EXPERIMENT NO 1

Aim: To install and configure flutter environment

Theory:

Flutter is an open-source UI framework developed by Google used to build cross-platform applications from a single codebase.
With Flutter, you can create apps for Android, iOS, Web, Windows, macOS, and Linux.

Flutter uses the Dart programming language and follows a widget-based architecture.

Key Features of Flutter

- Single codebase for multiple platforms
- Hot Reload (instant UI updates)
- Rich set of customizable widgets
- High-performance rendering using Skia
- Strong support from Google

Advantages of Flutter

1. Single Codebase
    - Write once, run on Android, iOS, Web, and Desktop.
2. Fast Development
    - Hot Reload allows instant UI updates, speeding up development.
3. High Performance
    - Compiles directly to native ARM code, close to native performance.
4. Rich UI & Customization
    - Built-in widgets provide attractive and consistent UI across platforms.
5. Open Source & Strong Community
    - Free to use, well-documented, and actively maintained.
6. Reduced Development Cost
    - One team and one codebase save time and money.

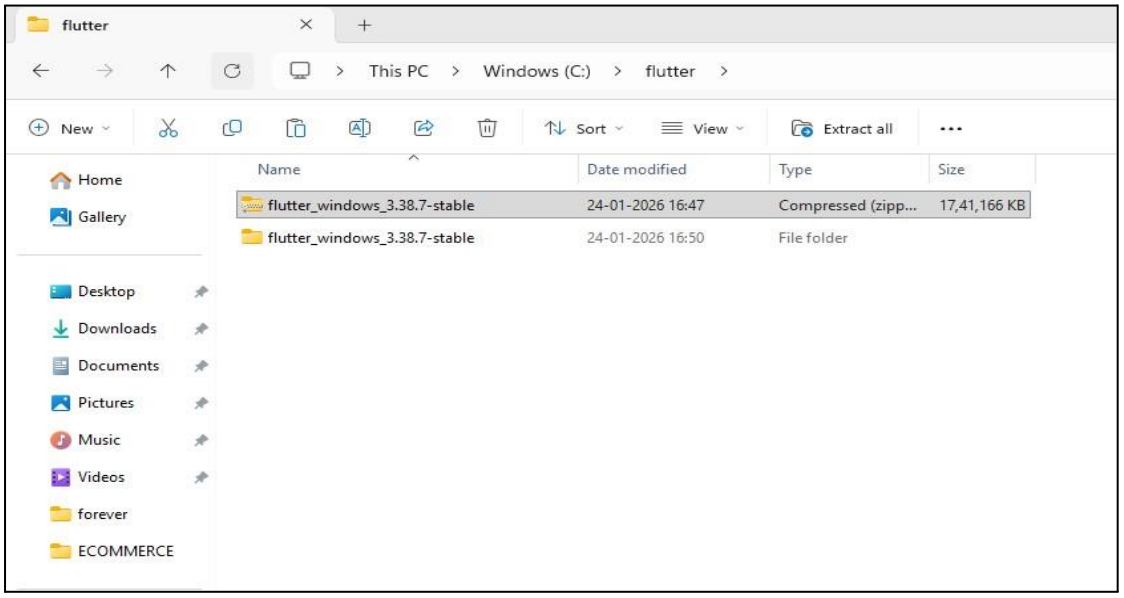
Disadvantages of Flutter

1. Large App Size
    - Flutter apps are generally larger than native apps.
2. Dart Language Learning Curve
    - Developers must learn Dart, which is less popular than JavaScript.
3. Limited Native Libraries
    - Some device-specific features may require platform-specific code.
4. Not Ideal for Heavy Native Apps
    - Complex native integrations can be challenging.
5. Relatively New Framework
    - Fewer third-party libraries compared to older frameworks.

Procedures:

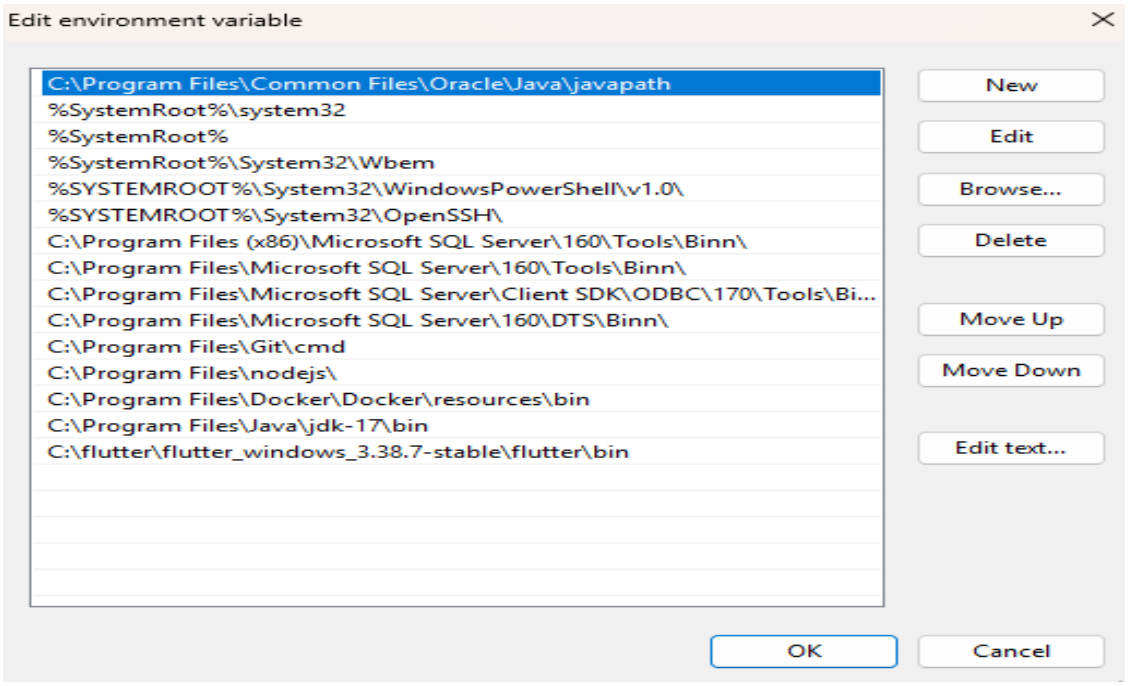
STEP 1: Download Flutter SDK

1. Open your browser
2. Go to flutter.dev
3. Click Get Started
4. Select Windows
5. Download the Flutter SDK (ZIP file)
6. Extract the downloaded ZIP file

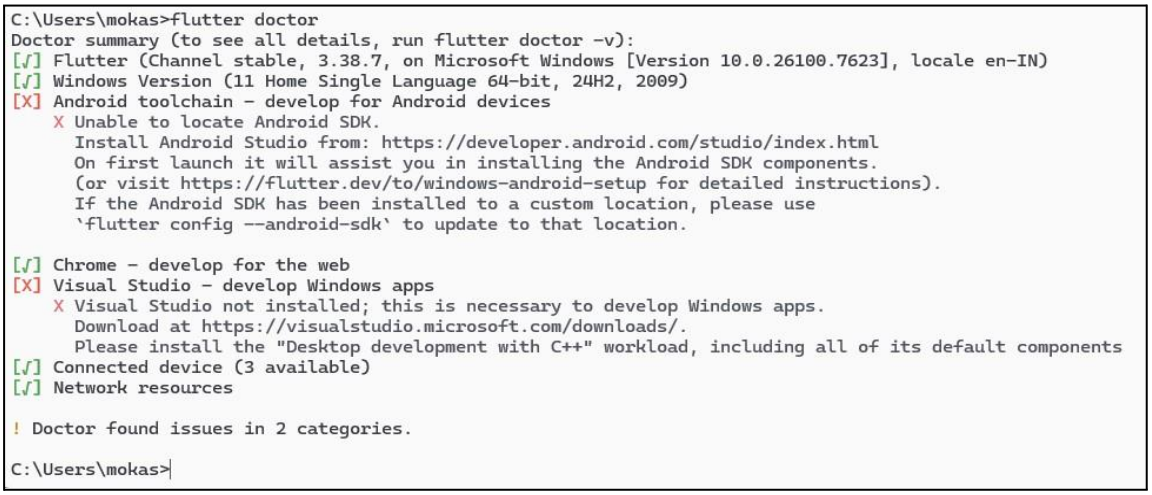


STEP 2: Set Flutter Path (Environment Variable)

1. Press Windows + S → search Environment Variables
2. Click Edit the system environment variables
3. Click Environment Variables
4. Under System Variables, select Path
5. Click Edit → New
6. Add:
7. C:\flutter\bin
8. Click OK → OK

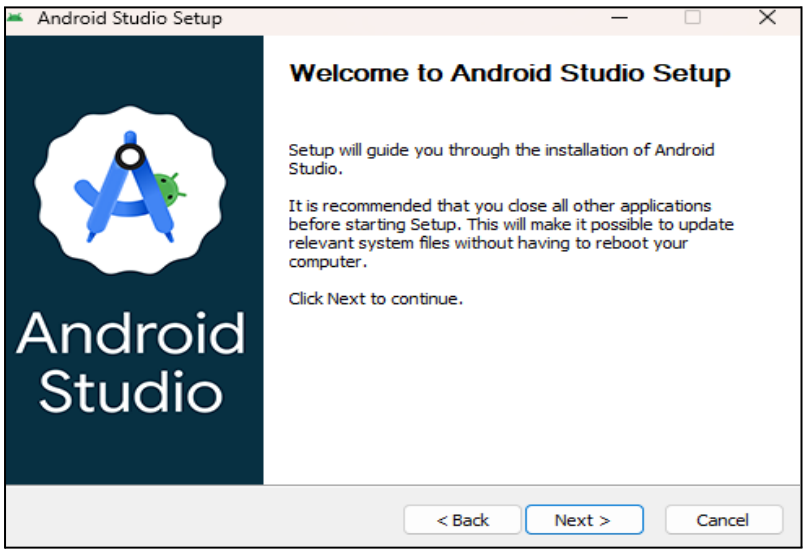


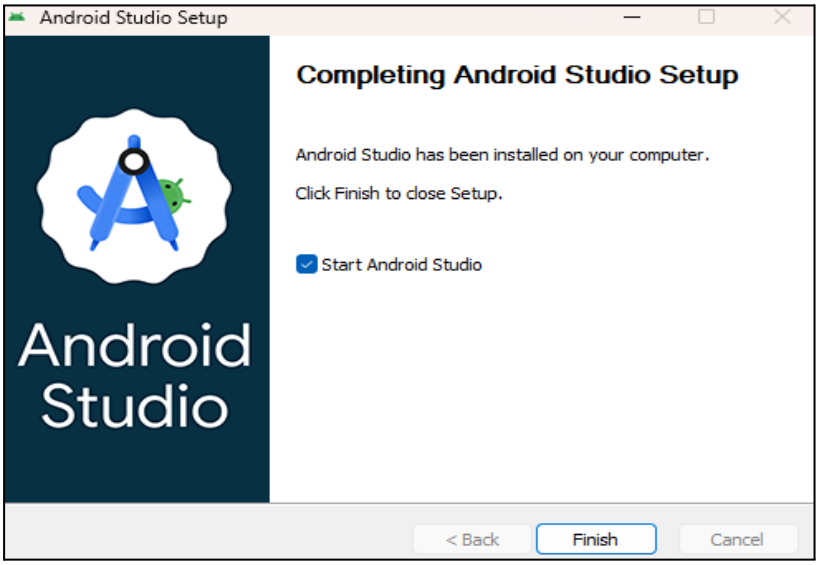
STEP 3: Verify Installation On command prompt



STEP 4: Install Android Studio

1. Download from developer.android.com/studio
2. Install Android Studio
3. During setup, select:
    - Android SDK
    - Android SDK Platform Tools
    - Android Virtual Device

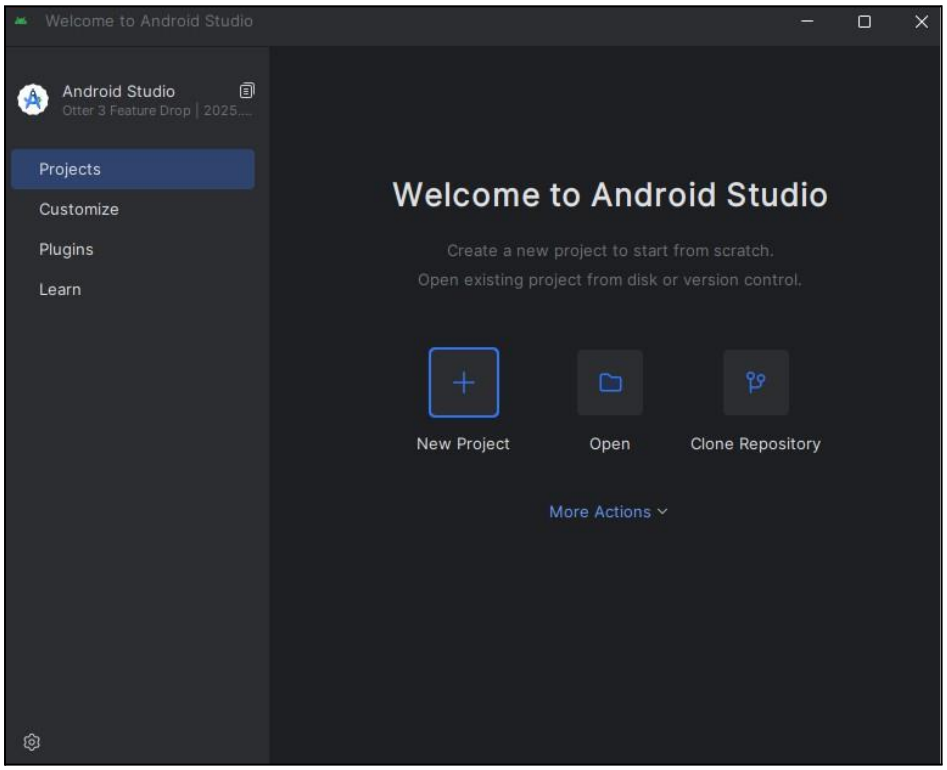




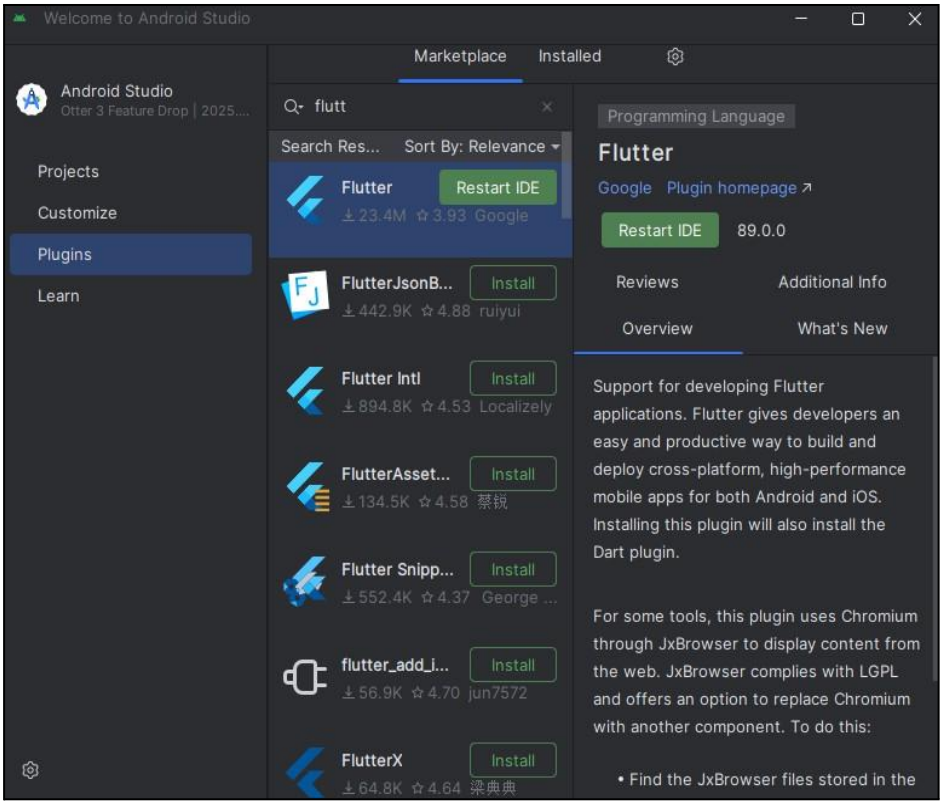
STEP 5: Set Up Android Emulator

1. Open Android Studio
2. Go to Device Manager

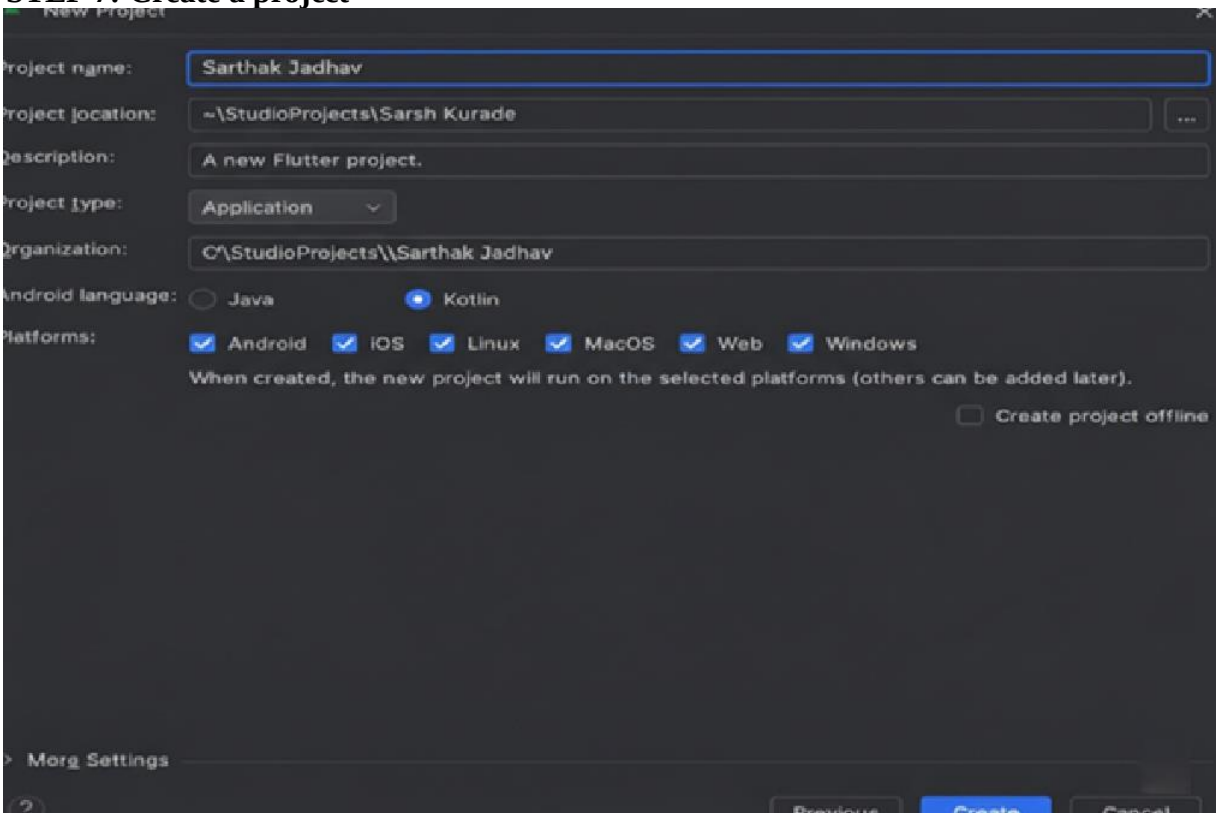
3. Create a Virtual Device
4. Start the emulator



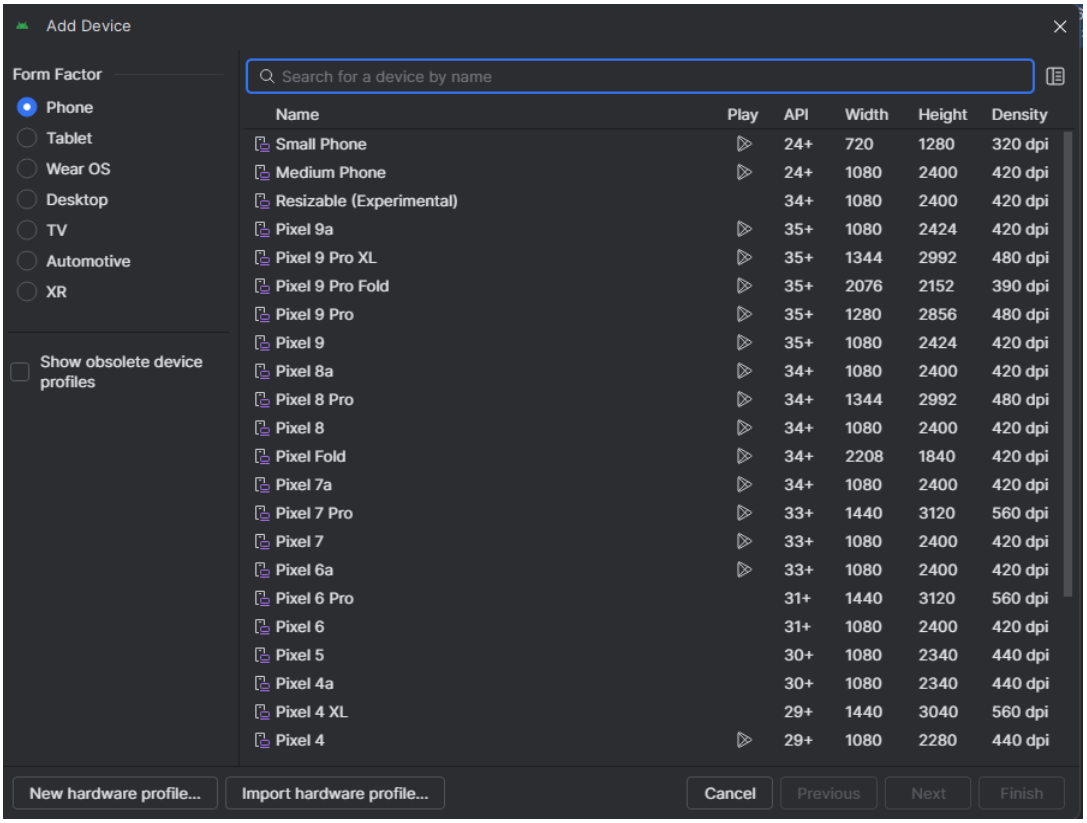
STEP 6: Plugins



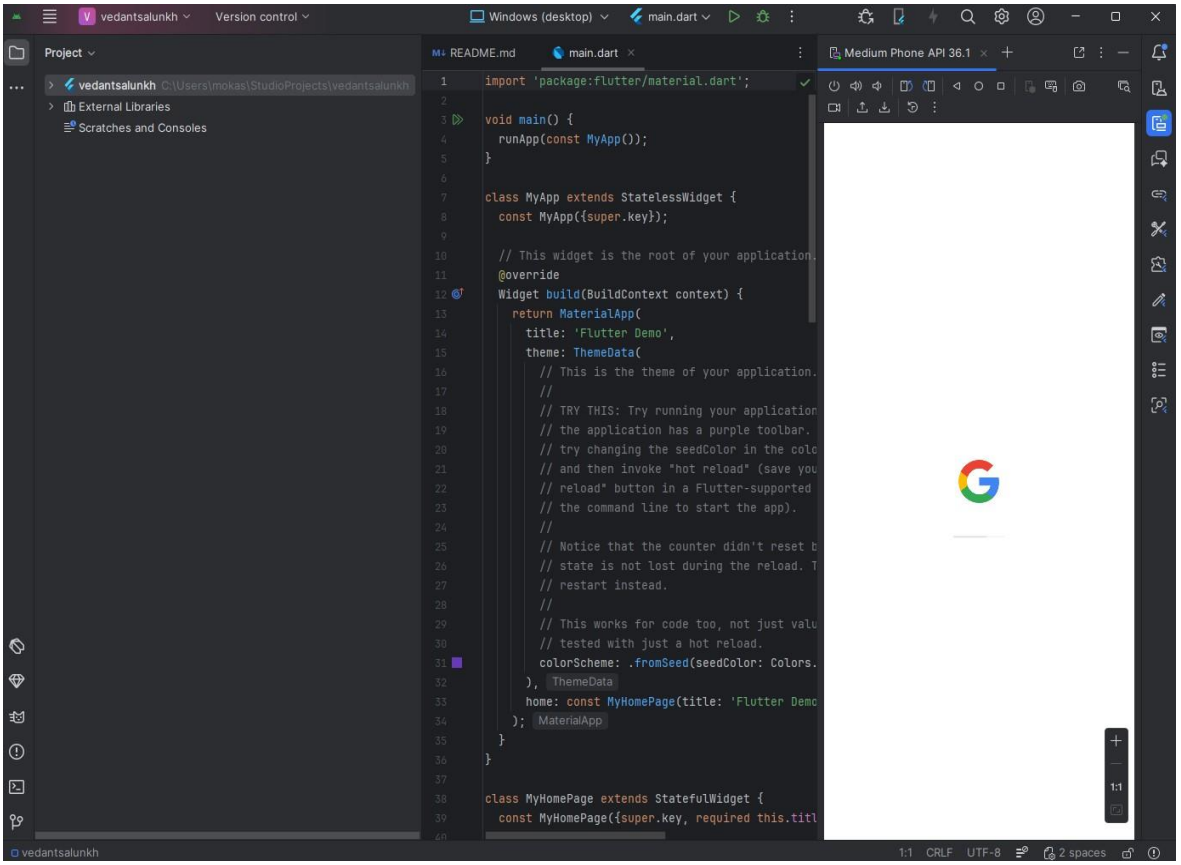
STEP 7: Create a project



STEP 8: Create a virtual device



STEP 9: Medium phone is downloaded



Conclusion:

Flutter is an open-source UI framework developed by Google for cross-platform app development. It allows developers to build high-performance applications using a single codebase. Flutter provides rich widgets and fast development through Hot Reload.
It supports Android, iOS, web, and desktop platforms.