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MPL Lab - 1

Aim : To install and configure the flutter development environment for building and testing flutter Application

Theory :

Flutter is an open-source UI software development kit created by google. It is used to develop crossplatform application from a single codebase. Flutter uses Dart programming language and provides a rich set of pre-defined widgets that helps in building aesthitically pleasing applications.

- Flutter SDK (Software Development Kit) contains all the necessary tools required to build flutter application. including :-
  - Dart SDK, for writting flutter applications
  - Flutter's command line tools for building, running and Maneging project.
  - Pre-built widgets and libraries that simplify UI development

Installation Steps :

1) Download and install SDK
2) Set up System path
3] Verify Installation with 'flutter doctor'.
4] Install Android studio and SDK
5] Set up an Android Emulator
6] Install flutter and Dart Plugins.

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Conclusion :-

In this experiment, we successfully installed and configured the flutter environment, we set up the flutter SDK, added it to system path and verified its installation, we installed Android studio and configured flutter and Dart plugins.

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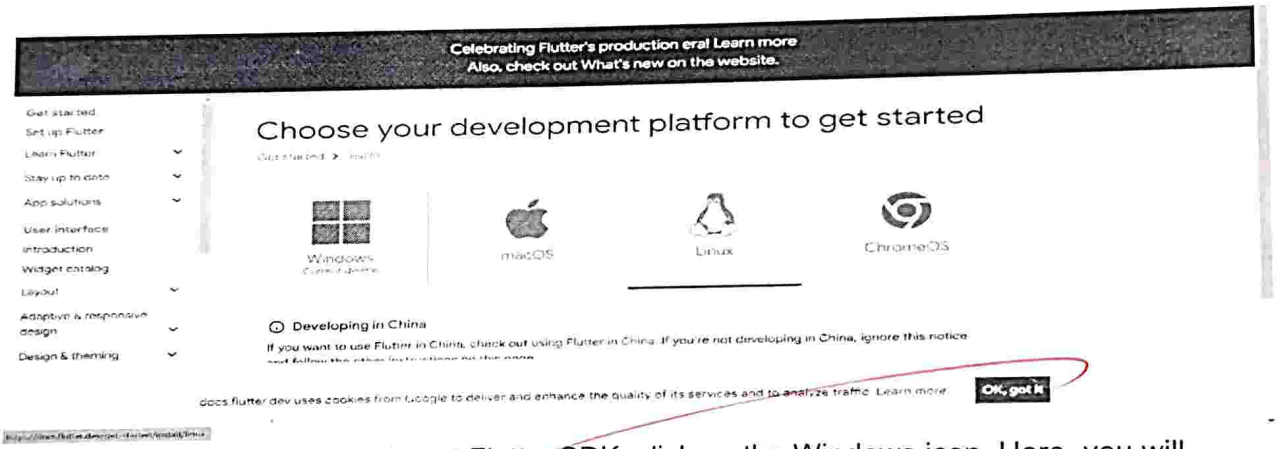
EXP 1: Installation and Configuration of Flutter Environment.

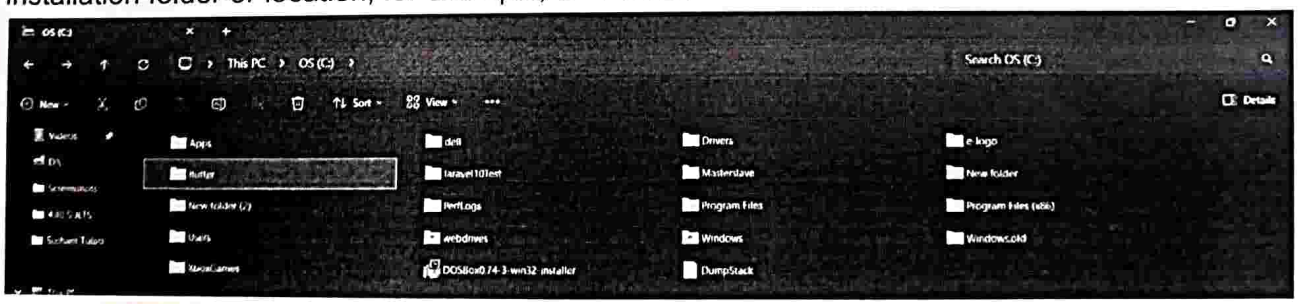
Install the Flutter SDK

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.



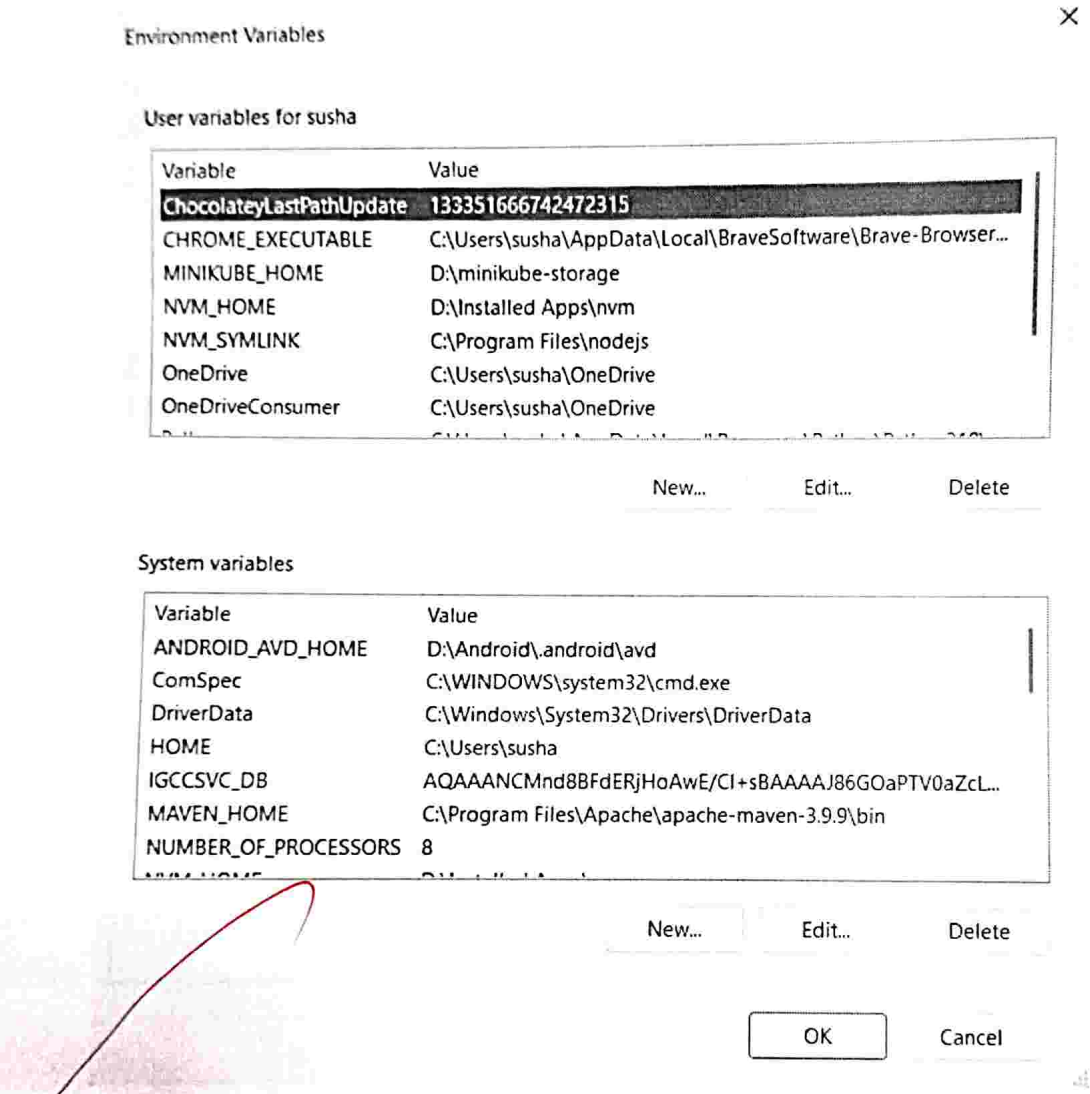
Step 2: Next, to download the latest Flutter SDK, click on the Windows icon. Here, you will find the download link for SDK.

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.

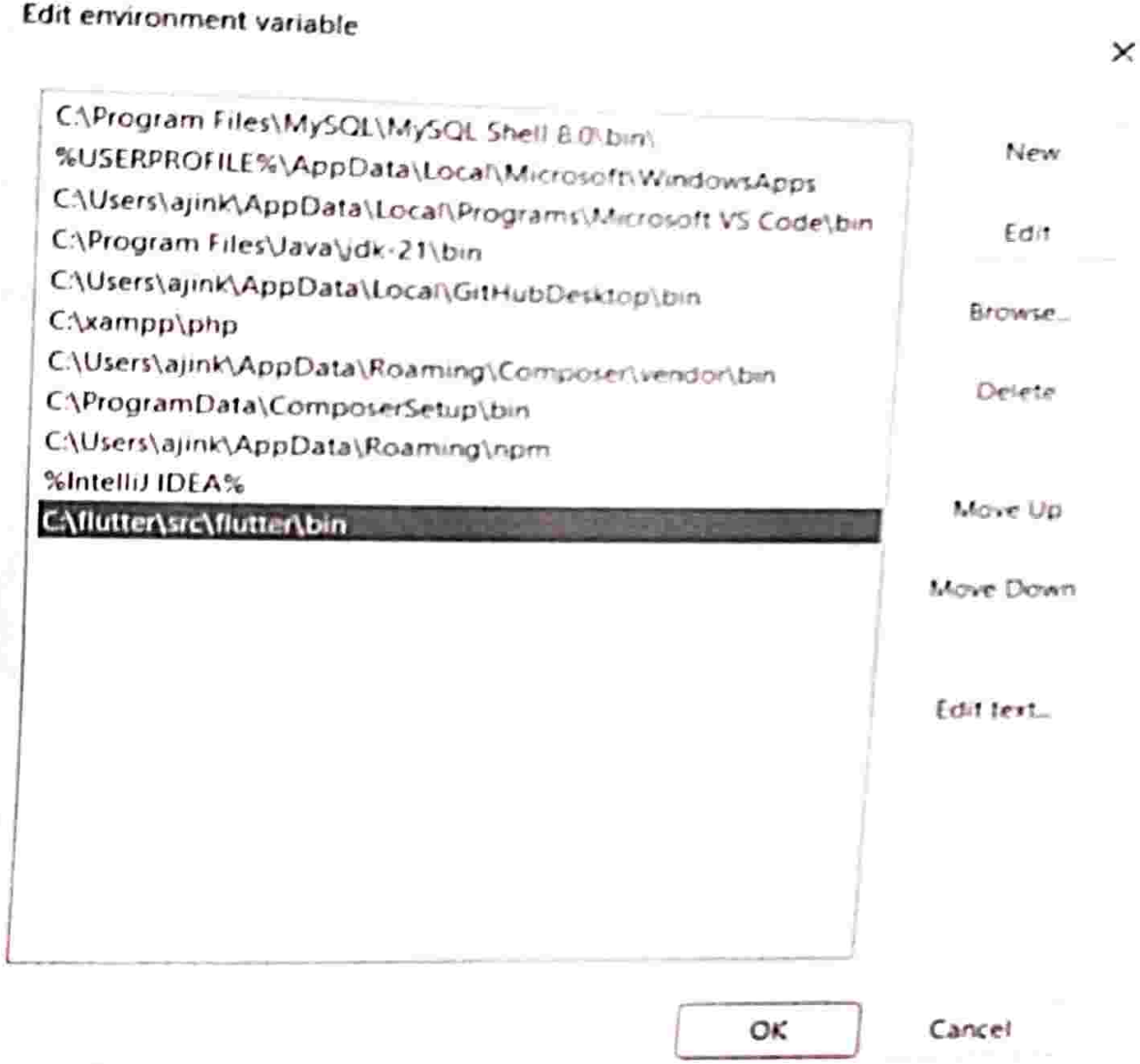


Step 4: To run the Flutter command in the regular windows console, you need to update the system path to include the flutter bin directory. The following steps are required to do this:

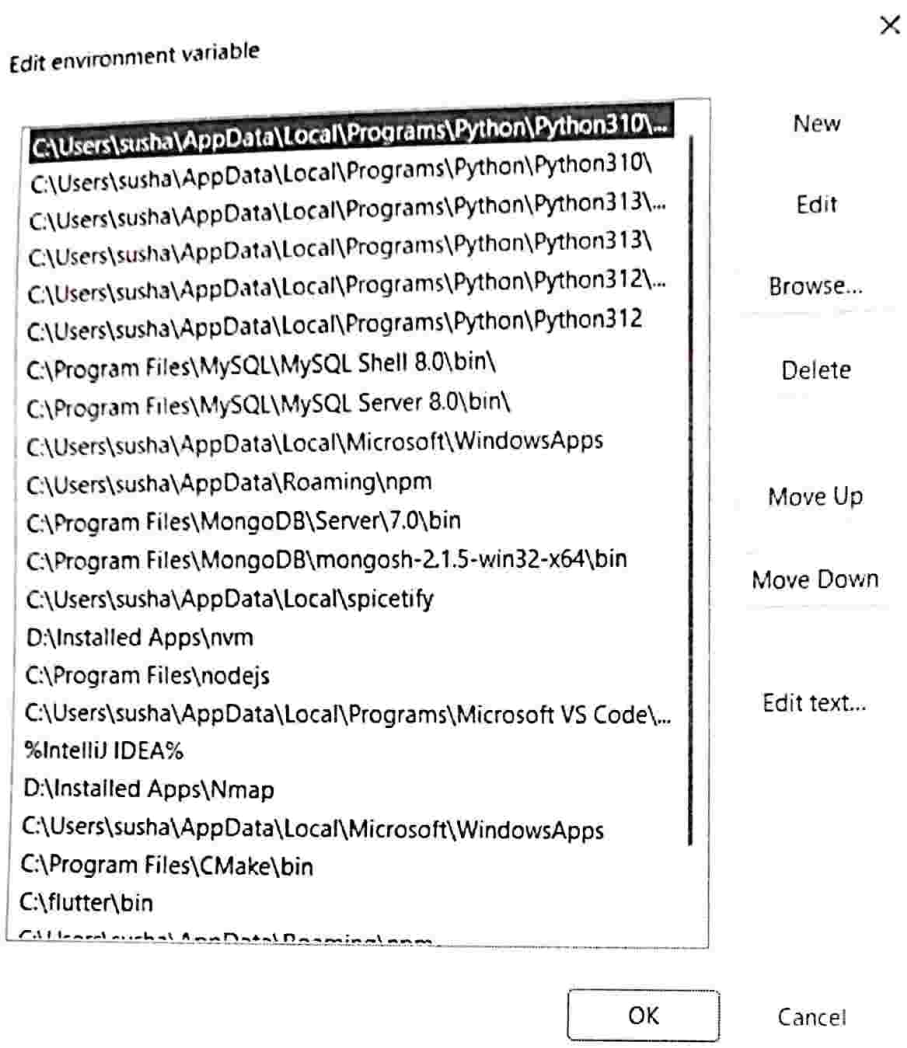
Step 4.1: Go to MyComputer properties -> advanced tab -> environment variables. You will get the following screen.



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.

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.

```
Microsoft Windows [Version 10.0.26120.2415]
(c) Microsoft Corporation. All rights reserved.

C:\Users\susha>flutter

  A new version of Flutter is available!

  To update to the latest version, run "flutter upgrade".

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.
```

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.

```
C:\Users\gungu>flutter doctor
Doctor summary (to see all details, run flutter doctor -v):
[√] Flutter (Channel stable, 3.29.0, on Microsoft Windows [Version 10.0.22631.5039], locale en-US)
[√] Windows Version (11 Pro 64-bit, 23H2, 2009)
[√] Android toolchain - develop for Android devices (Android SDK version 35.0.1)
[√] Chrome - develop for the web
[√] Visual Studio - develop Windows apps (Visual Studio Build Tools 2019 16.11.45)
[√] Android Studio (version 2024.2)
[√] Connected device (3 available)
[√] Network resources

• No issues found!
```

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.

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

```
C:\Users\gungu>flutter doctor
Doctor summary (to see all details, run flutter doctor -v):
[√] Flutter (Channel stable, 3.29.0, on Microsoft Windows [Version 10.0.22631.5039], locale en-US)
[√] Windows Version (11 Pro 64-bit, 23H2, 2009)
[√] Android toolchain - develop for Android devices (Android SDK version 35.0.1)
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[√] Visual Studio - develop Windows apps (Visual Studio Build Tools 2019 16.11.45)
[√] Android Studio (version 2024.2)
[√] Connected device (3 available)
[√] Network resources

• No issues found!
```
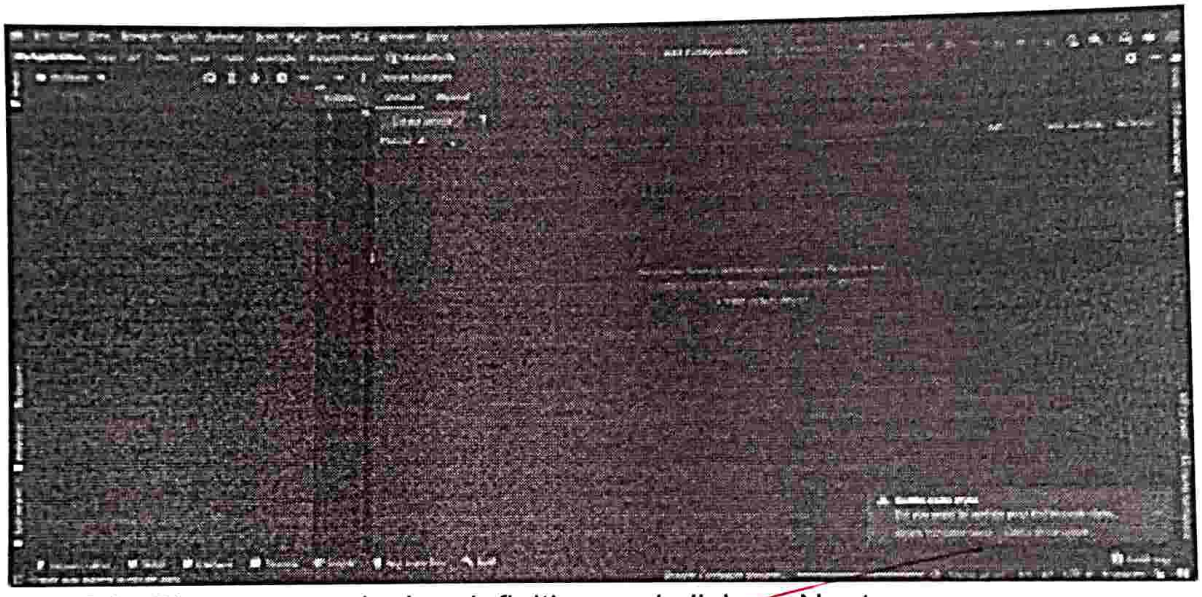
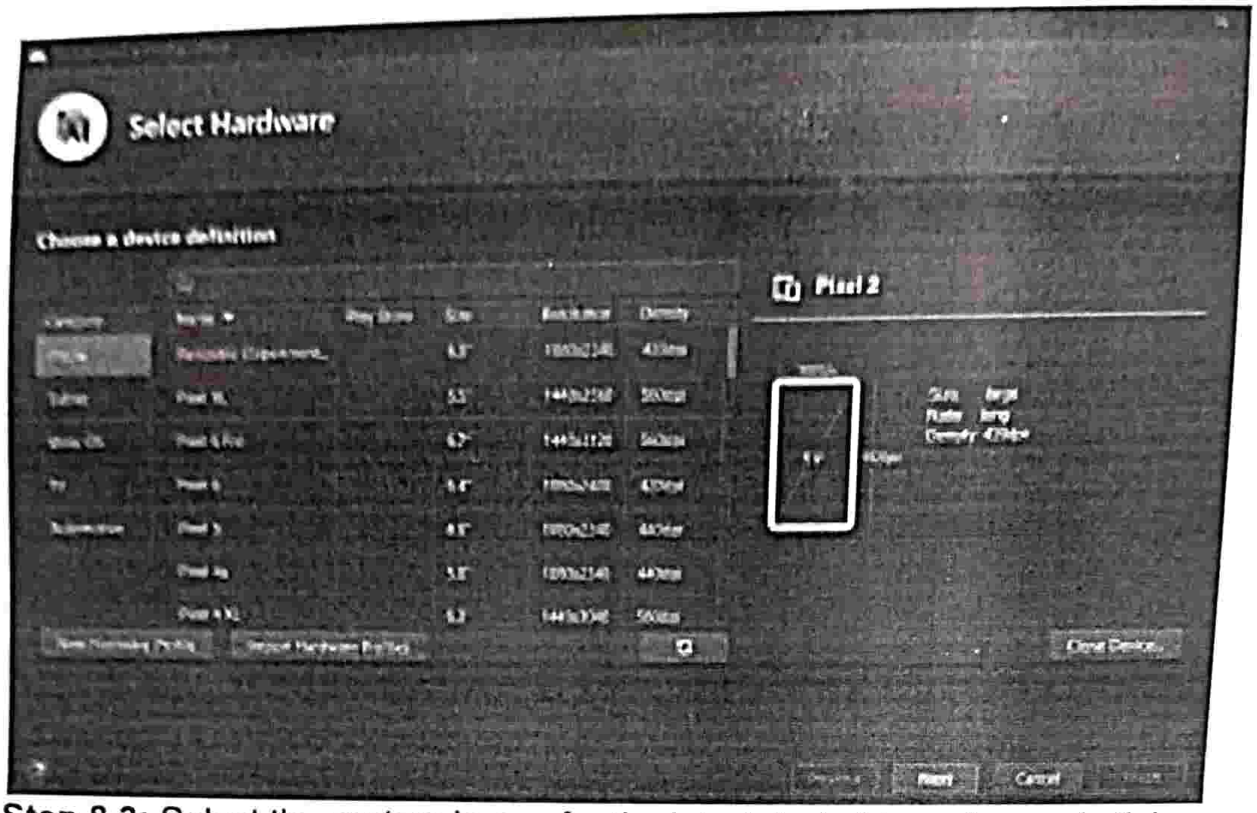

Step 8: Next, you need to set up an Android emulator. It is responsible for running and testing the Flutter application.

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.

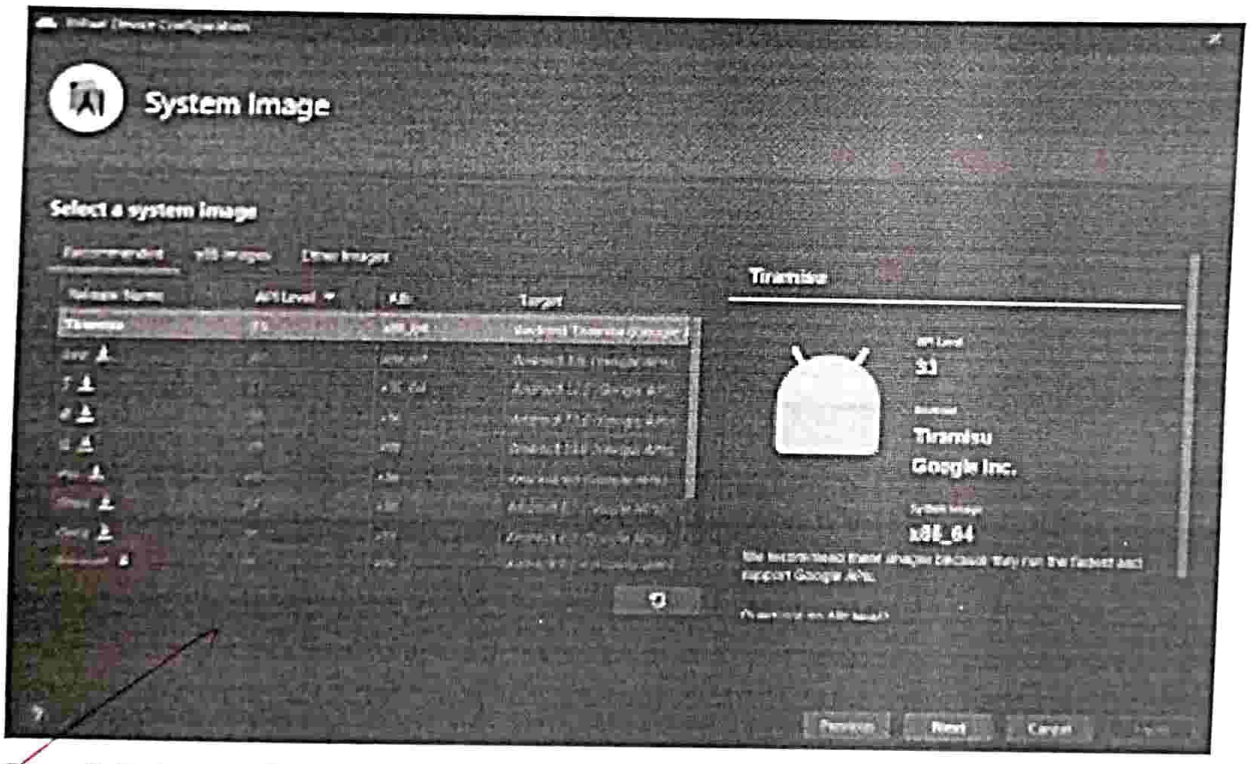


Step 8.2: Choose your device definition and click on Next.



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.

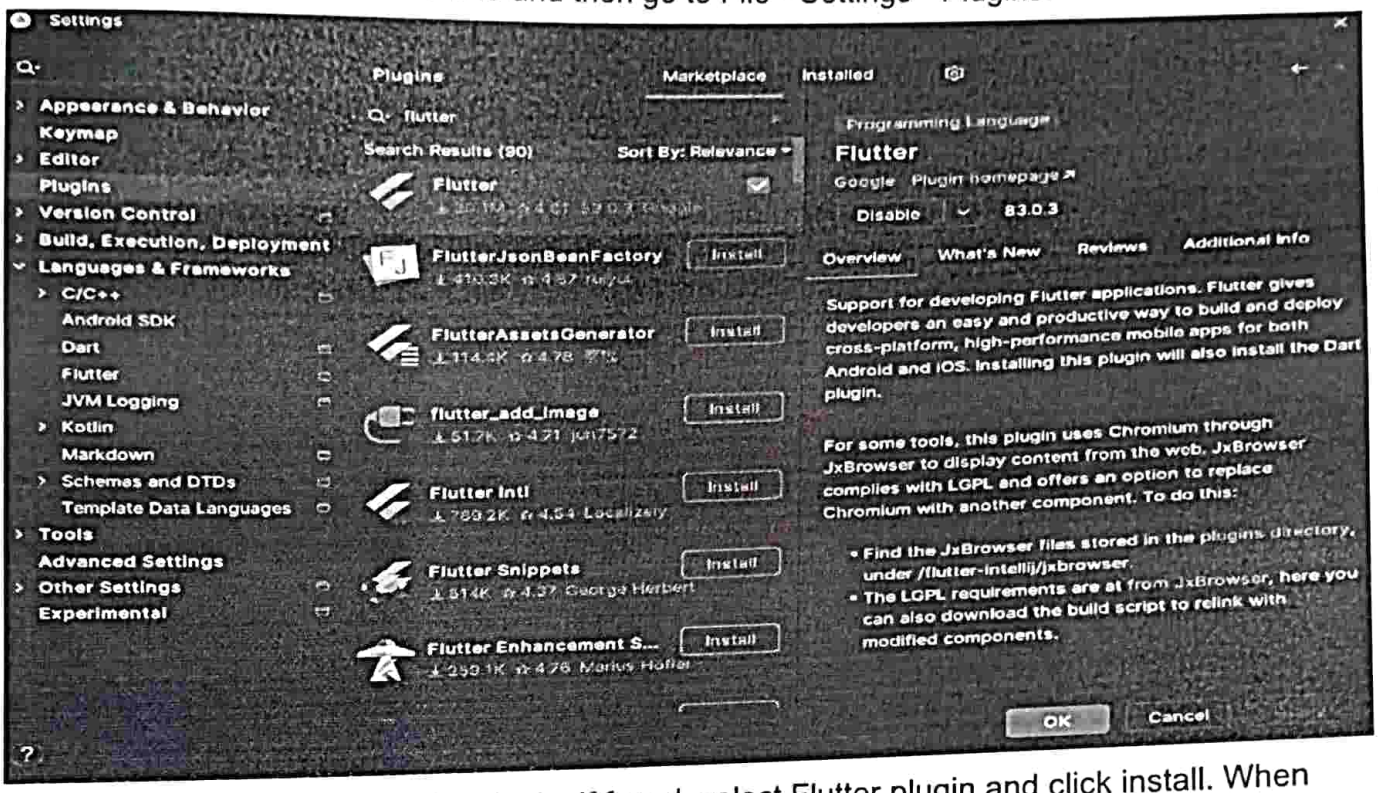


Step 8.5: Last, click on the icon pointed into the red color rectangle. The Android emulator
displayed as below screen.

Step 9: Now, install Flutter 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.