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D15B - 36

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.

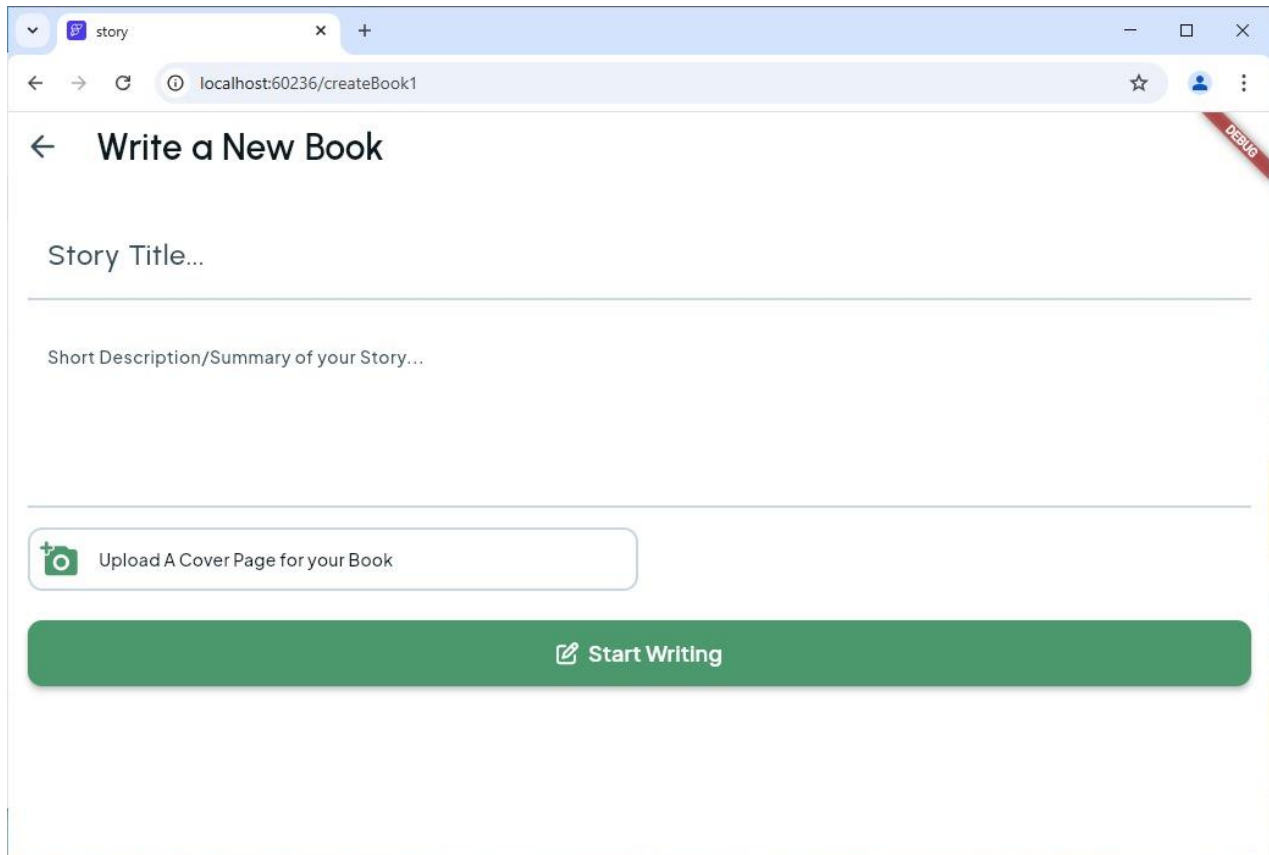
Retrieve and Display Data:

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

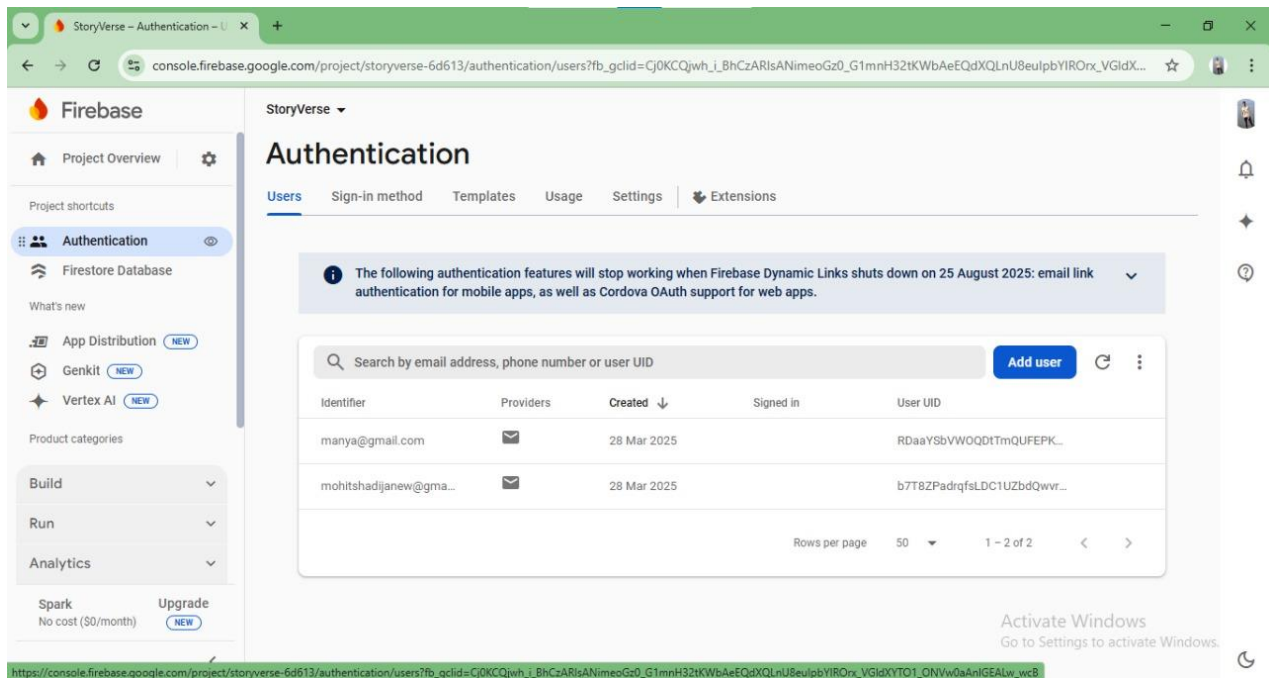
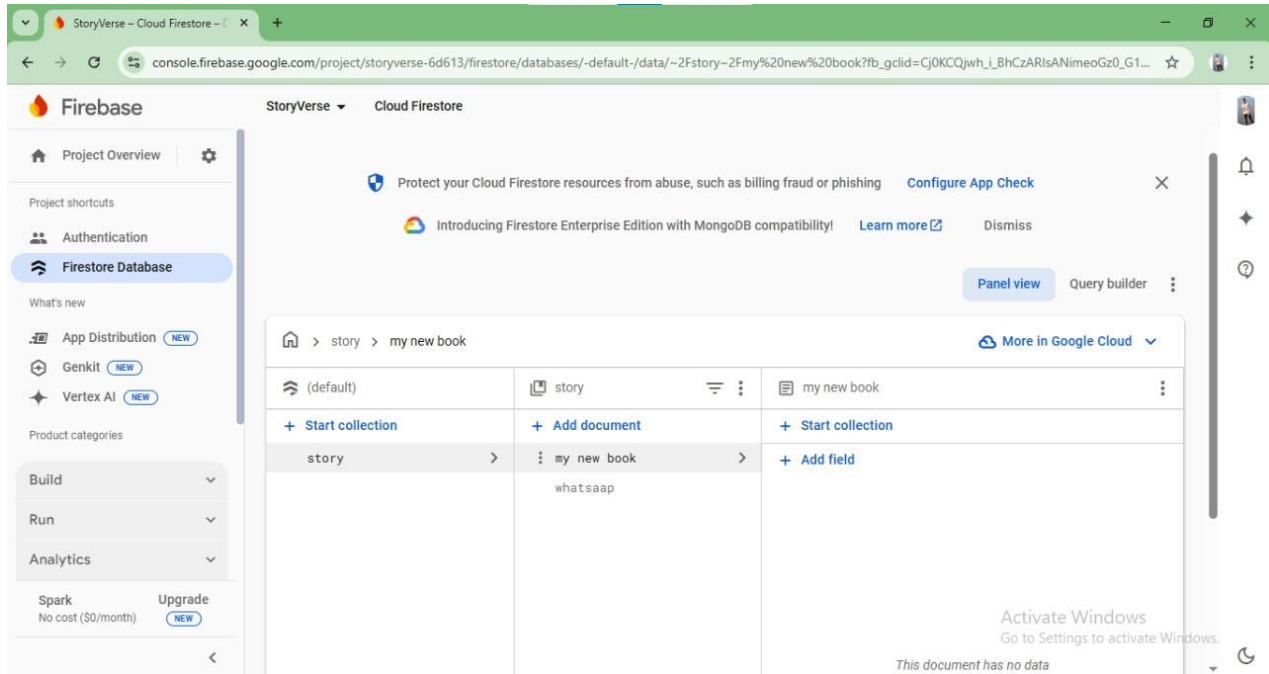
```

        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 Stories. This provides seamless data synchronization across devices.