Experiment No: 1

Experiment No 1 **1: Installation and Configuration of Flutter Environment.**	
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CLASS	**D15-B**
SUBJECT	**MAD & PWA Lab**
LO-MAPPED	

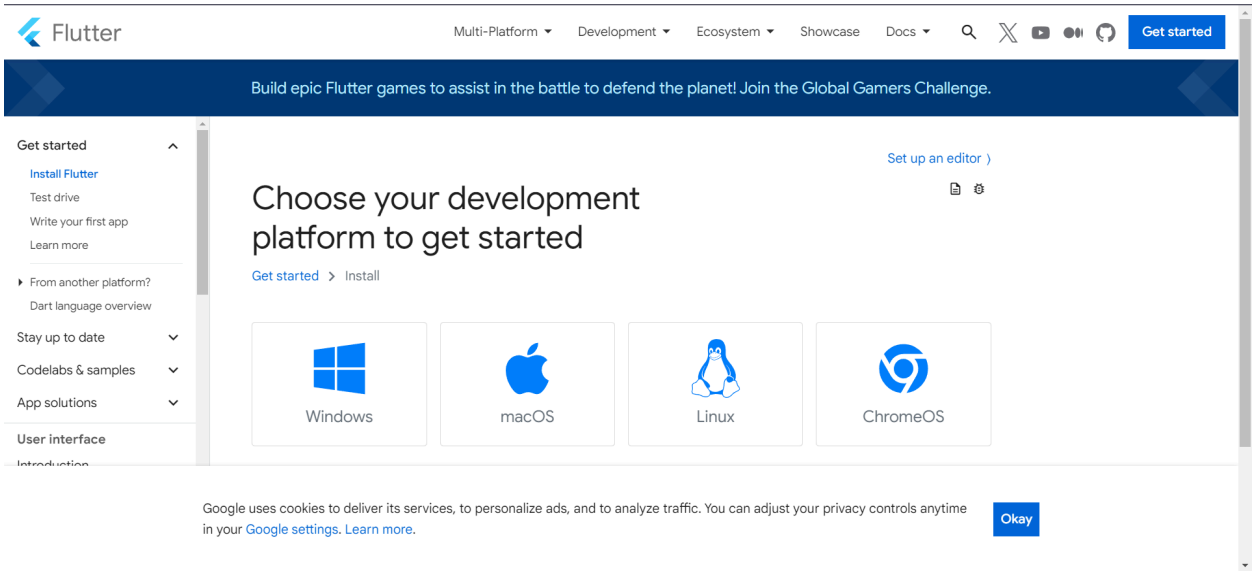
Aim: Installation and Configuration of Flutter Environment.

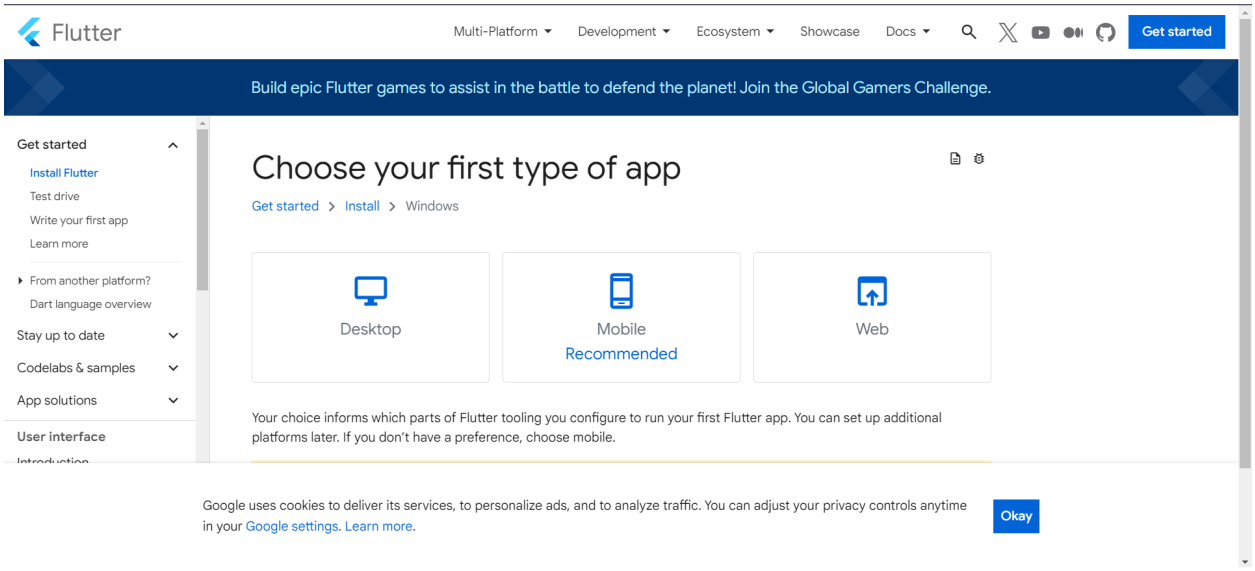
Theory:

Flutter, an open-source UI software development framework crafted by Google, facilitates cross-platform application development, enabling the creation of apps for both iOS and Android with a single codebase. Built on the Dart programming language, Flutter emphasizes the use of widgets as fundamental UI elements, allowing developers to compose intricate user interfaces. Its standout feature, Hot Reload, enables real-time visualization of code changes during development without restarting the application. Flutter supports both Material Design and Cupertino style, offering a rich set of customizable widgets for versatile design. Known for high performance, Flutter compiles to native ARM code, contributing to its efficiency. The framework's active community contributes to its ecosystem with packages and plugins. Flutter's appeal lies in its streamlined development process, expressive UI, and the ability to maintain a single codebase, making it increasingly popular among mobile app developers.

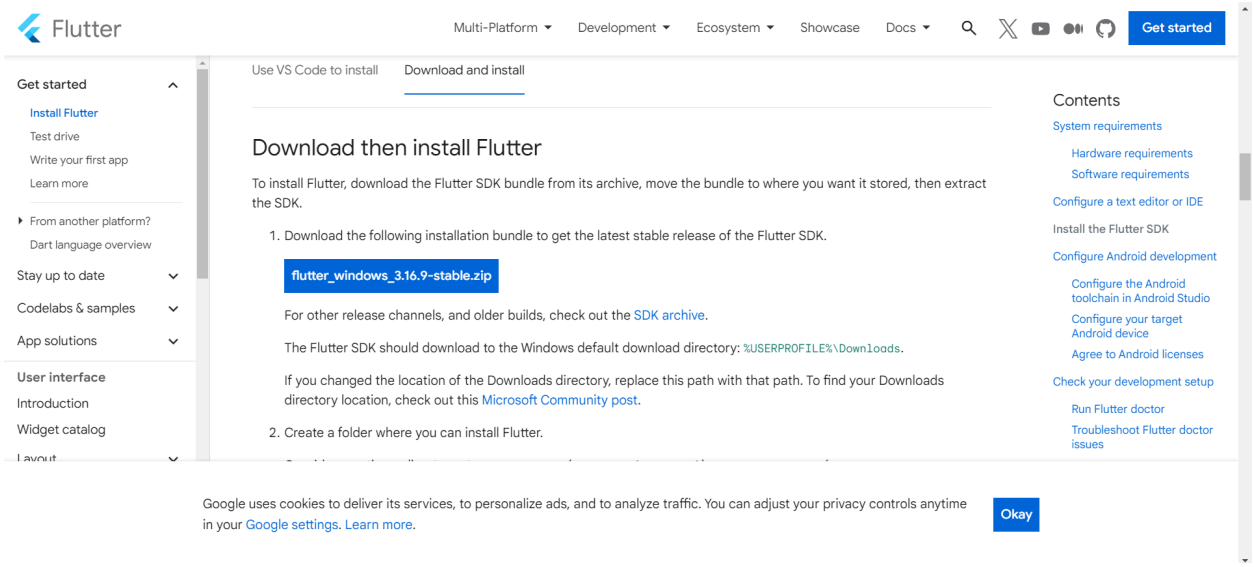
Installation:

1) Install Flutter sdk





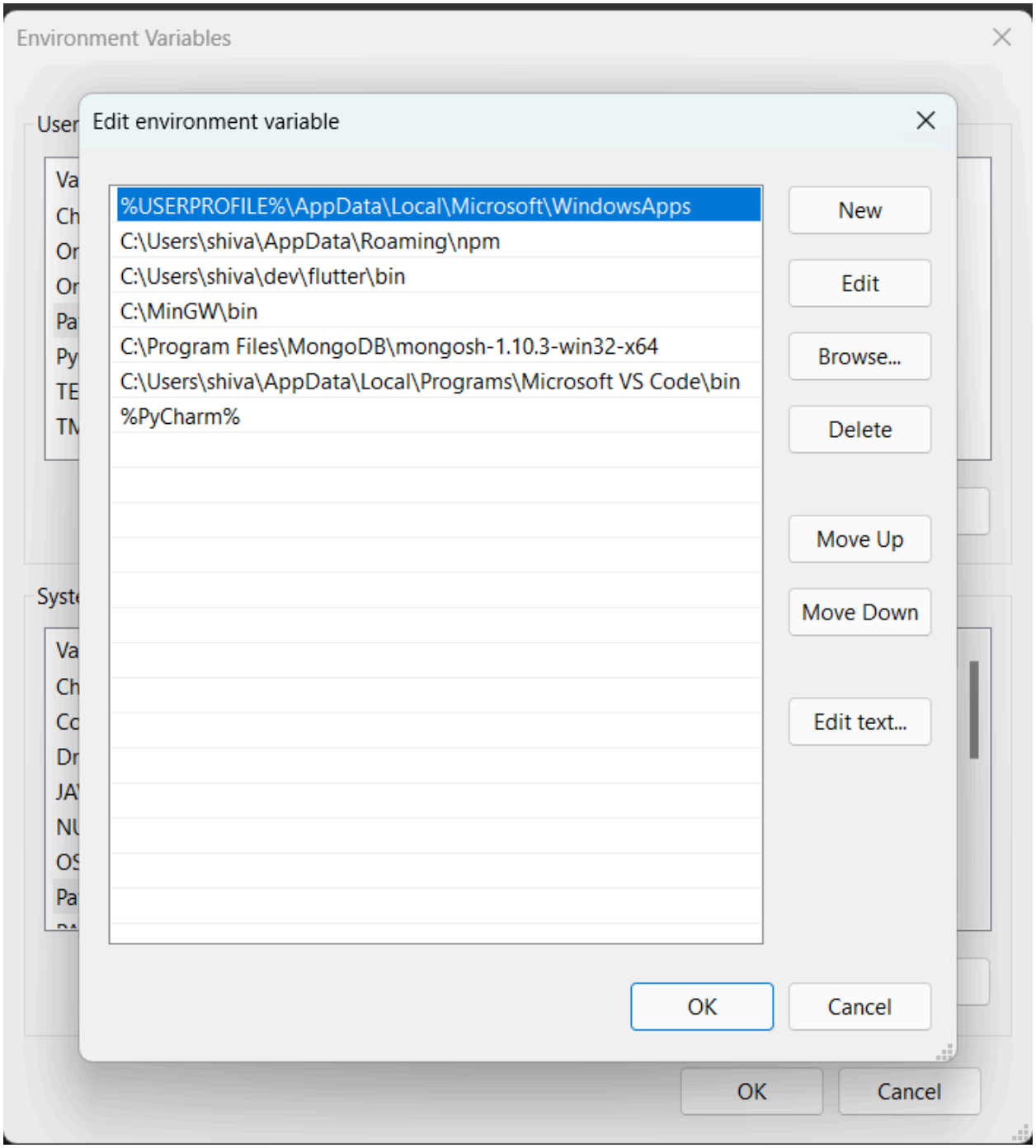
Step 2: Next, to download the latest Flutter SDK, click on the Windows icon. Here, you will find the download link for SDK



Step 3: When your download is complete, extract the zip file and place it in the desired installation folder or location, for example, C: /Flutter.

Step 4: To run the Flutter command in regular windows console, you need to update the system path to include the flutter bin directory. The following steps are required to do this:

Step 4.1: Go to MyComputer properties -> advanced tab -> environment variables. You will get the following screen.



Step 4.2: Now, select path -> click on edit. The following screen appears

Step 4.3: In the above window, click on New->write path of Flutter bin folder in variable value -> ok -> ok -> ok.

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

```
C:\Users\shiva>flutter
Manage your Flutter app development.

Common commands:

  flutter create <output directory>
    Create a new Flutter project in the specified directory.

  flutter run [options]
    Run your Flutter application on an attached device or in an emulator.

Usage: flutter <command> [arguments]

Global options:
-h, --help                  Print this usage information.
-v, --verbose               Noisy logging, including all shell commands executed.
                            If used with "--help", shows hidden options. If used with "flutter doctor", shows additional
                            diagnostic information. (Use "-vv" to force verbose logging in those cases.)
-d, --device-id             Target device id or name (prefixes allowed).
    --version               Reports the version of this tool.
    --enable-analytics      Enable telemetry reporting each time a flutter or dart command runs.
    --disable-analytics     Disable telemetry reporting each time a flutter or dart command runs, until it is
                            re-enabled.
    --suppress-analytics    Suppress analytics reporting for the current CLI invocation.

Available commands:

Flutter SDK
  bash-completion   Output command line shell completion setup scripts.
  channel           List or switch Flutter channels.
```

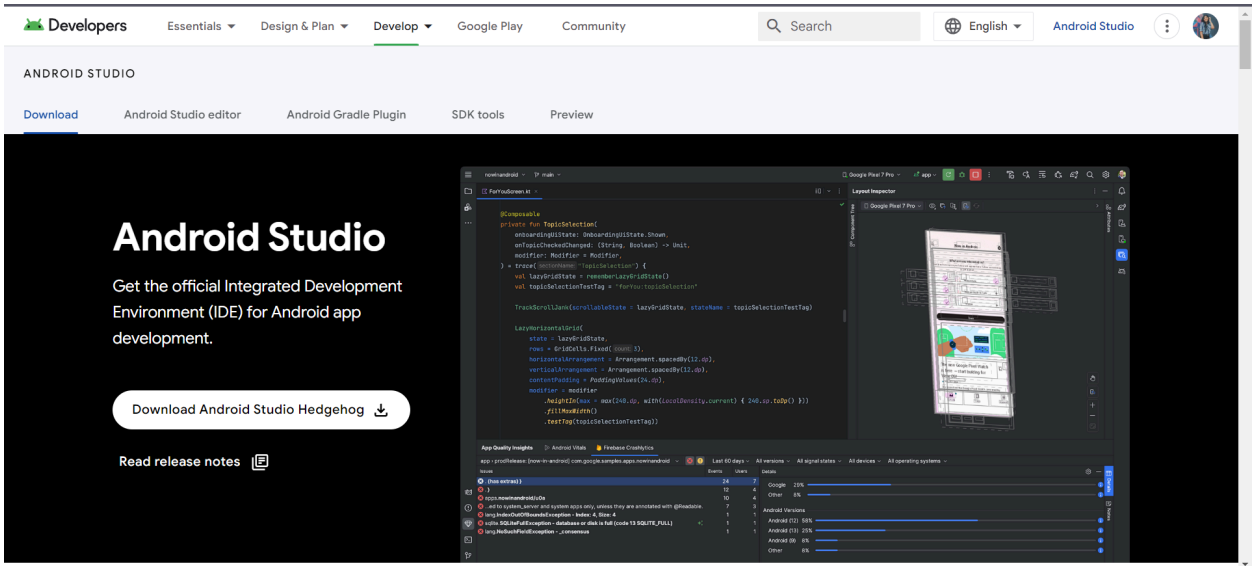
Now, run the $ flutter doctor command. This command checks for all the requirements of Flutter app development and displays a report of the status of your Flutter installation.

```
C:\Users\shiva>flutter doctor
Doctor summary (to see all details, run flutter doctor -v):
[√] Flutter (Channel stable, 3.16.9, on Microsoft Windows [Version 10.0.22621.3085], locale en-IN)
[√] Windows Version (Installed version of Windows is version 10 or higher)
[X] Android toolchain - develop for Android devices
    X Unable to locate Android SDK.
      Install Android Studio from: https://developer.android.com/studio/index.html
      On first launch it will assist you in installing the Android SDK components.
      (or visit https://flutter.dev/docs/get-started/install/windows#android-setup for detailed instructions).
      If the Android SDK has been installed to a custom location, please use
      `flutter config --android-sdk` to update to that location.

[√] Chrome - develop for the web
[X] Visual Studio - develop Windows apps
    X Visual Studio not installed; this is necessary to develop Windows apps.
      Download at https://visualstudio.microsoft.com/downloads/.
      Please install the "Desktop development with C++" workload, including all of its default components
[!] Android Studio (not installed)
[√] VS Code (version 1.86.1)
[√] Connected device (3 available)
[√] Network resources

! Doctor found issues in 3 categories.
```

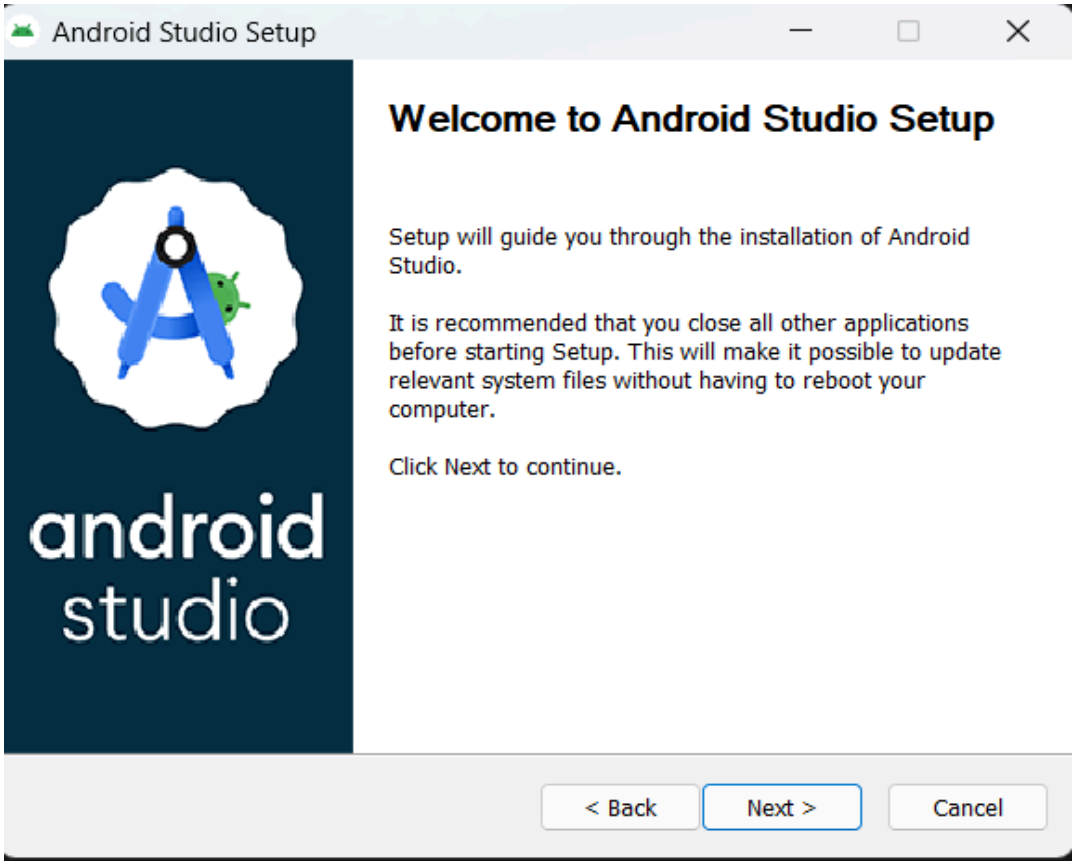
Step 6: When you run the above command, it will analyze the system and show its report, as shown in the below image. Here, you will find the details of all missing tools, which required to run Flutter as well as the development tools that are available but not connected with the device.

Step 7: Install the Android SDK. If the flutter doctor command does not find the Android SDK tool in your system, then you need first to install the Android Studio IDE. To install Android Studio IDE, do the following steps.

Step 7.1: Download the latest Android Studio executable or zip file from the official site.

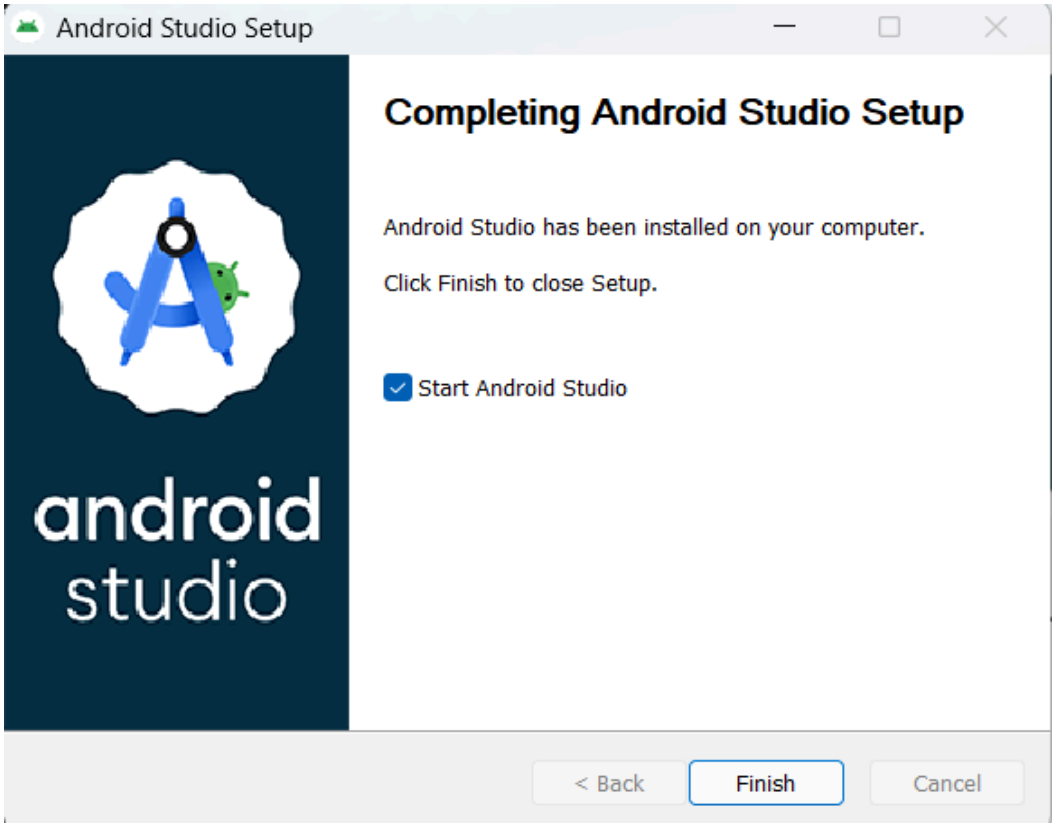


Step 7.2: When the download is complete, open the .exe file and run it. You will get the following dialog box

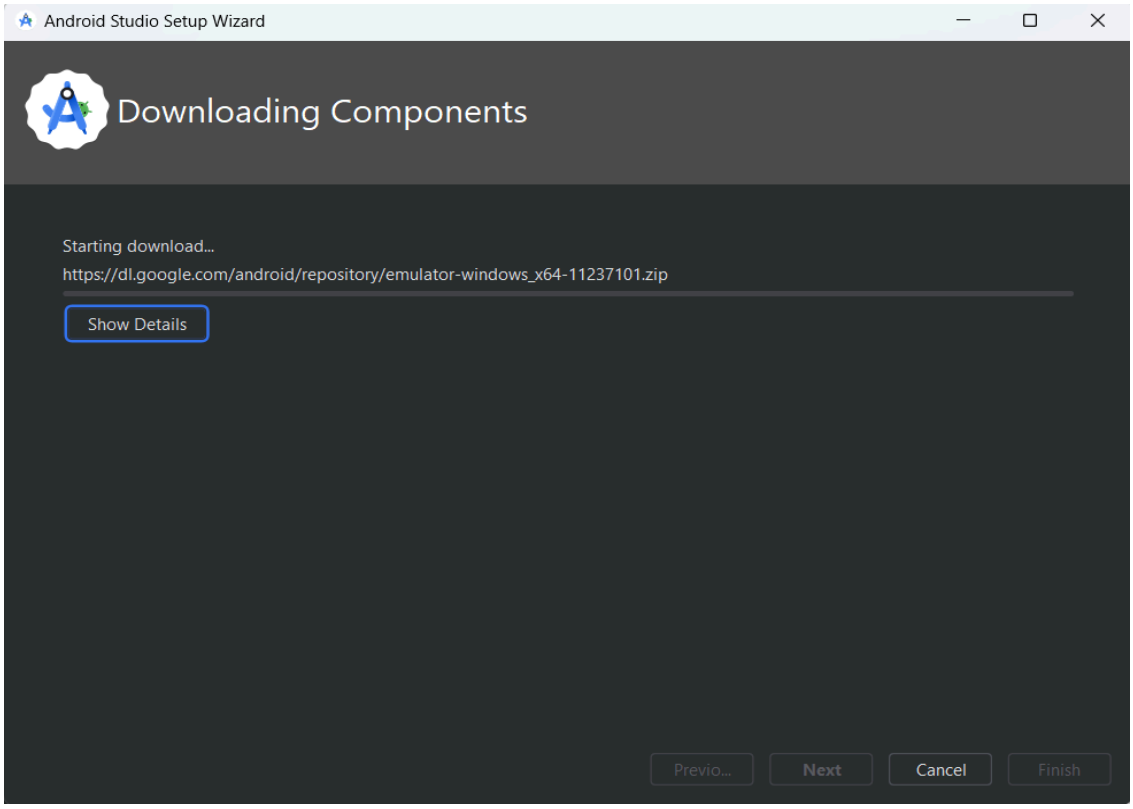


Step 7.3: Follow the steps of the installation wizard. Once the installation wizard completes, you will get the following screen.

Step 7.4: In the above screen, click Next-> Finish. Once the Finish button is clicked, you need to choose the 'Don't import Settings option' and click OK. It will start the Android Studio.



Then click on finish after pressing accept

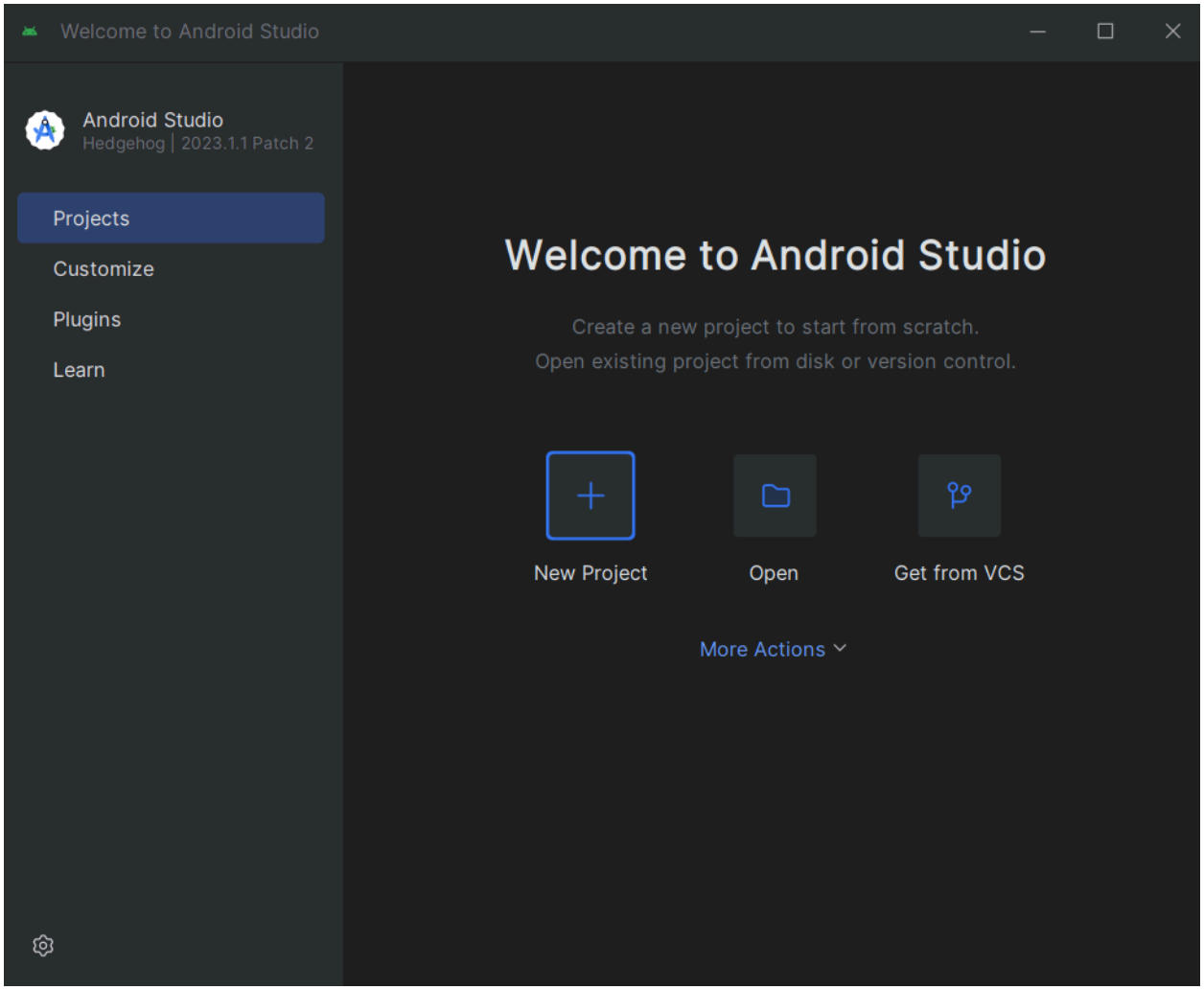


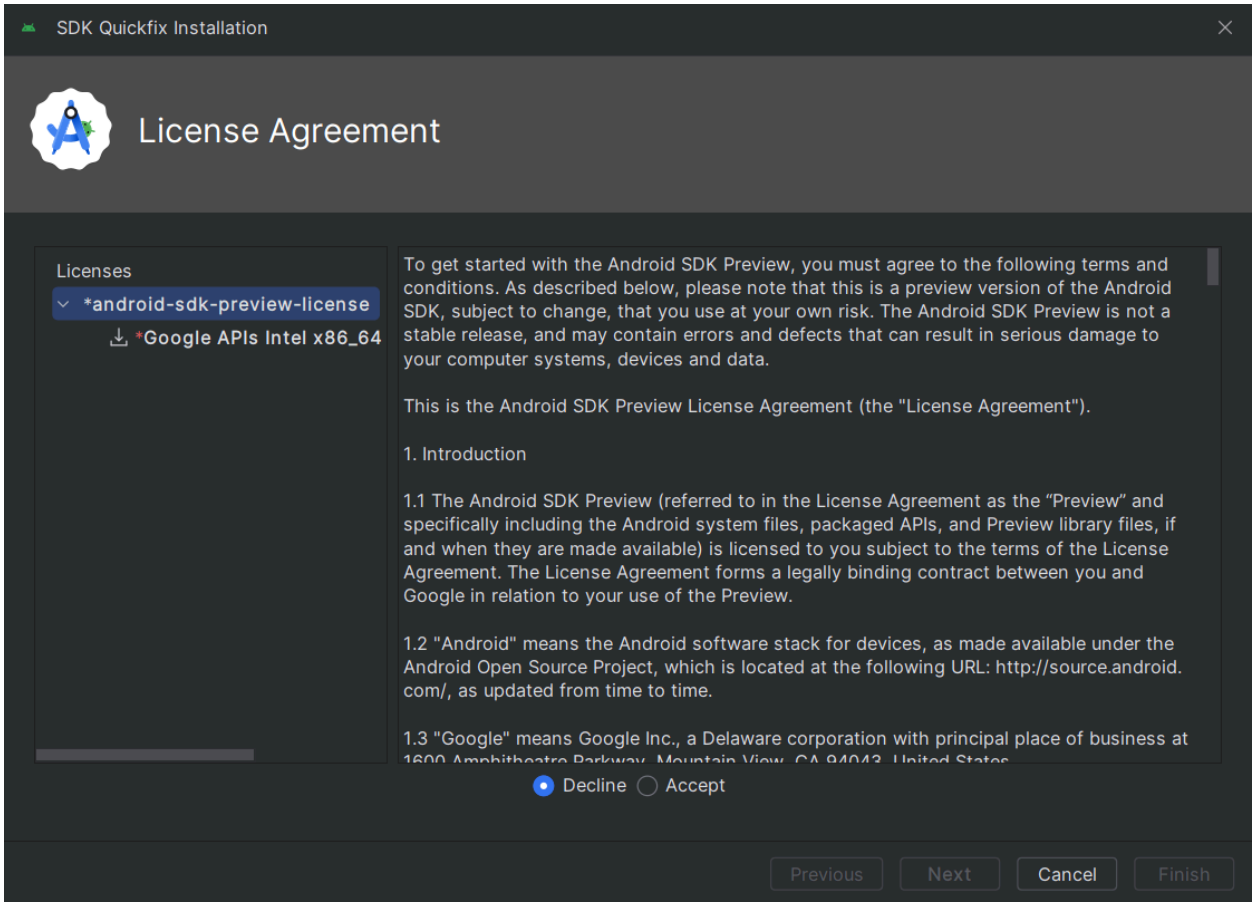
Step 7.5: run the $ flutter doctor command and Run flutter doctor --android-licenses command.

```
PS C:\Users\shiva> flutter doctor
Doctor summary (to see all details, run flutter doctor -v):
[√] Flutter (Channel stable, 3.16.9, on Microsoft Windows [Version 10.0.22621.3085], locale en-IN)
[√] Windows Version (Installed version of Windows is version 10 or higher)
[!] Android toolchain - develop for Android devices (Android SDK version 34.0.0)
    ✗ cmdline-tools component is missing
      Run `path/to/sdkmanager --install "cmdline-tools;latest"`
      See https://developer.android.com/studio/command-line for more details.
    ✗ Android license status unknown.
      Run `flutter doctor --android-licenses` to accept the SDK licenses.
      See https://flutter.dev/docs/get-started/install/windows#android-setup for more details.
[√] Chrome - develop for the web
[✗] Visual Studio - develop Windows apps
    ✗ Visual Studio not installed; this is necessary to develop Windows apps.
      Download at https://visualstudio.microsoft.com/downloads/.
      Please install the "Desktop development with C++" workload, including all of its default components
[√] Android Studio (version 2023.1)
[√] VS Code (version 1.86.1)
[√] Connected device (3 available)
[√] Network resources

! Doctor found issues in 2 categories.
```

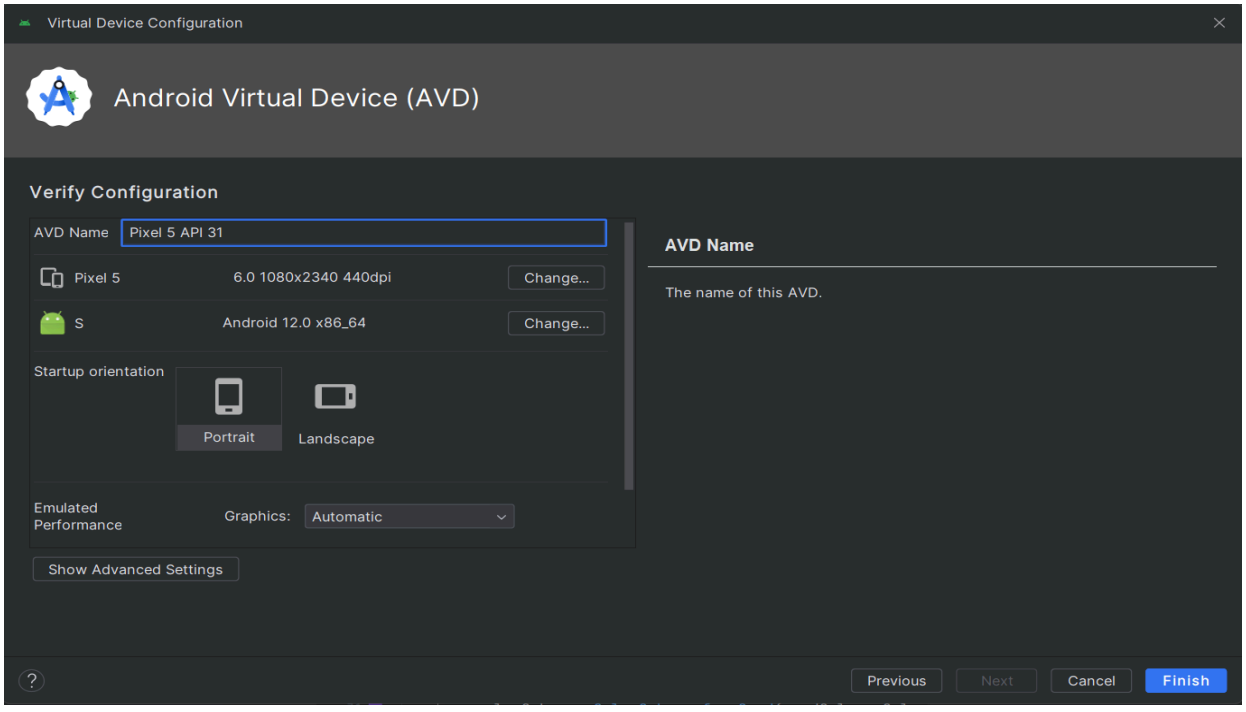
Step 8: Next, you need to set up an Android emulator. It is responsible for running and testing the Flutter application.

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.



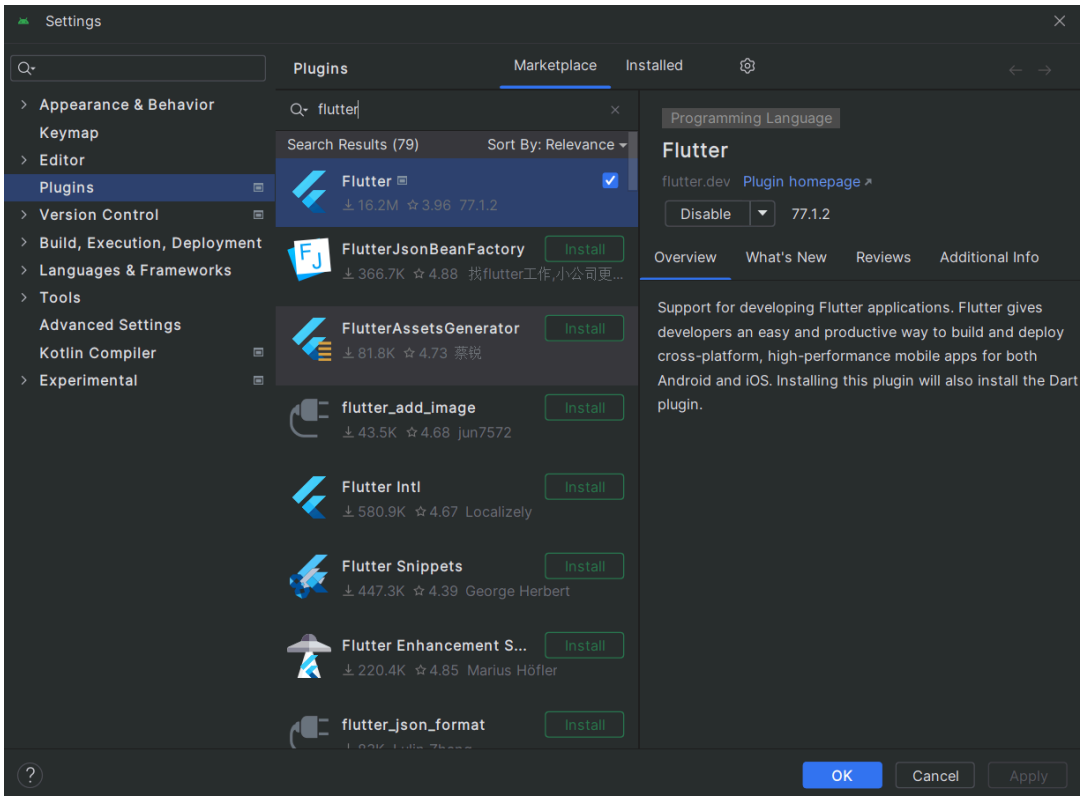
Step 8.3: Select the system image for the latest Android version and click on Next.

Step 8.4: Now, verify the all AVD configuration. If it is correct, click on Finish. The following screen appears.

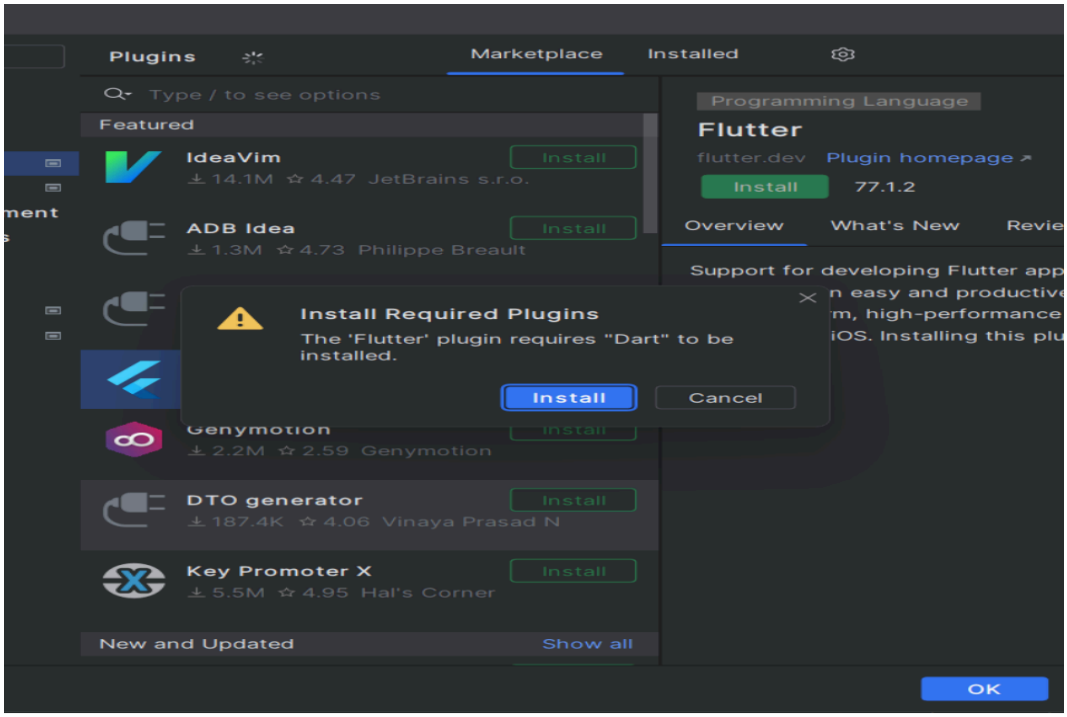
Step 8.5: Last, click on the icon pointed into the red color rectangle. The Android emulator displayed as below screen.

Step 9: Now, install Flutter 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:

Successfully understood the process to install And Setup of Flutter Environment and Android Studio