Experiment 6

Aim: To Connect Flutter UI with fireBase database

Theory:

Firebase is a comprehensive mobile and web application development platform provided by Google. It offers a wide range of features and services that enable developers to build high-quality apps quickly and efficiently.

At its core, Firebase provides tools for various aspects of app development, including authentication, real-time database, cloud storage, hosting, and more. Here's a breakdown of some key Firebase components:

Authentication: Firebase Authentication allows developers to easily integrate secure authentication methods into their apps. It supports various authentication methods, including email/password, phone number, Google, Facebook, Twitter, and more. This feature handles user management, authentication, and security, making it simple to add user sign-up, sign-in, and access control to apps.

Realtime Database: Firebase Realtime Database is a NoSQL cloud database that enables developers to store and sync data in real time. It's particularly useful for applications that require real-time updates, such as chat apps, collaboration tools, and gaming apps. The database is JSON-based, which makes it flexible and easy to use. It automatically synchronizes data across all connected clients and devices, ensuring that changes made by one user are immediately reflected on others' screens.

Cloud Firestore: Cloud Firestore is Firebase's newer, more scalable NoSQL database solution. It offers more powerful querying capabilities, better scalability, and improved performance compared to the Realtime Database. Firestore organizes data into collections and documents, allowing for more structured and efficient data storage. It also supports real-time updates, offline data access, and powerful querying capabilities.

Cloud Storage: Firebase Cloud Storage provides secure and reliable cloud storage for user-generated content, such as images, videos, and documents. It allows developers to easily upload and download files from their apps using simple APIs. Cloud Storage integrates seamlessly with other Firebase services, making it easy to store and serve user-generated content in Firebase-powered apps.

Hosting: Firebase Hosting allows developers to quickly and securely deploy web apps and static content to a global content delivery network (CDN). It provides fast and reliable hosting with SSL encryption, custom domain support, and automatic scaling. With Firebase Hosting, developers can deploy web apps with just a few simple commands, eliminating the need for complex server configurations and maintenance.

Cloud Functions: Firebase Cloud Functions allow developers to run backend code in response to events triggered by Firebase features and HTTPS requests. It enables developers to extend the functionality of their apps without managing servers or infrastructure. Cloud Functions are written in JavaScript or TypeScript and can be deployed with a single command using the Firebase CLI (Command Line Interface).

Analytics: Firebase Analytics provides insights into app usage and user behavior, helping developers understand how users interact with their apps. It tracks key metrics such as active users, retention, engagement, and conversion, allowing developers to make informed decisions about app improvements and optimizations.

Performance Monitoring: Firebase Performance Monitoring helps developers identify and fix performance issues in their apps. It provides detailed insights into app performance, including app startup time, network latency, and UI responsiveness. Performance Monitoring helps developers optimize their apps for better user experiences and higher ratings.

In addition to these core features, Firebase offers many other services, including Cloud Messaging for push notifications, Remote Config for dynamic app configuration, Machine Learning for integrating machine learning models into apps, and more. Overall, Firebase provides a powerful and comprehensive platform for building, managing, and scaling mobile and web applications.

Code in main.dart:

```dart
import 'package:firebase_core/firebase_core.dart';
import 'package:flutter/material.dart';
import 'package:flutter/services.dart';
import 'package:flutter_riverpod/flutter_riverpod.dart';
import 'package:youtube/login.dart';

void main() async{
 WidgetsFlutterBinding.ensureInitialized();
 try {
     await Firebase.initializeApp(
       options: FirebaseOptions(
         apiKey: "AIzaSyAyMitBa5a5qF9SSVLyeeu3aZUce_f_y3c", // paste your api key here
         appId: "1:702995124628:android:119b3a052e863e5f757f81", //paste your app id here
         messagingSenderId: "702995124628", //paste your messagingSenderId here
         projectId: "ytclone-87bbb", //paste your project id here
        ),
   );
     runApp(ProviderScope(child: MyApp()));
 } catch (e) {
   print('Error initializing Firebase: $e');
   // Handle the error gracefully, possibly show an error dialog or fallback screen
 }
}

class MyApp extends StatelessWidget {
 @override
 Widget build(BuildContext context) {
   SystemChrome.setPreferredOrientations([DeviceOrientation.portraitUp]);
   return MaterialApp(
     title: 'Flutter YouTube UI',
     debugShowCheckedModeBanner: false,
     theme: ThemeData(
       brightness: Brightness.dark,
       bottomNavigationBarTheme:
       const BottomNavigationBarThemeData(selectedItemColor: Colors.white),
     ),
     home: GoogleSignInScreen(),
   );
 }

}
```

Output:

Let's start with a name for your project ⑦

Project name

ytclone

✏ ytclone-2283c   ▦ **Select parent resource**

Continue

Google Analytics is a free and unlimited analytics solution that enables targeting, reporting, and more in Firebase Crashlytics, Cloud Messaging, In-App Messaging, Remote Config, A/B Testing, and Cloud Functions.

Google Analytics enables:

🧪 A/B testing ⑦   🔧 Breadcrumb logs in Crashlytics ⑦

⊛ User segmentation & targeting across ⑦   ⚡ Event-based Cloud Functions triggers ⑦
   Firebase products   📊 Free unlimited reporting ⑦

✅ Enable Google Analytics for this project
   Recommended

Previous   **Continue**

Configure Google Analytics

Choose or create a Google Analytics account ⑦

📊 Gargi ▾

Automatically create a new property in this account ✏️

Upon project creation, a new Google Analytics property will be created in your chosen Google Analytics account and linked to your Firebase project. This link will enable data flow between the products. Data exported from your Google Analytics property into Firebase is subject to the Firebase terms of service, while Firebase data imported into Google Analytics is subject to the Google Analytics terms of service. Learn more ☒.

Previous   **Create project**

🔥 Firebase

Your Firebase projects

+

Add project

ytclone
ytclone-87bbb

🤖   ▦ ves.ac.in

Project settings

Your project

Project name	ytclone ✏️
Project ID ⍰	ytclone-87bbb
Project number ⍰	702995124628
Default GCP resource location ⍰	asia-south1
Parent org/folder in GCP ⍰	⊞ ves.ac.in
Web API Key	▬▬▬▬▬▬▬▬▬

Environment

This setting customizes your project for different stages of the app lifecycle

Environment type	Unspecified ✏️

Public settings

These settings control instances of your project shown to the public

Public-facing name ⍰	project-▬▬▬ ✏️
Support email ⍰	2021.gargi.angne@ves.ac.in ▾

Your apps

Add app

Android apps

📱 **youtubeclone**
com.example.youtube

SDK setup and configuration

Need to reconfigure the Firebase SDKs for your app? Revisit the SDK setup instructions or just download the configuration file containing keys and identifiers for your app.

⟨⟩ See SDK instructions   ⬇ google-services.json

App ID ⍰
▬▬▬▬▬▬▬▬▬

App nickname
youtubeclone ✏️

Package name
com.example.youtube

Authentication

Users   Sign-in method   Templates   Usage   Settings   ❖ Extensions

Identifier	Providers	Created ↓	Signed In	User UID
dcgargiangne@gmail.c...	G	Feb 21, 2024	Feb 23, 2024	▬▬▬▬▬▬
2021.gargi.angne@ves....	G	Feb 21, 2024	Feb 21, 2024	▬▬▬▬▬▬

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Google

Verify it's you

To help keep your account safe, Google wants to make sure it's really you trying to sign in

dcgargiangne@gmail.com

24

Check your Vivo V2055

Google sent a notification to your Vivo V2055. Tap **Yes** on the notification, then tap **24** on your phone to verify it's you.

Resend it

Try another way

Google

Welcome

dcgargiangne@gmail.com

We publish the Google Terms of Service so that you know what to expect as you use our services. By clicking 'I Agree, you agree to these terms.

You are also agreeing to the Google Play Terms of Service to enable discovery and management of apps.

And remember, the Google Privacy Policy describes how Google handles information generated as you use Google services. You can always visit your Google Account (account.google.com) to take a Privacy Checkup or to adjust your privacy controls.

I agree