Making Everything Easier!™

Objective-C® Programming

FOR DUMMIES®

Learn to:

- Create apps for iPhone®, iPad®, and OS X® using object-oriented programming
- Use Xcode® 4 for debugging and code completion
- Identify and eliminate errors in your programs
- Structure applications and use Objective-C syntax

NSDictionary* englandDictionary = [app
NSFileManager defaultManager] fileExistsAtPath: balancePath])
if ([[NSFileManager defaultM
ray alloc]initWithContentsOfFile:balancePath];
y valueForKey:@"Europe"] ;

Neal Goldstein
Karl Kowalski

Objective-C® Programming For Dummies®

Visit www.dummies.com/cheatsheet/objectivecprogramming to view this book's cheat sheet.

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by Neal Goldstein and Karl G. Kowalski

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About the Authors

Neal Goldstein is a recognized leader in making state-of-the-art and cutting-edge technologies practical for commercial and enterprise development. He was one of the first technologists to work with commercial developers at firms such as Apple Computer, Lucasfilm, and Microsoft to develop commercial applications using object-based programming technologies. He was a pioneer in moving that approach into the corporate world for developers at Liberty Mutual Insurance, USWest (now Verizon), National Car Rental, EDS, and Continental Airlines, showing them how object-oriented programming could solve enterprise-wide problems. His book (with Jeff Alger) on object-oriented development, *Developing Object-Oriented Software for the Macintosh* (Addison Wesley, 1992), introduced the idea of scenarios and patterns to developers. He was an early advocate of the Microsoft .NET framework, and he successfully introduced it into many enterprises, including Charles Schwab. He was one of the earliest developers of Service Oriented Architecture (SOA), and as Senior Vice President of Advanced Technology and the Chief Architect at Charles Schwab, he built an integrated SOA solution that spanned the enterprise, from desktop PCs to servers to complex network mainframes. (He holds four patents as a result.) As one of IBM's largest customers, he introduced the folks at IBM to SOA at the enterprise level and encouraged them to head in that direction.

Since the release of the iPhone SDK in March 2008, he has been focusing on mobile applications. He has had eight applications in the App Store. These include a series of Travel Photo Guides (developed with his partners at mobilefortytwo), and a Digital Field Guides series (`http://lp.wileypub.com/DestinationDFGiPhoneApp`), developed in partnership with John Wiley & Sons. He also has a free app called Expense Diary that allows you to keep track of things like expenses, mileage, and time by adding them to your calendar.

He has developed mobile strategies for a number of businesses, ranging from National Cinemedia to the American Automobile Association (AAA). His strategies focus on Mobile 2.0 — integrating mobile across the enterprise, creating a consistent user experience across devices and applications in an application ecosystem, and developing a user experience architecture that both leverages — and is constrained by — the device. He has spent the last three years working with mobile device users and developers to determine what makes mobile devices so appealing, what users want from an application on a phone or tablet, and what makes an app compelling. These efforts have resulted in the Application Ecosystem model for mobile applications and an underlying Model Application Controller Architecture based on web services that has become a key element in his client work and his books.

In his copious spare time, he also teaches introductory and advanced classes on iPhone and iPad development (for clients as well as some public classes) and does expert witness work.

Along with those apps and his consulting, he has written several books on iPhone programming, *iPhone Application Development For Dummies* (multiple editions) (Wiley), *Objective-C For Dummies* (Wiley), and he co-authored (with Tony Bove) *iPad Application*

Development For Dummies (including multiple editions) (Wiley) and *iPhone Application Development All-in-One For Dummies* (Wiley). He's also the primary author (with Jon Manning and Paris Buttfield-Addison) of *iPhone & iPad Game Development For Dummies.*

Karl Kowalski has traveled the world of computers and software development for far longer than he's willing to admit. He has written programs for airplanes, robots, games, and even particle accelerators, and he has developed software on platforms ranging from desktop computers to mainframes all the way down to smartphones. He is also the author of *Mac Application Development For Dummies* (John Wiley & Sons, Inc., 2011). He lives near Boston and works for RSA, The Security Division of EMC, where he develops security solutions for mobile platforms such as iPhone and BlackBerry, and desktop operating systems such as Windows and Mac OS X. In his spare time, he develops software for smartphones as part of a startup, BlazingApps. And if there are any spare seconds in the day, he does some voice-over work for one of his favorite journals, *The Objective Standard.*

Dedication

To my friends and family, and especially my children Sarah and Evan and my wife, Linda. She deserves special recognition for her support and patience and for maintaining her (and my) sense of humor. Without her support I never would have been able to write 12 books in 3.5 years. Thank you so much.

This is for you
As day follows night
The tunnel ends in the light
Finally time to play

— Neal Goldstein

To my incredible family: Connie, Stanley, Lee Anne, David, Rosemarie, Joseph, Candi, Reeseling the Nieceling, and Mason — thank you for all your love and support.

— Karl Kowalski

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Thanks again to my agent Carole Jelen for her continued work and support in putting and keeping these projects together.

— Neal Goldstein

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Introduction

When the folks at John Wiley & Sons approached me about writing *Objective-C Programming For Dummies,* I thought long and hard about it. Within 480 pages, I wanted to be sure that I could explain to someone with no programming experience how to actually create useful programs.

So I started to think about what makes programming so difficult.

It isn’t the concept of how programs work, which I cover easily in Part I. And it isn’t really the language itself (or the instruction set — I cover that in Chapter 4). It isn’t even the user interface — all that code needed to open and close windows, process menus and the mouse and user touches, draw graphics, and play audio and video (did I leave anything out?). No, while all that used to be really hard, now it’s made much easier by using the frameworks available with Mac OS X and iOS.

What is really hard, after you understand the language and framework, is how you structure your program — how you actually go about taking your idea for an application and turning it into a robust Objective-C application.

Finding out how to use the tools is (relatively) easy; knowing how to use them to create a useful application is the real challenge.

So, besides explaining the instruction set and everything else involved with coding, what I do along the way is explain the other things you need to know (things like application architecture and design) — those things that will make it possible for you, when you are done with this book, to go out and start developing your first application. Nothing less.

So instead of a book that only shows you *how* to use all the features (instructions and frameworks) available to you, I decided to write a book that shows you both *how* and *why.* I do that by having you start to develop an application in Chapter 5 (after I go over the instruction set) and add to that same application until you end up with it running on both the iPhone and Mac in Chapters 17 and 18. Granted, this application isn't the most exciting one in the world, but it gives you the opportunity to use every feature of Objective-C that you'll need to know to go out and build your own killer app. What's more, you build the application incrementally, just as a professional develops a commercial application. Occasionally, you will enter some code only to delete it later, which may seem annoying at times. However, you will get a flavor for how you'll work when you are out on your own.

And while some development will be annoying and tedious, in general it is fun. So go enjoy yourself while you're finding out about Objective-C. I know I do.

About This Book

Objective-C Programming For Dummies is a beginner's guide to developing applications for both iOS devices and the Mac. You don't need any programming experience to get started. I expect you to come as a blank slate, ready to be filled with useful information and new ways to do things. In some ways, the less you know, the easier it will be for you because you won’t have any preconceived notions about programming.

This book distills the hundreds (or even thousands) of pages of Apple documentation, not to mention my own development experience, into only what’s necessary to start you developing real applications. I explain not only the language, but also along the way, I explicitly talk about object-oriented principles and how doing things in a certain way (that is, following those principles) leads to more extensible and enhanceable programs, which you will discover is the holy grail of programming.

Conventions Used in This Book

This book guides you through the process of building applications by using Objective-C.

Code examples in this book appear in a monospaced font so that they stand out a bit better. This means that the code you see will look like this:

```
NSLog(@”I am an Objective-C statement.”);
```

Objective-C is based on C, which (I want to remind you) *is* case sensitive, so please enter the code that appears in this book *exactly* as it appears in the text. I also use the standard Objective-C naming conventions — for example, class names always start with a capital letter, and the names of methods and instance variables always start with a lowercase letter.

All URLs in this book appear in a monospaced font as well:

www.dummies.com

If you’re ever uncertain about anything in the code, you can always look at the source code at the website associated with this book: www.dummies.com/go/objcprogrammingfd. And from time to time, I provide updates for the code and post other things you might find useful on my website, www.nealgoldstein.com.

Foolish Assumptions

To find out how to program in Objective-C for Mac OS X or iOS, you need a Macintosh computer with the latest version of the Mac OS on it. You also need to download the Software Development Kit (SDK). You don’t have to become a registered Apple Developer to do that, but registering with Apple gives you access to all the information Apple provides for understanding Objective-C, iOS, and Mac OS X. I show you how to do both in Chapter 2 (don’t worry; it doesn’t cost a cent).

I assume that you don’t have any programming knowledge but that you have at least a passing acquaintance with some of the ideas, and more important, a desire to know how to program. In general, the code is easy and straightforward (the book isn’t written to dazzle you with fancy coding techniques).

I also assume that you’re familiar with the Mac and/or iPhone and that you are comfortable doing all the things you have to do on the Mac to run applications, including using the Finder to cruise the file system to see what’s there.