

AIM:- Installation and Configuration of Flutter Environment.

THEORY :-

Flutter is an open-source UI software development toolkit created by Google for building natively compiled applications for mobile, web, and desktop from a single codebase.

Flutter revolves around the concept of a reactive framework for building user interfaces. Key principles include:

- **Single Codebase, Multiple Platforms:**

Flutter allows developers to write code once and deploy it on multiple platforms, such as iOS, Android, web, and desktop.

The Dart programming language is used to write Flutter applications, providing a concise and efficient syntax for building expressive UIs.

- **Widget-based Architecture:**

The fundamental building blocks of Flutter applications are widgets. Widgets are UI elements that define the structure and behavior of the user interface.

Flutter follows a declarative approach, where the UI is described by composing and nesting widgets, making it easy to visualize and understand the application's structure.

- **Hot Reload:**

One of Flutter's standout features is the "Hot Reload" capability, allowing developers to instantly see the effects of code changes without restarting the entire application.

This facilitates a faster development cycle and enhances productivity during the coding and debugging phases.

- **Highly Customizable UI:**

Flutter provides a rich set of pre-designed widgets, but it also allows developers to create custom widgets to achieve a unique and branded user interface.

This flexibility empowers developers to craft highly customized and visually appealing designs.

- **Performance:**

Flutter achieves high-performance by compiling its Dart code to native ARM code, providing near-native performance on both iOS and Android platforms.

The use of a reactive framework and a customizable rendering engine contributes to smooth animations and efficient rendering.

- **Community and Ecosystem:**

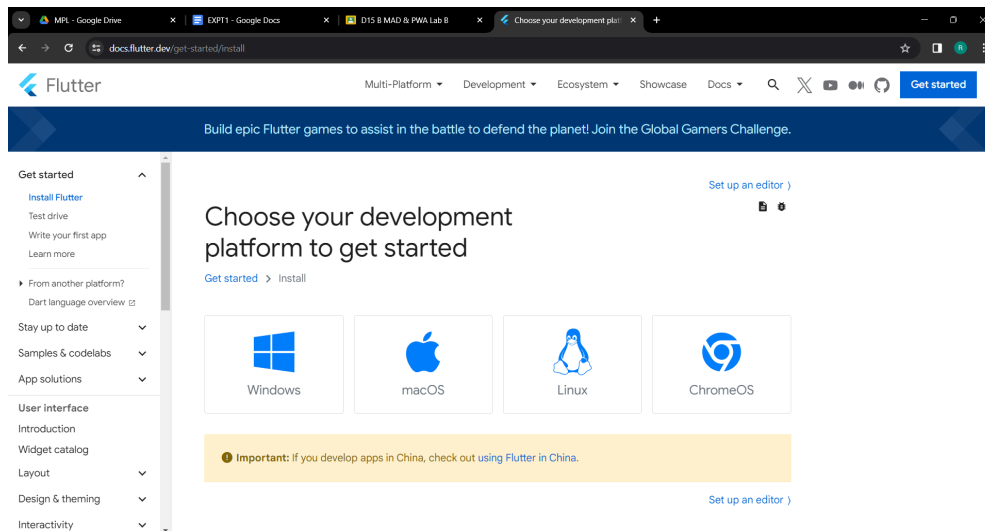
Flutter has a growing and vibrant community of developers contributing to its ecosystem. This includes a vast collection of plugins and packages that extend Flutter's capabilities and integration with various services.

- **Adaptability:**

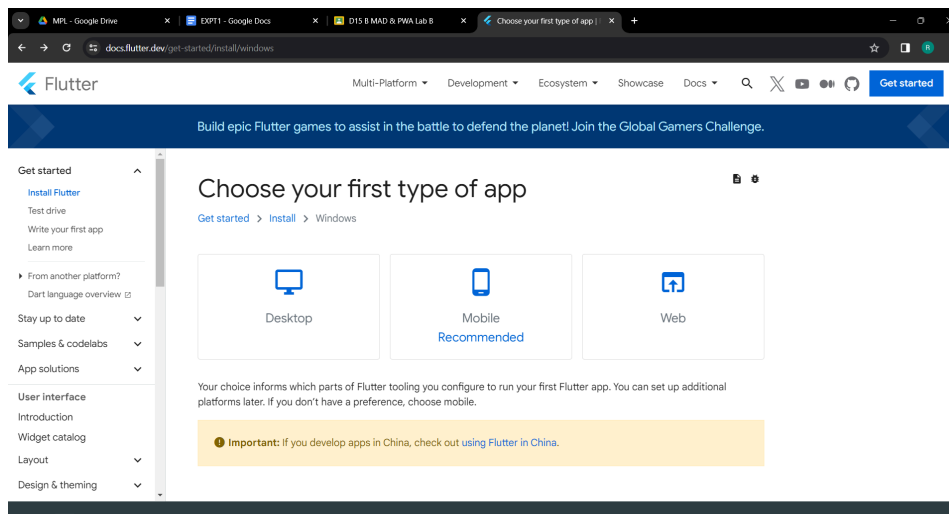
Flutter is designed to adapt to different screen sizes and form factors, making it suitable for a variety of devices, including smartphones, tablets, web browsers, and desktop environments.

OUTPUT :-

Step 1:-Visit the official website of Flutter.



Step 2:-Select the type of App



Step 3:- Download Flutter SDK

The screenshot shows the Flutter documentation page for installing Flutter on Windows. The page has a dark blue header with the Flutter logo and navigation links. A sidebar on the left contains a 'Get started' section with links to 'Install Flutter', 'Test drive', 'Write your first app', and 'Learn more'. The main content area is titled 'Start building Flutter Android apps on Windows' and includes a 'Create a test app' button. Below the title is a yellow box with an 'Important' note: 'Perform this guide in sequence. Skipping steps can cause errors.' The 'System requirements' section states that the Windows environment must meet certain requirements. The 'Hardware requirements' section lists minimal and recommended hardware specifications in a table.

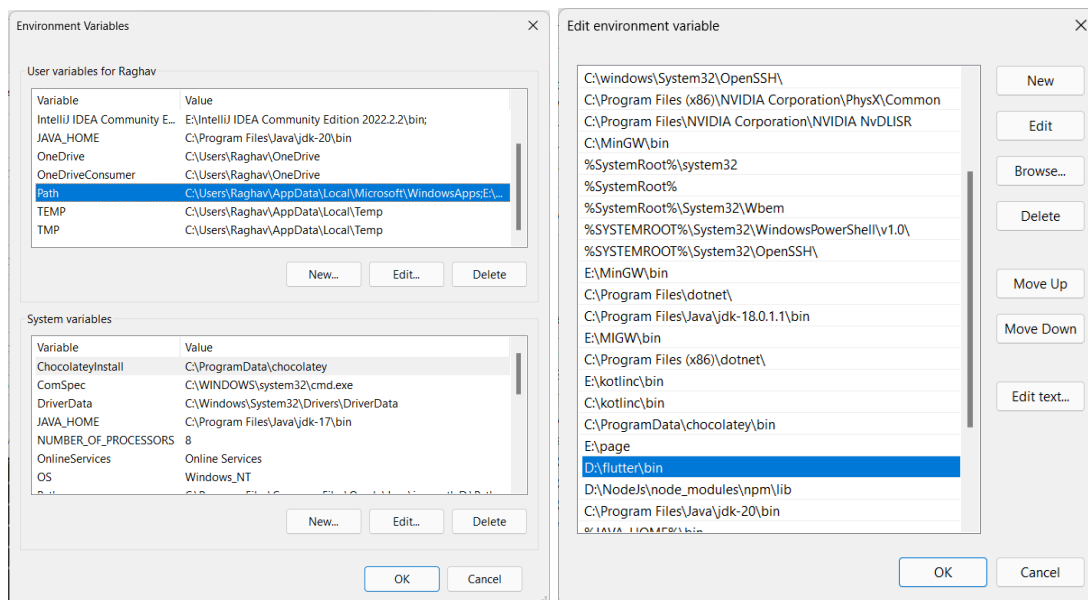
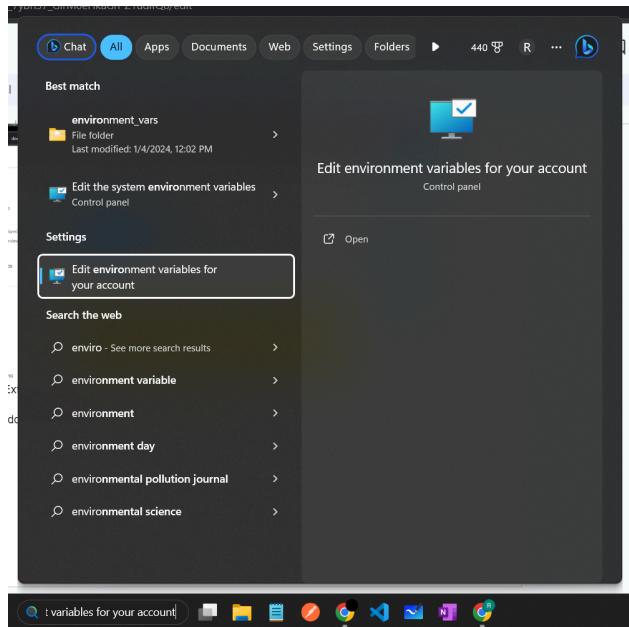
Requirement	Minimum	Recommended

The screenshot shows the Flutter documentation page for downloading and installing Flutter. The page has a dark blue header with the Flutter logo and navigation links. A sidebar on the left contains a 'Get started' section with links to 'Install Flutter', 'Test drive', 'Write your first app', and 'Learn more'. The main content area is titled 'Download then install Flutter' and includes a 'Use VS Code to install' button. Below the title is a yellow box with a 'Warning' note: 'Don't install Flutter to a directory or path that meets one or both of the following conditions: The path contains special characters or spaces. The path requires elevated privileges. As an example, C:\Program Files\ fails both conditions.'

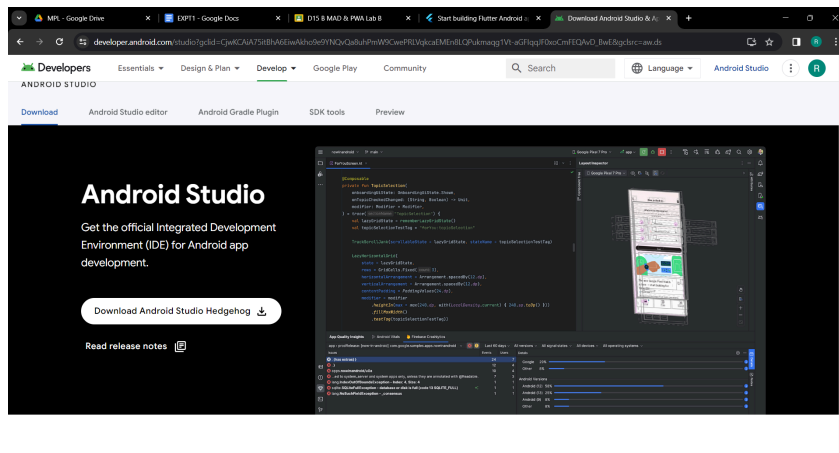
Step 4:- Extract the ZIP File

Step 5:-Add Flutter SDK path to environment variables

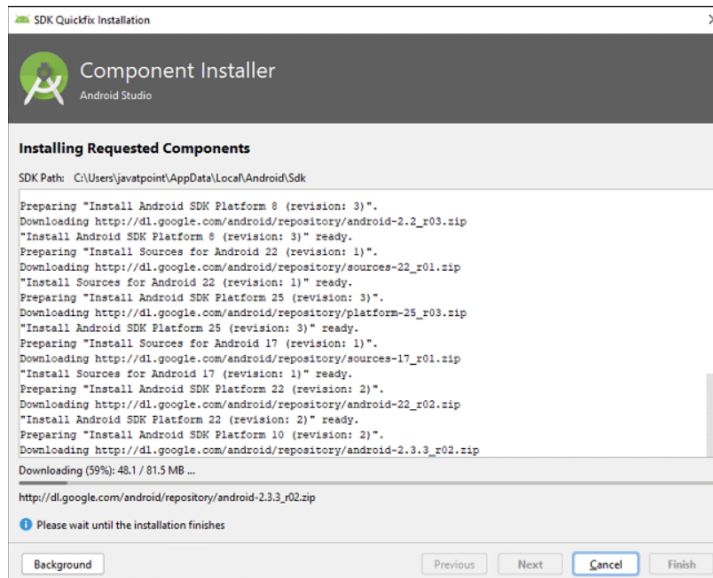
Go to extracted file -> select Bin Path -> search for environment variables -> Edit Path -> Paste the copied path -> OK



Step 6:- Visit Official Site for Android Studio



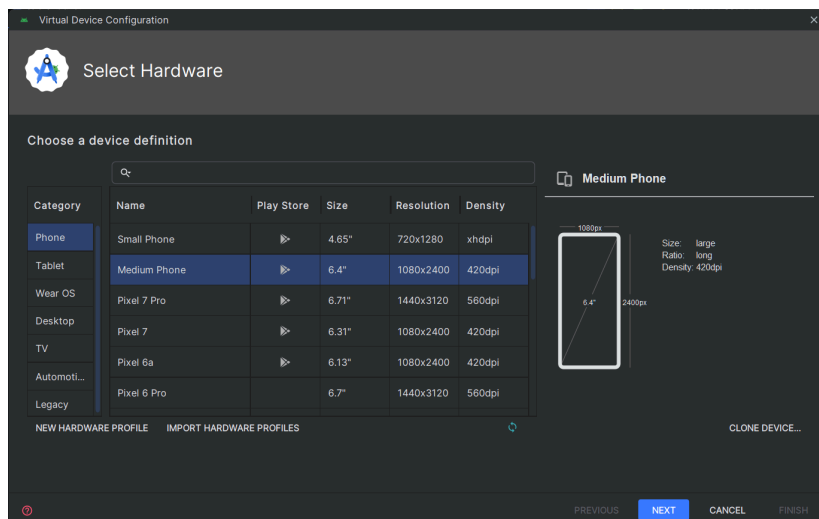
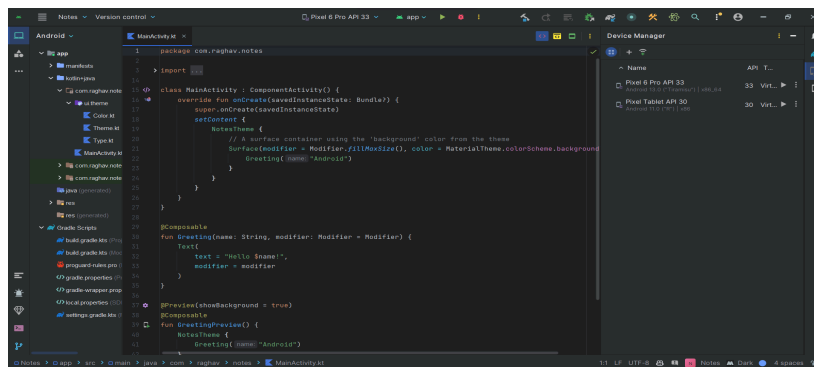
Step 7:-Install Android SDK




Step 8:-Accept Android License

Step 9:-Install AVD (Android Virtual Device) from Android Studio

Device Manager -> Add Device -> Select Model -> Select System Image -> Finish



Virtual Device Configuration

System Image

Select a system image

Recommendedx86 ImagesOther Images

Release Name	API Level	ABI	Target
UpsideDownCakePriv...	UpsideDownCaki	x86_64	Android API UpsideDownCaki
TiramisuPrivacySamb...	TiramisuPrivacyS	x86_64	Android 14.0 (Google Play)
UpsideDownCake	34	x86_64	Android 14.0 (Google Play)
Tiramisu	33	x86_64	Android 13.0 (Google Play)
Sv2	32	x86_64	Android 12L (Google Play)
S	31	x86_64	Android 12.0 (Google Play)
R	30	x86	Android 11.0 (Google Play)
Q	29	x86	Android 10.0 (Google Play)

R

API Level
30

Type
Google Play

Android
11.0


Google Inc.

System image
x86

We recommend these Google Play images because this device is compatible with Google Play.


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Virtual Device Configuration

Android Virtual Device (AVD)


Verify Configuration


AVD NamePixel 7 Pro API 30

Pixel 7 Pro6.71 1440x3120 560dpiCHANGE...

RAndroid 11.0 x86CHANGE...

Startup orientation

Portrait

Landscape

Emulated PerformanceGraphics: Automatic

SHOW ADVANCED SETTINGS

AVD Name

The name of this AVD.

PREVIOUSNEXTCANCELFINISH



Step 10:- Open command prompt on your machine and run command 'flutter doctor'

```
Command Prompt - flutter d: x + -
Microsoft Windows [Version 10.0.22621.3807]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Raghav>flutter doctor
Doctor summary (to see all details, run flutter doctor -v):
[✓] Flutter (Channel stable, 3.16.6, on Microsoft Windows [Version 10.0.22621.3807], 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)
[✓] 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 (version 2023.1)
[✓] Connected device (3 available)
[✓] Network resources

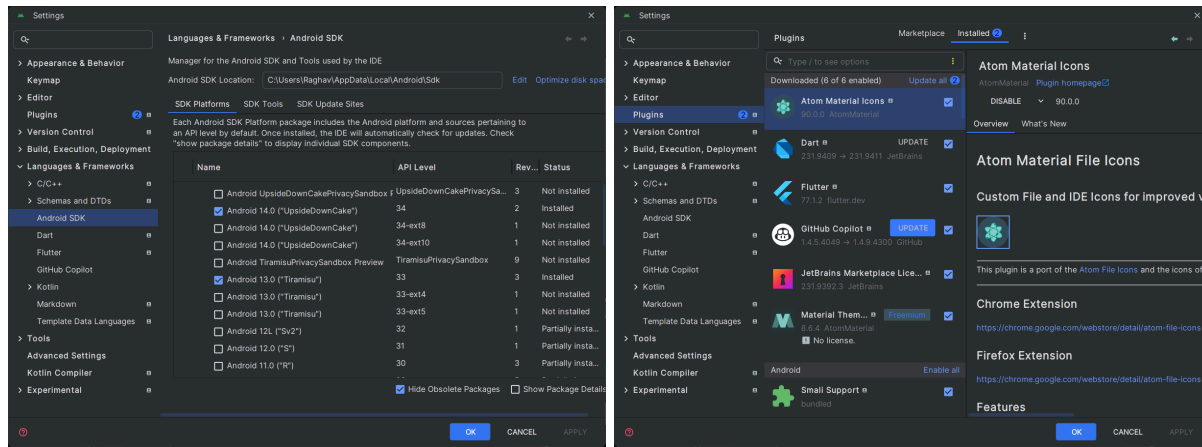
! Doctor found issues in 1 category.

C:\Users\Raghav>
```


Step 11:- Resolve Errors if any

Step 12:- Install Dart and Flutter plugins in Android Studio

Settings -> Plugins -> Search for Dart and Flutter



Conclusion:- In this experiment , we installed Flutter SDK , Android Studio , Dart and Flutter Plugins . Also we accepted an Android Licence and Installed Android SDK and AVD using Android Studio.