Documentation

Language: Swift

Framework

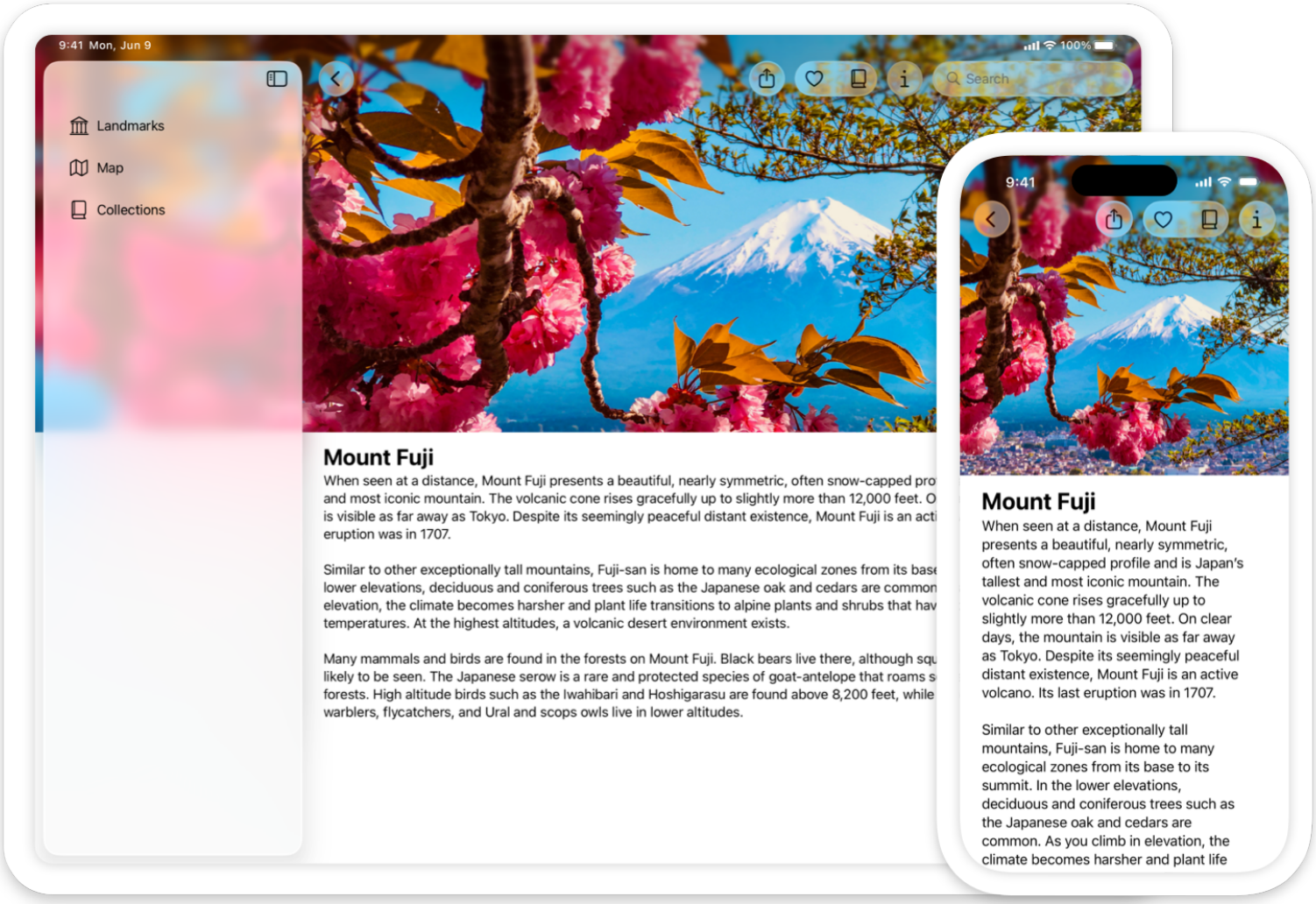
UIKit

Construct and manage a graphical, event-driven user interface for your iOS, iPadOS, or tvOS app.

iOS 2.0+ iPadOS 2.0+ Mac Catalyst 13.0+ tvOS 9.0+ visionOS 1.0+ | watchOS 2.0+

Overview

UIKit provides a variety of features for building apps, including components you can use to construct the core infrastructure of your iOS, iPadOS, or tvOS apps. The framework provides the window and view architecture for implementing your UI, the event-handling infrastructure for delivering Multi-Touch and other types of input to your app, and the main run loop for managing interactions between the user, the system, and your app.



UIKit also includes support for animations, documents, drawing and printing, text management and display, search, app extensions, resource management, and getting information about the current device. You can also customize accessibility support, and localize your app's interface for different languages, countries, or cultural regions.

UIKit works seamlessly with the SwiftUI framework, so you can implement parts of your UIKit app in SwiftUI or mix interface elements between the two frameworks. For example, you can place UIKit views and view controllers inside SwiftUI views, and vice versa.

To build a macOS app, you can use SwiftUI to create an app that works across all of Apple's platforms, or use AppKit to create an app for Mac only. Alternatively, you can bring your UIKit iPad app to the Mac with Mac Catalyst.

Important

Use UIKit classes only from your app's main thread or main dispatch queue, unless otherwise indicated in the documentation for those classes. This restriction particularly applies to classes that derive from `UIResponder` or that involve manipulating your app's user interface in any way.

Topics

Essentials

- Adopting Liquid Glass
  Find out how to bring the new material to your app.
- UIKit updates
  Learn about important changes to UIKit.
- About App Development with UIKit
  Learn about the basic support that UIKit and Xcode provide for your iOS and tvOS apps.
- Protecting the User's Privacy
  Secure personal data, and respect user preferences for how data is used.

App structure

UIKit manages your app's interactions with the system and provides classes for you to manage your app's data and resources.

- App and environment

Manage life-cycle events and your app's UI scenes, and get information about traits and the environment in which your app runs.

- Documents, data, and pasteboard

  Organize your app's data and share that data on the pasteboard.

- Resource management

  Manage the images, strings, storyboards, and nib files that you use to implement your app's interface.

- App extensions

  Extend your app's basic functionality to other parts of the system.

- Interprocess communication

  Display activity-based services to people.

- Mac Catalyst

  Create a version of your iPad app that users can run on a Mac device.

User interface

Views help you display content onscreen and facilitate user interactions; view controllers help you manage views and the structure of your interface.

- Views and controls

  Present your content onscreen and define the interactions allowed with that content.

- View controllers

  Manage your interface using view controllers and facilitate navigation around your app's content.

- View layout

  Use stack views to lay out the views of your interface automatically. Use Auto Layout

when you require precise placement of your views.

- Appearance customization

  Apply Liquid Glass to views, support Dark Mode in your app, customize the appearance of bars, and use appearance proxies to modify your UI.

- Animation and haptics

  Provide feedback to users using view-based animations and haptics.

- Windows and screens

  Provide a container for your view hierarchies and other content.

User interactions

Responders and gesture recognizers help you handle touches and other events. Drag and drop, focus, peek and pop, and accessibility handle other user interactions.

- Touches, presses, and gestures

  Encapsulate your app's event-handling logic in gesture recognizers so that you can reuse that code throughout your app.

- Menus and shortcuts

  Simplify interactions with your app using menu systems, contextual menus, Home Screen quick actions, and keyboard shortcuts.

- Drag and drop

  Bring drag and drop to your app by using interaction APIs with your views.

- Pointer interactions

  Support pointer interactions in your custom controls and views.

- Apple Pencil interactions

  Handle user interactions like double tap and squeeze on Apple Pencil.

- Focus-based navigation

  Navigate the interface of your UIKit app using a remote, game controller, or keyboard.

- Accessibility for UIKit

  Make your UIKit apps accessible to everyone who uses iOS and tvOS.

Graphics, drawing, and printing

UIKit provides classes and protocols that help you configure your drawing environment and render your content.

- Images and PDF

  Create and manage images, including those that use bitmap and PDF formats.

- Drawing

  Configure your app's drawing environment using colors, renderers, draw paths, strings, and shadows.

- Printing

  Display the system print panels and manage the printing process.

Text

In addition to text views that simplify displaying text in your app, UIKit provides custom text management and rendering that supports the system keyboards.

- Text display and fonts

  Display text, manage fonts, and check spelling.

- TextKit

  Manage text storage and perform custom layout of text-based content in your app's views.

- Keyboards and input

  Configure the system keyboard, create your own keyboards to handle input, or detect key presses on a physical keyboard.

- Writing Tools

  Add support for Writing Tools to your app's text views.

- Handwriting recognition

  Configure text fields and custom views that accept text to handle input from Apple Pencil.

Deprecated

Avoid using deprecated classes and protocols in your apps.

- Deprecated symbols

  Review unsupported symbols and their replacements.

Reference

- UIKit Enumerations

- UIKit Constants

  This document describes constants that are used throughout the UIKit framework.

- UIKit Data Types

  The UIKit framework defines data types that are used in multiple places throughout the framework.

- UIKit Functions

  The UIKit framework defines a number of functions, many of them used in graphics and drawing operations.