Name:Tarunkumar Sharma
Div:D15B
Roll no:52

EXP 1: Installation and Configuration of Flutter Environment.

Aim: Installation and Configuration of Flutter Environment.

Theory: Flutter is an open-source framework developed by Google that is primarily used for building natively compiled applications for mobile, web, and desktop from a single codebase. It is particularly popular for creating mobile apps for iOS and Android, but it can also be used to develop apps for macOS, Windows, Linux, and the web.

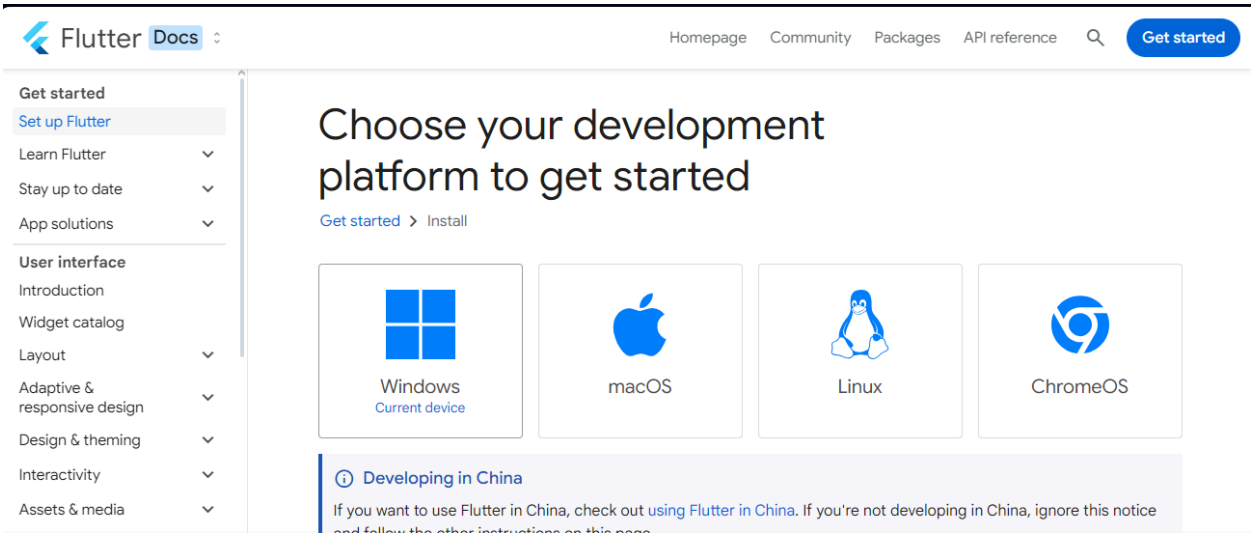
Key Features of Flutter:

1. Cross-Platform Development: With Flutter, developers can write one codebase and deploy it across multiple platforms (mobile, web, desktop). This greatly reduces the development effort and cost compared to maintaining separate codebases for different platforms.
2. Hot Reload: Flutter's "hot reload" feature allows developers to see code changes immediately reflected in the app without restarting it. This makes development faster and smoother.
3. Widgets: Flutter is built around a rich set of customizable widgets. These widgets describe how the app should look and behave, and they can be combined and customized to create complex UIs.
4. Dart Programming Language: Flutter uses Dart, a language developed by Google, which is object-oriented and compiled to native code. Dart is easy to learn and has strong support for asynchronous programming, which is crucial for building modern apps.

5. Native Performance: Since Flutter is compiled directly into native ARM machine code, it can provide near-native performance on both iOS and Android. This is one of the main advantages over other cross-platform frameworks like React Native.
6. Customizable UI: With Flutter, developers have complete control over the design and the user interface (UI). It doesn't rely on the platform's native components; instead, it provides its own set of widgets, which means you can create custom UIs that maintain consistency across platforms.

Install the Flutter SDK

Step 1: Download the installation bundle of the Flutter Software Development Kit for windows. To download Flutter SDK, Go to its official website https://docs.flutter.dev/get-started/install , you will get the following screen.

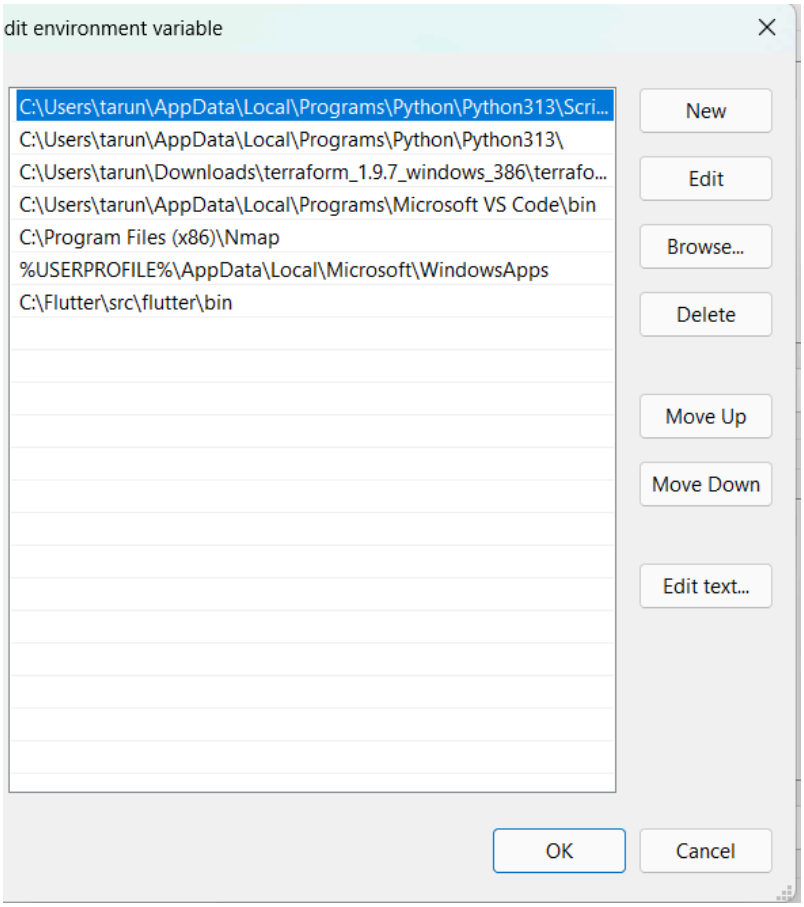


Step 2 : Download Flutter SDK: Go to the Flutter website and click on the Windows icon to download the latest SDK.

Step 3 : Extract the Zip: Once the download is complete, extract the zip file and place it in a location, like `C:\Flutter`.

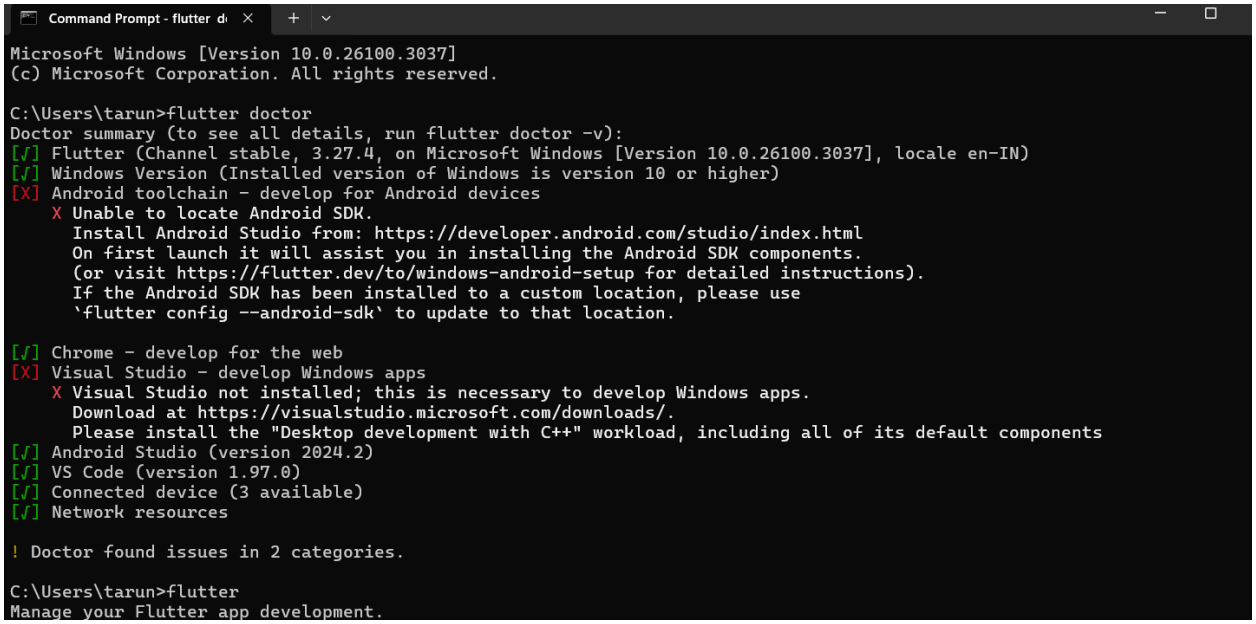
Step 4 : Update System Path:

- Right-click **This PC** → **Properties** → **Advanced system settings** → **Environment Variables**.
- In the **System Variables** section, find the **Path** variable, click **Edit**, and add `C:\flutter\bin` to the list.

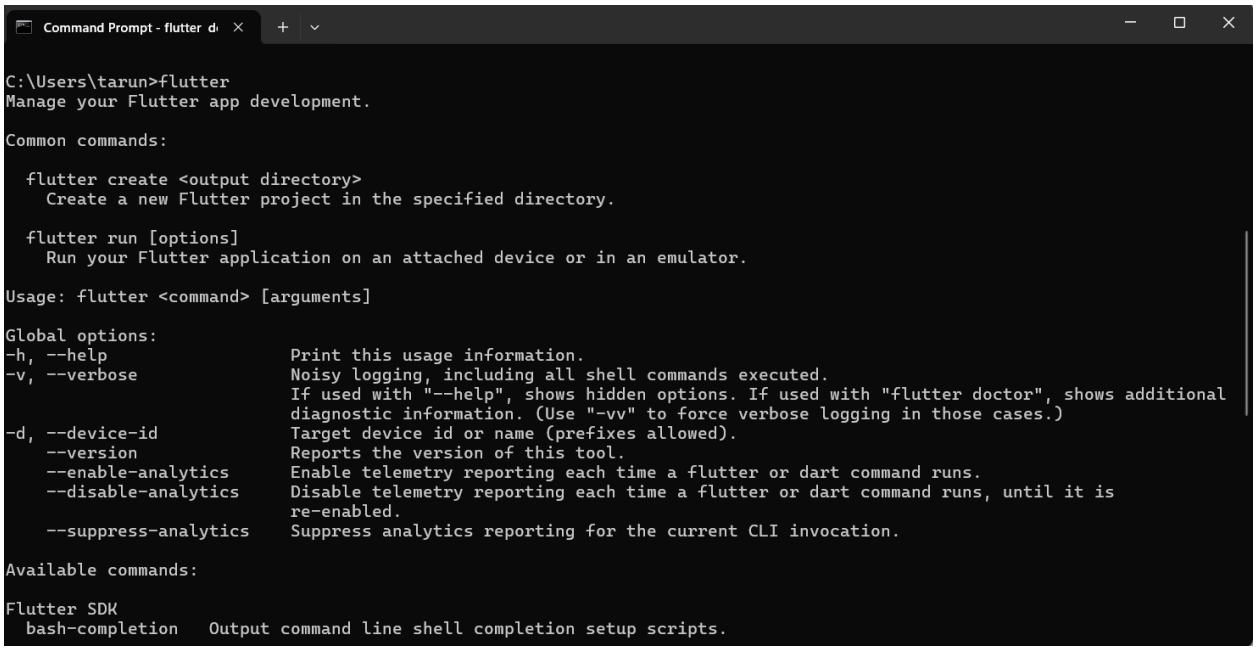


Step 5: Now, run the $ flutter command in command prompt.

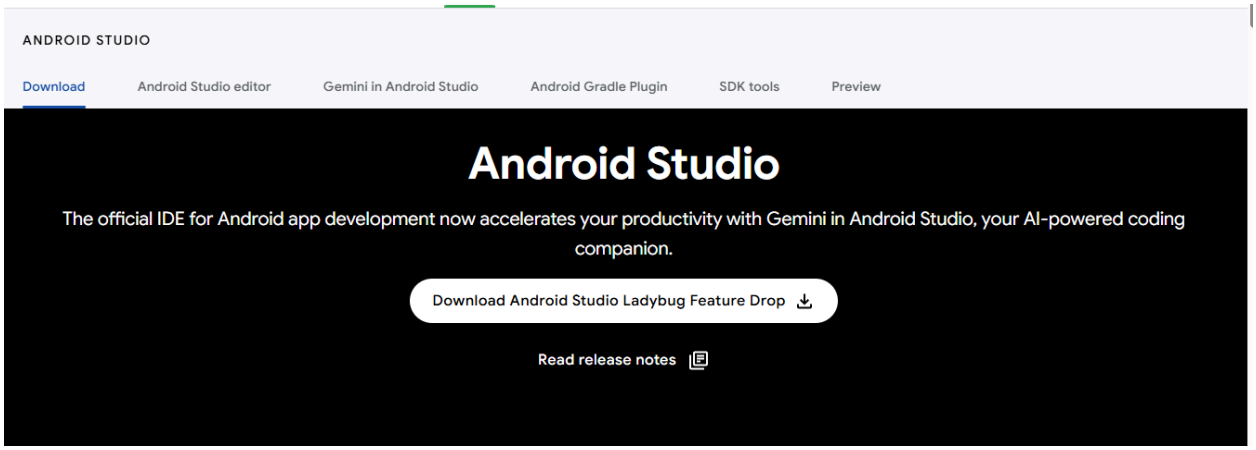
Now, run the $ flutter doctor command. This command checks for all the requirements of Flutter app development and displays a report of the status of your Flutter installation.

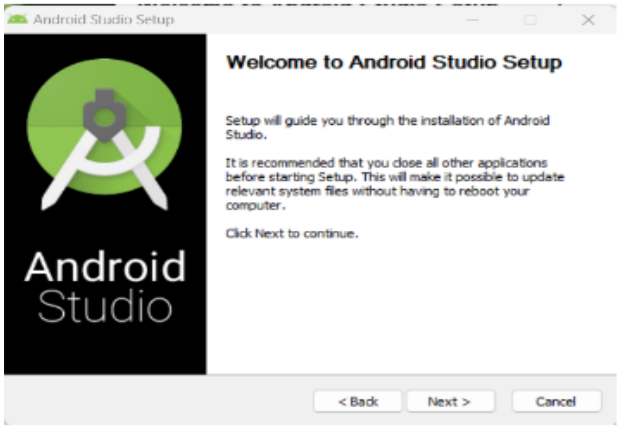


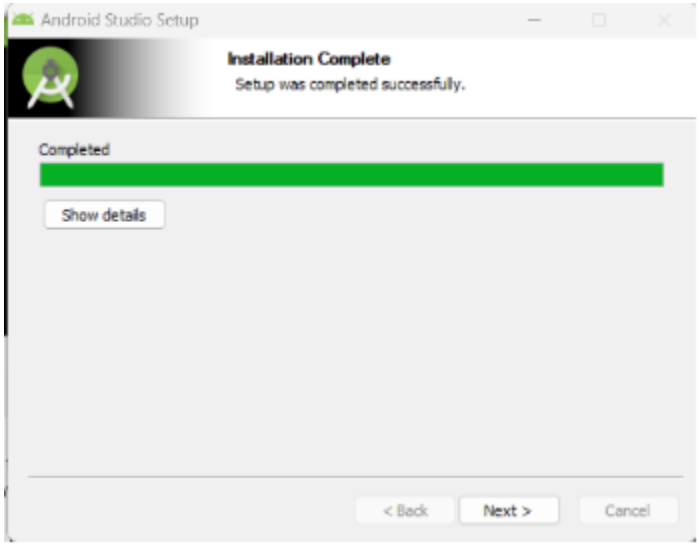
Step 6: Now, run the $ flutter command in command



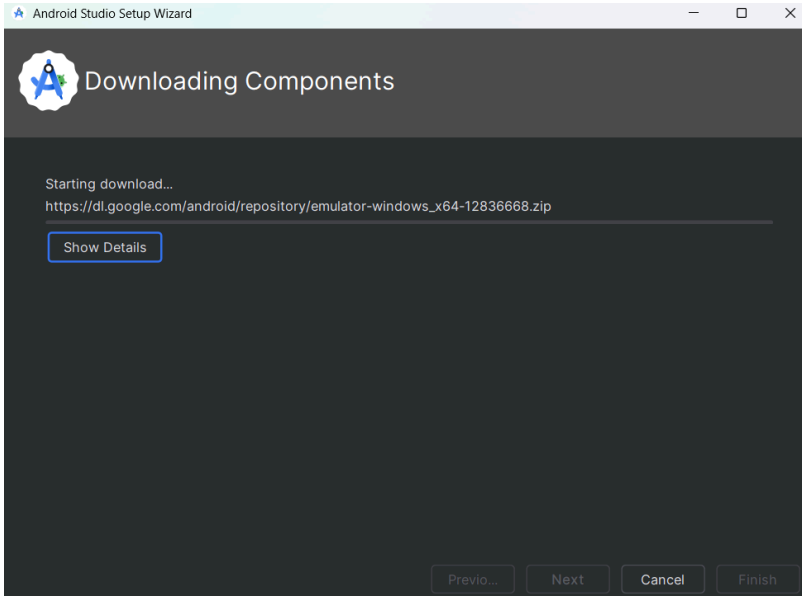
Step 7: Download and install android studio from the website

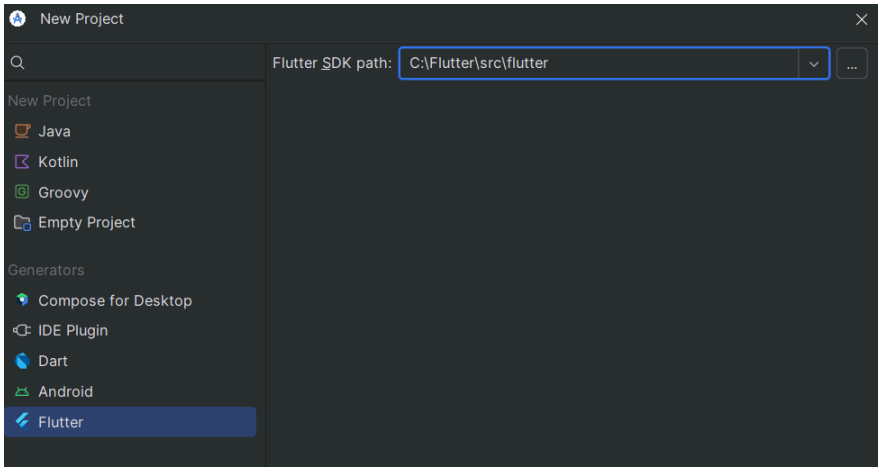


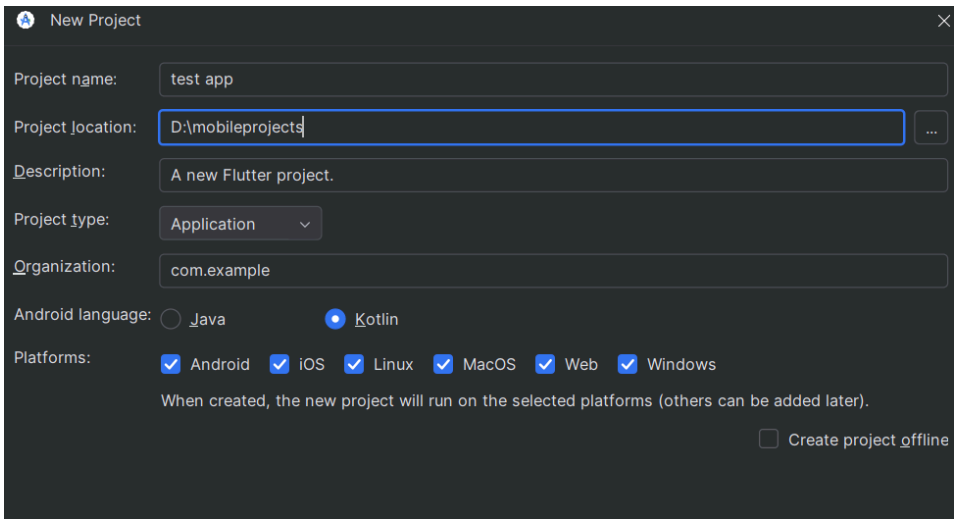




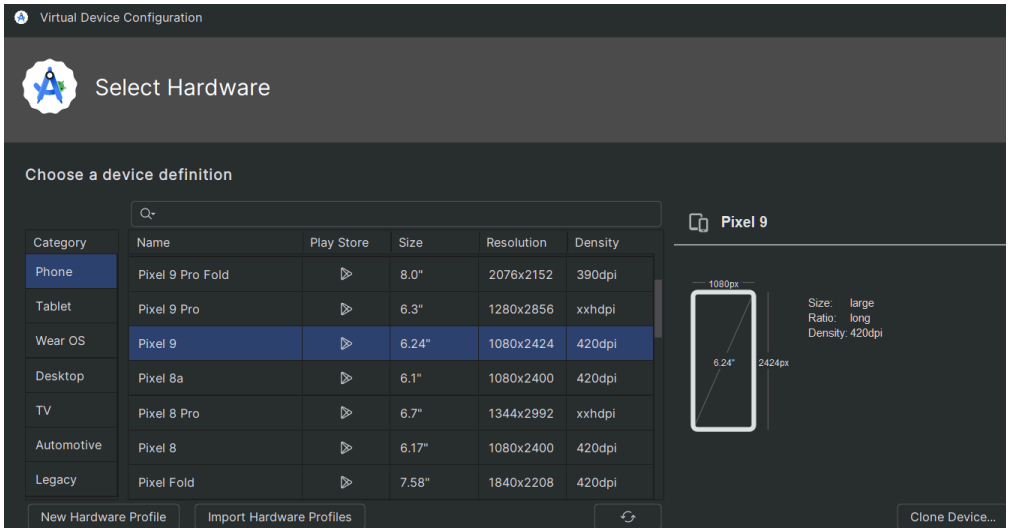
Step 8: Start Android Studio with default configurations and Download the components
Step 8.1: To set an Android emulator, go to Android Studio > Tools > Android > AVD Manager and select Create Virtual Device. Or, go to Help->Find Action->Type Emulator in the search box. You will get the following screen.

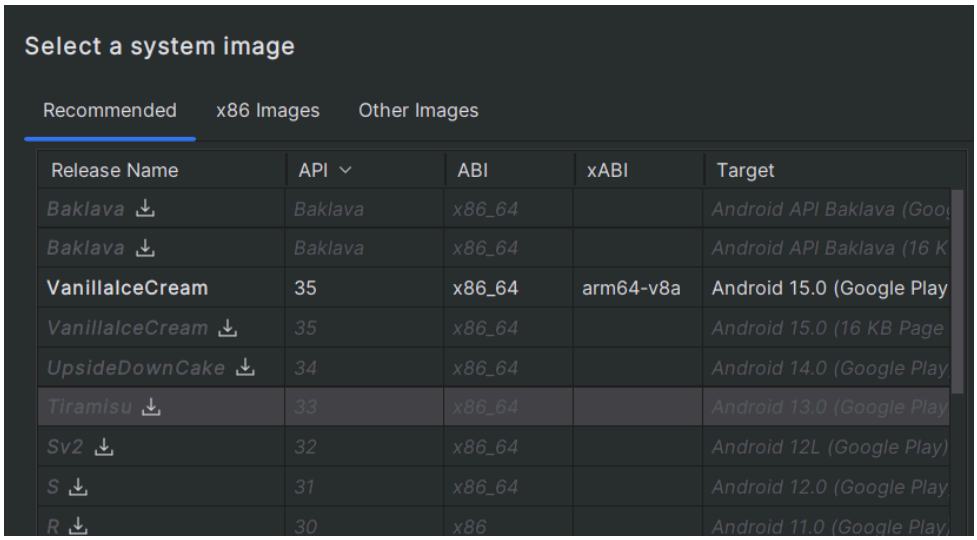


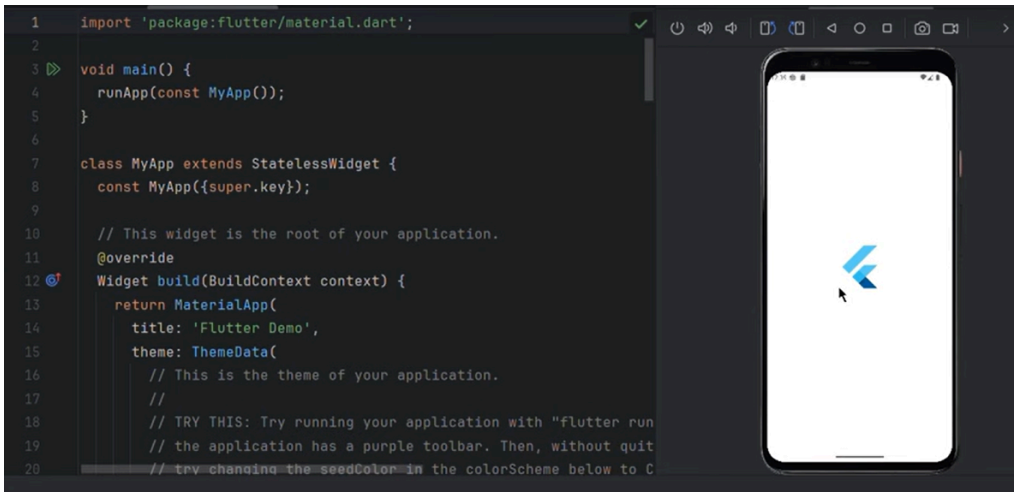




Step 8.2: Choose your device definition and click on Next.



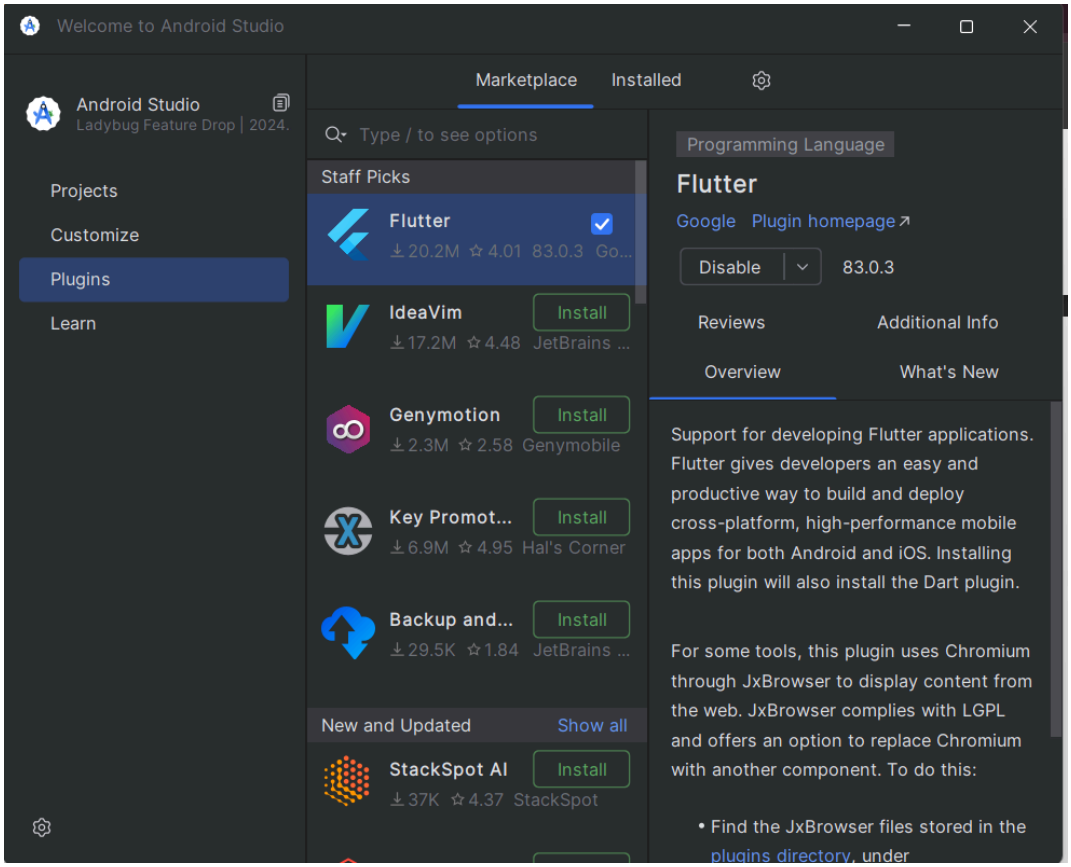




Step 9: Now, install Flutter and Dart plugin for building Flutter application in Android Studio. These plugins provide a template to create a Flutter application, give an option to run and debug

Flutter application in the Android Studio itself. Do the following steps to install these plugins.

Step 9.1: Open the Android Studio and then go to File->Settings->Plugins.



Step 9.2: Now, search the Flutter plugin. If found, select Flutter plugin and click install. When you click on install, it will ask you to install Dart plugin as below screen. Click yes to proceed.

Step 9.3: Restart the Android Studio.

Conclusion: In conclusion, you've successfully installed Flutter and Android Studio, set up the Android Emulator, and are now ready to begin developing cross-platform mobile applications. With these tools in place, you can efficiently build, test, and debug your apps. Start creating your Flutter projects, experiment with different widgets, and enjoy the development process!