Article

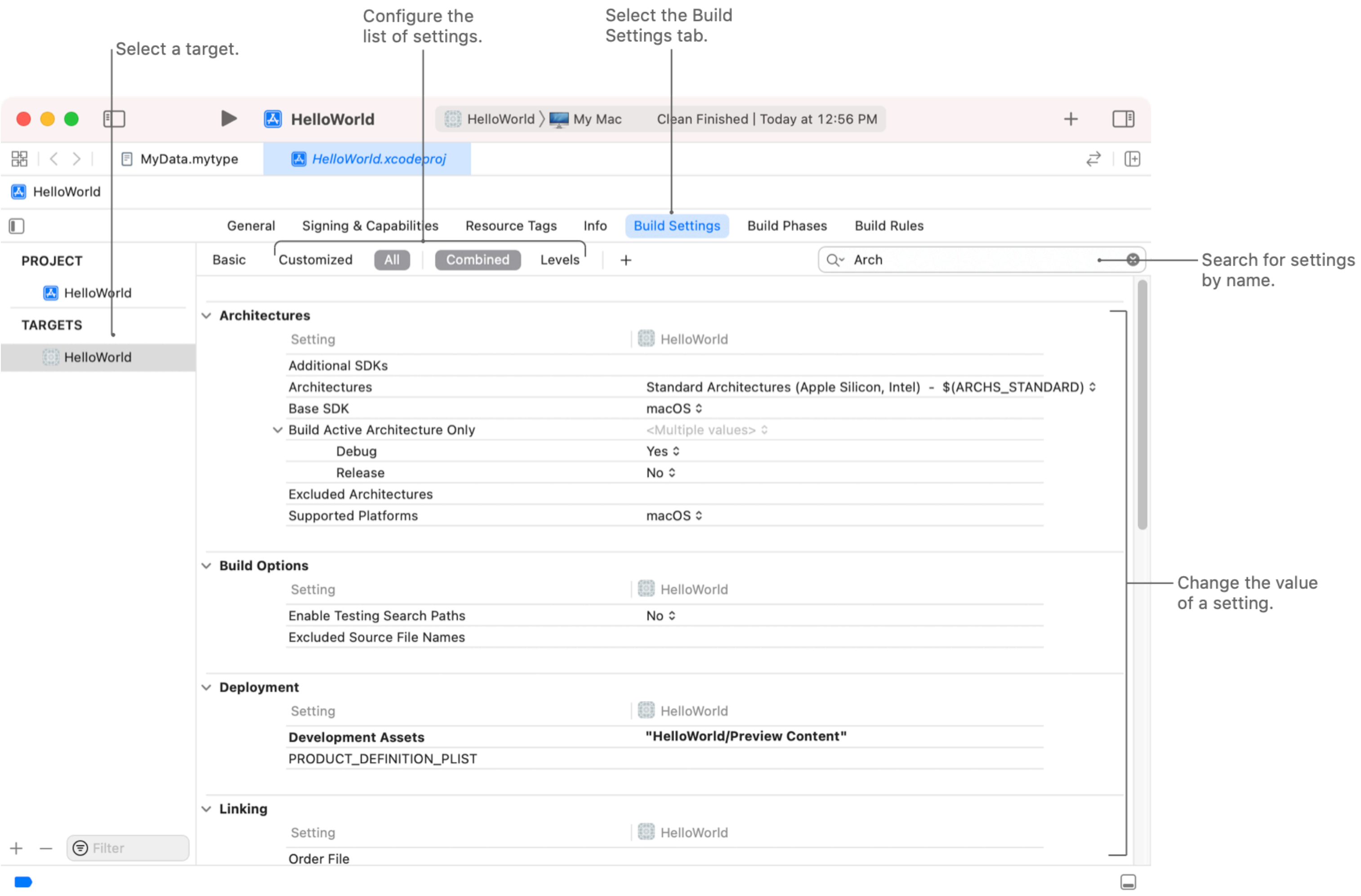
Configuring the build settings of a target

Specify the options you use to compile, link, and produce a product from a target, and identify settings inherited from your project or the system.

Overview

The Xcode build process is highly configurable, and you can change the build settings of a single target or all the targets in your project. Build settings control every aspect of the build process, including how Xcode compiles your source files, how it links your executable, whether it generates debug information, and how it packages and distributes your code. Xcode has hundreds of build settings to support the tools and steps associated with the build process.

Make changes to your project or target’s settings from the Build Settings tab or with build configuration files. The following image shows the Build Settings tab for a project.



Select a target.

Configure the list of settings.

Select the Build Settings tab.

Search for settings by name.

Change the value of a setting.

Search: Arch

Architectures

Setting	HelloWorld
Additional SDKs	
Architectures	Standard Architectures (Apple Silicon, Intel) - $(ARCHS_STANDARD)
Base SDK	macOS
Build Active Architecture Only	<Multiple values>
Debug	Yes
Release	No
Excluded Architectures	
Supported Platforms	macOS

Build Options

Setting	HelloWorld
Enable Testing Search Paths	No
Excluded Source File Names	

Deployment

Setting	HelloWorld
Development Assets	**"HelloWorld/Preview Content"**
PRODUCT_DEFINITION_PLIST	

Linking

Setting	HelloWorld
Order File	

Note

You can also store settings in specially formatted text files called build configuration files. These files make it easy to save your settings along with your source files in your source control management system. For information about build configuration files, see Adding a build configuration file to your project.

For a complete list of build settings, see Build settings reference.

Search and filter the list of build settings

To find a specific build setting quickly, use the filters and Search field at the top of the Build Settings tab.

- Select a filter to display all settings or only the modified settings.
- Enter text in the search field to display settings that contain the specified string. Xcode searches all settings attributes by default.
- To refine your search, click the magnifying glass and select a single attribute to match.

Configure the value of a build setting

Each build setting has the following attributes.

Attribute	Description	Example
Title	A human-readable name for the build setting.	`Build Active Architecture Only`
Name	The programmatic name for the build setting. This name appears in the Quick Help inspector, in build configuration (`xcconfig`) files, and in the `xcodebuild` command-line tool.	`ONLY_ACTIVE_ARCH`
Value type	Common types include Booleans, strings, enumerations, string lists, path strings, and a list of path strings.	`Boolean`
Value	The current value of the setting.	`YES`

The Build Settings tab displays a setting's title or name, but not both. When titles are visible, choose Editor > Show Setting Names to display the names. When names are visible, choose Editor > Show Setting Titles to display the titles.

When you find the setting you want to modify, click the value attribute and type the new value. Xcode applies a bold font to modified settings to help you find them later. To restore a setting's original value, select it and press the Delete key. If you modified the setting from the Levels view, delete the setting at the level where you overrode the value. For example, if you overrode the setting in your project, delete the setting there, and not in a target belonging to that project.

To configure different values for debug and release builds, click a setting's disclosure triangle to reveal the configuration-specific values, and make the changes there. If you modify a setting while its disclosure triangle is in the closed position, Xcode applies the change to both configurations.

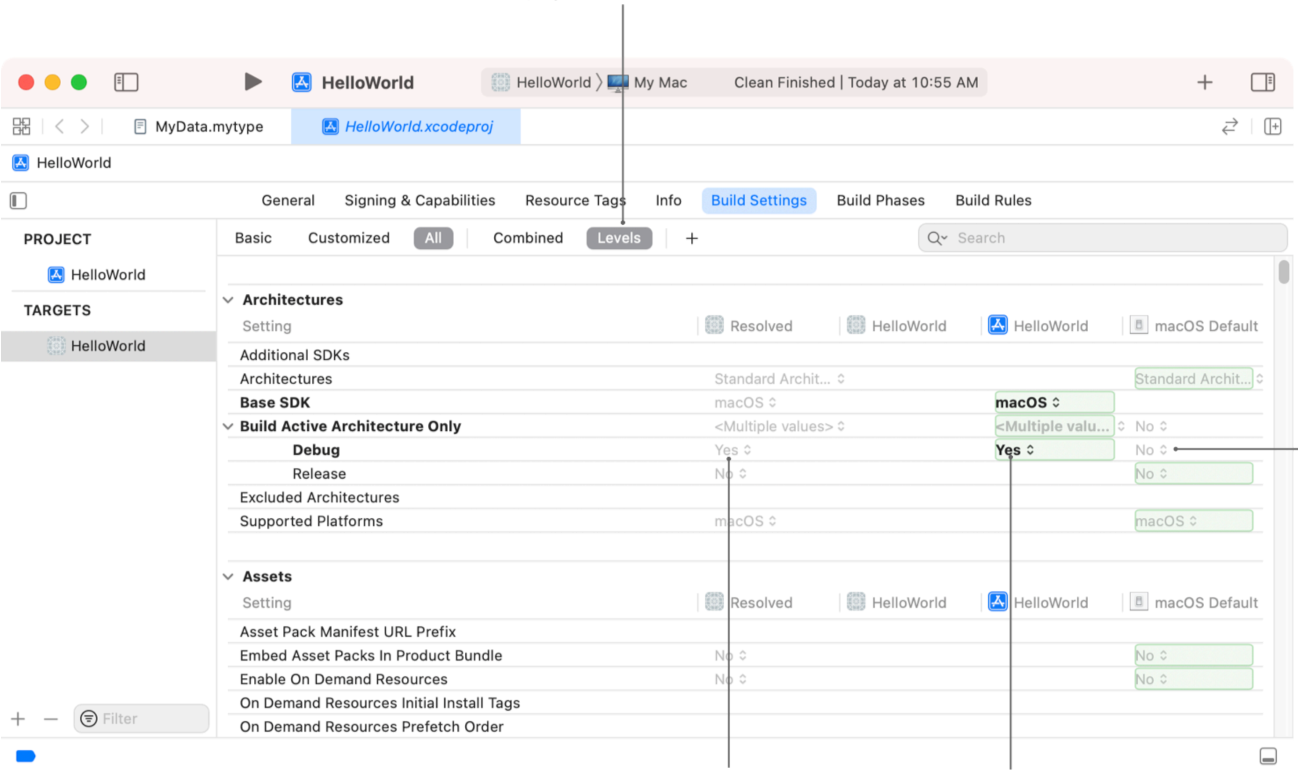
Some settings define their values in terms of other settings. For example, an attribute whose value is a path to a file might use the `BUILD_DIR` setting to specify part of the path. When a setting's definition is visible, choose Editor > Show Values to see the computed final value — that is, the value without the environment variable. When the final value is visible, choose Editor > Show Definitions to see the definition.

Evaluate how your project inherits settings

Every target inherits settings from both its parent project and the platform SDK. This inheritance model ensures that the target starts with valid baseline settings. When you create a target, Xcode changes some settings based on the target type, and you are free to make other changes based on your needs.

To help you track down the source of a setting's value, open the build settings for your project or target and select the Levels filter. Xcode displays the current settings hierarchy in the build settings editor. This hierarchy includes the default SDK values and any other project or target values that are active. The Resolved column shows the final resolved value Xcode uses to build the item.

Display the inherited levels.



Architectures

Setting	Resolved	HelloWorld	HelloWorld	macOS Default
Additional SDKs				
Architectures	Standard Archit...			Standard Archit...
Base SDK	macOS		**macOS**	
Build Active Architecture Only	<Multiple values>		<Multiple valu...	No
Debug	Yes		**Yes**	No
Release	No			No
Excluded Architectures				
Supported Platforms	macOS			macOS

Assets

Setting	Resolved	HelloWorld	HelloWorld	macOS Default
Asset Pack Manifest URL Prefix				
Embed Asset Packs In Product Bundle	No			No
Enable On Demand Resources	No			No
On Demand Resources Initial Install Tags				
On Demand Resources Prefetch Order				

The default value from the SDK.

The final, resolved value.

The project value that overrides the SDK.

With levels displayed, highlighted values indicate values that take precedence. Xcode uses a target's build settings before referring to build settings you define for the project. At each level, Xcode gives precedence to settings you provide in the project over those you provide in build configuration files. Xcode gives the lowest precedence to the default system values. The hierarchy of precedence is:

1. Target-level values.

2. Configuration settings file values mapped to a target.

3. Project-level values.

4. Configuration settings file mapped to the project.

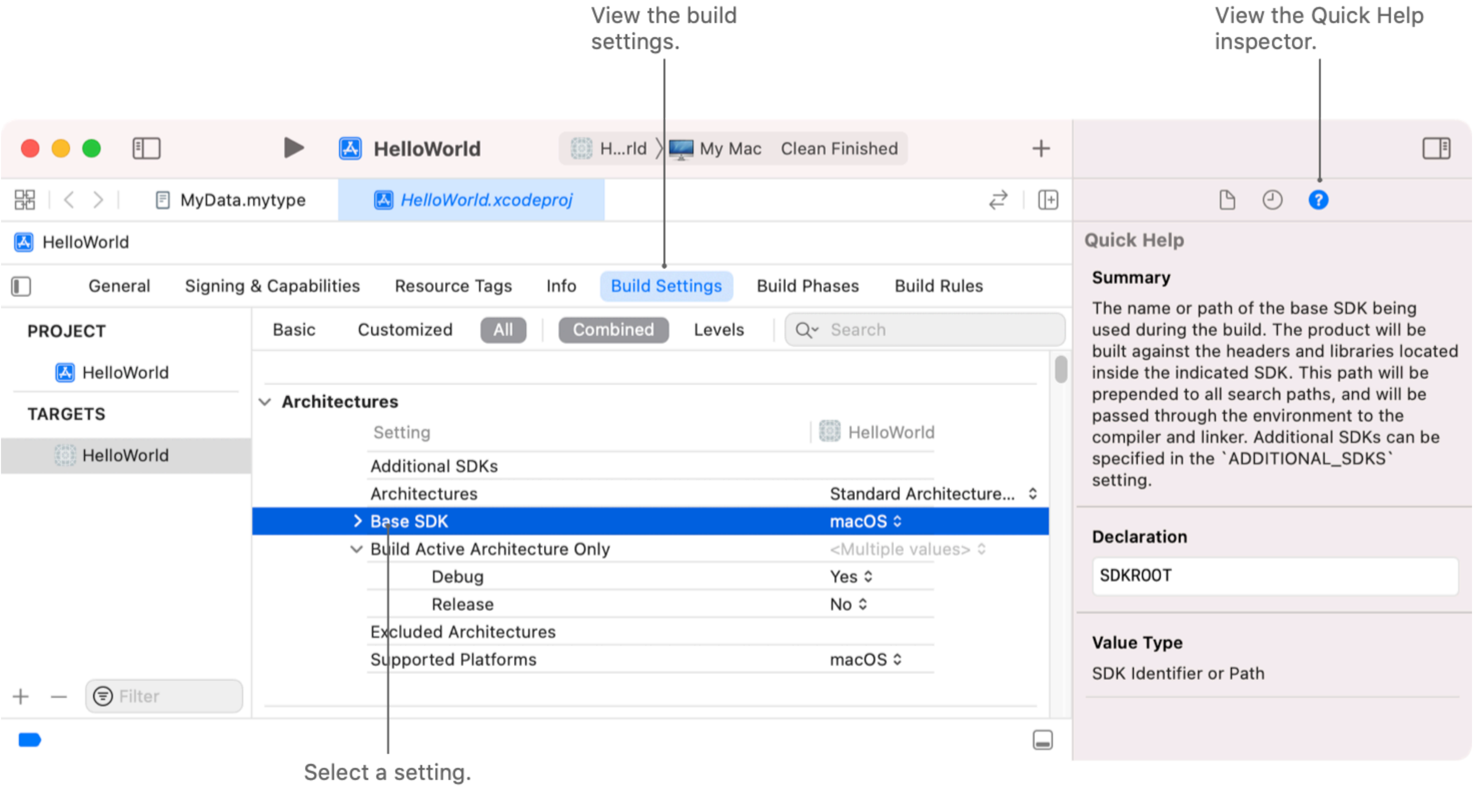
5. System default values.

Note

When using the `xcodebuild` command-line tool, the tool gives any settings you pass to it the highest predecence.

Obtain additional details about a build setting

To see detailed information about a particular setting, select the setting and choose View > Inspectors > Quick Help. Xcode displays a description of the setting, along with its name and value type.



View the build settings.

View the Quick Help inspector.

Select a setting.

Architectures

Setting	HelloWorld
Additional SDKs	
Architectures	Standard Architecture...
Base SDK	macOS
Build Active Architecture Only	<Multiple values>
Debug	Yes
Release	No
Excluded Architectures	
Supported Platforms	macOS

Quick Help

Summary

The name or path of the base SDK being used during the build. The product will be built against the headers and libraries located inside the indicated SDK. This path will be prepended to all search paths, and will be passed through the environment to the compiler and linker. Additional SDKs can be specified in the `ADDITIONAL_SDKS` setting.

Declaration

SDKROOT

Value Type

SDK Identifier or Path

See Also

Build settings

Adding a build configuration file to your project

Specify your project’s build settings in plain-text files, and supply different settings for debug and release builds.

Build settings reference

A detailed list of individual Xcode build settings that control or change the way a target is built.

- Identifying and addressing framework module issues

  Detect and fix common problems found in framework modules with the module verifier.

- Understanding build product layout changes in Xcode