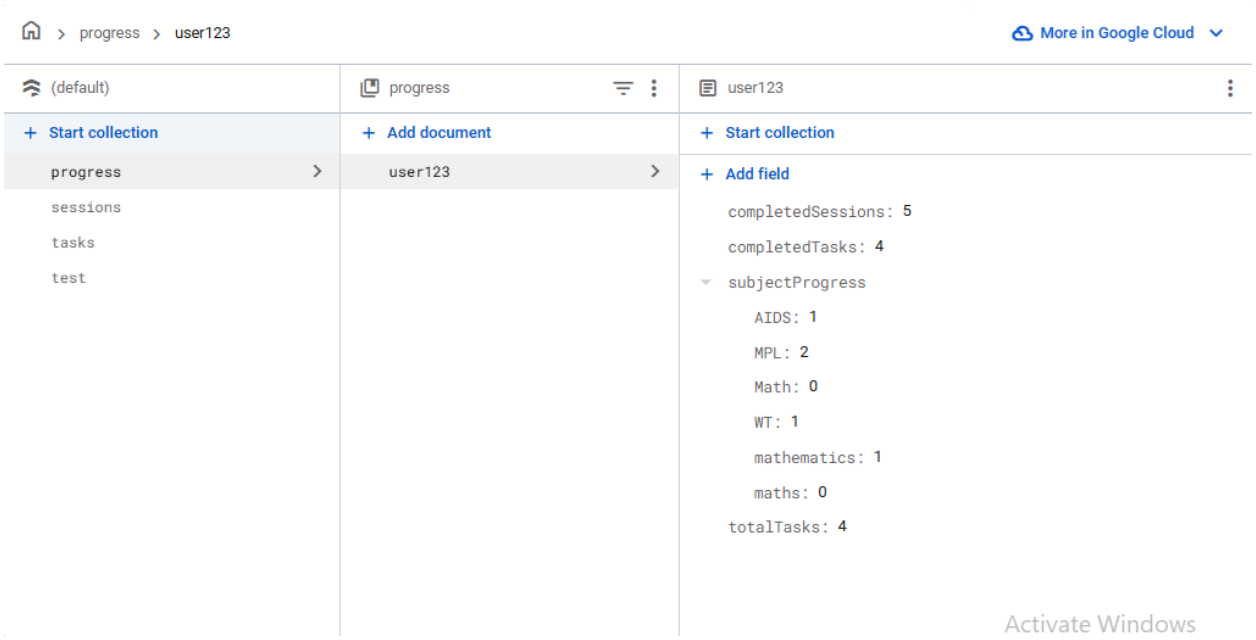
```
 StreamBuilder(
  stream: FirebaseFirestore.instance.collection('sessions').snapshots(),
  builder: (context, AsyncSnapshot<QuerySnapshot> snapshot) {
    if (!snapshot.hasData) return CircularProgressIndicator();
    return ListView(
```

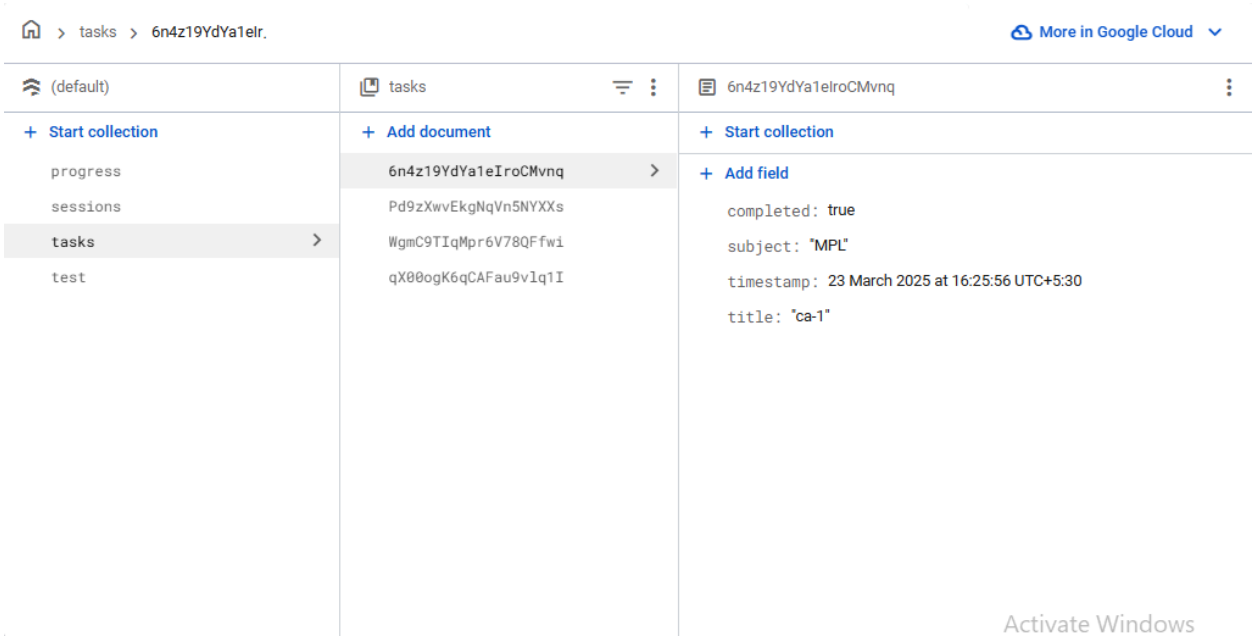
```
      children: snapshot.data!.docs.map((document) {
        return ListTile(
          title: Text(document['sessionName']),
          subtitle: Text('Duration: ${document['duration']} min'),
        );
      }).toList(),
    );
  },
)
```





- Successfully connect the Flutter app to Firestore.
- Save study session and task progress data to Firestore.
- Retrieve and display stored data in the app UI.





Conclusion:

By integrating Firebase Firestore into the Flutter Smart Study App, we have successfully enabled cloud-based storage for tasks, session progress, and study tracking. This provides seamless data synchronization across devices.