



Xcode Overview

Development and Debugging

What We'll Cover

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1. Introduction
2. Key Features
3. Workspace Overview
4. Debugging Basics
5. Advanced Debugging
6. Debugging Tools

Foundational Concepts

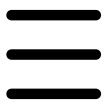
Introduction

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1. Apple's integrated development environment (IDE)
2. Used for developing software for macOS, iOS, iPadOS, watchOS, and tvOS
3. Comprehensive testing and debugging capabilities
4. Latest version: Xcode 16

Key Features


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1. Interface Builder
2. Source Code Editor
3. Asset Management
4. Testing Tools
5. Simulators
6. Version Control

Workspace Overview

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1. Navigator Area (left)
2. Editor Area (centre)
3. Utilities Area (right)
4. Debug Area (bottom)
5. Toolbar (top)

Workspace Overview

The screenshot displays the Xcode workspace with the following components:

- Navigation:** Located on the left, it shows a project tree for 'HelloWorld'. The 'ViewController' file is selected and highlighted in blue.
- Editor:** The central area displays the Swift code for 'ViewController.swift'. The code includes comments, an import statement for 'UIKit', and a class definition for 'ViewController' that inherits from 'UIViewController'. It features an '@IBOutlet' for 'nameTextField' and two '@IBAction' methods: 'viewDidLoad' and 'printMessage'.
- Inspector:** Located on the right, it shows the 'Identity and Type' section for the selected file. It lists the file name as 'ViewController.swift', its type as 'Default - Swift Source', and its location as 'Relative to Group'. The 'Target Membership' section shows that the file is a member of the 'HelloWorld' target.
- Toolbar:** At the top, it shows the current project 'HelloWorld', the selected target 'iPhone 15 Pro', and the status 'Finished running HelloWorld on iPhone 15 Pro'.
- Debug:** At the bottom, it shows the 'Debug' pane with a filter bar and a list of variables.

```
1 //
2 // ViewController.swift
3 // HelloWorld
4 //
5 // Created by Ravi Shankar on 05/04/24.
6 //
7
8 import UIKit
9
10 class ViewController: UIViewController {
11
12     @IBOutlet weak var nameTextField: UITextField!
13
14     override func viewDidLoad() {
15         super.viewDidLoad()
16     }
17
18     @IBAction func printMessage(_ sender: Any) {
19         print("Welcome to iOS Bootcamp \(nameTextField.text ?? "")")
20     }
21 }
22
23
```

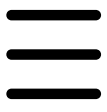
Debugging

1 —
2 —
3 —

1. Breakpoints
2. Variables Inspection
3. Console Output
4. LLDB Commands
5. Exception Breakpoints
6. Symbolic Breakpoints
7. View Debugging
8. Memory Debugging

Debugging Tools

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1. Instruments for profiling

2. Network Link Conditioner

3. Energy Log

4. Thread Sanitizer

5. Address Sanitizer