Framework

SwiftUI

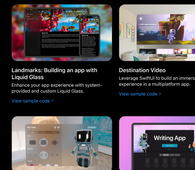
Declare the user interface and behavior for your app on every platform.

iOS 13.0+ | iPadOS 13.0+ | Mac Catalyst 13.0+ | macOS 10.15+ | tvOS 13.0+ | visionOS 1.0+ | watchOS 6.0+

Overview

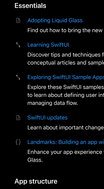
SwiftUI provides views, controls, and layout structures for declaring your app's user interface. The framework provides event handlers for delivering taps, gestures, and other types of input to your app, and tools to manage the flow of data from your app's models down to the views and controls that users see and interact with.

Define your app structure using the `App` protocol, and populate it with scenes that contain the views that make up your app's user interface. Create your own custom views that conform to the `View` protocol, and compose them with SwiftUI views for displaying text, images, and custom shapes using stacks, lists, and more. Apply powerful modifiers to built-in views and your own views to customize their rendering and interactivity. Share code between apps on multiple platforms with views and controls that adapt to their context and presentation.



You can integrate SwiftUI views with objects from the UIKit, AppKit, and WatchKit frameworks to take further advantage of platform-specific functionality. Learn about accessibility support in SwiftUI, and localize your app's interface for different languages, countries, or cultural regions.

Featured samples



Landmarks: Building an app with Liquid Glass
Enhance your app experience with system-provided and custom Liquid Glass.
View sample code ›

Destination Video
Leverage SwiftUI to build an immersive media experience in a multiplatform app.
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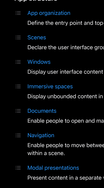

BOT-anist
Build a multiplatform app that uses windows, volumes, and immersive spaces to create a robot botanist's greenhouse.
View sample code ›

Building a document-based app with SwiftUI
Create, save, and open documents in a multiplatform app.
View sample code ›

Topics

Essentials

- Adopting Liquid Glass
  Find out how to bring the new material to your app.
- Learning SwiftUI
  Discover tips and techniques for building multiplatform apps with this set of conceptual articles and sample code.
- Exploring SwiftUI Sample Apps
  Explore these SwiftUI samples using Swift Playgrounds on iPad or in Xcode to learn about defining user interfaces, responding to user interactions, and managing data flow.
- SwiftUI updates
  Learn about important changes to SwiftUI.
- Landmarks: Building an app with Liquid Glass
  Enhance your app experience with system-provided and custom Liquid Glass.

App structure

- App organization
  Define the entry point and top-level structure of your app.
- Scenes
  Declare the user interface groupings that make up the parts of your app.
- Windows
  Display user interface content in a window or a collection of windows.
- Immersive spaces
  Display unbounded content in a person's surroundings.
- Documents
  Enable people to open and manage documents.
- Navigation
  Enable people to move between different parts of your app's view hierarchy within a scene.
- Modal presentations
  Present content in a separate view that offers focused interaction.
- Toolbars
  Provide immediate access to frequently used commands and controls.
- Search
  Enable people to search for text or other content within your app.
- App extensions
  Extend your app's basic functionality to other parts of the system, like by adding a Widget.

Data and storage

- Model data
  Manage the data that your app uses to drive its interface.
- Environment values
  Share data throughout a view hierarchy using the environment.
- Preferences
  Indicate configuration preferences from views to their container views.
- Persistent storage
  Store data for use across sessions of your app.

Views

- View fundamentals
  Define the visual elements of your app using a hierarchy of views.
- View configuration
  Adjust the characteristics of views in a hierarchy.
- View styles
  Apply built-in and custom appearances and behaviors to different types of views.
- Animations
  Create smooth visual updates in response to state changes.
- Text input and output
  Display formatted text and get text input from the user.
- Images
  Add images and symbols to your app's user interface.
- Controls and indicators
  Display values and get user selections.
- Menus and commands
  Provide space-efficient, context-dependent access to commands and controls.
- Shapes
  Trace and fill built-in and custom shapes with a color, gradient, or other pattern.
- Drawing and graphics
  Enhance your views with graphical effects and customized drawings.

View layout

- Layout fundamentals
  Arrange views inside built-in layout containers like stacks and grids.
- Layout adjustments
  Make fine adjustments to alignment, spacing, padding, and other layout parameters.
- Custom layout
  Place views in custom arrangements and create animated transitions between layout types.
- Lists
  Display a structured, scrollable column of information.
- Tables
  Display selectable, sortable data arranged in rows and columns.
- View groupings
  Present views in different kinds of purpose-driven containers, like forms or control groups.
- Scroll views
  Enable people to scroll to content that doesn't fit in the current display.

Event handling

- Gestures
  Define interactions from taps, clicks, and swipes to fine-grained gestures.
- Input events
  Respond to input from a hardware device, like a keyboard or a Touch Bar.
- Clipboard
  Enable people to move or duplicate items by issuing Copy and Paste commands.
- Drag and drop
  Enable people to move or duplicate items by dragging them from one location to another.
- Focus
  Identify and control which visible object responds to user interaction.
- System events
  React to system events, like opening a URL.

Accessibility

- Accessibility fundamentals
  Make your SwiftUI apps accessible to everyone, including people with disabilities.
- Accessible appearance
  Enhance the legibility of content in your app's interface.
- Accessible controls
  Improve access to actions that your app can undertake.
- Accessible descriptions
  Describe interface elements to help people understand what they represent.
- Accessible navigation
  Enable users to navigate to specific user interface elements using rotors.

Framework integration

- AppKit integration
  Add AppKit views to your SwiftUI app, or use SwiftUI views in your AppKit app.
- UIKit integration
  Add UIKit views to your SwiftUI app, or use SwiftUI views in your UIKit app.
- WatchKit integration
  Add WatchKit views to your SwiftUI app, or use SwiftUI views in your WatchKit app.
- Technology-specific views
  Use SwiftUI views that other Apple frameworks provide.

Tool support

- Previews in Xcode
  Generate dynamic, interactive previews of your custom views.
- Xcode library customization
  Expose custom views and modifiers in the Xcode library.
- Performance analysis
  Measure and improve your app's responsiveness.