Experiment No.6
MAD & PWA LAB

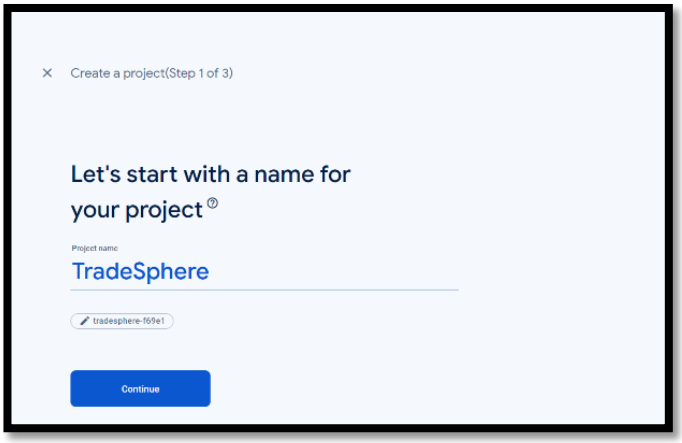
- **Aim:** To Connect Flutter UI with firebase database

- **Theory:**

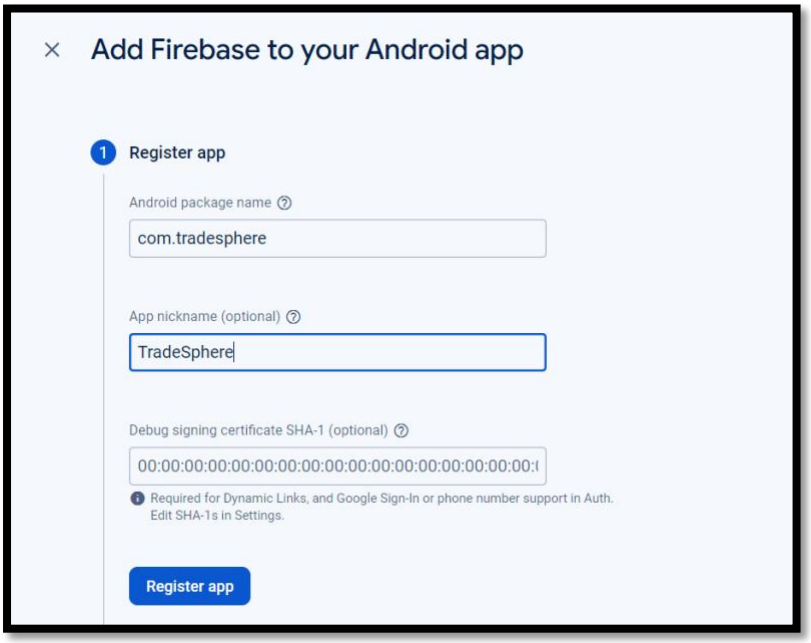
→ **Connecting Flutter UI with Firebase–**
Connecting a Flutter UI with a Firebase database involves several steps, including setting up a Firebase project, configuring your Flutter app, and implementing the necessary code to interact with the Firebase database. Here's a step-by-step guide to help you connect Flutter UI with a Firebase database.

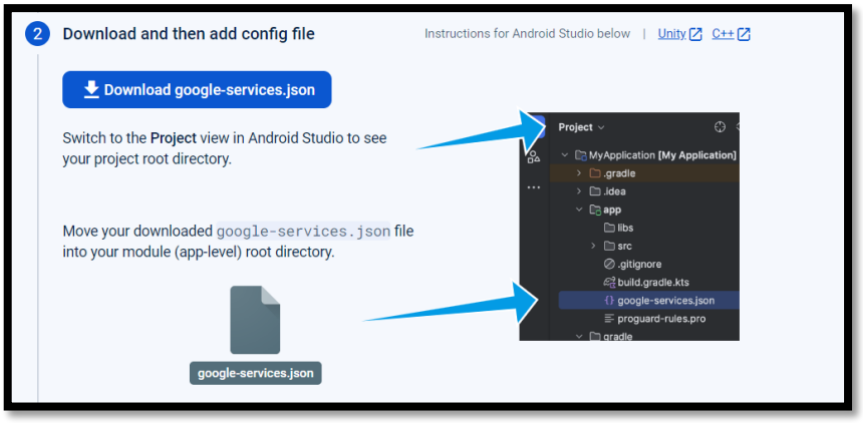
➢ **Step 1: Set up Firebase Project –**

✓ Create a Firebase Project:
- Go to the Firebase Console(https://console.firebase.google.com/).
- Click on "Add Project" and follow the prompts to create a new project.



✓ Add your Flutter app to Firebase:
- After creating the project, click on "Add App" and select the Flutter icon.
- Follow the setup instructions to add the necessary configuration files to your Flutter project.





✓ Enable Firebase services:

- In the Firebase Console, navigate to your project and click on "Develop" > "Database."
- Create a Firestore database or a Realtime Database, depending on your needs.

➢ **Step 2: Set up Flutter Project –**

✓ Add Dependencies:

- Open your 'pubspec.yaml' file and add the following dependencies.

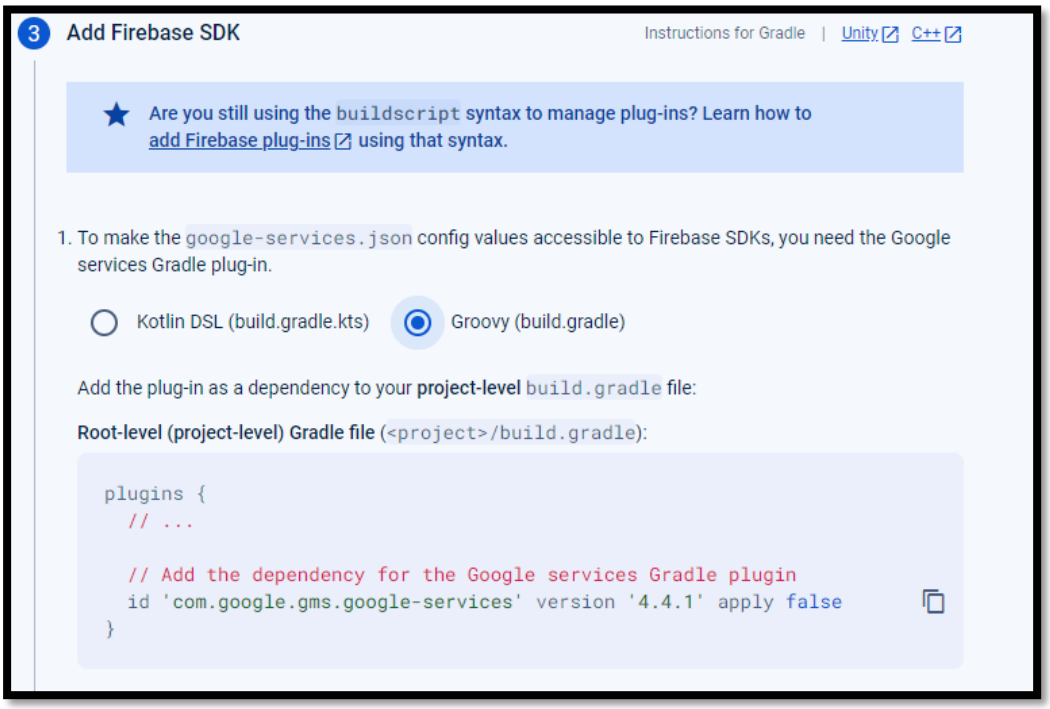
  Dependencies:
  Firebase_core: ^latest_version
  Cloud_firestore: ^latest_version

- Run `flutter pub get` in the terminal to install the dependencies.

✓ Initialize Firebase in your Flutter App:

- In your main Dart file (usually `main.dart`), initialize Firebase by adding the following code:

```
import 'package:firebase_core/firebase_core.dart';
void main() async {
 WidgetsFlutterBinding.ensureInitialized();
 await Firebase.initializeApp();
 runApp(MyApp());
}
```



2. Then, in your **module (app-level)** `build.gradle` file, add both the `google-services` plug-in and any Firebase SDKs that you want to use in your app:

Module (app-level) Gradle file (`<project>/<app-module>/build.gradle`):

```
plugins {
  id 'com.android.application'
  // Add the Google services Gradle plugin
  id 'com.google.gms.google-services'
  ...
}

dependencies {
  // Import the Firebase BoM
  implementation platform('com.google.firebase:firebase-bom:32.7.3')

  // TODO: Add the dependencies for Firebase products you want to use
  // When using the BoM, don't specify versions in Firebase dependencies
  implementation 'com.google.firebase:firebase-analytics'

  // Add the dependencies for any other desired Firebase products
  // https://firebase.google.com/docs/android/setup#available-libraries
}
```

By using the Firebase Android BoM, your app will always use compatible Firebase library versions. Learn more

➢ Step 3: Connect Flutter UI with Firebase –

✓ Firestore Database Example:

- If you are using Firestore, you can use the following example to read and write data.

```
import 'package:cloud_firestore/cloud_firestore.dart';
Future<void> addData() async {
  await FirebaseFirestore.instance.collection('your_collection').add({
    'field1': 'value1',
    'field2': 'value2',
  });
}
StreamBuilder(
  stream: FirebaseFirestore.instance.collection('your_collection').snapshots(),
  builder: (context, snapshot) {
    if (!snapshot.hasData) {
      return CircularProgressIndicator();  }
    var documents = snapshot.data.docs; },);
```

✓ Realtime Database Example:

- If you are using the Realtime Database, you can use the following example:

```
import 'package:firebase_database/firebase_database.dart';
DatabaseReference databaseReference =
FirebaseDatabase.instance.reference();
databaseReference.child('your_collection').push().set({
  'field1': 'value1',
  'field2': 'value2',
});

DatabaseReference databaseReference =
FirebaseDatabase.instance.reference();
databaseReference.child('your_collection').once().then((DataSnapshot
snapshot) {
    });
```

```
# The following adds the Cupertino Icons font to your application.
# Use with the CupertinoIcons class for iOS style icons.
cupertino_icons: ^1.0.2
firebase_core: ^2.15.1
firebase_auth: ^4.7.3
loading_overlay: ^0.3.0
rflutter_alert: ^2.0.7
```

```
lass SignUpScreen extends StatefulWidget {
 const SignUpScreen({super.key});
 static String id = 'signup_screen';

 @override
 State<SignUpScreen> createState() => _SignUpScreenState();


lass _SignUpScreenState extends State<SignUpScreen> {
 final _auth = FirebaseAuth.instance;
 late String _email;
 late String _password;
 late String _confirmPass;
 bool _saving = false;
```

```
CustomBottomScreen(
  textButton: 'Sign Up',
  heroTag: 'signup_btn',
  question: 'Have an account?',
  buttonPressed: () async {
    FocusManager.instance.primaryFocus?.unfocus();
    setState(() {
      _saving = true;
    });
    if (_confirmPass == _password) {
      try {
        await _auth.createUserWithEmailAndPassword(
            email: _email, password: _password);

        if (context.mounted) {
          signUpAlert(
            context: context,
            title: 'GOOD JOB',
            desc: 'Go login now',
            btnText: 'Login Now',
            onPressed: () {
              setState(() {
                _saving = false;
                Navigator.popAndPushNamed(
                    context, SignUpScreen.id);
              });
```

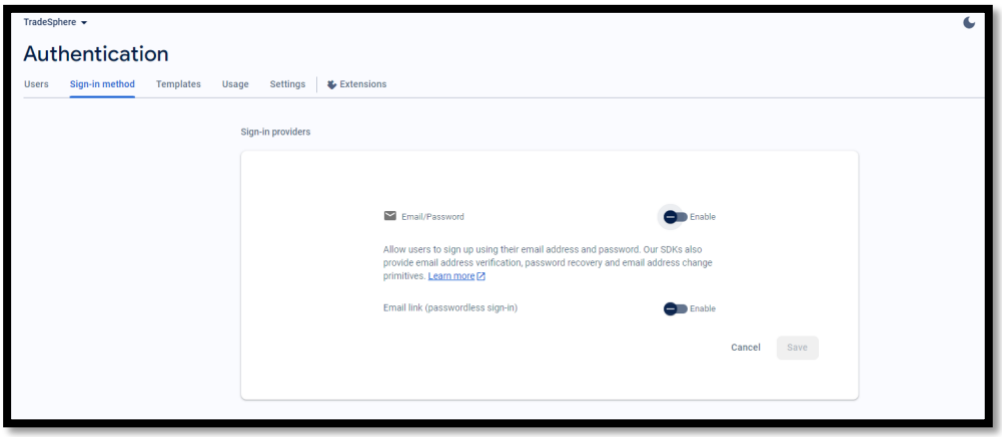
- **Step 4: Authentication –**

If we need user authentication, Firebase provides authentication services. We can integrate Firebase Authentication to secure your app.

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

Future<void> signIn(String email, String password) async {
  try {
    await FirebaseAuth.instance.signInWithEmailAndPassword(
      email: email,
      password: password,
    );
  } catch (e) {
    print(e);
  }
}
```

Remember to replace placeholder values like “your_collection”, “field1”, “value1”, etc., with your actual database collection and field names.


TradeSphere
Authentication
Users
Sign-in method
Templates
Usage
Settings
Extensions
Sign-in providers
Email/Password
Enable
Allow users to sign up using their email address and password. Our SDKs also provide email address verification, password recovery and email address change primitives. Learn more
Email link (passwordless sign-in)
Enable
Cancel
Save


TradeSphere
Authentication
Email/Password enabled
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Templates
Usage
Settings
Extensions
Sign-in providers
Add new provider
Provider
Status
Email/Password
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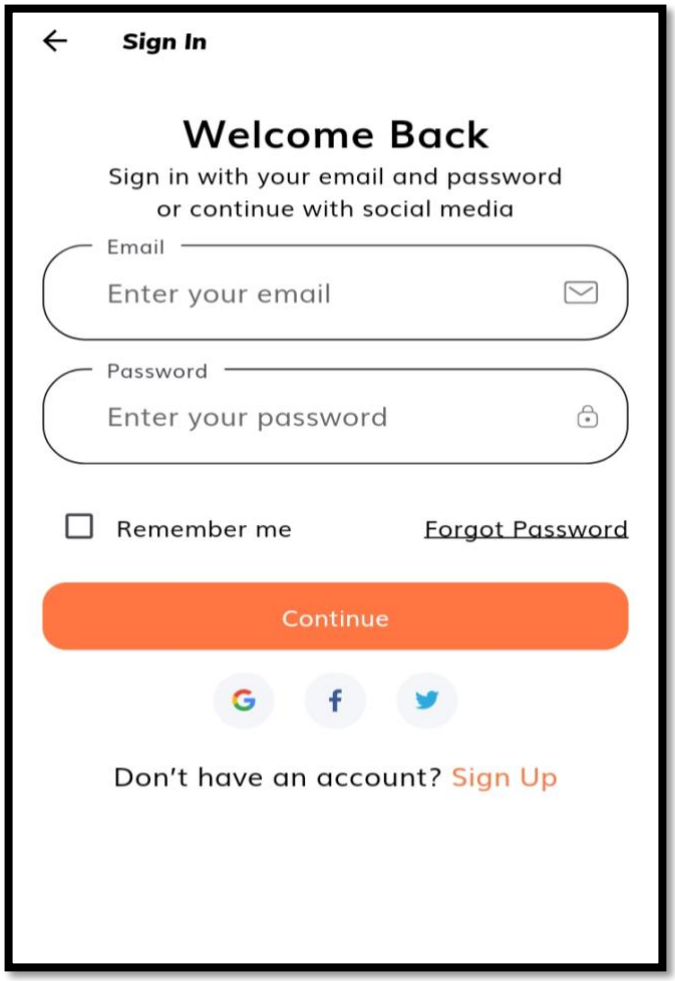
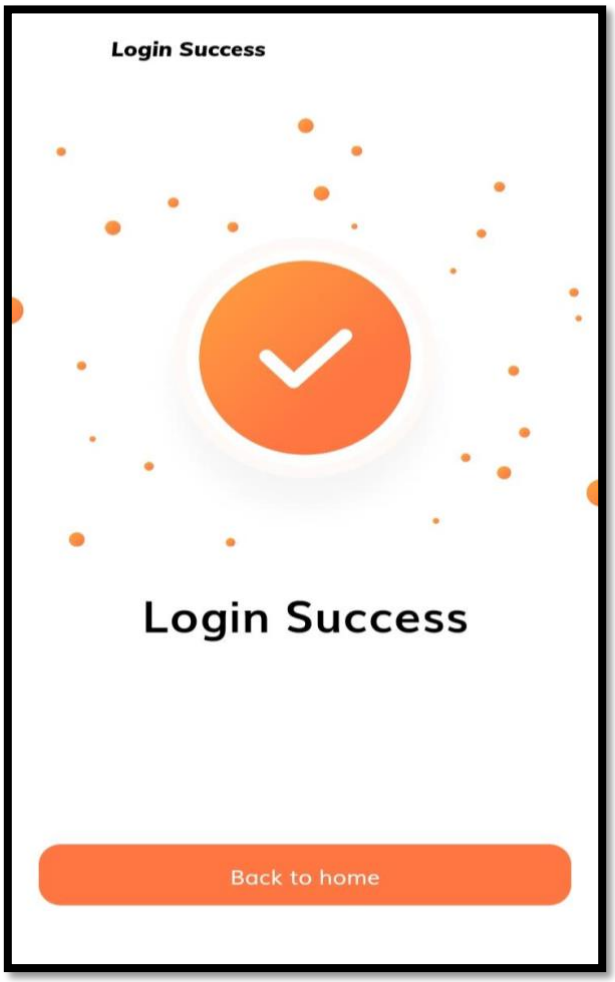
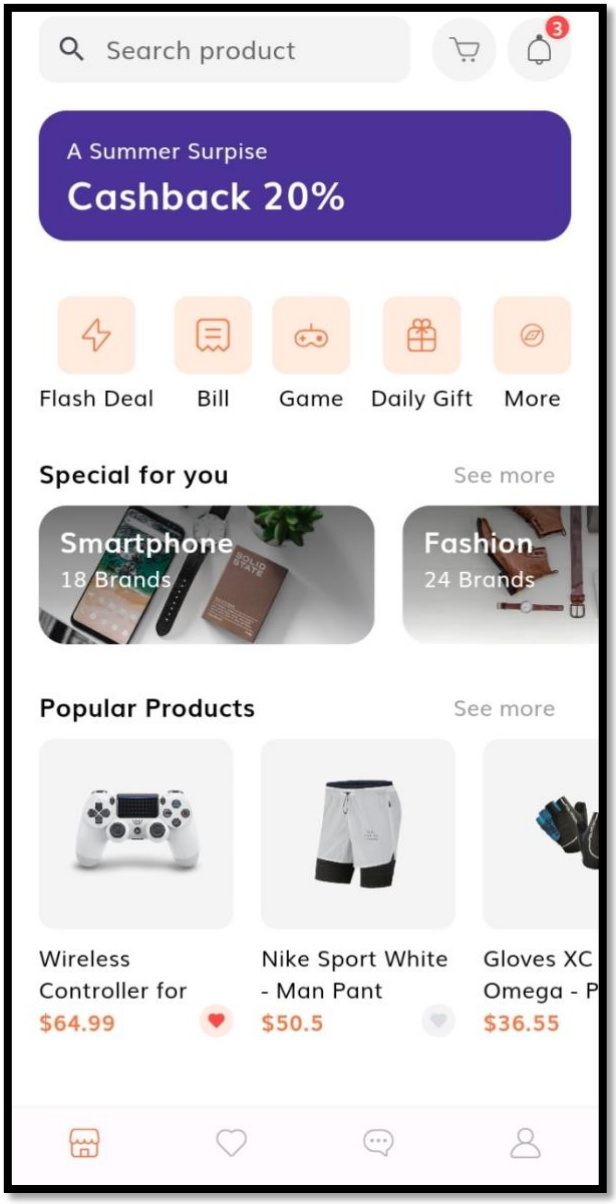
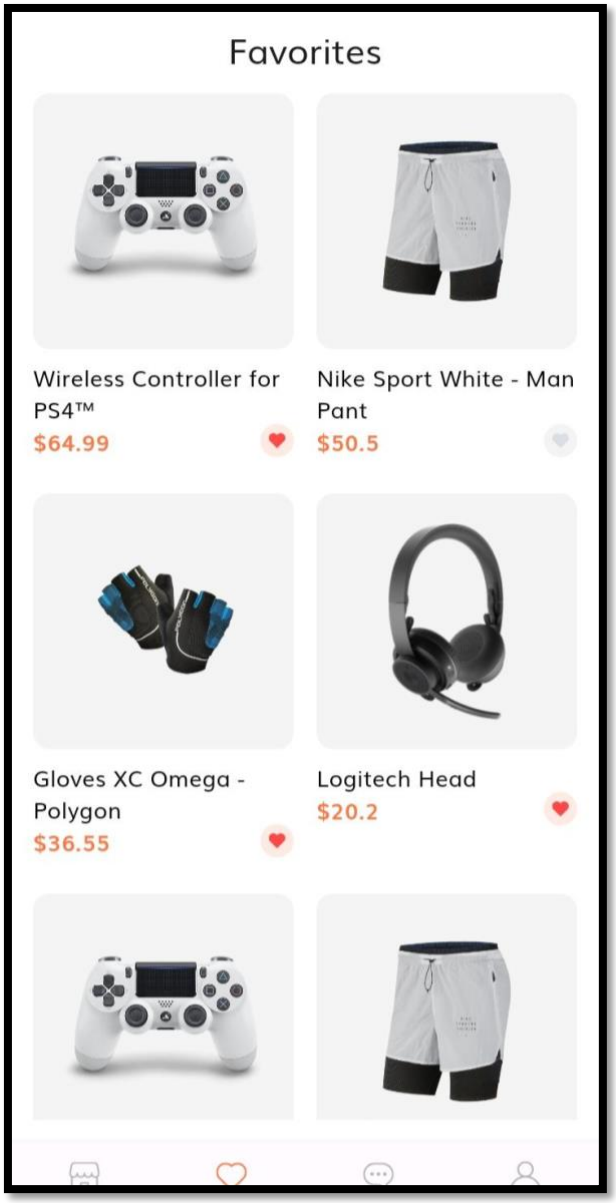

Sign In
Welcome Back
Sign in with your email and password
or continue with social media
Email
Enter your email
Password
Enter your password
Remember me
Forgot Password
Continue
Don't have an account? Sign Up


Login Success
Login Success
Back to home





- **Conclusion:**

  So, in summary, we've learned how to link our Flutter user interface with a Firebase database. Connecting the visual part of our app with the storage and retrieval of data is a crucial step, and understanding this connection allows us to create dynamic and interactive mobile applications.