



Getting Started with WidgetKit

Create Widgets for iOS and iPadOS

Sagun Raj Lage
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Apress®

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To my father, late Shree Ram Lage, my role model, my inspiration, my pride, who taught me what duties and responsibilities mean. I hope I am making you proud, Baba.

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—Sagun Raj Lage

To my dear mother.

—Prakshapan Shrestha

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About the Technical Reviewer

Felipe Laso is a Senior Systems Engineer working at Lextech Global Services. He's also an aspiring game designer/programmer. You can follow him on Twitter at @iFeliLM or on his blog.

Before You Begin...

Before you start exploring the beauty and power of WidgetKit through this book, you will need to make sure you have the following prerequisites set up:

- **A Mac running macOS Catalina (version 10.15.4) or later:** However, we recommend a Mac running macOS Big Sur (version 11) or later as the code was tested on that version.
- **Xcode 12 or later:** Xcode is the primary tool used to develop apps for the Apple ecosystem. You can download the latest version of Xcode from Apple's developer site.¹ We recommend using Xcode 12.4 or later as the code was tested on that version.
- **Swift 5 or later:** Since the new versions of Xcode ship with the updated versions of Swift, you need not worry about this.
- **Simulators and devices with iOS 14 or later installed** since the WidgetKit framework, the framework you will use to develop widgets, is only supported from iOS 14.

¹<https://developer.apple.com/xcode/>

BEFORE YOU BEGIN...

- **A Twitter Developer Account:** In the last chapter of this book, you will develop a widget that will use Twitter's API. And you will get access to Twitter's API only after you own a Twitter Developer Account. You can apply for a developer account from Twitter's developer account page.²

Generally, it takes a day or two, or sometimes even more, for Twitter to review your application and approve or reject it. Therefore, it is a nice idea to apply for that account before beginning this book so that when you reach the last chapter, your Twitter Developer Account will be ready to use.

²<https://developer.twitter.com/en/apply-for-access>

CHAPTER 1

Getting Familiar with WidgetKit in a Flash

This chapter will quickly introduce you to WidgetKit, Apple's framework to develop beautiful and handy widgets for iOS homescreen and macOS Notification Center.

Background

WWDC20 brought forward a number of exciting changes and features in the Apple ecosystem. It caught the attention of not only the developers but also of the end users, since it introduced some changes that carry the potential to shape the future of the overall Apple ecosystem experience.

People were anticipating the release of the latest version of iOS in the 20th edition of WWDC, and they got exactly what they were waiting for – iOS 14, a package of awesome features and enhancements! Among those features and enhancements, widgets created a lot of buzz in the market.

Before iOS 14, widgets had very limited features, and they could be seen in a vertical list of full-width boxes on the Today screen (the screen to the left of the first page of the homescreen). That was quite an injustice for

widgets! But iOS 14 has changed the way iOS treated widgets. Now widgets can contain more information and can show up in various sizes. And the best part is that they are no more confined to be on the Today screen. They can be dragged off the Today screen and placed on the homescreen, together with app icons. And trust us, they look beautiful together.

Now you must be thinking, “Okay, enough of the talks! How can I start?” The next section tells you everything about it.

Hello, WidgetKit!

Apple introduced the WidgetKit framework to enable developers to develop widgets of their apps. The beauty of widgets is that users can get the latest information at a glance, without having to launch the app. And in case users need more details, they can tap on the widget to navigate to the appropriate location in the app.

WidgetKit allows you to create widgets of three different sizes – small, medium, and large. These widgets can be used to display different amount of information. For example, if you have a weather app, you can use the small-sized widget to display only the current temperature in degree Fahrenheit or degree Celsius. The medium-sized widget can display the current location and the temperature. And since the large-sized widget has a greater space, you can use it to display the current location, the temperature, and a brief weather report of the day. And if the users want a detailed report, they can launch the app by tapping the widget. So, for companies, businesses, and developers, widgets are a nice way to keep their users attracted and engaged to their app.

Note Before developing widgets, you must keep in mind that the WidgetKit framework is available only in iOS 14 and above. So, consider your target users before development. Also, you will require basic SwiftUI knowledge and Xcode 12 or above to be able to develop widgets.

Summary

Now you have gained some familiarity with WidgetKit, Apple’s framework to develop widgets of various sizes. Also, you now have an idea about how widgets can help users to get up-to-date information at a glance and how developers can develop beautiful and handy widgets to keep their users attracted and engaged to their app. Plus, you have learned that iOS 14 is the minimum iOS version that supports widgets, and Xcode 12 is the minimum version of Xcode that can be used to develop widgets.

Since SwiftUI is used to develop widgets, in the upcoming chapter, we will give you an overview of SwiftUI and its views that you will use to create widgets. You will learn more about the various sizes of widgets you can create, and you will get an overview of Apple’s Human Interface Guidelines (HIG) for widgets.

EXERCISES

1. Go through the overview section of the official documentation of WidgetKit from <https://developer.apple.com/documentation/widgetkit/>. It can help you get a different perspective to understand things. You can explore other sections too, if you are interested.
 2. Try completing at least the first chapter, SwiftUI Essentials, from <https://developer.apple.com/tutorials/swiftui/>, if you haven't given SwiftUI a try. This tutorial will help you understand the basics and make you ready for the next chapter of our book.
-

CHAPTER 2

SwiftUI, Human Interface Guidelines, and Widget Family

Now that you have a general idea about WidgetKit, you can move forward to learn about some basic building blocks of a widget. In this chapter, you will learn about some views of SwiftUI that will act as the building blocks of your widget. Then, you will get an overview of Apple's Human Interface Guidelines for creating intuitive, easy-to-learn, and consistent user interface for widgets. In addition to these, you will learn more about WidgetFamily that enables you to create widgets of various sizes.

SwiftUI

In WWDC 2019, Apple introduced SwiftUI – a framework that brought a major change in the way iOS apps are developed. Before the introduction of SwiftUI, there existed debates between developers about whether they should use Storyboards or develop the app UI programmatically. SwiftUI flushed out the debate and brought a new and easier way to create