

Learn to code quickly and painlessly using Apple's newest
Swift programming language



Swift OS X

Programming for Absolute Beginners

Wallace Wang

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~~This book is dedicated to everyone who always wanted to learn how to program on the Macintosh. You can learn anything you want just as long as you're willing to take the time and believe in yourself.~~

“Promise me you'll always remember: You're braver than you believe, and stronger than you seem, and smarter than you think.”

—Christopher Robin to Winnie the Pooh

Introduction

Whether you're a complete novice looking to get started in programming, someone familiar with programming but curious about learning more, or a seasoned programmer comfortable with other programming languages but unfamiliar with Macintosh programming, this book is for you. Whatever your skill level, this book will help everyone understand how to use Apple's latest programming language, Swift, to create OS X programs for the Macintosh.

Now you may be wondering why learn Swift and why program for the Macintosh? The answer is simple.

First, Swift is Apple's newest programming language designed to make creating OS X and iOS programs faster, easier, and more reliable than before. Previously, you had to use Objective-C to create OS X and iOS apps. While powerful, Objective-C is much harder to learn; more complicated to read and write; and because of its complexity, more prone to introducing errors or bugs in a program.

On the other hand, Swift is just as powerful as Objective-C (actually more powerful as you'll soon see), far easier to learn, and much simpler to read and write while also minimizing common programming errors at the same time. Swift gives you all the benefits of Objective-C with none of the drawbacks. Plus Swift gives you features that Objective-C doesn't offer, which makes Swift a far better programming language to learn and use today and tomorrow. Since Swift is Apple's official programming language, you can be certain learning Swift will lead to greater opportunities now and long into the future.

Second, you may wonder why learn to create Macintosh programs? After all, the hot trend is learning to create iOS apps for the iPhone, iPad, and Apple Watch. If you plan on developing software, you definitely want to use Swift to create iOS apps.

However, learning Swift means understanding the following:

- The principles of programming and object-oriented programming in particular
- The syntax of the Swift programming language
- Xcode's features
- Apple's software development framework (called Cocoa) that forms the foundation of every OS X and iOS program
- The principles of user interface design

Does this sound like a lot to learn? Don't worry. We'll go through each process step by step so you won't feel lost. The point is that to create OS X programs and iOS apps, you need to learn multiple topics, but creating iOS apps poses an additional challenge.

For example, an iOS app needs to respond to touch gestures with one finger, two fingers, swipes, shakes, and motion in addition to adapting to changes when the user flips an iPhone or iPad left, right, upside down, or right side up.

In comparison, a Macintosh program only needs to respond to keyboard and mouse input. That means OS X programs are much simpler to create and understand, which also means that learning Swift to create OS X programs is far easier than learning Swift to create iOS apps.

Best of all, the principles are exactly the same. What you learn creating OS X programs are the exact same skills you need to create iOS apps. The difference is that creating OS X programs is far easier, less confusing, and much less intimidating than creating iOS apps.

Trying to create iOS apps right from the start can be like trying to swim across the English Channel before you even know how to hold your breath underwater.

You don't want to frustrate yourself unnecessarily. That's why it's much easier to learn the principles of iOS app programming by first learning OS X programming. Once you're familiar with OS X programming, you'll find it's trivial to transfer your programming skills to creating iOS apps. By learning to create OS X programs in Swift, you'll learn everything you need to know to eventually create iOS apps in Swift, plus you'll know how to create OS X programs so you can tap into the growing Macintosh market as well.

Following Lucrative Programming Trends

The introduction of a new computer platform has always ushered in a lucrative period for programmers. In the early 80s, the hottest platform was the Apple II computer. If you wanted to make money writing programs, you wrote programs to sell to Apple II computer owners, such as Dan Bricklin did, an MBA graduate student at the time, when he wrote the first spreadsheet program, VisiCalc.

Then the next big computing platform shift occurred in the mid-80s with the IBM PC and MS-DOS. People made fortunes off the IBM PC including Bill Gates and Microsoft, which went from a small, startup company to the most dominant computer company in the world. The IBM PC made millionaires out of hundreds of people including Scott Cook, a former marketing director at Procter & Gamble, who developed the popular money manager program, Quicken.

Microsoft helped usher in the next computer platform when they shifted from MS-DOS to Windows and put a friendly graphical user interface on IBM PCs. Once again, programming Windows became the number one way that programmers and non-programmers alike made fortunes by writing and selling their own Windows programs. Microsoft took advantage of the shift to Windows by releasing several Windows-only programs that have become fixtures of the business world such as Outlook, Access, and Excel.

Now the world is shifting toward the new computer platform of Apple products running OS X and iOS. Thousands of people, just like you, are eager to start writing programs to take advantage of the Macintosh's rising market share along with the dominant position of the iPhone and the iPad in the smart phone and tablet categories, and the Apple Watch in the wearable computer market.

Besides experienced developers, amateurs, hobbyists, and professionals in other fields are also interested in writing their own games, utilities, and business software specific to their particular niche.

Many programmers have gone from knowing nothing about programming to earning thousands of dollars a day by creating iPhone/iPad apps or Macintosh programs. As the Macintosh, iPhone, iPad, and now the Apple Watch continue gaining market share all over the world, more people will use one or more of these products, increasing the potential market for you.

All this means is that it's a perfect time for you to start learning how to program your Macintosh right now because the sooner you understand the basics of Macintosh programming, the sooner you can start creating your own Macintosh programs along with iPhone/iPad/Apple Watch apps.

What to Expect From This Book

Whether you're a complete novice or a seasoned programmer coming from another programming environment, this book will minimize technical jargon and focus on helping you understand what to do and why.

If you just want to get started and learn the basics of programming in Swift, this book is for you. If you're already an experienced Windows programmer and want to get started programming the Macintosh, this book can be especially helpful in teaching you the basics in a hurry.

If you've never programmed before in your life, or if you're already familiar with programming but not with Macintosh programming, then this book is for you. Even if you're experienced with Macintosh programming, you may still find this book handy as a reference to help you achieve certain results without having to wade through several books to find an answer.

You won't learn everything you need to create your own super-sophisticated programs, but you'll learn just enough to get started, feel comfortable using Xcode, and be able to tackle other programming books with more confidence and understanding. Fair enough? If so, then turn the page and let's get started.

Note

All code in this book was tested using Swift 2 in Xcode 7. If you're using Xcode 6, some features in this book won't work.

Acknowledgments

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A special mention goes towards Michael Montijo and his indomitable spirit that has him driving from Phoenix to Los Angeles once a month for the past fifteen years to meet with Hollywood executives. His cartoon show ideas, “Life of Mikey” and “Pachuko Boy,” will one day make it to television because he never gave up despite all the obstacles in his way.

Thanks also go to my wife, Cassandra, and son, Jordan, for putting up with a house filled with more gadgets than actual living people. Final thanks go to my cats, Oscar and Mayer, for walking over the keyboard, knocking over laptops, and chewing on power cords at the most inconvenient times of the day.

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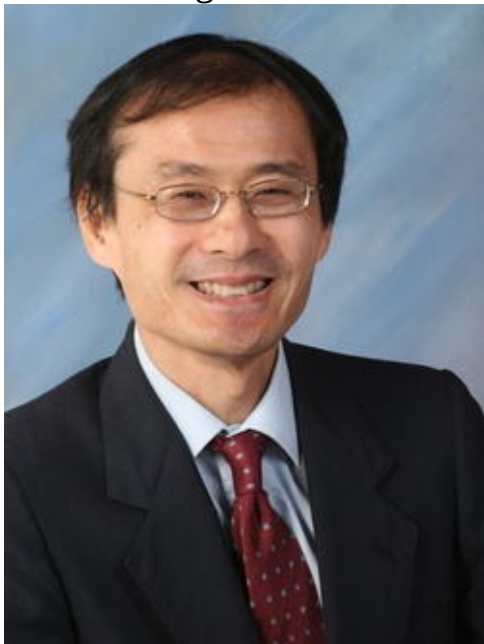
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About the Author and About the Technical reviewer

About the Author

Wallace Wang

is a former Windows enthusiast who took one look at Vista and realized that the future of computing belonged to the Macintosh. He has written more than forty computer books, including *Microsoft Office for Dummies*, *Beginning Programming for Dummies*, *Steal This Computer Book*, *My New Mac*, and *My New iPad*. In addition to programming the Macintosh and iPhone/iPad, he also performs stand-up comedy, having appeared on A&E's "Evening at the Improv," and having performed in Las Vegas at the Riviera Comedy Club at the Riviera Hotel & Casino. When he is not writing computer books or performing stand-up comedy, he also appears on a local San Diego radio show called "Note From the Underground" that airs twice a week on a radio station KNSJ (www.knsj.org).



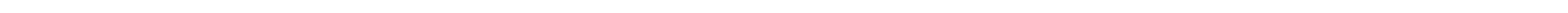
In addition, he enjoys blogging about screenwriting at his site, The 15 Minute Movie Method (www.15minutemoviemethod.com), where he shares screenwriting tips with other aspiring screenwriters who all share the goal of breaking into Hollywood. Some of his other sites include Cat Daily News (www.catdailynews.com) that highlights interesting news about cats, The Electronic Author (www.electronicauthor.com) that focuses on self-publishing, and Top Bananas (www.topbananas.com) that covers the possibilities and application of technology related to Apple and other mobile and wearable computer manufacturers.

About the Technical reviewer

Bruce Wade

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Apple technology



1. Understanding Programming

Wallace Wang¹✉

(1) CA, US

Programming is nothing more than writing step-by-step instructions for a computer to follow. If you've ever written down the steps for a recipe or scribbled directions for taking care of your pets while you're on vacation, you've already gone through the basic steps of writing a program. The key is simply knowing what you want to accomplish and then making sure you write the correct instructions that will tell someone how to achieve that goal.

Although programming is theoretically simple, it's the details that can trip you up. First, you need to know exactly what you want. If you wanted a recipe for cooking chicken chow mein, following a recipe for cooking baked salmon won't do you any good.

Second, you need to write down every instruction necessary to get you from your starting point to your desired result. If you skip a step or write steps out of order, you won't get the same result. Try driving to a restaurant where your list of driving instructions omits telling you when to turn on a specific road. It doesn't matter if 99 percent of the instructions are right; if just one instruction is wrong, you won't get to your desired goal.

The simpler your goal, the easier it will be to achieve it. Writing a program that displays a calculator on the screen is far simpler than writing a program to monitor the safety systems of a nuclear power plant. The more complex your program, the more instructions you'll need to write, and the more instructions you need to write, the greater the chance you'll forget an instruction, write an instruction incorrectly, or write instructions in the wrong order.

Programming is nothing more than a way to control a computer to solve a problem, whether that computer is a laptop, smart phone, tablet, or wearable watch. Before you can start writing your own programs, you need to understand the basic principles of programming in the first place.

Note

Don't get confused between learning programming and learning a particular programming language. You can actually learn the principles of programming without touching a computer at all. Once you understand the principles of programming, you can easily learn any particular programming language such as Swift.

Programming Principles

To write a program, you have to write instructions that the computer can follow. No matter what a program does or how big it may be, every program in the world consists of nothing more than step-by-step instructions for the computer to follow, one at a time. The simplest program can consist of a single line such as:

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