Aim: Installation and Configuration of Flutter Environment.

Theory:

Flutter is an open-source UI toolkit developed by Google that enables the development of applications for multiple platforms including Android, iOS, web, desktop, and embedded systems using a single codebase. It uses the Dart programming language and offers a rich set of pre-designed widgets for crafting beautiful and natively compiled applications.

Key Features of Flutter:

●   Single Codebase: Write once and run on multiple platforms.

●   Hot Reload: Instantly see changes during development.

●   Custom Widgets: Access to a wide collection of widgets and customization options.

●   High Performance: Compiles to ARM or x86 native libraries.

●   Open Source: Free to use and backed by an active community.

Requirements:

For Windows:

●   Windows 10 or later (64-bit)

●   1.64 GB of disk space (excluding IDE/tools)

●   Git for Windows

For macOS:

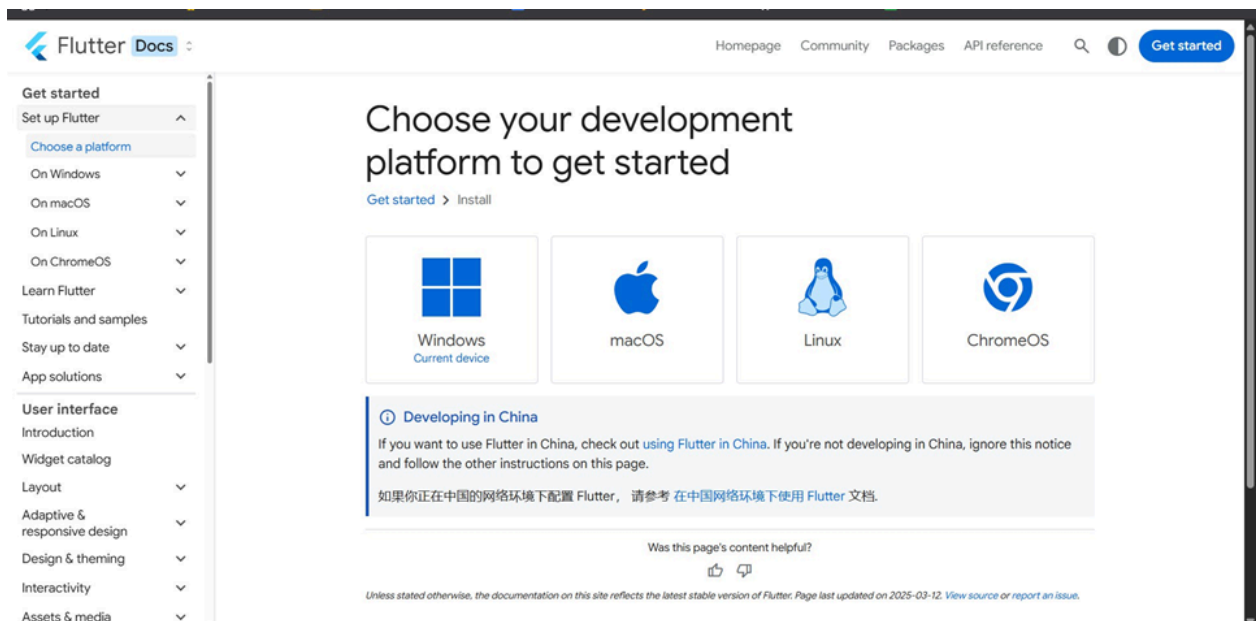●   macOS (Intel or Apple Silicon)

●   Xcode for iOS development

For Linux:

● 　Any recent Linux distribution with bash, curl, git, and unzip

Installation Steps:

Step 1: Download the Flutter SDK

● 　Navigate to the official Flutter website: https://flutter.dev

● 　Select your operating system and download the latest stable release.

● 　Extract the contents to a desired location (e.g., C:\flutter on Windows or

~/development/flutter on Linux/macOS).

Step 2: Set Up System Environment Variable

● 　Add the Flutter SDK's bin directory to your system PATH.

○ 　On Windows: Add C:\flutter\bin to Environment Variables.

○ 　On macOS/Linux: Add the line export PATH="$PATH:[PATH_TO_FLUTTER_DIRECTORY]/bin" to your shell configuration file (e.g., .bashrc, .zshrc).

Step 3: Verify Installation

Open the terminal or command prompt and run:

flutter doctor

```
Microsoft Windows [Version 10.0.26100.3775]
(c) Microsoft Corporation. All rights reserved.

C:\Users\saira>flutter doctor
Doctor summary (to see all details, run flutter doctor -v):
[√] Flutter (Channel stable, 3.27.3, on Microsoft Windows [Version 10.0.26100.3775], locale en-IN)
[√] Windows Version (Installed version of Windows is version 10 or higher)
[√] 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 17.12.4)
[√] Android Studio (version 2024.1)
[√] Android Studio (version 2024.2)
[√] VS Code (version 1.99.3)
[√] Connected device (3 available)
[√] Network resources

• No issues found!

C:\Users\saira>
```

This command checks your environment and displays a report of the Flutter installation along with required dependencies.

Step 4: Install a Code Editor or IDE You can use:

●   Android Studio (recommended for full-featured Flutter development)

●   Visual Studio Code (lightweight and fast)

Step 5: Install Flutter and Dart Plugins In Android Studio:

●   Open Settings > Plugins

●   Search and install the Flutter plugin

●   The Dart plugin will be prompted for installation automatically

In Visual Studio Code:

●   Open the Extensions tab

●   Search for and install both "Flutter" and "Dart"
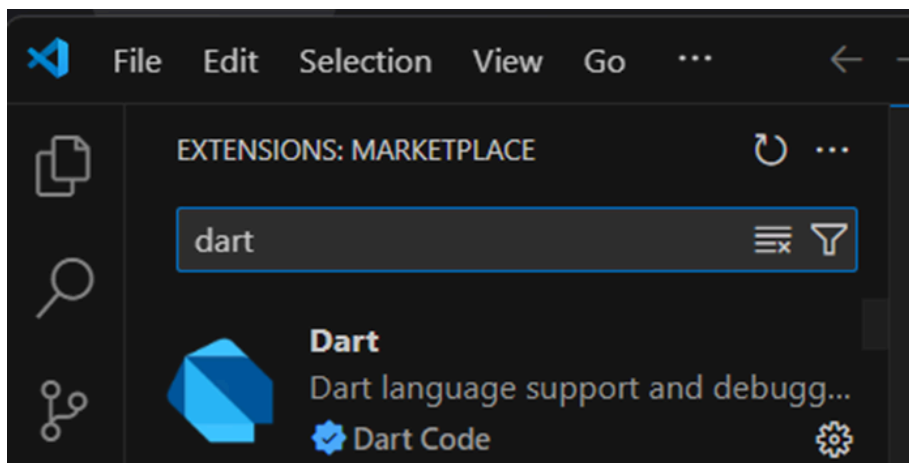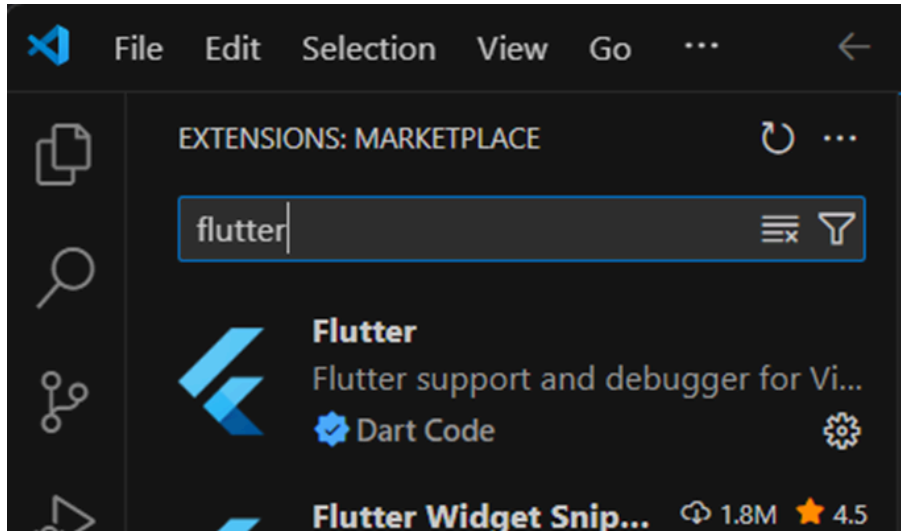
Step 6: Set Up an Android Emulator (Optional for Testing)

● Open Android Studio

● Go to AVD Manager and create a new virtual device

● Choose a hardware profile and system image

● Launch the emulator

Step 7: Create and Run a Sample Application

Use the following commands to create a basic Flutter project and run it: flutter create myapp

cd myapp flutter run

Make sure a simulator or physical device is connected and running.

Conclusion: The Flutter environment has been successfully installed and configured. Developers can now build and test cross-platform applications using a single codebase. The setup ensures a consistent development experience with native performance and modern UI capabilities.