

Get started

Samples & tutorials

Development

- ▶ [User interface](#)
- ▶ [Data & backend](#)
- ▶ [Accessibility & internationalization](#)
- ▶ [Platform integration](#)
- ▶ [Packages & plugins](#)
- ▶ [Add Flutter to existing app](#)
- ▼ [Tools & techniques](#)
 - [Android Studio & IntelliJ](#)
 - [Visual Studio Code](#)
 - ▶ [DevTools](#)
 - ▶ [Flutter SDK](#)
 - [Hot reload](#)
 - [Code formatting](#)
 - ▶ [Migration notes](#)

Testing & debugging

Performance & optimization

Deployment

Resources

Reference

- [Widget index](#)
- [API reference](#)
- [Package site](#)

Android Studio and IntelliJ

[Docs](#) > [Development](#) > [Tools](#) > [Android Studio and IntelliJ](#)

Contents

- [Installation and setup](#)
 - [Updating the plugins](#)
- [Creating projects](#)
 - [Creating a new project](#)
 - [Creating a new project from existing source code](#)
- [Editing code and viewing issues](#)
- [Running and debugging](#)
 - [Selecting a target](#)
 - [Run app without breakpoints](#)
 - [Run app with breakpoints](#)
- [Fast edit and refresh development cycle](#)
 - [Show performance data](#)
- [Editing tips for Flutter code](#)
 - [Assists & quick fixes](#)
 - [Wrap with new widget assist](#)
 - [Wrap widget list with new widget assist](#)
 - [Convert child to children assist](#)
 - [Live templates](#)
 - [Keyboard shortcuts](#)
 - [Hot reload vs. hot restart](#)
- [Editing Android code in Android Studio with full IDE support](#)
- [Editing Android code in IntelliJ IDEA](#)
- [Tips and tricks](#)
- [Troubleshooting](#)
 - [Known issues and feedback](#)

[Android Studio and IntelliJ](#) [Visual Studio Code](#)

🔗 Installation and setup

Follow the [Set up an editor](#) instructions to install the Dart and Flutter plugins.

Updating the plugins

Updates to the plugins are shipped on a regular basis. You should be prompted in the IDE when an update is available.

To check for updates manually:

1. Open preferences (**Android Studio > Check for Updates** on macOS, **Help > Check for Updates** on Linux).
2. If `dart` or `flutter` are listed, update them.

Creating projects

You can create a new project in one of several ways.

Creating a new project

To create a new Flutter project from the Flutter starter app template:

1. In the IDE, click **Create New Project** from the **Welcome** window or **File > New > Project** from the main IDE window.
2. Select **Flutter** in the menu, and click **Next**.
3. Enter your desired **Project name** and **Project location**.
4. If you might publish this app, [set the company domain](#).
5. Click **Finish**.

Setting the company domain

[Get started](#)

[Samples & tutorials](#)

[Development](#)

► [User interface](#)

► [Data & backend](#)

► [Accessibility & internationalization](#)

► [Platform integration](#)

► [Packages & plugins](#)

► [Add Flutter to existing app](#)

▼ [Tools & techniques](#)

[Android Studio & IntelliJ](#)

[Visual Studio Code](#)

► [DevTools](#)

► [Flutter SDK](#)

[Hot reload](#)

[Code formatting](#)

► [Migration notes](#)

[Testing & debugging](#)

[Performance & optimization](#)

[Deployment](#)

[Resources](#)

[Reference](#)

[Widget index](#)

[API reference](#)

[Package site](#)

When creating a new app, some Flutter IDE plugins ask for an organization name in reverse domain order, something like `com.example`. Along with the name of the app, this is used as the package name for Android, and the Bundle ID for iOS when the app is released. If you think you might ever release this app, it is better to specify these now. They cannot be changed once the app is released. Your organization name should be unique.

Creating a new project from existing source code

To create a new Flutter project containing existing Flutter source code files:

1. In the IDE, click **Create New Project** from the **Welcome** window or **File > New > Project** from the main IDE window.

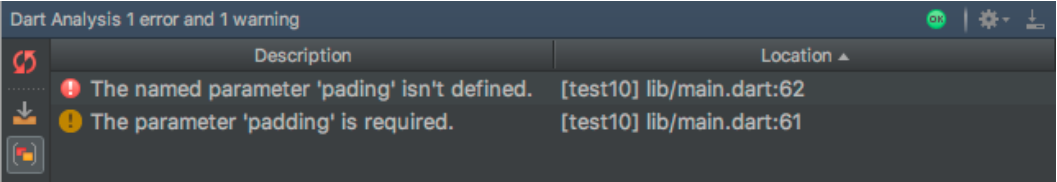
! Important: Do *not* use the **New > Project from existing sources** option for Flutter projects.

2. Select **Flutter** in the menu, and click **Next**.
3. Under **Project location** enter, or browse to, the directory holding your existing Flutter source code files.
4. Click **Finish**.

Editing code and viewing issues

The Flutter plugin performs code analysis that enables the following:

- Syntax highlighting.
- Code completions based on rich type analysis.
- Navigating to type declarations (**Navigate > Declaration**), and finding type usages (**Edit > Find > Find Usages**).
- Viewing all current source code problems (**View > Tool Windows > Dart Analysis**). Any analysis issues are shown in the Dart Analysis pane:



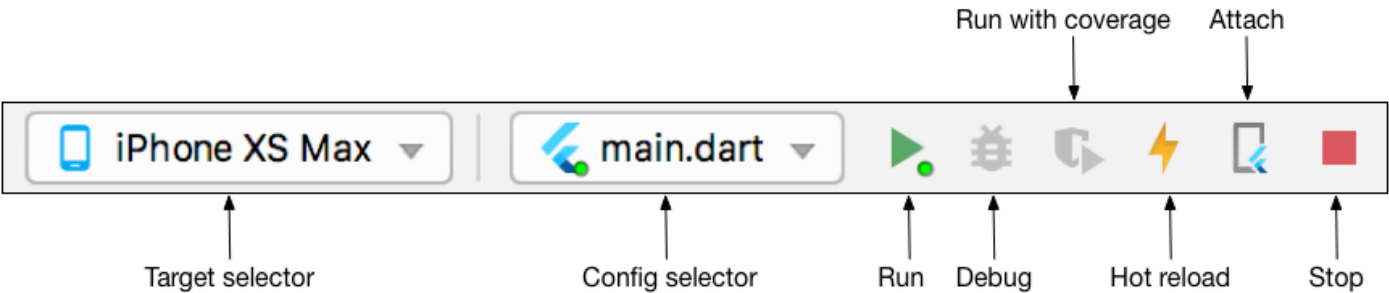
Running and debugging

Note: You can debug your app in a few ways.

- Using [DevTools](#), a suite of debugging and profiling tools that run in a browser *and include the Flutter inspector*. DevTools replaces the previous browser-based profiling tool, Observatory.
- Using Android Studio's (or IntelliJ's) built-in debugging features, such as the ability to set breakpoints.
- Using the Flutter inspector, directly available in Android Studio and IntelliJ.

The instructions below describe features available in Android Studio and IntelliJ. For information on launching DevTools, see [Running DevTools from Android Studio](#) in the [DevTools](#) docs.

Running and debugging are controlled from the main toolbar:



Selecting a target

When a Flutter project is open in the IDE, you should see a set of Flutter-specific buttons on the right-hand side of the toolbar.

Note: If the Run and Debug buttons are disabled, and no targets are listed, Flutter has not been able to discover any connected iOS or Android devices or simulators. You need to connect a device, or start a simulator, to proceed.

1. Locate the **Flutter Target Selector** drop-down button. This shows a list of available targets.
2. Select the target you want your app to be started on. When you connect devices, or start simulators, additional entries appear.

Note: If you want to try running your app on the web, but the **Chrome (web)** target doesn't appear in the list of targets, make sure you've enabled web, as described in [Building a web application](#).

[Get started](#)

[Samples & tutorials](#)

[Development](#)

▶ [User interface](#)

▶ [Data & backend](#)

▶ [Accessibility & internationalization](#)

▶ [Platform integration](#)

▶ [Packages & plugins](#)

▶ [Add Flutter to existing app](#)

▼ [Tools & techniques](#)

[Android Studio & IntelliJ](#)

[Visual Studio Code](#)

▶ [DevTools](#)

▶ [Flutter SDK](#)

[Hot reload](#)

[Code formatting](#)

▶ [Migration notes](#)

[Testing & debugging](#)

[Performance & optimization](#)

[Deployment](#)

[Resources](#)

[Reference](#)

[Widget index](#)

[API reference](#)

[Package site](#)

Run app without breakpoints

1. Click the **Play icon** in the toolbar, or invoke **Run > Run**. The bottom **Run** pane shows logs output.

Run app with breakpoints

1. If desired, set breakpoints in your source code.
2. Click the **Debug icon** in the toolbar, or invoke **Run > Debug**.
 - The bottom **Debugger** pane shows Stack Frames and Variables.
 - The bottom **Console** pane shows detailed logs output.
 - Debugging is based on a default launch configuration. To customize this, click the drop-down button to the right of the device selector, and select **Edit configuration**.

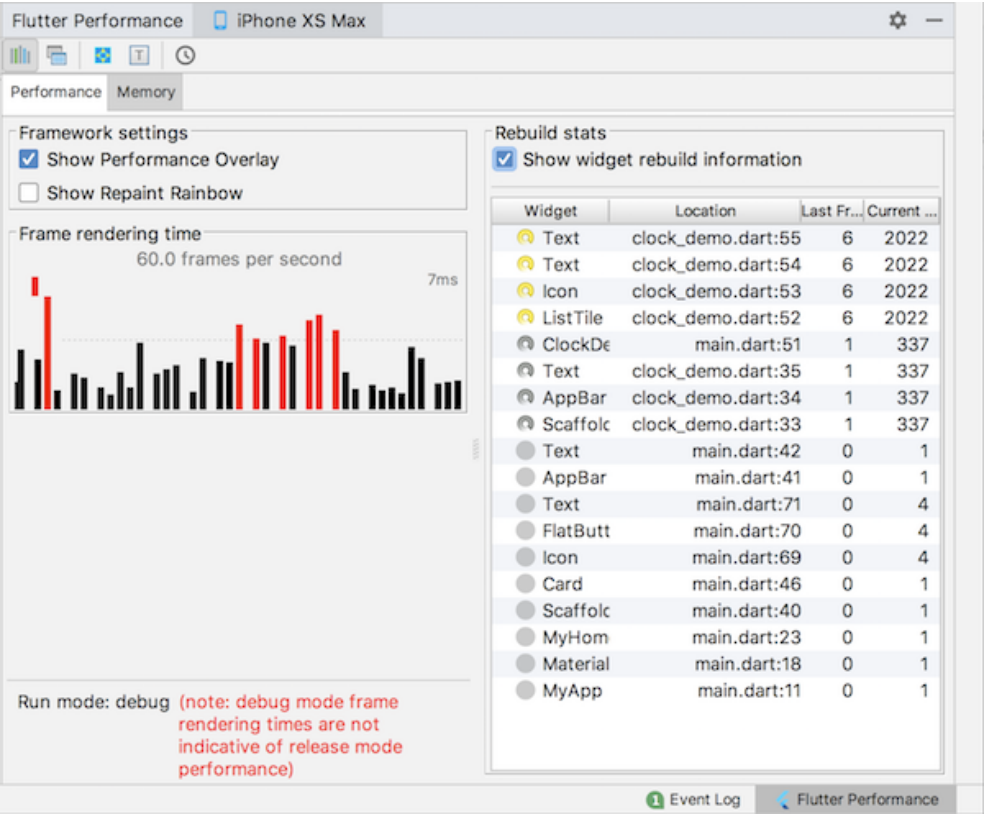
Fast edit and refresh development cycle

Flutter offers a best-in-class developer cycle enabling you to see the effect of your changes almost instantly with the *Stateful Hot Reload* feature. See [Hot reload](#) for details.

Show performance data

Note: To examine performance issues in Flutter, see the [Timeline view](#).

To view the performance data, including the widget rebuild information, start the app in **Debug** mode, and then open the Performance tool window using **View > Tool Windows > Flutter Performance**.



To see the stats about which widgets are being rebuilt, and how often, click **Show widget rebuild information** in the **Performance** pane. The exact count of the rebuilds for this frame displays in the second column from the right. For a high number of rebuilds, a yellow spinning circle displays. The column to the far right shows how many times a widget was rebuilt since entering the current screen. For widgets that aren't rebuilt, a solid grey circle displays. Otherwise, a grey spinning circle displays.

The app shown in this screenshot has been designed to deliver poor performance, and the rebuild profiler gives you a clue about what is happening in the frame that might cause poor performance. The widget rebuild profiler is not a diagnostic tool, by itself, about poor performance.

The purpose of this feature is to make you aware when widgets are rebuilding—you might not realize that this is happening when looking at the code. If widgets are rebuilding that you didn't expect, it's probably a sign that you should refactor your code by split up large build methods into multiple widgets.

This tool can help you debug at least four common performance issues:

1. The whole screen (or large pieces of it) are built by a single StatefulWidget, causing unnecessary UI building. Split up the UI into smaller widgets with smaller `build()` functions.
2. Offscreen widgets are being rebuilt. This can happen, for example, when a ListView is nested in a tall Column that extends offscreen. Or when the RepaintBoundary is not set for a list that extends offscreen, causing the whole list to be redrawn.
3. The `build()` function for an AnimatedBuilder draws a subtree that does not need to be animated, causing unnecessary rebuilds of static objects.

[Get started](#)

[Samples & tutorials](#)

[Development](#)

▸ [User interface](#)

▸ [Data & backend](#)

▸ [Accessibility & internationalization](#)

▸ [Platform integration](#)

▸ [Packages & plugins](#)

▸ [Add Flutter to existing app](#)

▼ [Tools & techniques](#)

[Android Studio & IntelliJ](#)

[Visual Studio Code](#)

▸ [DevTools](#)

▸ [Flutter SDK](#)

[Hot reload](#)

[Code formatting](#)

▸ [Migration notes](#)

[Testing & debugging](#)

[Performance & optimization](#)

[Deployment](#)

[Resources](#)

[Reference](#)

[Widget index](#)

[API reference](#) 

[Package site](#) 

- An Opacity widget is placed unnecessarily high in the widget tree. Or, an Opacity animation is created by directly manipulating the opacity property of the Opacity widget, causing the widget itself and its subtree to rebuild.

You can click on a line in the table to navigate to the line in the source where the widget is created. As the code runs, the spinning icons also display in the code pane to help you visualize which rebuilds are happening.

Note that numerous rebuilds doesn't necessarily indicate a problem. Typically you should only worry about excessive rebuilds if you have already run the app in profile mode and verified that the performance is not what you want.

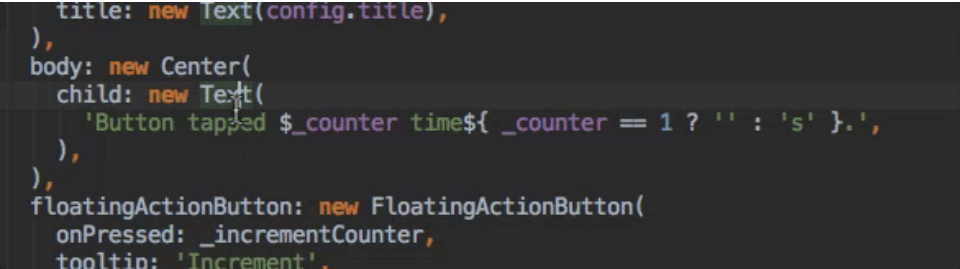
And remember, *the widget rebuild information is only available in a debug build*. Test the app's performance on a real device in a profile build, but debug performance issues in a debug build.

Editing tips for Flutter code

If you have additional tips we should share, [let us know!](#)

Assists & quick fixes

Assists are code changes related to a certain code identifier. A number of these are available when the cursor is placed on a Flutter widget identifier, as indicated by the yellow lightbulb icon. The assist can be invoked by clicking the lightbulb, or by using the keyboard shortcut (**Alt+Enter** on Linux and Windows, **Option+Return** on macOS), as illustrated here:



Quick Fixes are similar, only they are shown with a piece of code that has an error and they can assist in correcting it. They are indicated with a red lightbulb.

Wrap with new widget assist

This can be used when you have a widget that you want to wrap in a surrounding widget, for example if you want to wrap a widget with a **Row** or **Column**.

Wrap widget list with new widget assist

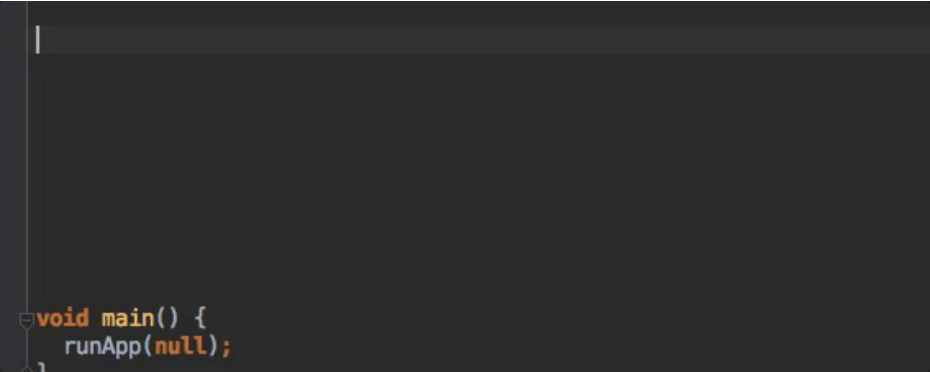
Similar to the assist above, but for wrapping an existing list of widgets rather than an individual widget.

Convert child to children assist

Changes a child argument to a children argument, and wraps the argument value in a list.

Live templates

Live templates can be used to speed up entering typical code structures. They are invoked by typing their prefix, and then selecting one in the code completion window:



The Flutter plugin includes the following templates:

- Prefix **stless**: Create a new subclass of **StatelessWidget**.
- Prefix **stful**: Create a new subclass of **StatefulWidget** and its associated **State** subclass.
- Prefix **stanim**: Create a new subclass of **StatefulWidget** and its associated **State** subclass, including a field initialized with **AnimationController**.

You can also define custom templates in **Settings > Editor > Live Templates**.

Keyboard shortcuts

Hot reload

On Linux (keymap *Default for XWin*) and Windows the keyboard shortcuts are **Control+Alt+;** and **Control+Backslash**.

On macOS (keymap *Mac OS X 10.5+ copy*) the keyboard shortcuts are **Command+Option** and **Command+Backslash**.

[Get started](#)

[Samples & tutorials](#)

[Development](#)

- ▶ [User interface](#)
- ▶ [Data & backend](#)
- ▶ [Accessibility & internationalization](#)
- ▶ [Platform integration](#)
- ▶ [Packages & plugins](#)
- ▶ [Add Flutter to existing app](#)
- ▼ [Tools & techniques](#)
 - [Android Studio & IntelliJ](#)
 - [Visual Studio Code](#)
 - ▶ [DevTools](#)
 - ▶ [Flutter SDK](#)
 - [Hot reload](#)
 - [Code formatting](#)
- ▶ [Migration notes](#)

[Testing & debugging](#)

[Performance & optimization](#)

[Deployment](#)

[Resources](#)

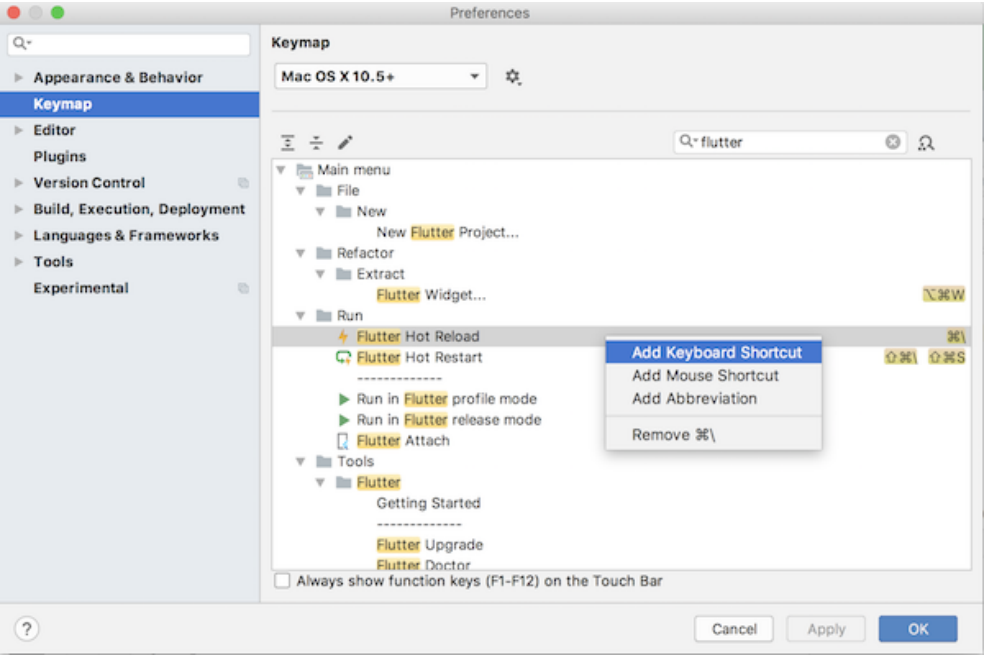
[Reference](#)

[Widget index](#)

[API reference](#)

[Package site](#)

Keyboard mappings can be changed in the IDE Preferences/Settings: Select *Keymap*, then enter *flutter* into the search box in the upper right corner. Right click the binding you want to change and *Add Keyboard Shortcut*.



Hot reload vs. hot restart

Hot reload works by injecting updated source code files into the running Dart VM (Virtual Machine). This includes not only adding new classes, but also adding methods and fields to existing classes, and changing existing functions. A few types of code change cannot be hot reloaded though:

- Global variable initializers
- Static field initializers
- The `main()` method of the app

For these changes you can fully restart your application, without having to end your debugging session. To perform a hot restart, don't click the Stop button, simply re-click the Run button (if in a run session) or Debug button (if in a debug session), or shift-click 'hot reload' button.

Editing Android code in Android Studio with full IDE support

Opening the root directory of a Flutter project doesn't expose all the Android files to the IDE. Flutter apps contain a subdirectory named `android`. If you open this subdirectory as its own separate project in Android Studio, the IDE will be able to fully support editing and refactoring all Android files (like Gradle scripts).

If you already have the entire project opened as a Flutter app in Android Studio, there are two equivalent ways to open the Android files on their own for editing in the IDE. Before trying this, make sure that you're on the latest version of Android Studio and the Flutter plugins.

- In the ["project view"](#), you should see a subdirectory immediately under the root of your flutter app named `android`. Right click on it, then select **Flutter > Open Android module in Android Studio**.
- OR, you can open any of the files under the `android` subdirectory for editing. You should then see a "Flutter commands" bar at the top of the editor with a link labeled **Open for Editing in Android Studio**. Click that link.

For both options, Android Studio gives you the option to use separate windows or to replace the existing window with the new project when opening a second project. Either option is fine.

If you don't already have the Flutter project opened in Android studio, you can open the Android files as their own project from the start:

1. Click **Open an existing Android Studio Project** on the Welcome splash screen, or **File > Open** if Android Studio is already open.
2. Open the `android` subdirectory immediately under the flutter app root. For example if the project is called `flutter_app`, open `flutter_app/android`.

If you haven't run your Flutter app yet, you might see Android Studio report a build error when you open the `android` project. Run `flutter pub get` in the app's root directory and rebuild the project by selecting **Build > Make** to fix it.

Editing Android code in IntelliJ IDEA

To enable editing of Android code in IntelliJ IDEA, you need to configure the location of the Android SDK:

1. In **Preferences > Plugins**, enable **Android Support** if you haven't already.
2. Right-click the `android` folder in the Project view, and select **Open Module Settings**.
3. In the **Sources** tab, locate the **Language level** field, and select level 8 or later.
4. In the **Dependencies** tab, locate the **Module SDK** field, and select an Android SDK. If no SDK is listed, click **New** and specify the location of the Android SDK. Make sure to select an Android SDK matching the one used by Flutter (as reported by `flutter doctor`).

[Get started](#)

[Samples & tutorials](#)

[Development](#)

- ▶ [User interface](#)
- ▶ [Data & backend](#)
- ▶ [Accessibility & internationalization](#)
- ▶ [Platform integration](#)
- ▶ [Packages & plugins](#)
- ▶ [Add Flutter to existing app](#)
- ▼ [Tools & techniques](#)
 - [Android Studio & IntelliJ](#)
 - [Visual Studio Code](#)
 - ▶ [DevTools](#)
 - ▶ [Flutter SDK](#)
 - [Hot reload](#)
 - [Code formatting](#)
- ▶ [Migration notes](#)

5. Click **OK**.

Tips and tricks

- [Flutter IDE cheat sheet, MacOS version](#)
- [Flutter IDE cheat sheet, Windows & Linux version](#)

Troubleshooting

Known issues and feedback

Important known issues that might impact your experience are documented in the [Flutter plugin README](#) file.

All known bugs are tracked in the issue trackers:

- Flutter plugin: [GitHub issue tracker](#)
- Dart plugin: [JetBrains YouTrack](#)

We welcome feedback, both on bugs/issues and feature requests. Prior to filing new issues:

- Do a quick search in the issue trackers to see if the issue is already tracked.
- Make sure you have [updated](#) to the most recent version of the plugin.

When filing new issues, include the output of [flutter doctor](#).



[flutter-dev@](#) • [terms](#) • [security](#) • [privacy](#) • [español](#) • [社区中文资源](#)

Except as otherwise noted, this work is licensed under a [Creative Commons Attribution 4.0 International License](#), and code samples are licensed under the [BSD License](#).

[Resources](#)

[Reference](#)

- [Widget index](#)
- [API reference](#)
- [Package site](#)