

**EXPERIMENT NO :- 6**

**AIM:-** To connect Flutter UI with Firebase.

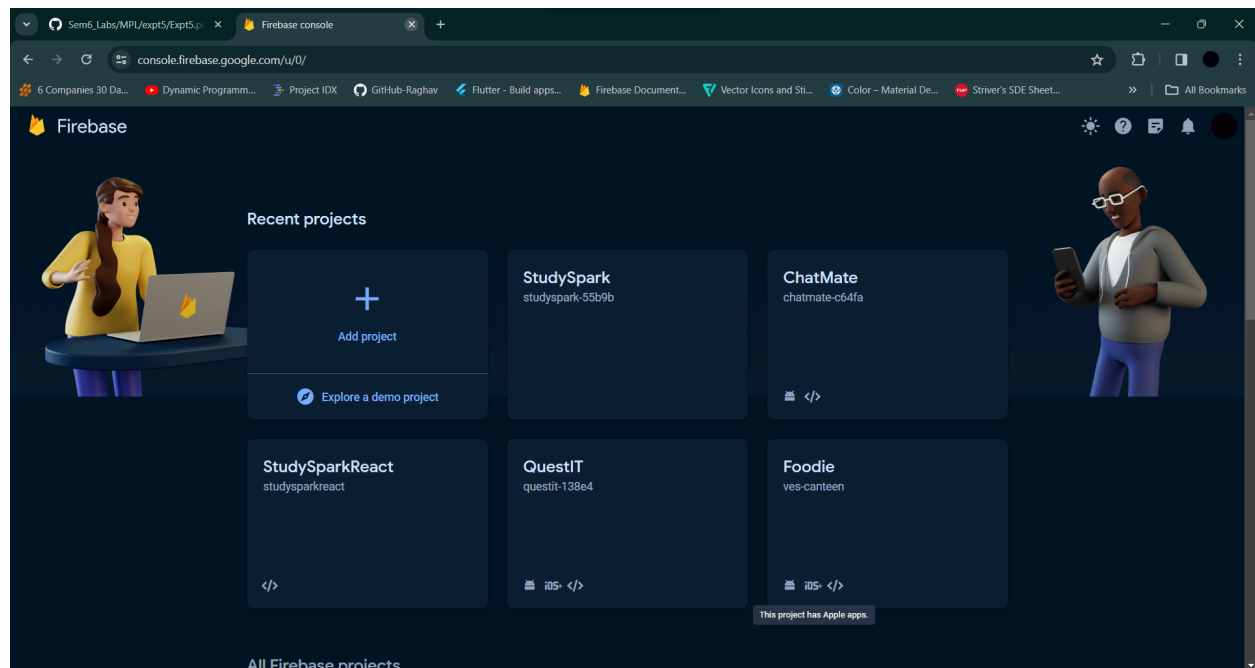
**THEORY :-** Firebase is a comprehensive mobile and web application development platform provided by Google. It offers a wide range of tools and services to help developers build high-quality apps, improve app quality, grow user base, and generate revenue. Here are some key components and theories related to Firebase:

- **Realtime Database:** Firebase provides a NoSQL cloud database to store and sync data between users in real-time. It uses a JSON data structure, allowing developers to build responsive applications that can update data instantly across all connected devices.
- **Authentication:** Firebase Authentication provides backend services, easy-to-use SDKs, and ready-made UI libraries to authenticate users to your app. It supports authentication using passwords, phone numbers, popular federated identity providers like Google, Facebook, Twitter, and more.
- **Cloud Firestore:** Cloud Firestore is Firebase's flexible, scalable database for mobile, web, and server development. It supports data syncing between client apps and cloud servers in real-time and provides powerful querying, offline support, and multi-region data replication.
- **Cloud Functions:** Firebase Cloud Functions allow developers to run backend code in response to events triggered by Firebase features and HTTPS requests. This enables developers to automate tasks, integrate with third-party services, and orchestrate workflows without managing server infrastructure.
- **Cloud Storage:** Firebase Storage provides secure file uploads and downloads for apps, offering scalable, cost-effective cloud storage for user-generated content such as images, videos, and audio files.
- **Cloud Messaging:** Firebase Cloud Messaging (FCM) is a cross-platform messaging solution that allows developers to send notifications and messages to users across Android, iOS, and web apps. It enables targeted messages, user segmentation, and personalized notifications to engage users effectively.
- **Performance Monitoring:** Firebase Performance Monitoring helps developers gain insights into their app's performance and stability. It provides real-time monitoring of app startup time, network latency, and user interactions, allowing developers to optimize app performance and deliver a smooth user experience.

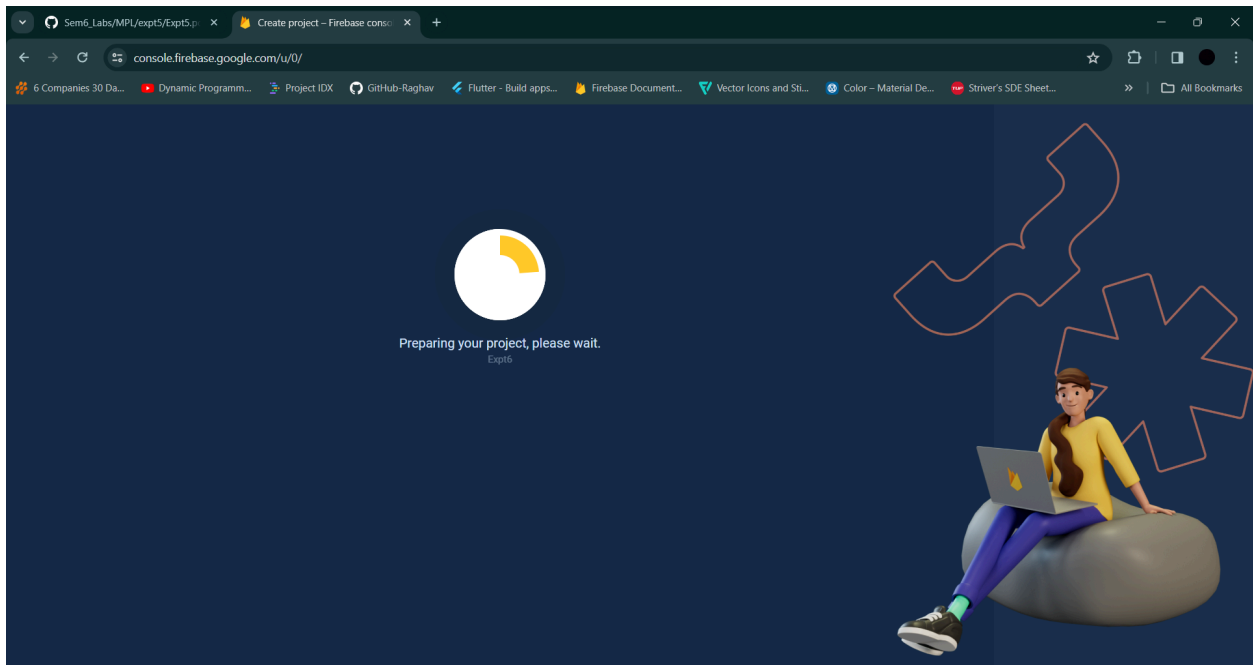
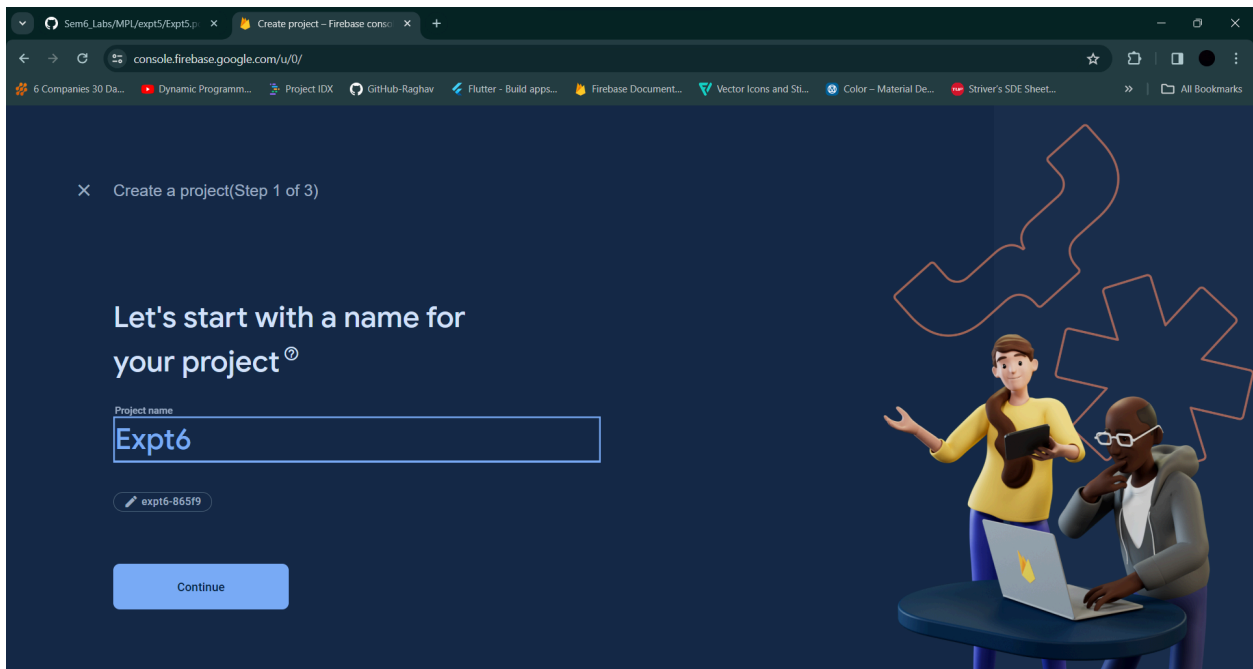
- **Crashlytics:** Firebase Crashlytics is a powerful crash reporting solution that helps developers track, prioritize, and fix stability issues in their apps. It provides detailed crash reports, real-time alerts, and analytics to identify and resolve issues quickly.
- **Analytics:** Firebase Analytics provides insights into user behavior, app usage, and app performance. It helps developers understand user engagement, retention, and conversion metrics, enabling data-driven decisions to optimize app experiences and drive business growth.
- **Remote Config:** Firebase Remote Config allows developers to customize the behavior and appearance of their apps without deploying app updates. It enables A/B testing, targeted feature rollouts, and dynamic content personalization to improve user engagement and retention.

## STEPS:-

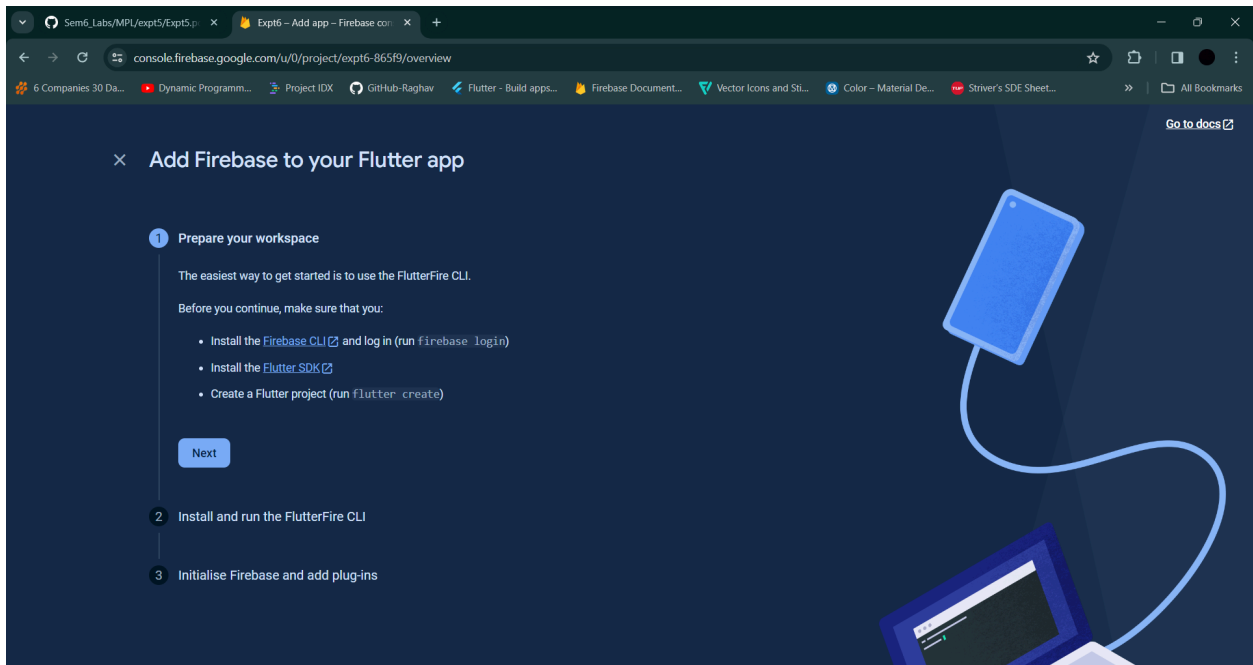
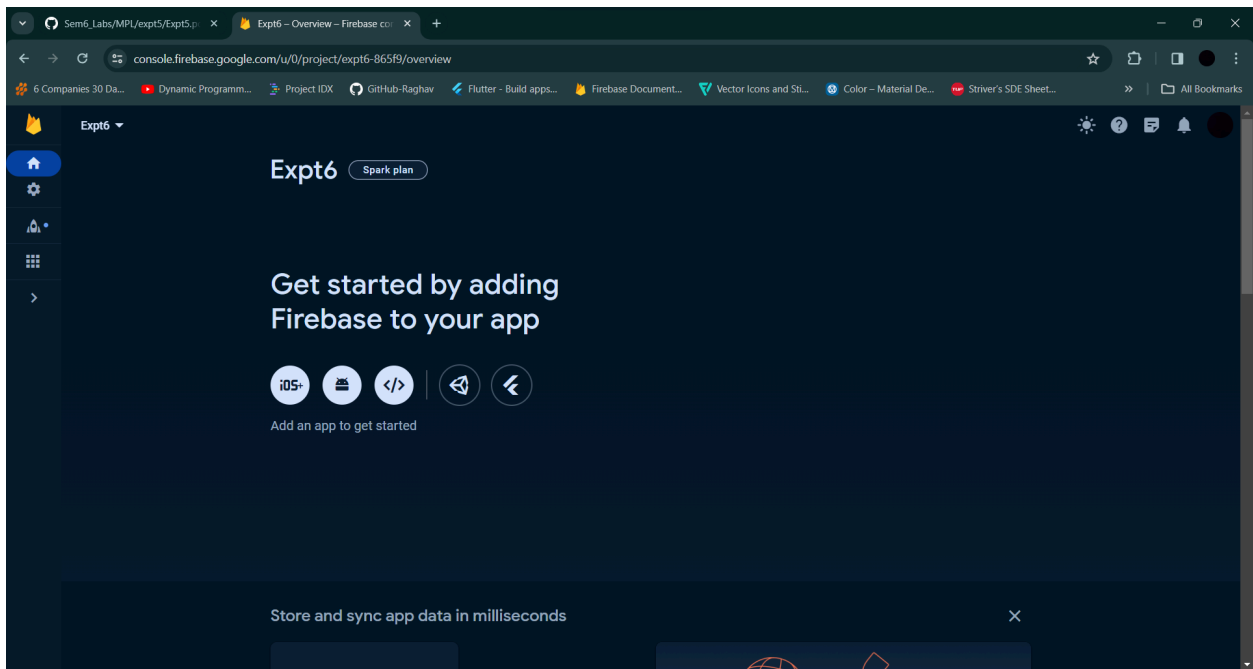
### 1.Go to Firebase Console.



## 2.Create A Project on Firebase Console



### 3. Click on Add Flutter App Option



## 4.Download Firebase CLI for Windows

The screenshot shows the Firebase CLI reference page for Windows. The page is titled "firebase.google.com/docs/cli?hl=en&authuser=0&\_gl=1\*wf6nso\*\_ga\*MTkyMjY5ODASUjE3MDI0NTAyOTU.\*\_ga\_CW55HF8NV1\*MTcwODc4NjQ3Mi4yNzUuMS4xNzA4Nzg2NjA0LjYwLjA..." and features a navigation bar with tabs like Overview, Fundamentals, Build, Release & Monitor, Engage, Reference, Samples, and Libraries. The main content area is divided into two sections: "npm" and "standalone binary". The "npm" section provides instructions on how to install the CLI using npm, while the "standalone binary" section provides instructions on how to download and run the binary for Windows. The "standalone binary" section includes a list of steps: 1. Download the Firebase CLI binary for Windows, 2. Access the binary to open a shell where you can run the firebase command, and 3. Continue to log in and test the CLI. The "macOS or Linux" section provides instructions on how to install the CLI for macOS or Linux using one of the following options: automatic install script, manual install script, or manual install script. The "automatic install script" option is highlighted, and its description is: "Run a single command that automatically detects your operating system, downloads the latest CLI release, then enables the globally available firebase command." The "Recommended for..." column lists "New developers" and "Developers not using or unfamiliar with Node.js". The "On this page" sidebar on the right lists various topics related to the CLI, including "Set up or update the CLI", "Install the Firebase CLI", "Log in and test the Firebase CLI", "Update to the latest CLI version", "Use the CLI with CI systems", "Initialize a Firebase project", "The firebase.json file", "Manage project aliases", "Add a project alias", "Use project aliases", "Source control and project aliases", "Serve and test your Firebase project locally", "Deploy to a Firebase project", "Deployment conflicts for security rules", "Deployment quotas", "Roll back a deployment", "Deploy specific Firebase services", "Deploy specific functions", "Delete functions", "Set up predeploy and postdeploy scripted tasks", and "Automated deploys in a CI/CD".

**firebase**

Products Solutions Pricing Docs Support

Overview Fundamentals Build Release & Monitor Engage Reference Samples Libraries

Filter

API Reference

CLI reference

Overview

auth:import and auth:export

Firebase Realtime Database

Operation Types

Deploy Targets

Cloud Firestore Index Definition

Format

Emulator Suite UI Log Query Syntax

Emulator Suite Security Rules Unit

Testing Library

IOS - Swift

IOS - Objective-C

Android - Kotlin

Android - Java

**npm**

Use npm (the Node Package Manager) to install the CLI and enable the globally available `firebase` command.

Developers using [Node.js](#)

**standalone binary** npm

To download and run the binary for the Firebase CLI, follow these steps:

1. Download the [Firebase CLI binary for Windows](#).
2. Access the binary to open a shell where you can run the `firebase` command.
3. Continue to [log in and test the CLI](#).

**macOS or Linux**

You can install the Firebase CLI for macOS or Linux using one of the following options:

Option	Description	Recommended for...
<b>automatic install script</b>	Run a single command that automatically detects your operating system, downloads the latest CLI release, then enables the globally available <code>firebase</code> command.	New developers
		Developers not using or unfamiliar with <a href="#">Node.js</a>
		<a href="#">Automated deploys in a CI/CD</a>


**On this page**

- Set up or update the CLI
- Install the Firebase CLI
- Log in and test the Firebase CLI
- Update to the latest CLI version
- Use the CLI with CI systems
- Initialize a Firebase project
- The `firebase.json` file
- Manage project aliases
- Add a project alias
- Use project aliases
- Source control and project aliases
- Serve and test your Firebase project locally
- Deploy to a Firebase project
- Deployment conflicts for security rules
- Deployment quotas
- Roll back a deployment
- Deploy specific Firebase services
- Deploy specific functions
- Delete functions
- Set up predeploy and postdeploy scripted tasks

## 5.Open the downloaded File

The screenshot shows a Windows File Explorer window with the title "Today". It displays a single file named "firebase-tools-instant-win.exe" with a file size of 1,42,159 KB. The file is categorized as an "Application" and was downloaded on "24-02-2024 20:28".

Today

 <b>firebase-tools-instant-win.exe</b>	24-02-2024 20:28	Application	1,42,159 KB
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## 6.Login with your Firebase Account

```

#####

Welcome to...

#####  ###  #####  #####  #####  #####  ##
##  ##  ##  ##  ##  ##  ##  ##  ##  ##  ##
#####  ##  #####  #####  #####  #####  #####  ##
##  ##  ##  ##  ##  ##  ##  ##  ##  ##
##  #####  #####  ##  ##  #####  #####  ##

#####

~ Let's make sure your Firebase CLI is ready...
+ Looks like your CLI is set up!

~ Checking your Firebase credentials[/]

```

```
C:\Users\Raghav\Downloads\  +  v
#####  ##  #####  #####  #####  #####  #####  #####  ##
##  ##  ##  ##  ##  ##  ##  ##  ##  ##
##  #####  ##  ##  #####  #####  ##  ##  #####  #####  ##

#####

~ Let's make sure your Firebase CLI is ready...
+ Looks like your CLI is set up!

Already logged in as mundhararaghav16@gmail.com

Update available 13.3.1 → 13.4.1
To update to the latest version using npm, run
  npm install -g firebase-tools
For other CLI management options, visit the CLI documentation (https://firebase.google.com/docs/cli#update-cli)

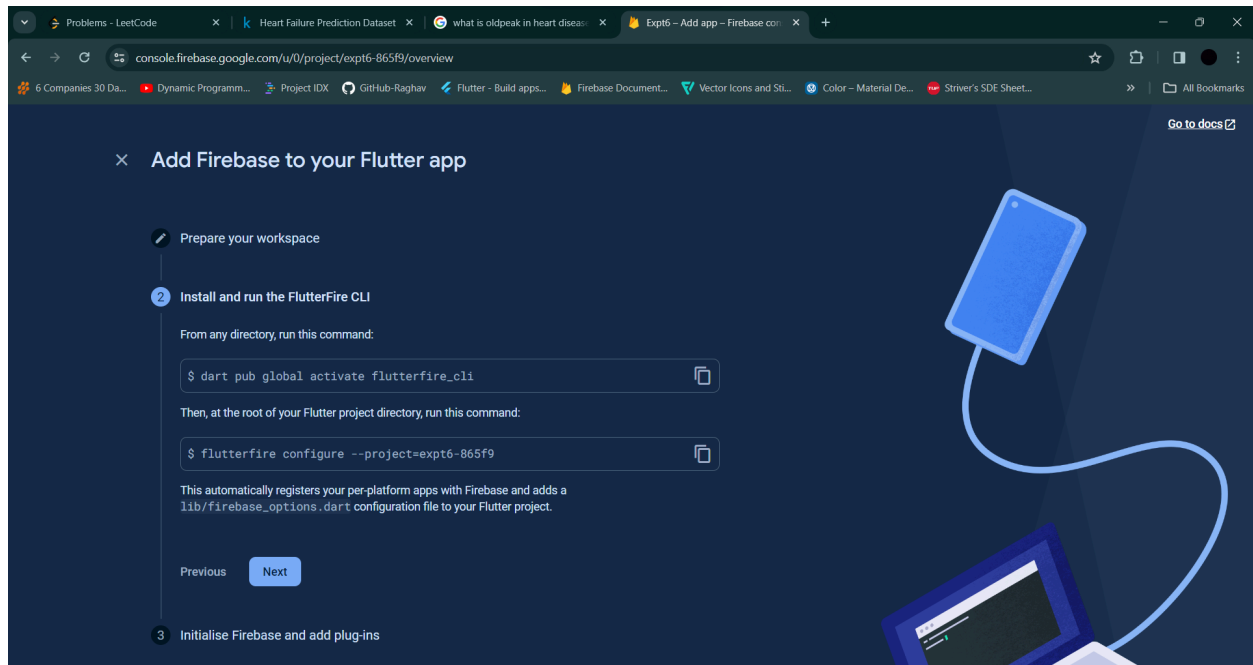
+ You can now use the 'firebase' or 'npm' commands!
~ For more help see https://firebase.google.com/docs/cli/

>
```

## 7.Create a Flutter Project

```
PS E:\Sem6 Labs\MPL\expt6> flutter create expt6
Creating project expt6...
Resolving dependencies in expt6... (1.6s)
```

8. Use the following Commands on terminal to generate API Keys for Firebase Connections with Flutter App.



```
PS E:\Sem6 Labs\MPL\expt6> dart pub global activate flutterfire_cli
Package flutterfire_cli is currently active at version 0.2.7.
The package flutterfire_cli is already activated at newest available version.
To recompile executables, first run `dart pub global deactivate flutterfire_cli`.
Installed executable flutterfire.
Activated flutterfire_cli 0.2.7.
```

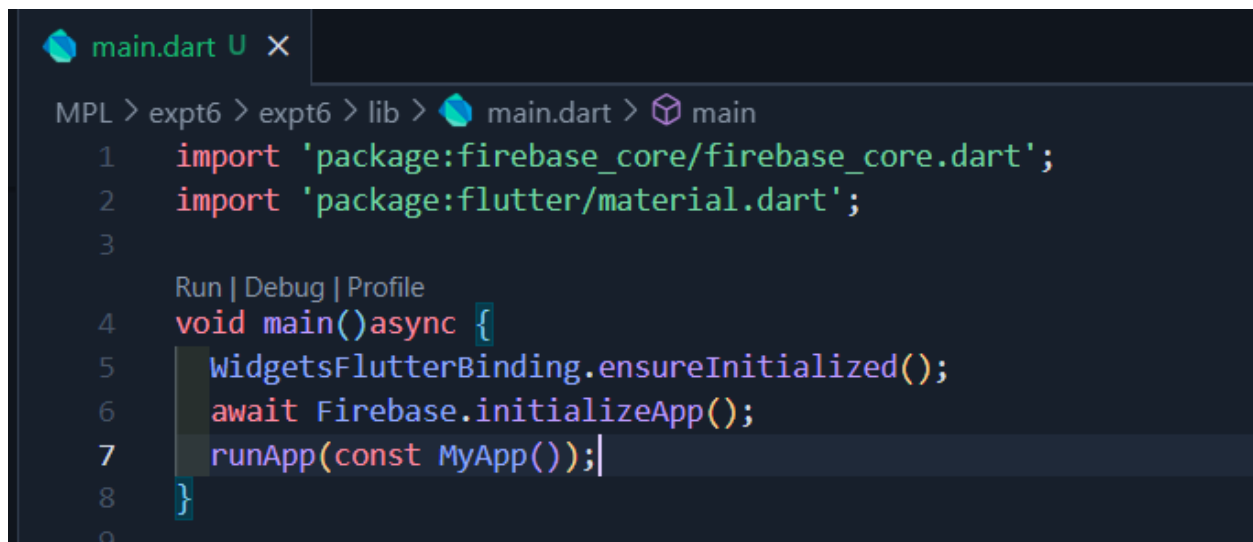
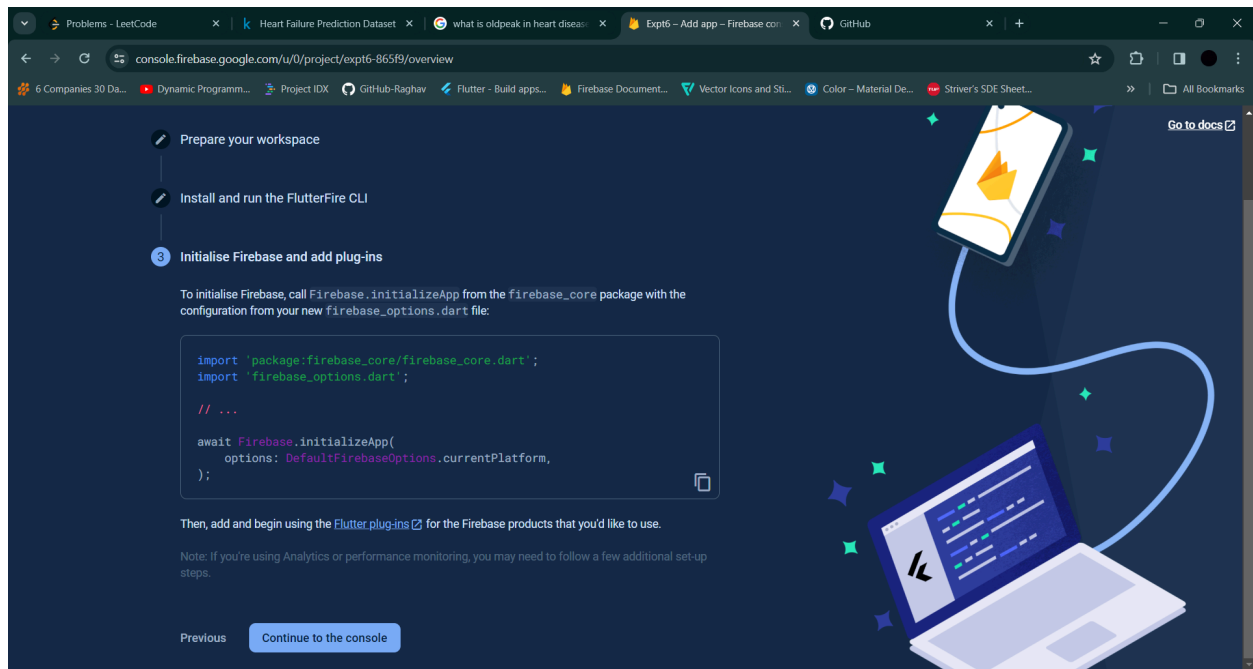
9. Select The OS Platform to Connect Firebase.

```
PS E:\Sem6 Labs\MPL\expt6\expt6> flutterfire configure --project=expt6-865f9
i Found 9 Firebase projects. Selecting project expt6-865f9.
? Which platforms should your configuration support (use arrow keys & space to select)? >
✓ android
✓ ios
✓ macos
✓ web
```

```
i Firebase android app com.example.expt6 is not registered on Firebase project expt6-865f9.
i Registered a new Firebase android app on Firebase project expt6-865f9.
i Firebase ios app com.example.expt6 is not registered on Firebase project expt6-865f9.
i Registered a new Firebase ios app on Firebase project expt6-865f9.
i Firebase macos app com.example.expt6.RunnerTests is not registered on Firebase project expt6-865f9.
i Registered a new Firebase macos app on Firebase project expt6-865f9.
i Firebase web app expt6 (web) is not registered on Firebase project expt6-865f9.
i Registered a new Firebase web app on Firebase project expt6-865f9.

Firebase configuration file lib\firebase_options.dart generated successfully with the following Firebase apps:
```

## 10. Copy and Paste the code shown on Firebase console in Your Flutter App.

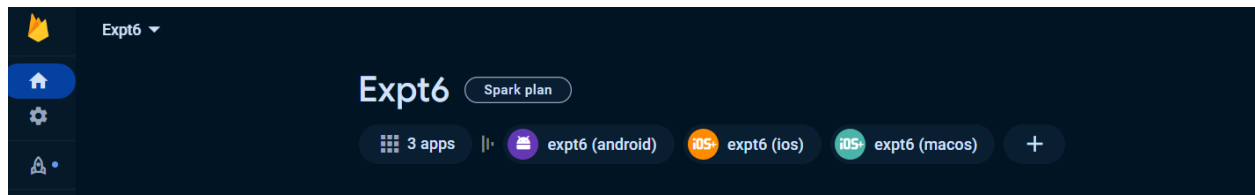




11. Add "firebase\_core" to Dependencies Using Following Command.

```
PS E:\Sem6 Labs\MPL\expt6\expt6> flutter pub add firebase_core
Resolving dependencies...
+ firebase_core 2.27.0
+ firebase_core_platform_interface 5.0.0
+ firebase_core_web 2.11.5
  flutter_lints 2.0.3 (3.0.1 available)
+ flutter_web_plugins 0.0.0 from sdk flutter
+ js 0.6.7 (0.7.1 available)
  lints 2.1.1 (3.0.0 available)
  matcher 0.12.16 (0.12.16+1 available)
  material_color_utilities 0.5.0 (0.8.0 available)
  meta 1.10.0 (1.12.0 available)
  path 1.8.3 (1.9.0 available)
+ plugin_platform_interface 2.1.8
  test_api 0.6.1 (0.7.0 available)
  web 0.3.0 (0.5.1 available)
Changed 6 dependencies!
9 packages have newer versions incompatible with dependency constraints.
Try `flutter pub outdated` for more information.
```

12.Refresh the Firebase Console Page and Check If the App is connected.



**CONCLUSION:-** In this experiment we created the Firebase account and connected our Flutter App with Firebase using Firebase CLI.