EXP 1:

Aim: To install and configure flutter environment.

Theory:

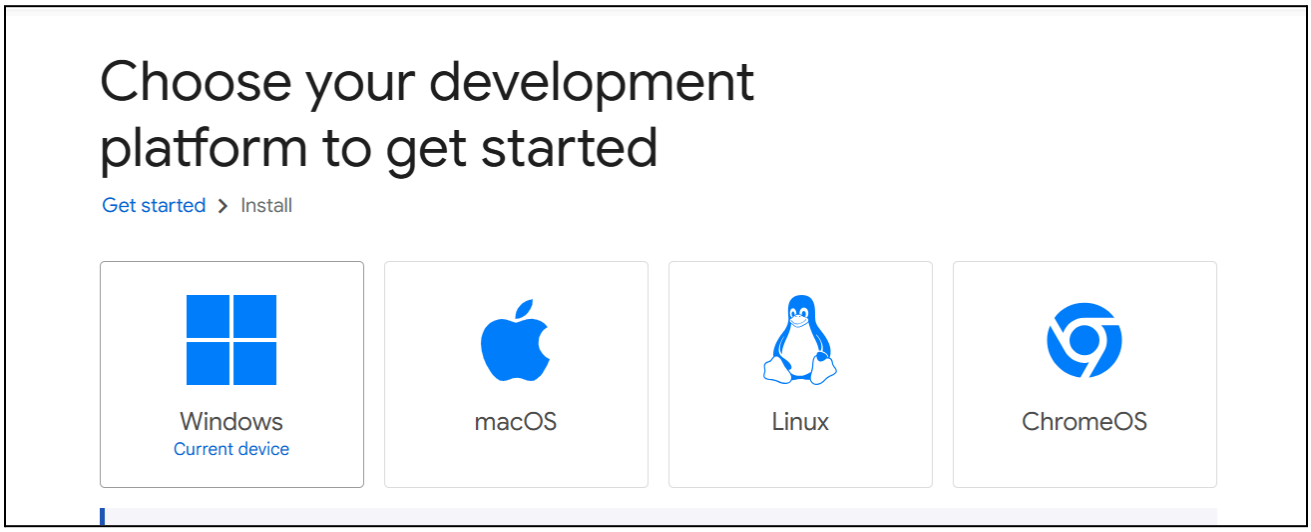
Flutter: Flutter is an open source framework by Google for building beautiful, natively compiled, multi-platform applications from a single codebase.

- Fast: Flutter code compiles to ARM or Intel machine code as well as JavaScript, for fast performance on any device.
- Productive: Build and iterate quickly with Hot Reload. Update code and see changes almost instantly, without losing state.
- Flexible: Control every pixel to create customized, adaptive designs that look and feel great on any screen.

Steps performed:

Download the Flutter SDK

Step 1: Go to the flutter official website and select your OS in order to get started.

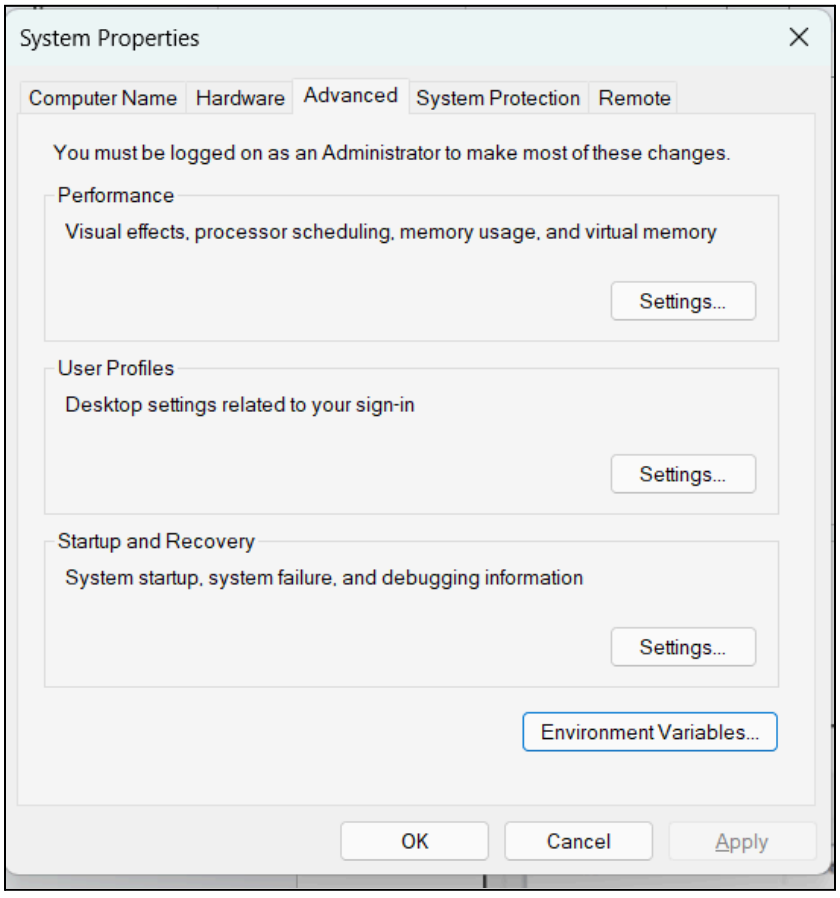


Step 2: Next, to download the latest Flutter SDK, click on the Windows icon. Here, you will find the download link for SDK.

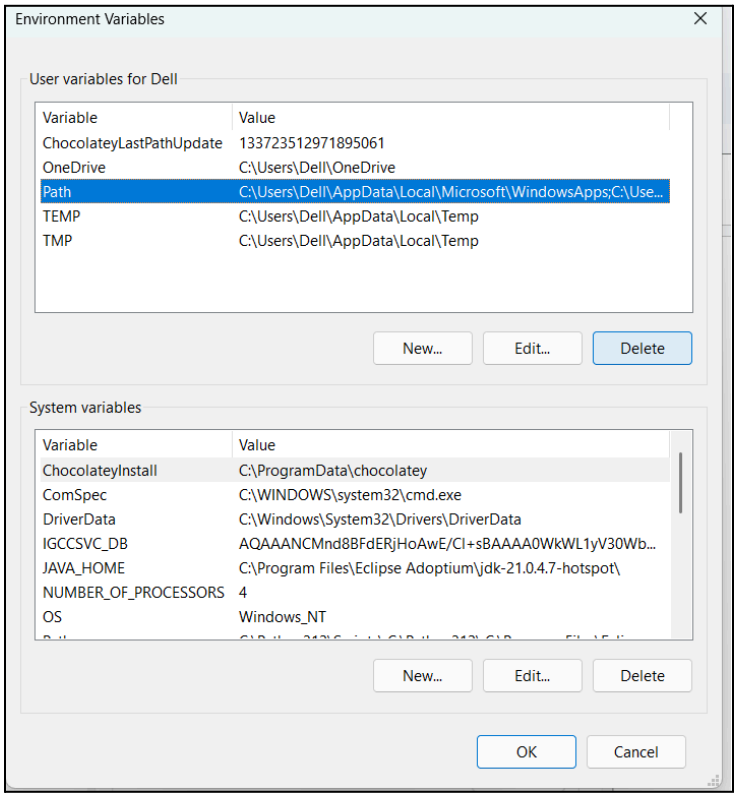
Step 3: When your download is complete, extract the zip file and place it in the desired installation folder or location.

Step 4: Now you will have to add flutter to the system path. To do so follow the below given steps:

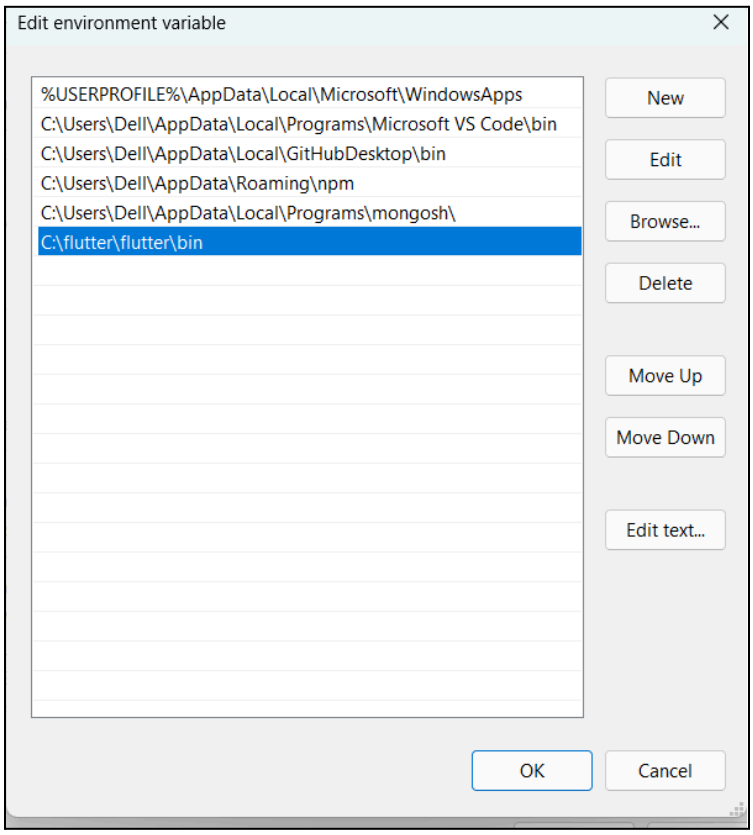
Step 4.1: Go to settings and search for environment variables,then select “Edit the system environment variables”. In the advanced tab, select the environment variables button.



Step 4.2: Now, in the next screen, select path and edit.



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



Step 5: Now, run the flutter –version command in command prompt to check if Flutter is correctly installed and see the version.

```
C:\Users\Dell>flutter --version
Flutter 3.29.2 • channel stable • https://github.com/flutter/flutter.git
Framework • revision c236373904 (3 weeks ago) • 2025-03-13 16:17:06 -0400
Engine • revision 18b71d647a
Tools • Dart 3.7.2 • DevTools 2.42.3
```

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\Dell>flutter doctor
Doctor summary (to see all details, run flutter doctor -v):
[√] Flutter (Channel stable, 3.29.2, on Microsoft Windows [Version 10.0.26100.3476], locale en-IN)
[√] Windows Version (11 Home Single Language 64-bit, 24H2, 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 Community 2022 17.11.4)
[√] Android Studio (version 2024.2)
[√] VS Code (version 1.99.0)
[√] Connected device (3 available)
[√] Network resources

• No issues found!
```

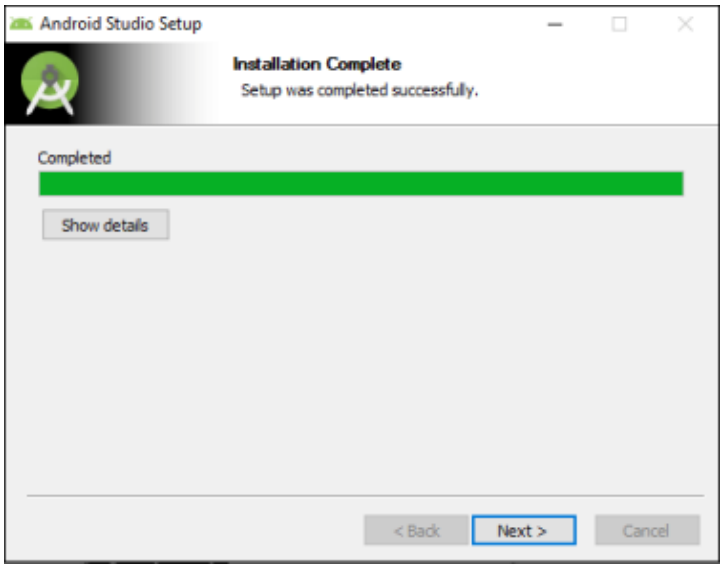
Step 6: When you run the above command, it will analyze the system and show its report, as shown in the above image. Here, you will find the details of all missing tools, which are required to run Flutter as well as the development tools that are available but not connected with the device. Based on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

Step 7: Install the Android SDK. If the flutter doctor command does not find the Android SDK tool in your system, then you need to first install the Android Studio IDE. To install Android Studio IDE, follow 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 again and run flutter doctor --android-licenses

command to accept all required Android SDK licenses needed for Flutter to build and run Android apps.

```
C:\Users\Dell>flutter doctor --android-licenses
Warning: Errors during XML parse:       ] 36% Fetch remote repository..
Warning: Additionally, the fallback loader failed to parse the XML.
[======================================] 100% Computing updates...
All SDK package licenses accepted.
```

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. 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.

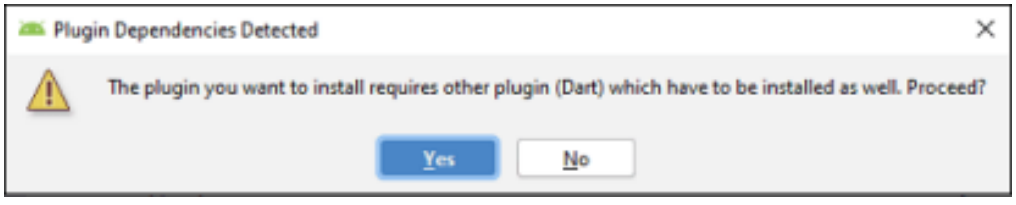
Step 8.4: Now, verify the AVD configuration. If it is correct, click on Finish.

Step 8.5: Lastly, click on the icon pointed into the red color rectangle. The Android emulator will be displayed as shown in the below screen.

Step 9: Now, install the Flutter and Dart plugin for building Flutter applications 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 for the Flutter plugin. If found, select Flutter plugin and click install. When you click on install, it will ask you to install the Dart plugin as shown in the below screen. Click yes to proceed.



Step 9.3: Restart Android Studio.

Conclusion:

This experiment demonstrates the complete process of setting up the Flutter development environment. The installation involves multiple components including the Flutter SDK, Android Studio IDE, and plugins that work together to create a functional development environment. The Flutter doctor tool helps identify and fix any missing dependencies. Once properly configured, developers can create Flutter projects and run them on emulators or physical devices, providing a foundation for mobile application development using Flutter's cross-platform capabilities.