Contents

Introduction 13

Don’t panic!
What is SwiftUI?
SwiftUI vs Interface Builder and storyboards
Frequently asked questions about SwiftUI
Answering the big question: should you learn SwiftUI, UIKit, or both?
How to follow this quick start guide
Migrating from UIKit to SwiftUI
What’s in the basic template?
Dedication

Building a complete project 33

SwiftUI tutorial: Building a complete project
Building a menu using List
Composing views to create a list row
Polishing designs with fonts and colors
Displaying a detail screen with NavigationLink
Observable objects, environment objects, and @Published
Adding items to an order with @EnvironmentObject
Adding TabView and tabItem()
Bindings and forms
Two-way bindings in SwiftUI
Formatting interpolated strings in SwiftUI
Presenting an alert
Adding swipe to delete and EditButton
Wrap up: our SwiftUI project is complete

Working with static text 95

How to create static labels with a Text view

How to style text views with fonts, colors, line spacing, and more
How to format text inside text views
How to add spacing between letters in text
How to format dates inside text views
How to make TextField uppercase or lowercase using textCase()
How to show text and an icon side by side using Label
How to mark content as a placeholder using redacted()

Images, shapes, and other media 107

How to draw images using Image views
How to adjust the way an image is fitted to its space
How to tile an image
How to render images using SF Symbols
How to render a gradient
How to use images and other views as a backgrounds
How to display solid shapes
How to fill and stroke shapes at the same time
How to draw part of a solid shape using trim()
When should you use ContainerRelativeShape?
How to play movies with VideoPlayer
How to integrate SpriteKit using SpriteView

View layout 128

How to give a view a custom frame
How to control spacing around individual views using padding
How to provide relative sizes using GeometryReader
How to place content outside the safe area
How to return different view types
How to create views in a loop using ForEach
How to control layout priority using layoutPriority()
How to make two views the same width or height

Stacks, grids, and scrollviews 145

How to create stacks using VStack and HStack

How to customize stack layouts with alignment and spacing
How to force views to one side inside a stack using Spacer
How to make a fixed size Spacer
How to layer views on top of each other using ZStack
How to change the order of view layering using Z index
How to create different layouts using size classes
How to automatically switch between HStack and VStack based on size class
How to add horizontal and vertical scrolling using ScrollView
How to make a scroll view move to a location using ScrollViewReader
How to create 3D effects like Cover Flow using ScrollView and GeometryReader
How to position views in a grid using LazyVGrid and LazyHGrid
How to lazy load views using LazyVStack and LazyHStack

Creating user interface controls 174

Working with state
How to create a tappable button
How to disable the overlay color for images inside Button and NavigationLink
How to read text from a TextField
How to add a border to a TextField
How to add a placeholder to a TextField
How to disable autocorrect in a TextField
How to dismiss the keyboard for a TextField
How to format a TextField for numbers
How to create secure text fields using SecureField
How to create a toggle switch
How to create a slider and read values from it
How to create a picker and read values from it
How to create a date picker and read values from it
How to create a segmented control and read values from it
How to create a stepper and read values from it
How to hide the label of a Picker, Stepper, Toggle, and more using labelsHidden()
How to create multi-line editable text with TextEditor

How to let users select a color with ColorPicker
How to show progress on a task using ProgressView
How to show indeterminate progress using ProgressView
How to show a Map view
How to show annotations in a Map view
How to open web links in Safari

Responding to global and lifecycle events 215

How to detect when your app moves to the background or foreground with scenePhase
How to respond to view lifecycle events: onAppear() and onDisappear()
How to add keyboard shortcuts using keyboardShortcut()
How to control which view is shown when your app launches
How to run code when your app launches
How to add an AppDelegate to a SwiftUI app
How to detect device rotation

Taps and gestures 230

How to add a gesture recognizer to a view
How to read tap and double-tap gestures
How to force one gesture to recognize before another using highPriorityGesture()
How to make two gestures recognize at the same time using simultaneousGesture()
How to create gesture chains using sequenced(before:)
How to detect the user hovering over a view
How to detect shake gestures
How to control the tappable area of a view using contentShape()
How to disable taps for a view using allowsHitTesting()

Advanced state 247

What's the difference between @ObservedObject, @State, and @EnvironmentObject?

How to use @StateObject to create and monitor external objects
How to use @ObservedObject to manage state from external objects
How to use @EnvironmentObject to share data between views
How to send state updates manually using objectWillChange
How to create constant bindings
How to create custom bindings
How to use a timer with SwiftUI
How to run some code when state changes using onChange()

Lists 269

Working with lists
How to create a list of static items
How to create a list of dynamic items
How to let users delete rows from a list
How to let users move rows in a list
How to add sections to a list
How to enable editing on a list using EditButton
How to set the background color of list rows using listRowBackground()
How to create grouped and inset grouped lists
How to create expanding lists
How to scroll to a specific row in a list
How to allow row selection in a list
How to use implicit stacking

Forms 291

Working with forms
Basic form design
Breaking forms into sections
Pickers in forms
Enabling and disabling elements in forms
Showing and hiding form rows

Containers 302

Working with containers
How to embed a view in a navigation view
How to add bar items to a navigation view
How to embed views in a tab bar using TabView
How to create scrolling pages of content using tabViewStyle()
How to group views together
How to hide and show the status bar
How to hide and reveal content using DisclosureGroup
How to create a toolbar and add buttons to it
How to add a sidebar for iPadOS

Alerts, action sheets, and menus 321

Working with presentations
How to show an alert
How to add actions to alert buttons
How to show multiple alerts in a single view
How to show an action sheet
How to show a context menu
How to recommend another app using appStoreOverlay()
How to show a menu when a button is pressed
How to let users pick options from a menu

Presenting views 336

How to push a new view onto a NavigationView
How to push a new view when a list row is tapped
How to use programmatic navigation in SwiftUI
How to present a new view using sheets
How to make a view dismiss itself
How to present a full screen modal view using fullScreenCover()
How to show a popover view

Transforming views 351

How to adjust the position of a view using its offset
How to color the padding around a view

How to stack modifiers to create more advanced effects
How to draw a border around a view
How to draw a border inside a view
How to create a marching ants border effect
How to draw a shadow around a view
How to clip a view so only part is visible
How to rotate a view
How to rotate a view in 3D
How to scale a view up or down
How to round the corners of a view
How to adjust the opacity of a view
How to adjust the accent color of a view
How to mask one view with another
How to blur a view
How to blend views together
How to adjust views by tinting, and desaturating, and more
Customizing Button with ButtonStyle
Customizing ProgressView with ProgressViewStyle
Customizing Toggle with ToggleStyle

Drawing **385**

SwiftUI's built-in shapes
How to draw a custom path
How to draw polygons and stars
How to draw a checkerboard
How to use UIBezierPath and CGPath in SwiftUI
How to convert a SwiftUI view to an image

Animation **401**

How to create basic animations
How to create a spring animation
How to animate changes in binding values
How to create an explicit animation
How to delay an animation
How to start an animation immediately after a view appears

How to apply multiple animations to a view
How to synchronize animations from one view to another with matchedGeometryEffect()
How to add and remove views with a transition
How to combine transitions
How to create asymmetric transitions
How to create a custom transition
How to animate the size of text
How to override animations with transactions

Composing views 436

How to create and compose custom views
How to combine text views together
How to store views as properties
How to create custom modifiers
How to wrap a custom UIView for SwiftUI
How to create modifiers for a UIViewRepresentable struct
How to insert images into text

Cross-platform SwiftUI 451

Learn once, apply anywhere
How to get translucent lists on macOS
How to make carousel lists on watchOS
How to read the Digital Crown on watchOS using digitalCrownRotation()

Data 457

Introduction to using Core Data with SwiftUI
How to configure Core Data to work with SwiftUI
How to access a Core Data managed object context from a SwiftUI view
How to create a Core Data fetch request using @FetchRequest
How to filter Core Data fetch requests using a predicate
How to add Core Data objects from SwiftUI views

How to delete Core Data objects from SwiftUI views
How to limit the number of items in a fetch request
How to create a document-based app using FileDocument and DocumentGroup
How to export files using fileExporter()
How to continue an NSUserActivity in SwiftUI

Accessibility 485

Introduction to accessibility with SwiftUI
How to use Dynamic Type with a custom font
How to detect the Reduce Motion accessibility setting
How to detect dark mode
How to use decorative images to reduce screen reader clutter
How to reduce animations when requested

Tooling 497

How to preview your layout at different Dynamic Type sizes
How to preview your layout in light and dark mode
How to preview your layout in different devices
How to preview your layout in a navigation view
How to use Instruments to profile your SwiftUI code and identify slow layouts

What now? 516

SwiftUI tips and tricks

Appendix A 532

Understanding property wrappers in Swift and SwiftUI
All SwiftUI property wrappers explained and compared
What is the @State property wrapper?
What is the @StateObject property wrapper?
What is the @Published property wrapper?
What is the @ObservedObject property wrapper?

What is the @EnvironmentObject property wrapper?
What is the @Environment property wrapper?
What is the @Binding property wrapper?
What is the @GestureState property wrapper?
What is the @FetchRequest property wrapper?
What is the @AppStorage property wrapper?
What is the @SceneStorage property wrapper?
What is the @ScaledMetric property wrapper?
What is the @UIApplicationDelegateAdaptor property wrapper?

Appendix B 565

Common SwiftUI errors and how to fix them
How to fix “Cannot assign to property: 'self' is immutable”
How to fix “Initializer 'init(_:rowContent:)' requires that ‘SomeType’ conform to 'Identifiable'”
How to fix “Ambiguous reference to member 'buildBlock()'”
How to fix “Function declares an opaque return type, but has no return statements in its body from which to infer an underlying type”
How to fix “Property declares an opaque return type, but has no initializer expression from which to infer an underlying type”
How to fix “Modifying state during view update, this will cause undefined behavior”
How to fix “Protocol 'View' can only be used as a generic constraint because it has Self or associated type requirements”
How to fix “Fatal error: No ObservableObject of type SomeType found”
How to fix “Cannot convert value of type 'String' to expected argument type 'Binding<String>'”
How to fix “Cannot convert value of type 'String' to expected argument type 'Text'"
How to fix “Referencing initializer 'init(wrappedValue:)' on 'ObservedObject' requires that ‘SomeType’ conform to 'ObservableObject'"
How to fix “Cannot convert value of type '() -> ()' to expected argument type '() -> _'”
How to fix “Missing argument for parameter 'content' in call”
How to fix images not resizing

How to fix a Form Picker or a NavigationLink that isn't tappable