Advanced Python Programming

Flutter Development

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Guide: Setting Up Visual Studio Code for Flutter Development

This document will guide you through installing and configuring Visual Studio Code (VS Code) to build, run, and debug your Flutter applications.

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1. Installation and Setup

Step 1: Install Visual Studio Code

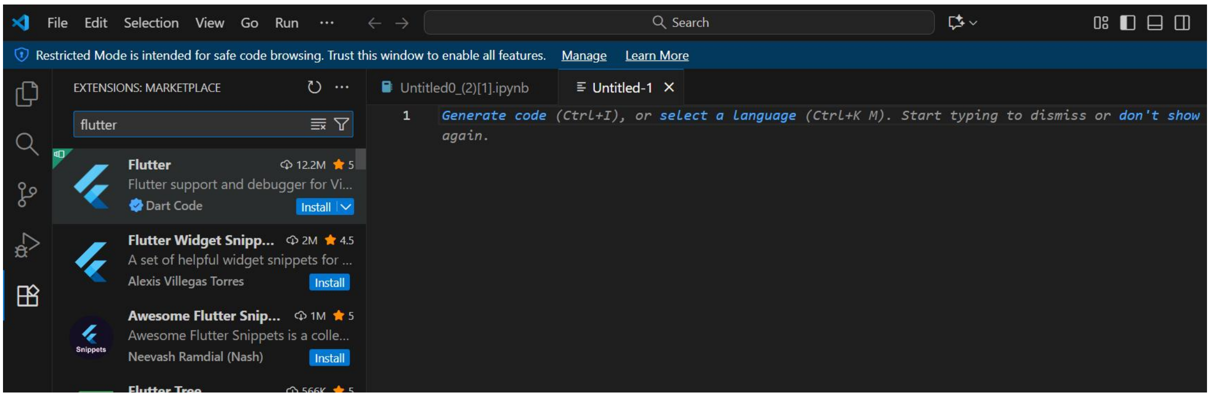
First, ensure you have the latest version of VS Code installed on your system. Follow the official instructions for your operating system:

- Install on macOS
- Install on Windows
- Install on Linux

Step 2: Install the Flutter Extension

The Flutter extension provides the necessary tools for Flutter development within VS Code, including syntax highlighting, code completion, and debugging support.

1. Launch **VS Code**.
2. Navigate to the **Extensions** view in the sidebar on the left.
3. Search for Flutter in the marketplace search bar.
4. Find the extension provided by **Dart Code** and click **Install**. This will also automatically install the required **Dart** extension.

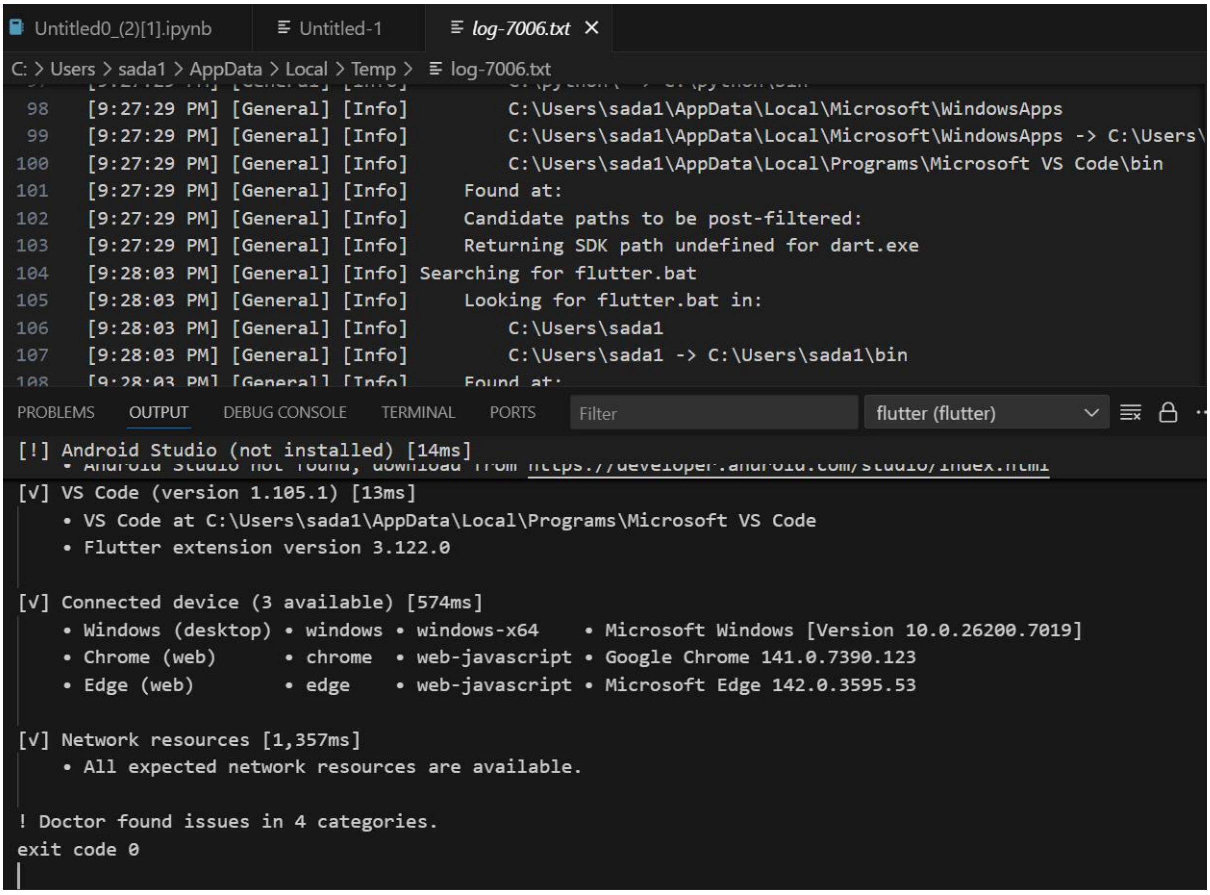

File Edit Selection View Go Run ···
Search
Restricted Mode is intended for safe code browsing. Trust this window to enable all features. Manage Learn More
EXTENSIONS: MARKETPLACE
flutter
Flutter 12.2M 5
Flutter support and debugger for Vi...
Dart Code
Install
Flutter Widget Snipp... 2M 4.5
A set of helpful widget snippets for ...
Alexis Villegas Torres
Install
Awesome Flutter Snip... 1M 5
Awesome Flutter Snippets is a colle...
Neevash Ramdial (Nash)
Install
Flutter Tree 566K 5
Untitled0_(2)[1].ipynb
Untitled-1

```
Generate code (Ctrl+I), or select a language (Ctrl+K M). Start typing to dismiss or don't show
again.
```

2. Validate Your Setup with Flutter Doctor

After installation, it's important to verify that everything is configured correctly.

1. Open the Command Palette by pressing Ctrl + Shift + P (or Cmd + Shift + P on macOS).
2. Type doctor into the palette.
3. Select the command **Flutter: Run Flutter Doctor**.
4. The **Output** panel will open and display the results. This will help you identify any missing dependencies or configuration issues.


Untitled0_(2)[1].ipynb
Untitled-1
log-7006.txt
C: > Users > sada1 > AppData > Local > Temp > log-7006.txt
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Filter
flutter (flutter)

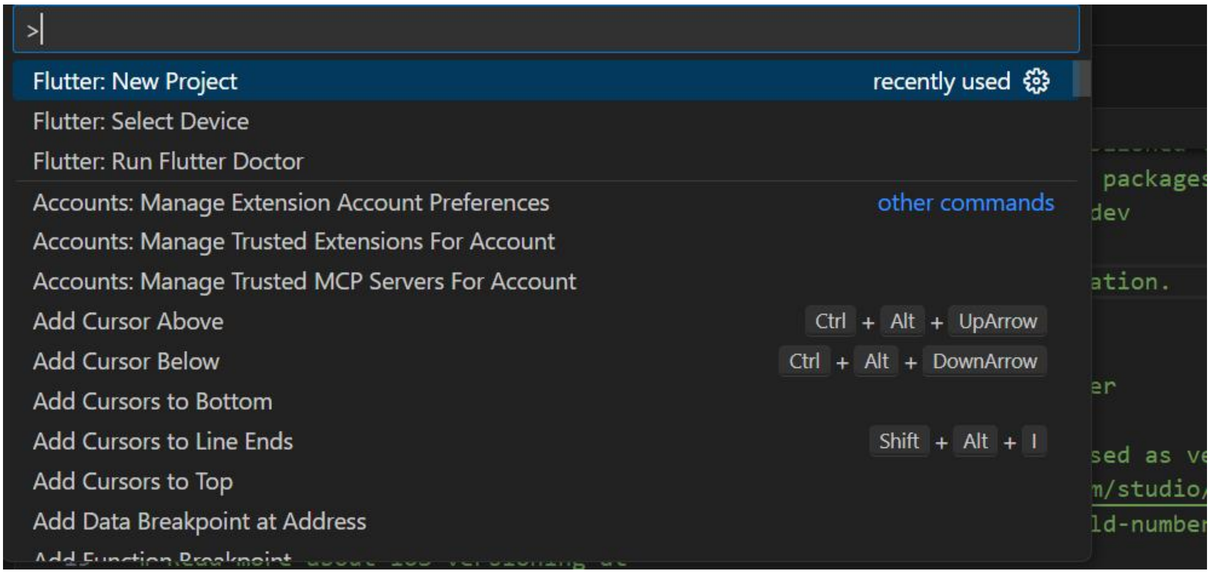
```
[9:27:29 PM] [General] [Info]           C:\Users\sada1\AppData\Local\Microsoft\WindowsApps
[9:27:29 PM] [General] [Info]           C:\Users\sada1\AppData\Local\Microsoft\WindowsApps -> C:\Users\
[9:27:29 PM] [General] [Info]           C:\Users\sada1\AppData\Local\Programs\Microsoft VS Code\bin
[9:27:29 PM] [General] [Info]       Found at:
[9:27:29 PM] [General] [Info]       Candidate paths to be post-filtered:
[9:27:29 PM] [General] [Info]       Returning SDK path undefined for dart.exe
[9:28:03 PM] [General] [Info] Searching for flutter.bat
[9:28:03 PM] [General] [Info]       Looking for flutter.bat in:
[9:28:03 PM] [General] [Info]           C:\Users\sada1
[9:28:03 PM] [General] [Info]           C:\Users\sada1 -> C:\Users\sada1\bin
[9:28:03 PM] [General] [Info]       Found at:
```

```
[!] Android Studio (not installed) [14ms]
    • Android Studio not found; download from https://developer.android.com/studio/index.html
[√] VS Code (version 1.105.1) [13ms]
    • VS Code at C:\Users\sada1\AppData\Local\Programs\Microsoft VS Code
    • Flutter extension version 3.122.0

[√] Connected device (3 available) [574ms]
    • Windows (desktop) • windows • windows-x64    • Microsoft Windows [Version 10.0.26200.7019]
    • Chrome (web)      • chrome  • web-javascript • Google Chrome 141.0.7390.123
    • Edge (web)        • edge    • web-javascript • Microsoft Edge 142.0.3595.53

[√] Network resources [1,357ms]
    • All expected network resources are available.

! Doctor found issues in 4 categories.
exit code 0
```

3. Creating or Opening a Flutter Project

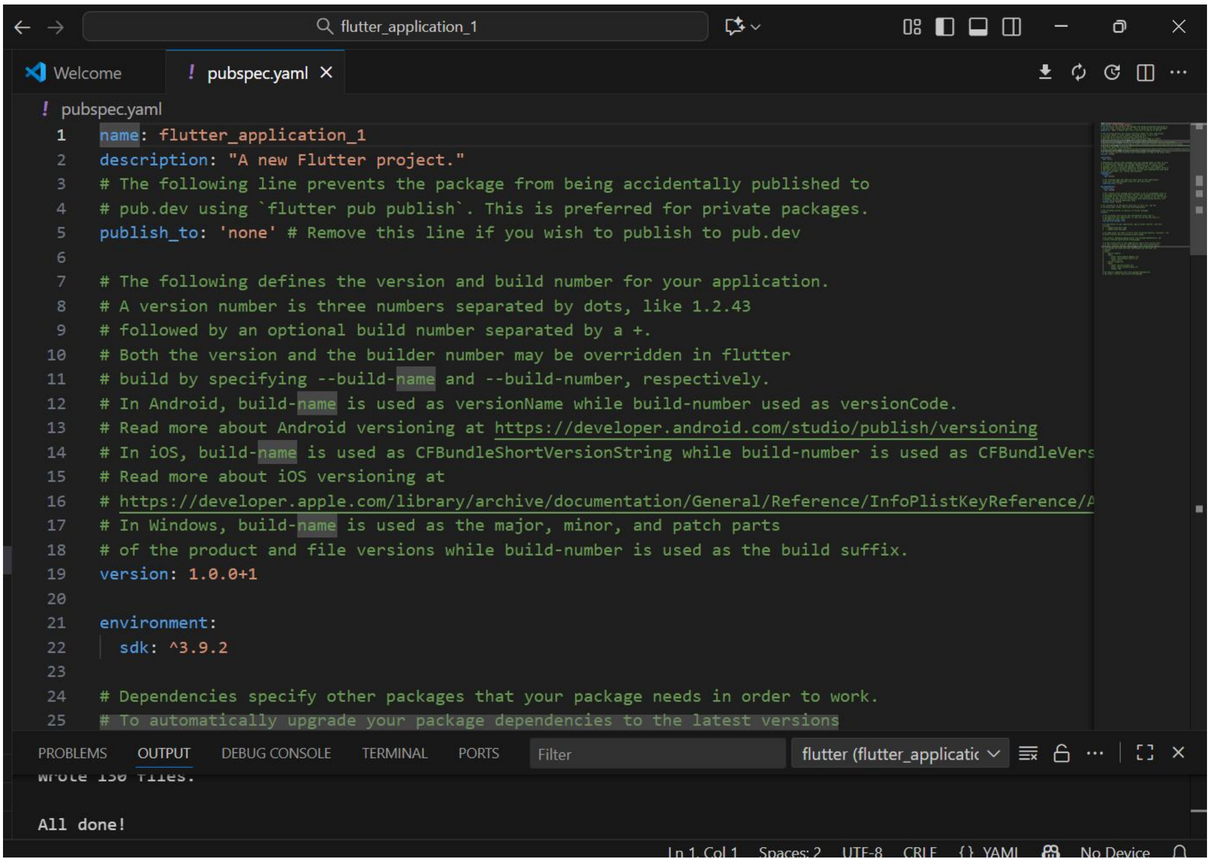
To Create a New Project:

1. Open the Command Palette (Ctrl/Cmd + Shift + P).
2. Type flutter and select **Flutter: New Project**.
3. Choose the **Application** template and press Enter.
4. Select a folder on your computer to save the project.
5. Enter a project name (e.g., my_first_app) and press Enter. VS Code will create the project and open it in a new window.



To Open an Existing Project:

1. Go to **File > Open...**.
2. Navigate to the main directory of your existing Flutter project (the folder containing the pubspec.yaml file).
3. Click **Open**.



```yaml
name: flutter_application_1
description: "A new Flutter project."
# The following line prevents the package from being accidentally published to
# pub.dev using `flutter pub publish`. This is preferred for private packages.
publish_to: 'none' # Remove this line if you wish to publish to pub.dev

# The following defines the version and build number for your application.
# A version number is three numbers separated by dots, like 1.2.43
# followed by an optional build number separated by a +.
# Both the version and the builder number may be overridden in flutter
# build by specifying --build-name and --build-number, respectively.
# In Android, build-name is used as versionName while build-number used as versionCode.
# Read more about Android versioning at https://developer.android.com/studio/publish/versioning
# In iOS, build-name is used as CFBundleShortVersionString while build-number is used as CFBundleVers
# Read more about iOS versioning at
# https://developer.apple.com/library/archive/documentation/General/Reference/InfoPlistKeyReference/A
# In Windows, build-name is used as the major, minor, and patch parts
# of the product and file versions while build-number is used as the build suffix.
version: 1.0.0+1

environment:
  sdk: ^3.9.2

# Dependencies specify other packages that your package needs in order to work.
# To automatically upgrade your package dependencies to the latest versions
```

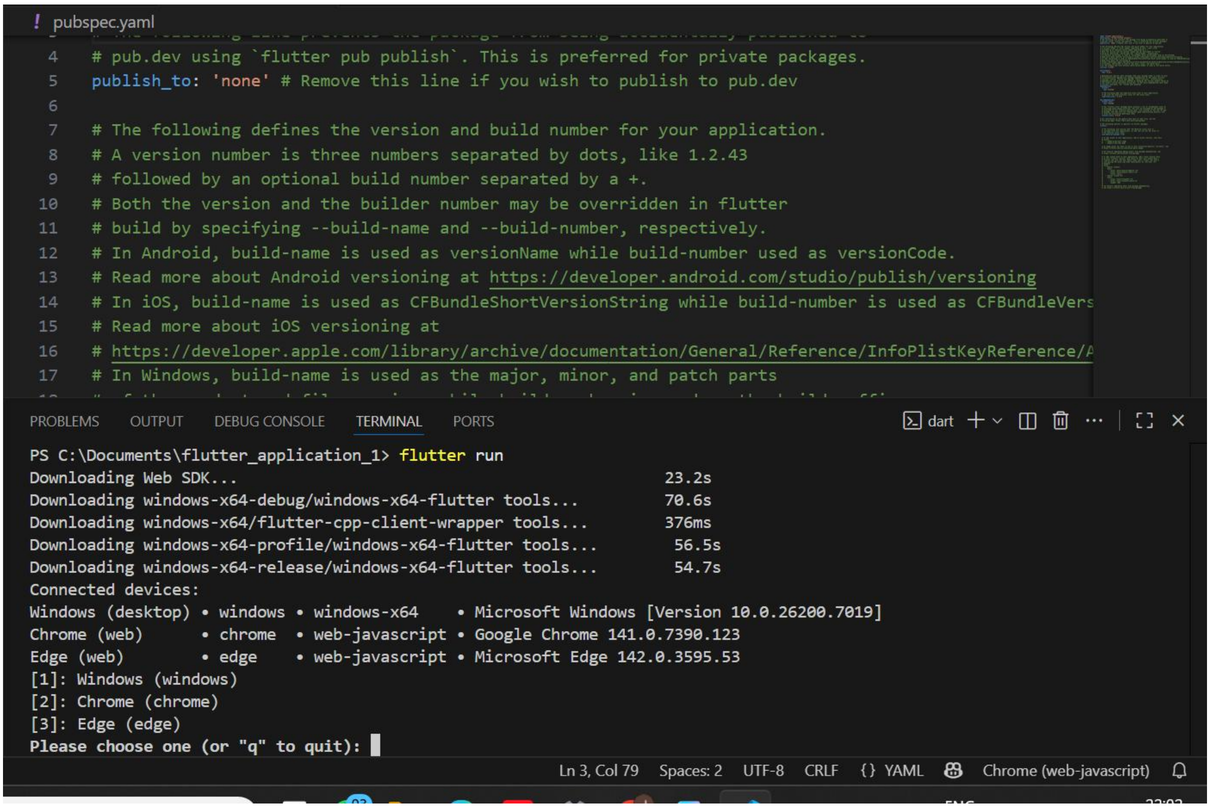
```
wrote 130 files.

All done!
```

4. Running and Debugging Your App

Step 1: Select a Target Device

Before running the app, you need to select a device.

1. Look at the status bar at the bottom right of the VS Code window.
2. If it says "No Devices," you need to either connect a physical device or start an emulator (Android) or simulator (iOS).
3. Once a device is available, its name will appear in the status bar. Click on the device name to switch between multiple connected devices.



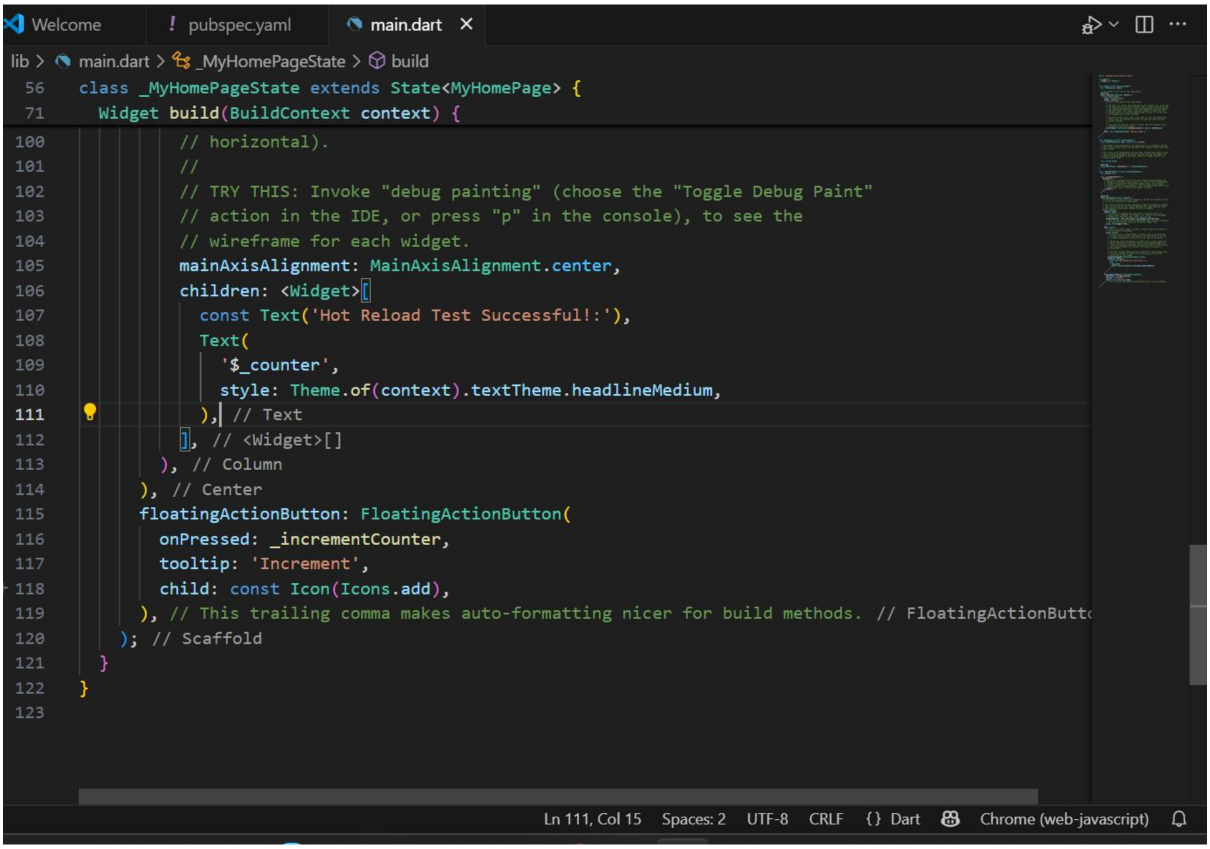
```yaml
# pub.dev using `flutter pub publish`. This is preferred for private packages.
publish_to: 'none' # Remove this line if you wish to publish to pub.dev

# The following defines the version and build number for your application.
# A version number is three numbers separated by dots, like 1.2.43
# followed by an optional build number separated by a +.
# Both the version and the builder number may be overridden in flutter
# build by specifying --build-name and --build-number, respectively.
# In Android, build-name is used as versionName while build-number used as versionCode.
# Read more about Android versioning at https://developer.android.com/studio/publish/versioning
# In iOS, build-name is used as CFBundleShortVersionString while build-number is used as CFBundleVers
# Read more about iOS versioning at
# https://developer.apple.com/library/archive/documentation/General/Reference/InfoPlistKeyReference/A
# In Windows, build-name is used as the major, minor, and patch parts
```

```
PS C:\Documents\flutter_application_1> flutter run
Downloading Web SDK...                                          23.2s
Downloading windows-x64-debug/windows-x64-flutter tools...      70.6s
Downloading windows-x64/flutter-cpp-client-wrapper tools...     376ms
Downloading windows-x64-profile/windows-x64-flutter tools...     56.5s
Downloading windows-x64-release/windows-x64-flutter tools...     54.7s
Connected devices:
Windows (desktop) • windows • windows-x64    • Microsoft Windows [Version 10.0.26200.7019]
Chrome (web)      • chrome  • web-javascript • Google Chrome 141.0.7390.123
Edge (web)        • edge    • web-javascript • Microsoft Edge 142.0.3595.53
[1]: Windows (windows)
[2]: Chrome (chrome)
[3]: Edge (edge)
Please choose one (or "q" to quit):
```

Step 2: Run the App

You have two primary options for running your application:

- **Run without Breakpoints (for faster startup):**
  - Go to **Run > Start Without Debugging**.
  - Or, press the shortcut Ctrl + F5.
- **Run with Breakpoints (for debugging):**
  - Set breakpoints by clicking in the gutter to the left of the line numbers in your code.
  - Go to **Run > Start Debugging**.
  - Or, press the shortcut F5.
  - The status bar will turn orange, and the **Debug Console** will show logs and output.



```
class _MyHomePageState extends State<MyHomePage> {
  Widget build(BuildContext context) {
          // horizontal).
          //
          // TRY THIS: Invoke "debug painting" (choose the "Toggle Debug Paint"
          // action in the IDE, or press "p" in the console), to see the
          // wireframe for each widget.
          mainAxisAlignment: MainAxisAlignment.center,
          children: <Widget>[
            const Text('Hot Reload Test Successful!:'),
            Text(
              '$_counter',
              style: Theme.of(context).textTheme.headlineMedium,
            ), // Text
          ], // <Widget>[]
        ), // Column
      ), // Center
      floatingActionButton: FloatingActionButton(
        onPressed: _incrementCounter,
        tooltip: 'Increment',
        child: const Icon(Icons.add),
      ), // This trailing comma makes auto-formatting nicer for build methods. // FloatingActionButt
    ); // Scaffold
  }
}
```

5. Key Development Features

Hot Reload and Hot Restart

Flutter's hot reload feature allows you to see your code changes almost instantly without losing the app's state.

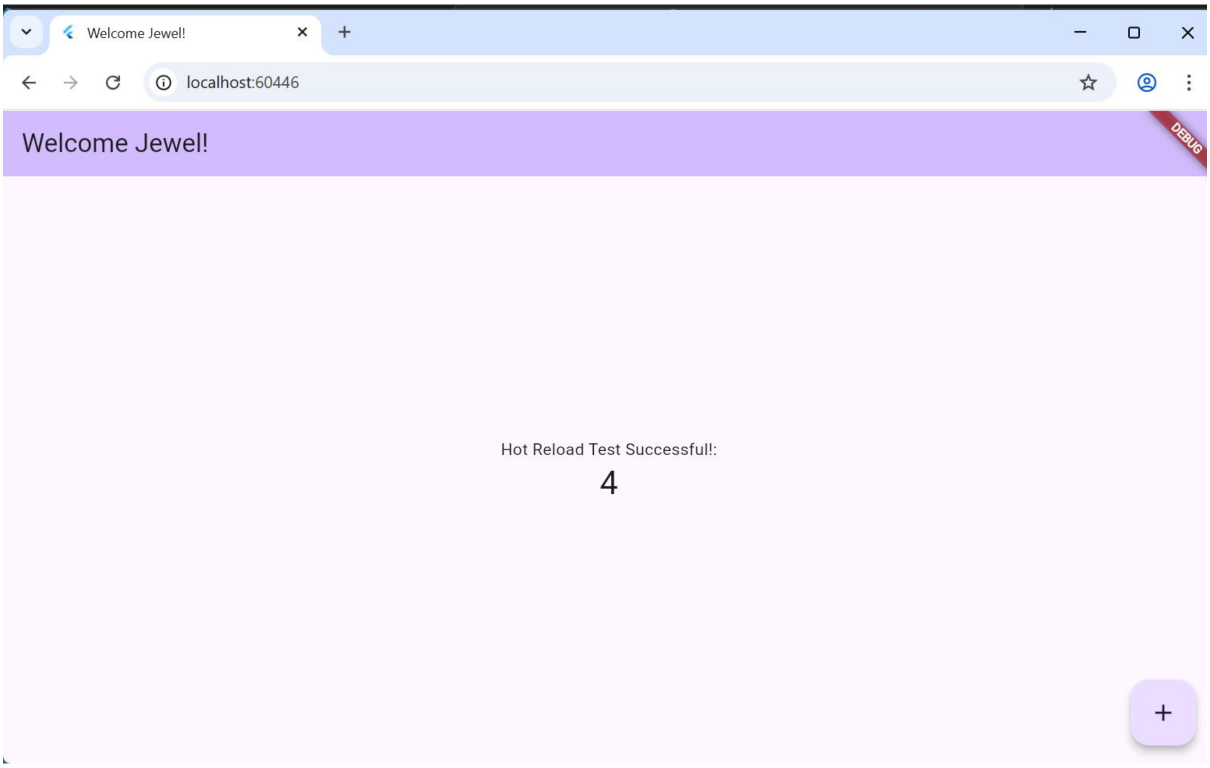
- **Hot Reload:** Injects code changes into the running app.
  - **Shortcut:** Ctrl + F5 (or Cmd + F5 on macOS).
  - **Button:** Click the lightning bolt icon (**Hot Reload**) on the Debug Toolbar.
- **Hot Restart:** Reloads the entire app state. Use this for changes that cannot be hot reloaded, like modifications to the main() method.
  - **Shortcut:** Ctrl + Shift + F5 (or Cmd + Shift + F5 on macOS).
  - **Command Palette:** Run **Flutter: Hot Restart**.

Code Assists and Snippets

VS Code provides tools to help you write code faster.

- **Assists & Quick Fixes:** When you see a yellow lightbulb icon, click it (or press Ctrl + .) for contextual actions, such as:

    - Wrapping a widget with another widget (e.g., Column, Row, Padding).
    - Converting a StatelessWidget to a StatefulWidget.
- **Snippets:** Type a prefix to quickly generate boilerplate code. Common snippets include:
    - stless: Creates a StatelessWidget.
    - stful: Creates a StatefulWidget.
    - stanim: Creates a StatefulWidget with an AnimationController.



Welcome Jewel!

Hot Reload Test Successful!:

4

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6. Troubleshooting

If you encounter issues, check the official issue tracker to see if the problem is already known or to file a new issue.

- **GitHub Issue Tracker:** Dart and Flutter extensions issues

When reporting a new issue, always include the output from flutter doctor.