

EXPERIMENT 1

Aim : To understand and install Flutter

Theory:

Flutter is an open source framework developed and supported by Google. Front-end and full-stack developers use Flutter to build an application's user interface (UI) for multiple platforms with a single codebase. When Flutter launched in 2018, it mainly supported mobile app development. Flutter now supports application development on six platforms: iOS, Android, the web, Windows, MacOS, and Linux.

Flutter simplifies the process of creating consistent, appealing UIs for an application across the six platforms it supports. Cross-platform app development allows developers to use one programming language and one codebase to build an application for multiple platforms. If you're releasing an application for multiple platforms, cross-platform app development is less costly and time-consuming than native app development.

This process also lets developers create a more consistent experience for users across platforms.

The advantages of Flutter

Here are some ways that Flutter stands out as a cross-platform development framework:

- Close-to-native performance. Flutter uses the programming language Dart and compiles into machine code. Host devices understand this code, which ensures a fast and effective performance.
- Fast, consistent, and customizable rendering. Instead of relying on platform-specific rendering tools, Flutter uses Google's open-source Skia graphic library to render UI. This provides users with consistent visuals no matter what platform they use to access an application.
- Developer-friendly tools. Google built Flutter with an emphasis on ease-of-use. With tools like hot reload, developers can preview what code

changes will look like without losing state. Other tools like the widget inspector make it easy to visualize and solve issues with UI layouts.

Flutter uses the open-source programming language Dart, which was also developed by Google. Dart is optimized for building UIs, and many of Dart's strengths are used in Flutter.

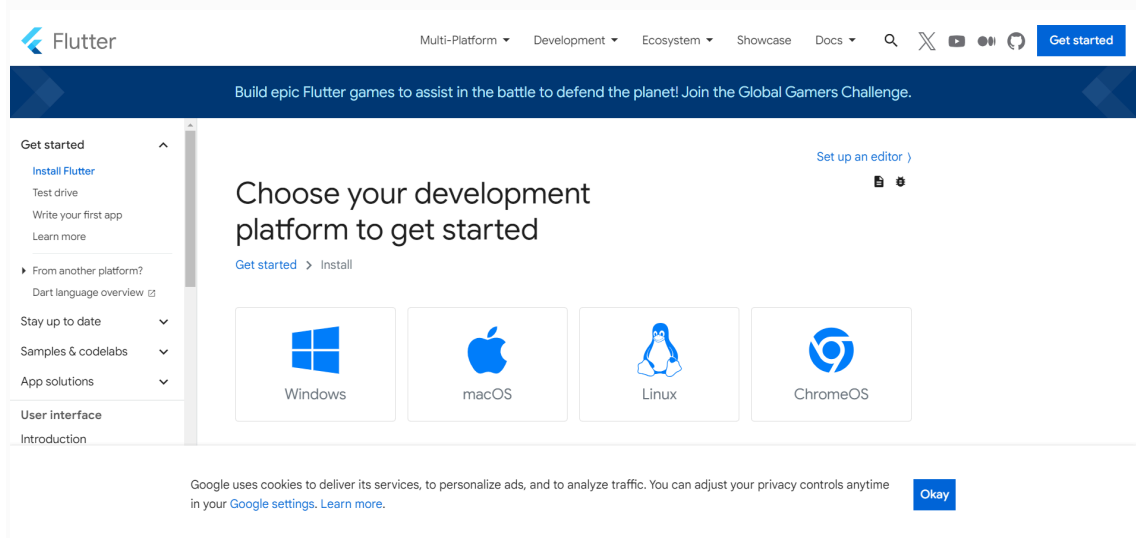
In Flutter, developers build UI layouts by using widgets. This means everything a user sees on a screen, from windows and panels to buttons and text, are made of widgets.

Flutter widgets are designed so developers can easily customize them. Flutter achieves this through a composition approach. This means most widgets are made up of smaller widgets, and the most basic widgets have specific purposes. This allows developers to combine or edit widgets to create new ones.

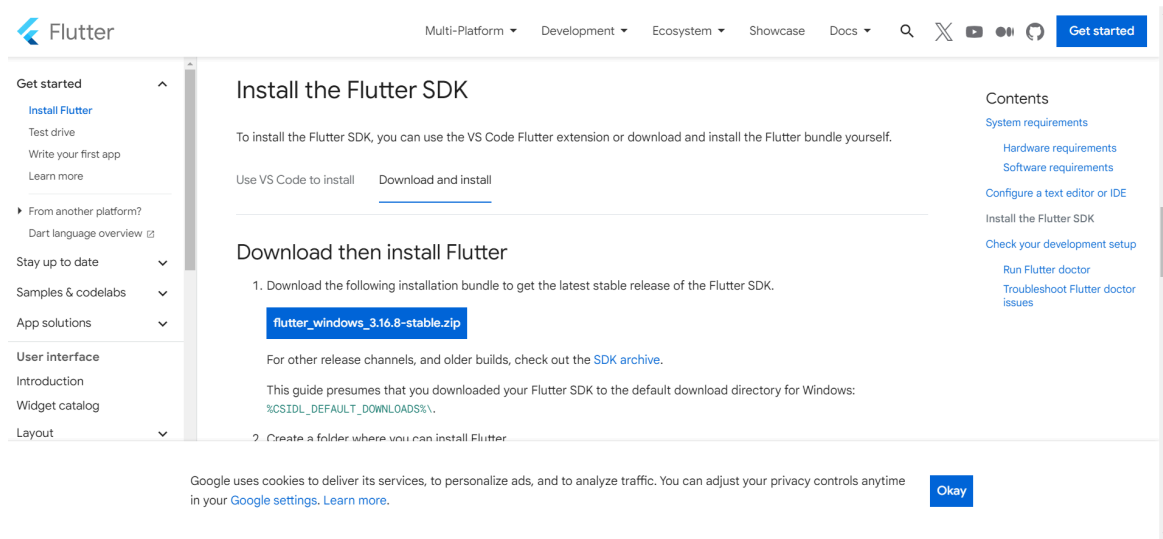
Flutter renders widgets using its own graphic engine instead of relying on a platform's built-in widgets. This way, users will experience a similar look and feel in a Flutter application across platforms. This approach also provides flexibility to developers, because some Flutter widgets can carry out functions that platform-specific widgets can't.

Flutter also makes it easy to use community-developed widgets. Flutter's architecture supports having multiple widget libraries, and Flutter encourages the community to build and maintain new ones.

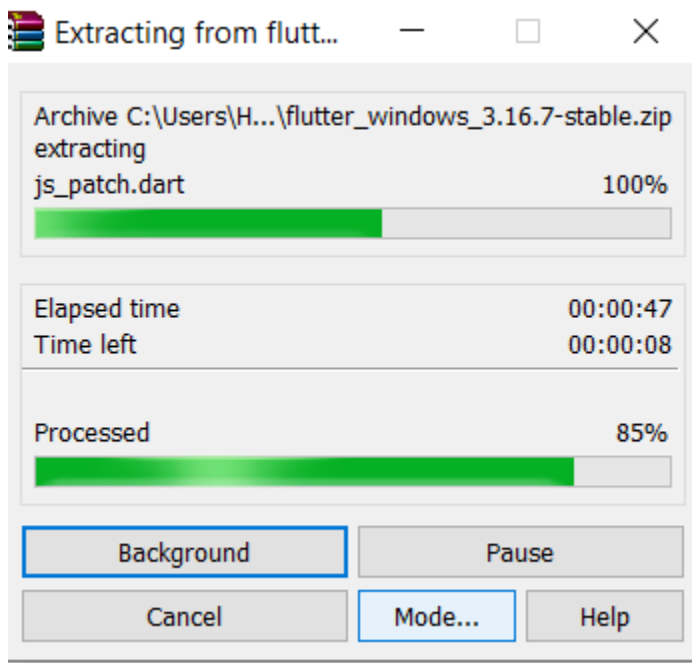
Installation:



1. Install the Flutter SDK

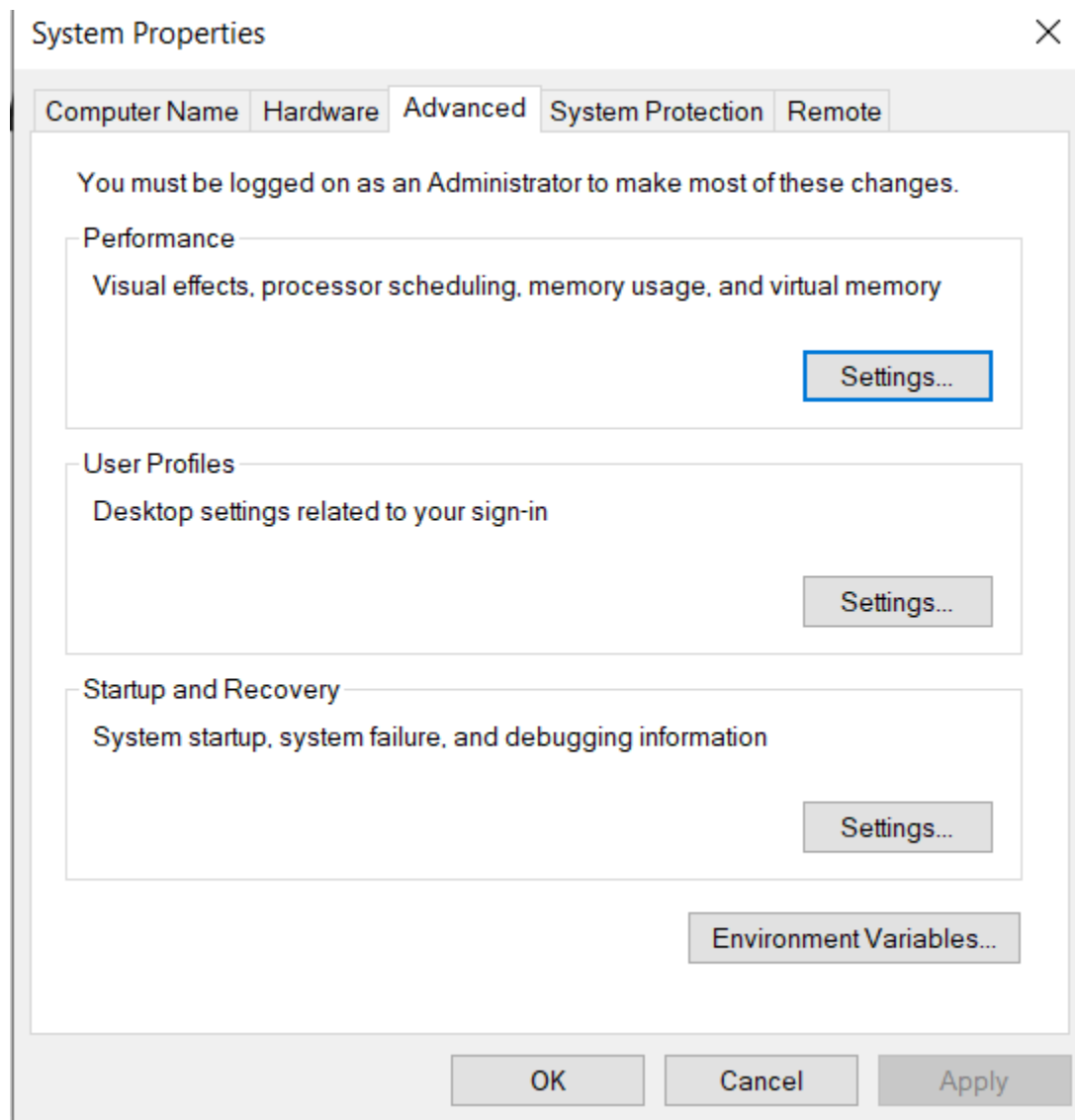


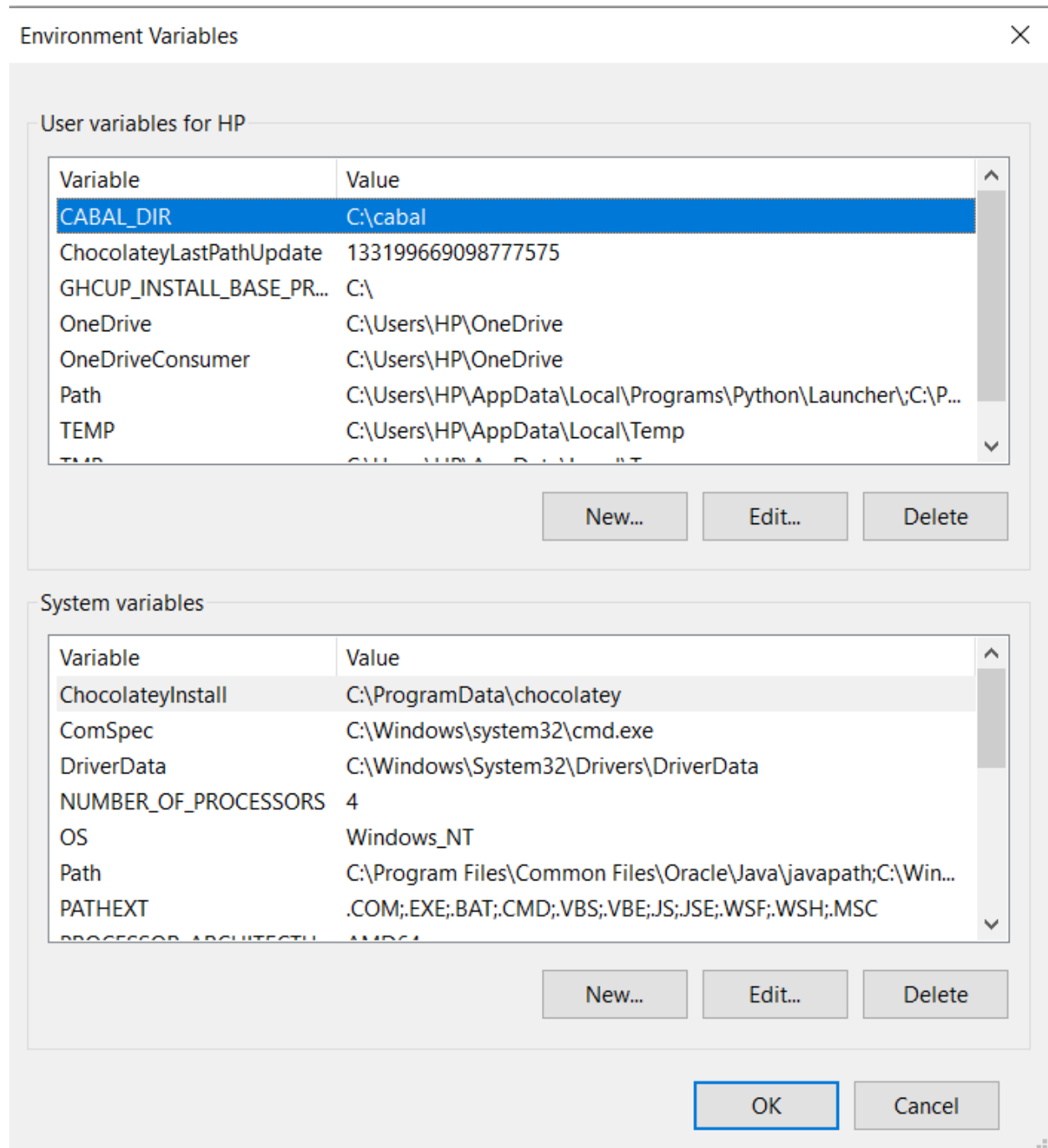
2. Extract the downloaded file



3. Edit the path in environment variable

Edit environment variables





4. Check whether flutter is installed properly

```
Command Prompt - flutter
Microsoft Windows [Version 10.0.19045.3930]
(c) Microsoft Corporation. All rights reserved.

C:\Users\HP>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]

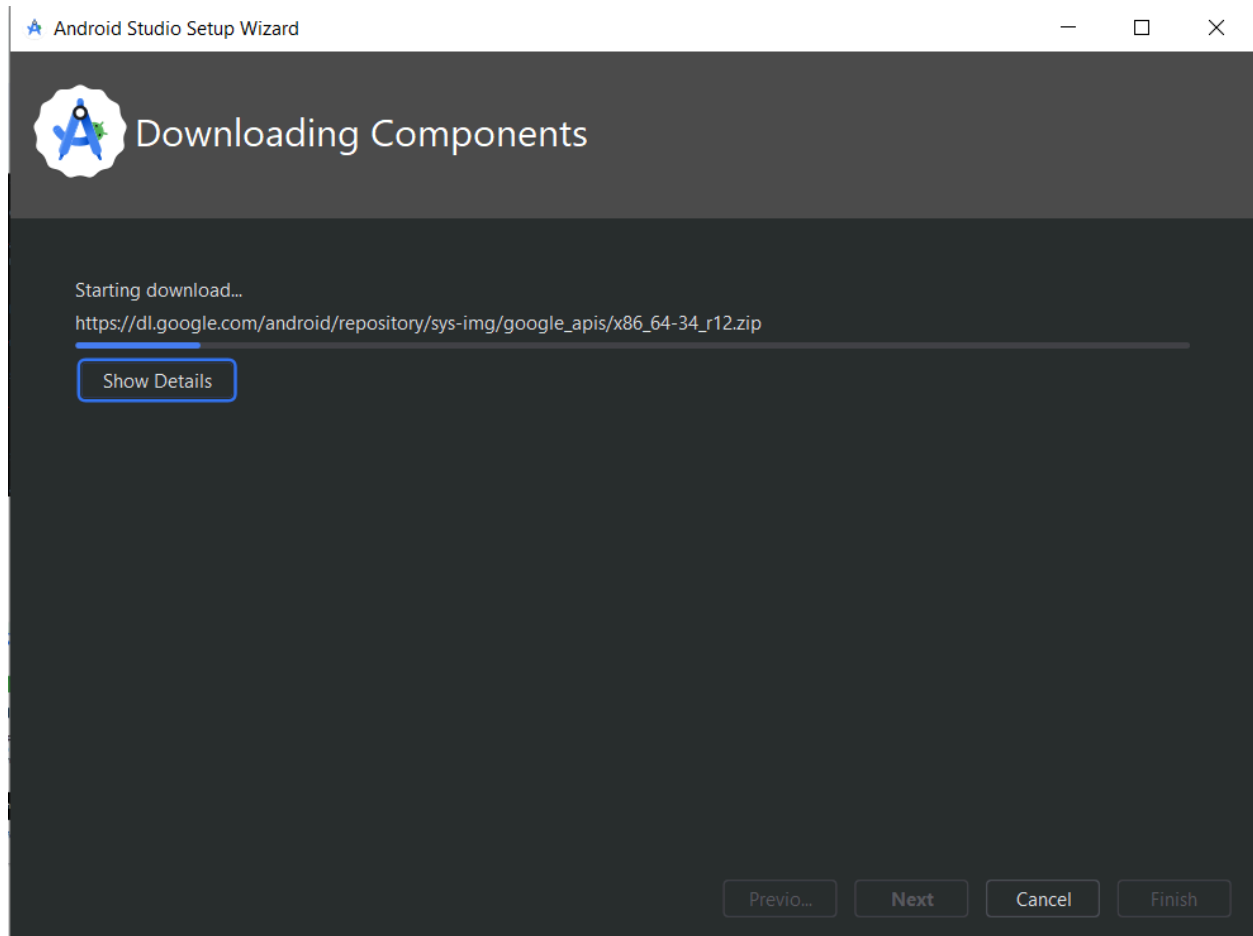
Global options:
-h, --help                Print this usage information.
-v, --verbose              Noisy logging, including all shell commands executed.
                           If used with "--help", shows hidden options. If used with "flutter doctor", shows additional
                           diagnostic 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.
```

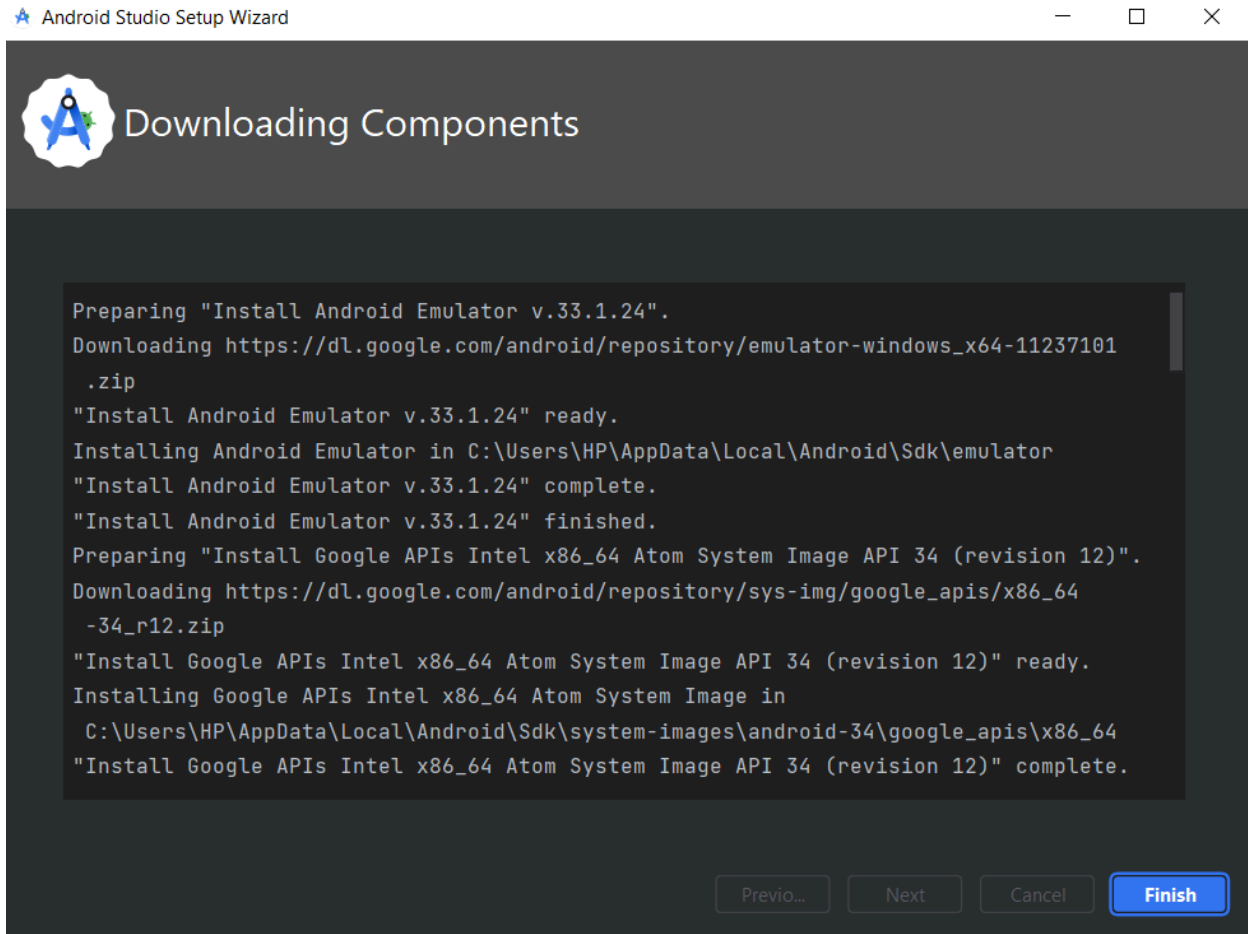
5. Download the SDK tools of android studio

Download sdk tools

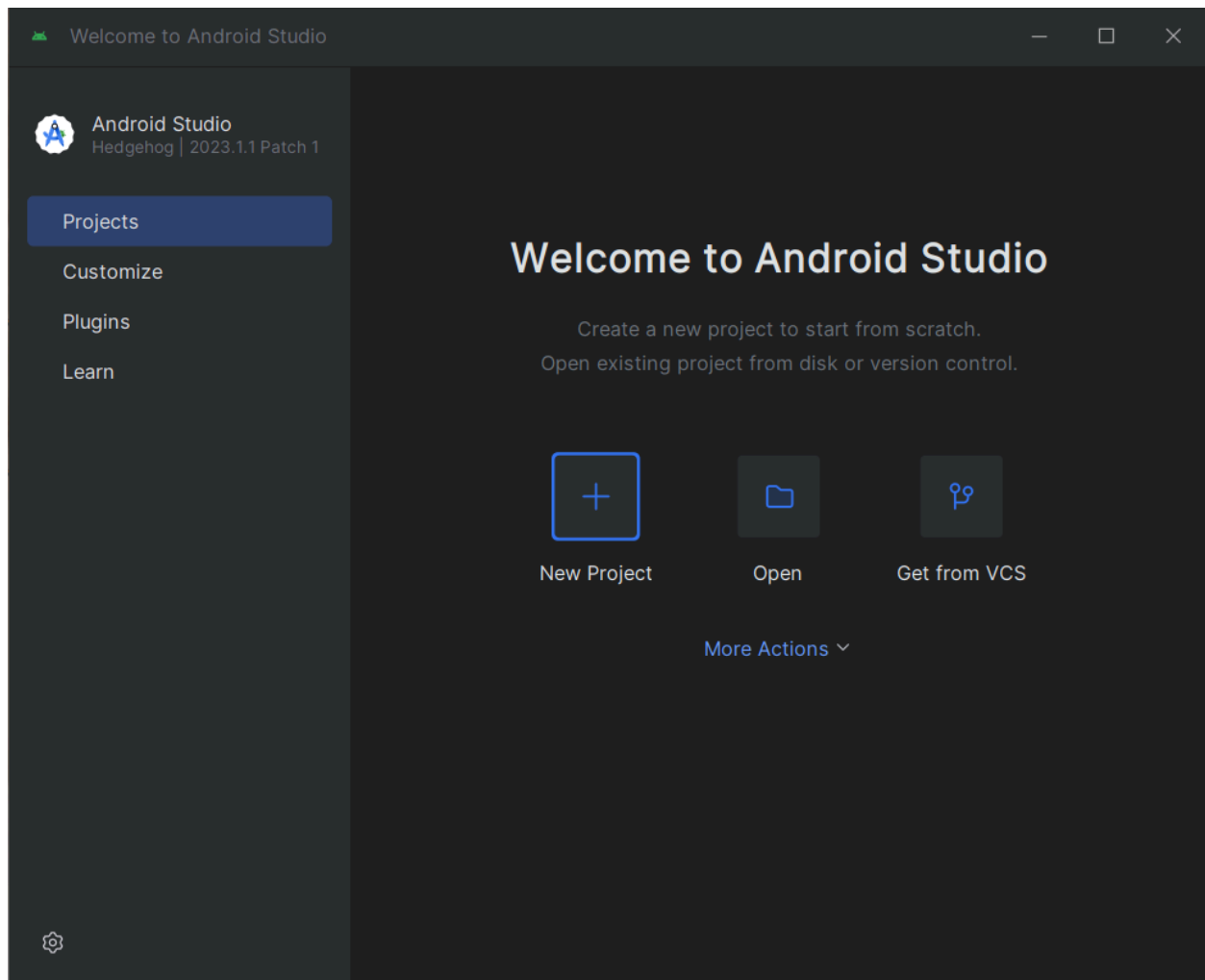
The screenshot shows the Android Developers website. The main navigation bar includes links for Developers, Essentials, Design & Plan, Develop, Google Play, and Community. A search bar and a language selector are also present. The page is divided into several sections:

- Modern Android:** A section on the left with a light blue background, featuring a lightbulb icon and text about bringing apps to life with less code using Kotlin. It includes a button to "Explore Modern Android" and a link to "Adopt Compose for teams".
- Get started:** A section with a pencil icon, providing links to "Hello world", "Training courses", "Tutorials", "Kotlin for Android", and "Monetization with Play".
- Extend by device:** A section with a smartphone icon, providing links to "Large screens (e.g. Tablets)", "Wear OS", "Android for Cars", "Android TV", and "ChromeOS".
- Build by category:** A section with a gear icon, providing links to "Games", "Media apps", "Health & Fitness", and "Enterprise apps".
- Get the latest:** A section with a star icon, providing links to "Platform releases", "Android Studio preview", "Jetpack & Compose libraries", "Wear OS preview", and "Privacy Sandbox".
- Downloads:** A section at the bottom with a dark background, providing information about downloading the latest SDK Platform-Tools from Android Studio's SDK Manager or from the sdkmanager command-line tool. It also includes a link to "Download SDK Platform-Tools for Windows".





5. Installation of android studio is complete



Conclusion : Hence we have understood and studied about the flutter app and installed it on our PCs along with android studio.