

Experiment-6

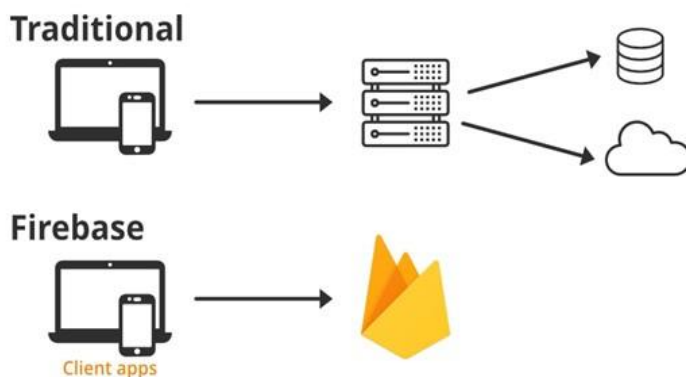
Aim: To Connect Flutter UI with firebase database.

Theory:



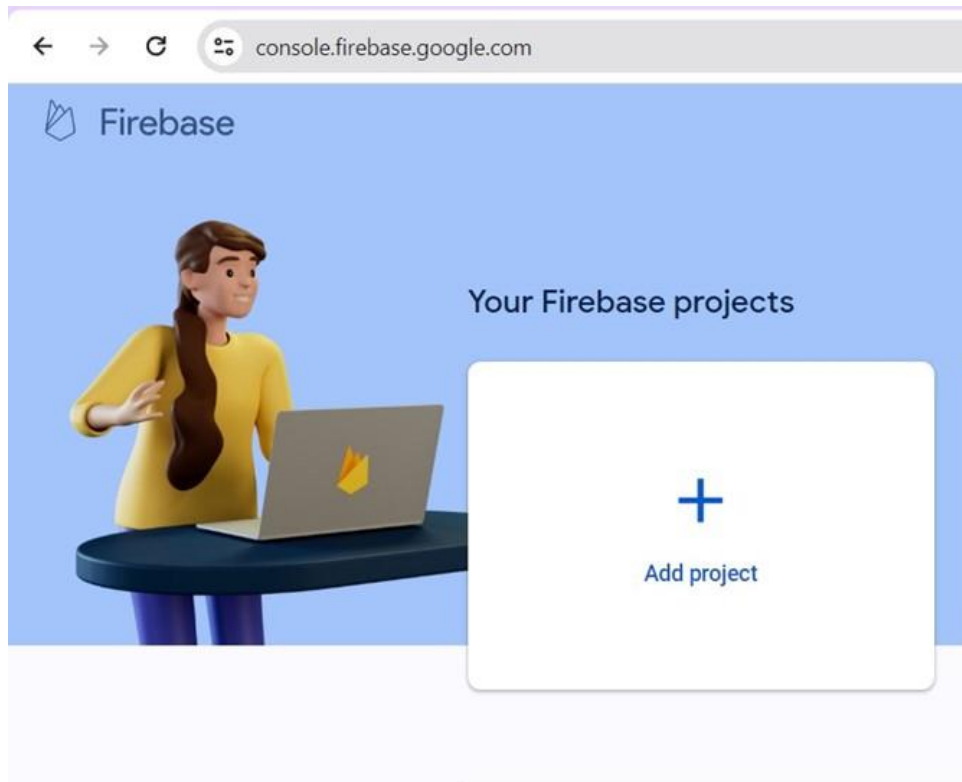
Firebase Authentication is a preconfigured backend service that makes it really easy to integrate with a mobile app using an SDK. You don't have to maintain any backend infrastructure for the authentication process and Firebase supports integration with popular identity providers such as Google, Facebook, and GitHub.

Firebase is a product of Google which helps developers to build, manage, and grow their apps easily. It helps developers to build their apps faster and in a more secure way. No programming is required on the firebase side which makes it easy to use its features more efficiently. It provides services to android, ios, web, and unity. It provides cloud storage. It uses NoSQL for the database for the storage of data.

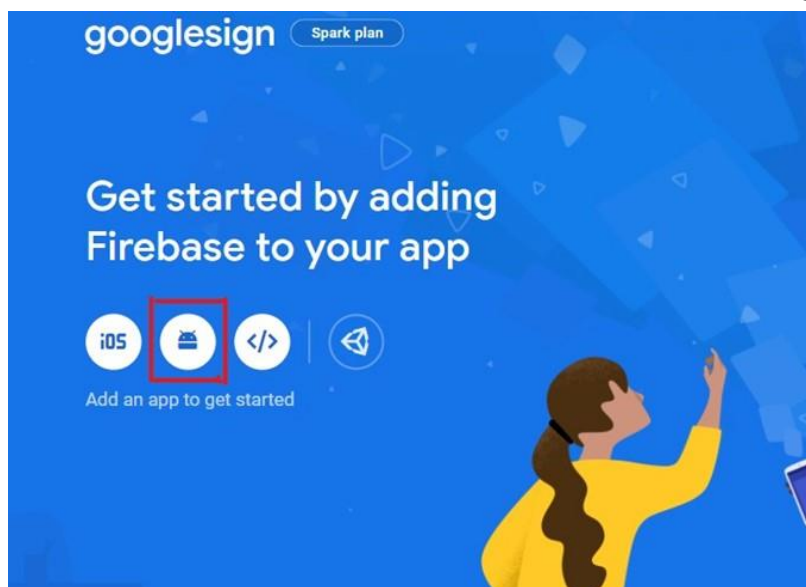


Step by Step Implementation

Step 1: First, you have to visit the Firebase console. Now let's move to the next step. Click on the "Add project" as shown in the below image.



Step 2: Provide the firebase project name. Let's give it "geeksforgeeks". Then click on "Continue". Disable the "Enable Google Analytics for this project" because we don't need this and click on "Create project". It takes some time to wait till the project is created, After that click on "Continue". Now there will be a screen, You can find the Android button and click on it as shown in the below image.



Now time to add firebase to your Android App.

Step 3: We have to give the "Android package name", where it can be found?????. Don't know, Let's find this in the next step.

← → ↻ console.firebase.google.com ☆

✕ Create a project (Step 1 of 3)

Let's start with a name for your project[®]


Project name

FoodFacts

foodfacts-cs477 [Select parent resource](#)

☐ I accept the [Firebase terms](#)

☐ I confirm that I will use Firebase exclusively for purposes relating to my trade, business, craft, or profession.








✕ Create a project (Step 2 of 3)


Google Analytics for your Firebase project

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
-  Breadcrumb logs in Crashlytics
-  User segmentation & targeting across Firebase products
-  Event-based Cloud Functions triggers
-  Free unlimited reporting

☒ **Enable Google Analytics for this project**
Recommended



✕ Create a project (Step 3 of 3)

United States

Google Analytics is a business tool. Use it exclusively for purposes related to your trade, business, craft, or profession.

Data sharing settings and Google Analytics terms


☒ **Use the default settings for sharing Google Analytics data.** [Learn more](#)

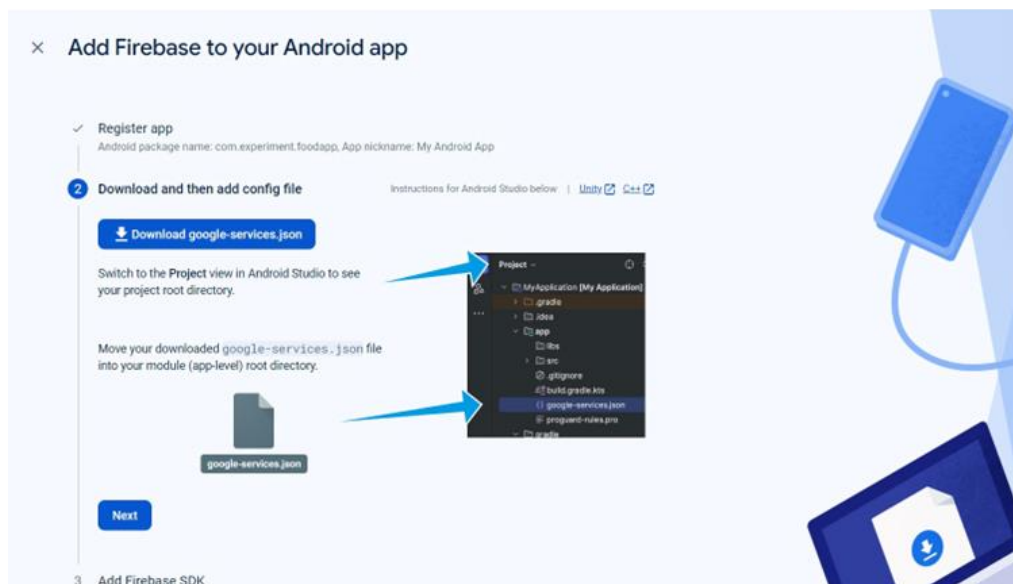
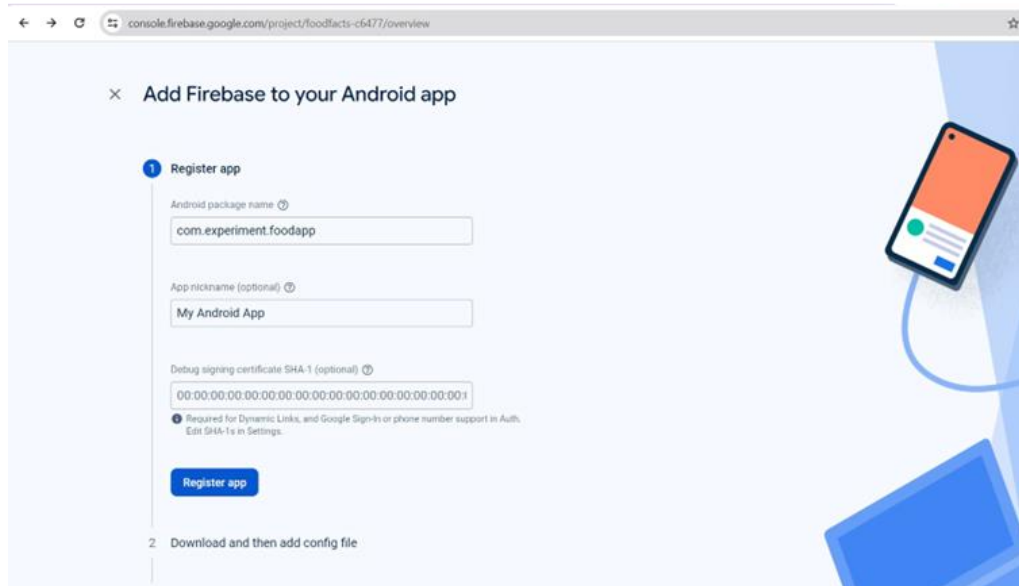
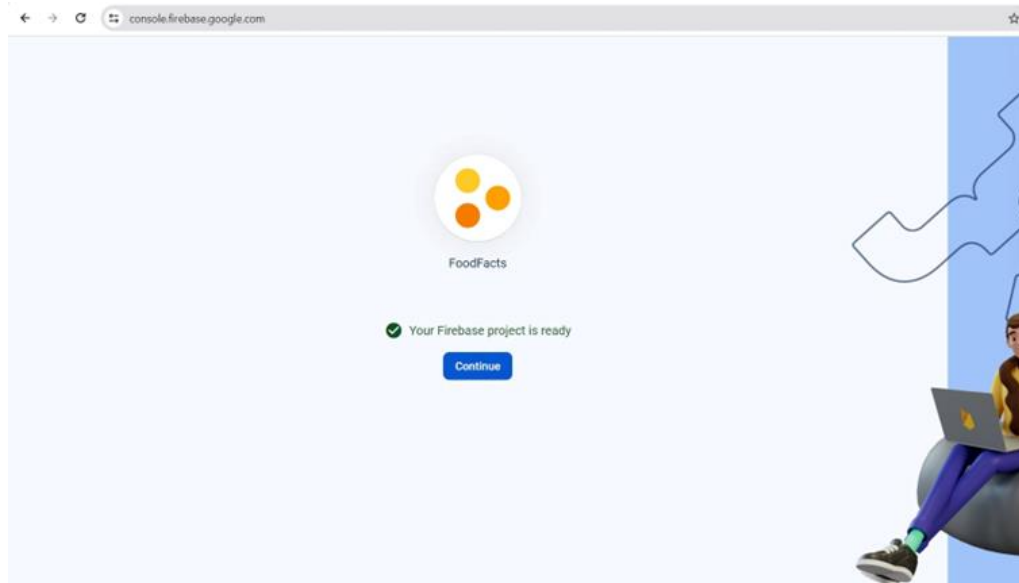
- ☒ Share your Analytics data with Google to improve Google Products and Services
- ☒ Share your Analytics data with Google to enable Benchmarking
- ☒ Share your Analytics data with Google to enable Technical Support
- ☒ Share your Analytics data with Google Account Specialists

☒ **I accept the [Google Analytics terms](#)**

Upon project creation, a new Google Analytics property will be created 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](#)





3 Add Firebase SDK

Instructions for Gradle | [Unity](#) [C++](#)

★ Are you still using the `buildscript` syntax to manage plugins? Learn how to [add Firebase plugins](#) using that syntax.

1. To make the `google-services.json` config values accessible to Firebase SDKs, you need the Google services Gradle plugin.

☒ Kotlin DSL (`build.gradle.kts`) ☐ Groovy (`build.gradle`)

Add the plugin as a dependency to your **project-level** `build.gradle.kts` file:

Root-level (project-level) Gradle file (`<project>/build.gradle.kts`):

```
plugins {  
    // ...  
  
    // Add the dependency for the Google services Gradle plugin  
    id("com.google.gms.google-services") version "4.4.1" apply false  
}
```

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

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

```
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](#)

3. After adding the plugin and the desired SDKs, sync your Android project with Gradle files.

[Previous](#) [Next](#)



× Add Firebase to your Android app

- ✓ Register app
Android package name: `com.experiment.foodapp`, App nickname: My Android App
- ✓ Download and then add config file
- ✓ Add Firebase SDK
- 4 Next steps**


You're all set!

Make sure to check out the [documentation](#) to learn how to get started with each Firebase product that you want to use in your app.

You can also explore [sample Firebase apps](#).

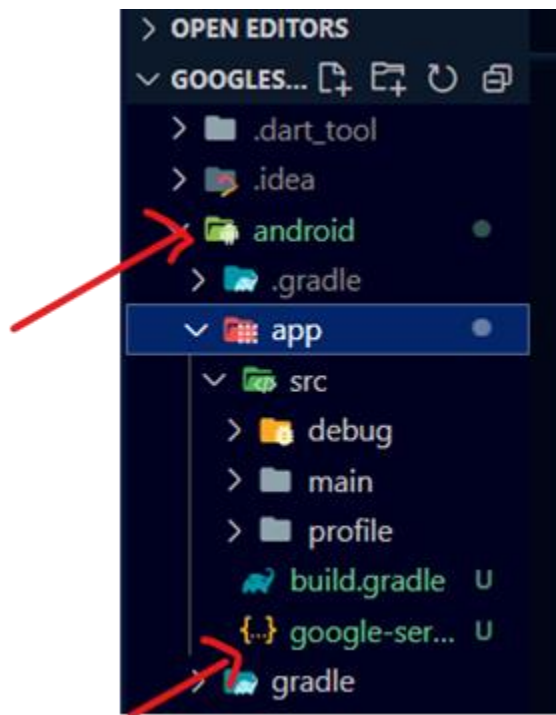
Or, continue to the console to explore Firebase.

[Previous](#) [Continue to console](#)



Step 4: Let's go to your flutter project, and click on the "Android" folder, and in the App-level build gradle file you find Application id just copy it and paste it to "Android package name".

Step 5: In "App nick-name" you give any name or leave it blank because it is optional. In "Debug signing certificate SHA-1 (optional)" also leave it blank for the time or you can give the debug SHA keys. Now click on "Register app". Now you have to "Download Config file", Switch to the Project view in Android Studio/vs code to see your project root directory. Move the "google-services.json" file you just downloaded into your Android app module root directory.



Now click on "Next".

Step 6: Add Firebase SDK. The Google services plugin for Gradle loads the google-services.json file you just downloaded. Modify your build.gradle files to use the plugin. Project-level build.gradle (<project>/build.gradle):

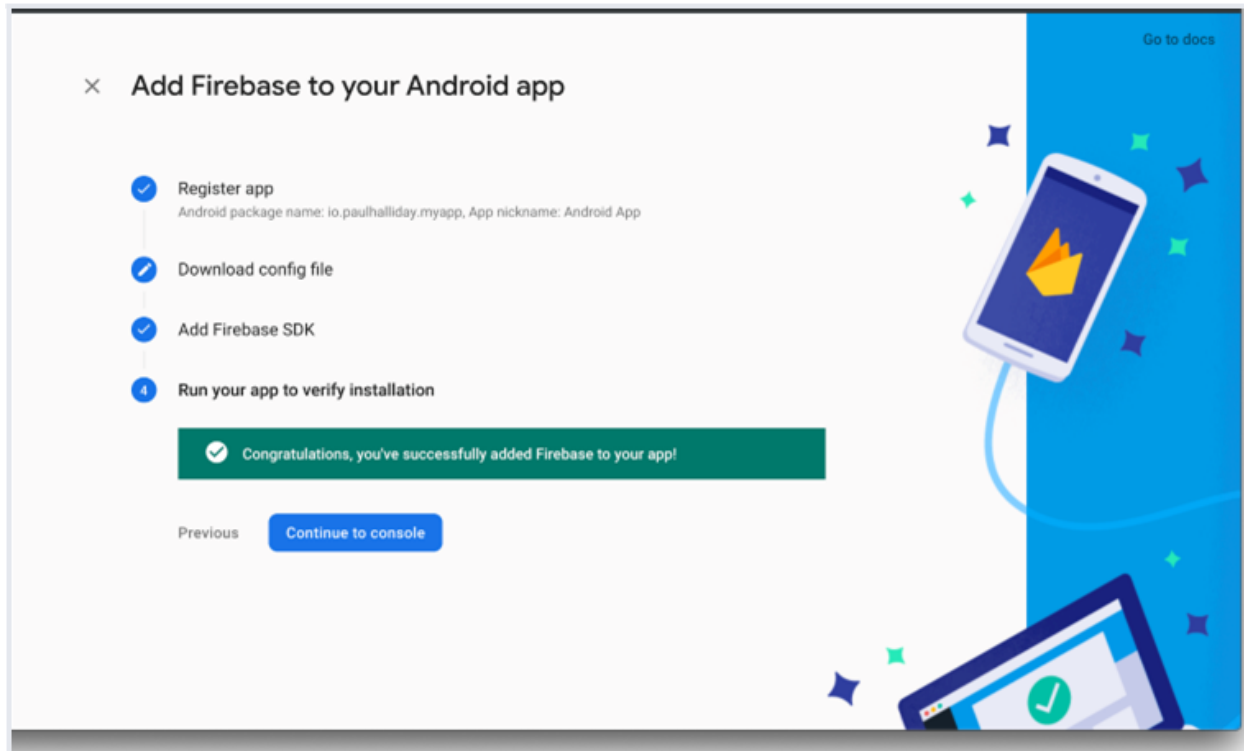
```
dependencies {  
    classpath 'com.android.tools.build:gradle:4.1.0'  
    classpath "org.jetbrains.kotlin:kotlin-gradle-plugin:$kotlin_version"  
    classpath 'com.google.gms:google-services:4.3.8'  
}
```

Step 7: App-level build.gradle (<project>/<app-module>/build.gradle):


```
apply plugin: 'com.android.application'
apply plugin: 'com.google.gms.google-services'
apply plugin: 'com.android.application'
apply plugin: 'kotlin-android'
apply from: "$flutterRoot/packages/flutter_tools/gradle/flutter.gradle"

dependencies {
    implementation "org.jetbrains.kotlin:kotlin-stdlib-jdk7:$kotlin_version"
    implementation platform('com.google.firebase:firebase-bom:28.0.1')
}
```

Step 8: After going back to the firebase console and click “Next”. And then Click on “Continue to Console”.



To demonstrate with a practical example, we'll walk you through the process of building an email-password registration and login process.

Create a Flutter and Firebase project

Create a new Flutter project using the following command:

```
flutter create flutter_authentication
```

Open the project in your favorite code editor. Here's how to open it using VS Code:

```
code flutter_authentication
```

To integrate Firebase with your Flutter project, you have to create a new Firebase project by going to the [console](#).

Register a new user

When a new user arrives, before logging in, they have to register to the Firebase authentication.

Create a new dart file called `fire_auth.dart` and define a new method called `registerUsingEmailPassword()`:

```
class FirebaseAuth {  
  static Future<User?>  
  registerUsingEmailPassword({ required String  
    name, required String email, required String  
    password,  
  }) async {  
    FirebaseAuth auth =  
    FirebaseAuth.instance; User? user; try {  
      UserCredential userCredential = await  
      auth.createUserWithEmailAndPassword( email: email, password: password,  
    );  
      user = userCredential.user;  
      await user!.updateProfile(displayName:  
      name); await user.reload(); user =  
      auth.currentUser;  
    } on FirebaseAuthException catch (e) {  
      if (e.code == 'weak-password') {  
        print('The password provided is too weak.');      } else if (e.code == 'email-already-in-use') { print('The account already exists for that  
      email.');    }  
    } catch (e) {  
      print(e);  
    }  
    return user;  
  }  
}
```

Here we are registering a new user using the email and password provided and associating the name of the user with this profile.

There can be various `FirebaseAuthException` errors, which we have handled in the above code snippet.

User sign-in and sign-out

To sign in a user who has already registered in our app, define a new method called `signInUsingEmailPassword()`, passing the user email and password:

```
static Future<User?>
signInUsingEmailPassword({ required String
email, required String password, required
BuildContext context,
}) async {
  FirebaseAuth auth = FirebaseAuth.instance;
  User? user;

  try {
    UserCredential userCredential = await
    auth.signInWithEmailAndPassword( email: email, password: password,
    );
    user = userCredential.user;
  } on FirebaseAuthException catch (e) {
    if (e.code == 'user-not-found') {
      print('No user found for that email. '); }
    else if (e.code == 'wrong-password') {
      print('Wrong password provided. ');
    }
  }

  return user;
}
```

The email and password are used to generate the User object provided by Firebase. The User can be used later to retrieve any additional data (e.g., user name, profile picture, etc.) stored in that account.

You can use the `signOut()` method to log a user out. There is no need to create a separate method for signing out because it's just a single line of code:

```
FirebaseAuth.instance.signOut();
```

Conclusion:

We have successfully integrated Firebase Authentication with your Flutter app. As we may have noticed, Firebase Authentication not only provides the backend infrastructure for authenticating users easily, but also the predefined methods for auto login and email verification. And there's a lot more to explore; Firebase Authentication also provides

support for integration with a number of identity providers, including Google, Facebook, Twitter, Apple, etc.