Objective-C for Absolute Beginners

iPhone, iPad, and Mac Programming Made Easy
Second Editon

Gary Bennett
Mitch Fisher
Brad Lees

Apress®

Objective-C for Absolute Beginners: iPhone, iPad, and Mac Programming Made Easy, Second Edition

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ISBN-13 (pbk): 978-1-4302-3653-5

ISBN-13 (electronic): 978-1-4302-3654-2

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Distributed to the book trade worldwide by Springer Science+Business Media, LLC., 233 Spring Street, 6th Floor, New York, NY 10013. Phone 1-800-SPRINGER, fax (201) 348-4505, e-mail `orders-ny@springer-sbm.com`, or visit `www.springeronline.com`.

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I'd like to dedicate this book to the two people who had the biggest impact on my career: my dad, Don W. Bennett, and Steve Jobs. Both passed away this year. Thanks for inspiring me to work in the field where I can have fun, make a difference, be creative, and live the American Dream.

—Gary Bennett

I would like to thank my family and friends who have always supported my endeavors. I would especially like to thank Heather, Matthew, and my two children Eric and Jade for patiently living without me for the many nights and forever-busy weekends. I would also like to thank my friends Gary and Brad for all the help they provided. It's been great working with them again.

—Mitch Fisher

I would like to thank my wife Natalie and my kids for the support and time they have given me to work on this book. I am also grateful for good friends who persuade me to take on crazy endeavors.

—Brad Lees

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About the Authors

Gary Bennett is president of xcelMe.com. xcelMe.com provides iPhone/iPad programming courses online. Gary has taught thousands of students how to develop iPhone/iPad apps, and has several very popular apps in the iTunes App Store. Gary's students have some of the best-selling apps in the iTunes App Store. Gary also worked for 25 years in the technology and defense industries. He served 10 years in the US Navy as a nuclear engineer aboard two nuclear submarines. After leaving the Navy, Gary worked for several companies as a software developer, CIO, and president. As CIO, he helped take VistaCare public in 2002. Gary also coauthored *iPhone Cool Projects* for Apress. He lives in Scottsdale, Arizona, with his wife Stefanie and their four children.

Mitch Fisher is a software developer in the Phoenix, Arizona, area. He was introduced to PCs back in the 1980s when 640 KB was considered more memory than anyone could ever use. Over the last 25 years, Mitch has worked for several large and medium-sized companies as a software engineer, software architect, and software manager, and has led teams of developers on multimillion-dollar projects. Mitch now divides his time between writing iOS applications, creating server-side UNIX technologies, and teaching iOS development at `xcelMe.com`.

Brad Lees has more than 14 years of experience in application development and server management. He has specialized in creating and initiating software programs in real estate development systems and financial institutions. Highlights of his professional career include his positions as information systems manager at The Lyle Anderson Company, product development manager for Smarsh, vice president of application development for iNation, and information technology manager at The Orcutt/Winslow Partnship, the largest architectural firm in Arizona. A graduate of Arizona State University, Brad resides in Phoenix with his wife Natalie and their five children.

About the Technical Reviewer

James Bucanek has spent the past 30 years programming and developing microcomputer systems. He has experience with a broad range of technologies, from embedded consumer products to industrial robotics. James currently focuses on Macintosh and iPhone software development. When not programming, James indulges in his love of the arts. He earned an associate degree in classical ballet from the Royal Academy of Dance, and occasionally teaches at Adams Ballet Academy.

Acknowledgments

We would like to thank Apress for all their help in making this book possible. Specifically, we would like to thank Kelly Moritz, our coordinating editor, for helping us stay focused and overcoming many obstacles. Without Kelly, this book would not have been possible.

Special thanks to Matthew Moodie, our development editor, for all his suggestions during the editorial review process to help make this a great book. Thanks to Chandra Clarke and Scribendi, Inc., the copy editors who made the book look great.

We would also like to thank the Alice Community and Carnegie Mellon University for developing Alice and making learning object-oriented programming fun and easy!

Introduction

Over the last three years, we've heard the following countless times:

- "I've never programmed before, but I have a great idea for an iPhone/iPad app."
- "Can I really learn to program the iPhone or iPad?"

We always answer, "Yes, but you have to believe you can." Only you are going to tell yourself you can't do it.

For the Newbie

This book assumes you may have never programmed before. The book is also written for someone who may have never programmed before using object-oriented programming (OOP) languages. There are many Objective-C books out there, but all of these books assume you have programmed before and know OOP and computer logic. We wanted to write a book that takes readers from knowing little or nothing about computer programming and logic to being able to program in Objective-C. After all, Objective-C is the native programming language for the iPhone, iPad, and Mac.

Over the last three years, we have taught well over a thousand students at xcelMe.com to be iPhone/iPad (iOS) developers. Many of our students have developed some of the most successful iOS apps in their category in the iTunes App Store. We have incorporated what we have learned in our first two courses, Introduction to Object-oriented Programming and Logic and Objective-C for iPhone/iPad Developers, into this book.

For the More Experienced

Many developers who programmed years ago or programmed in a non-OOP language need a background in OOP and Logic before they dive into Objective-C. This book is for you. We gently walk you through OOP and how it is used in iOS development to help make you a successful iOS developer.

Why Alice: An Innovative 3D Programming Environment

Over the years, universities have struggled with several issues with their computer science departments:

- High male-to-female ratios
- High drop-out rates

- Longer than average time to graduation

One of the biggest challenges to learning OOP languages like Java, C++, or Objective-C is the steep learning curve from the very beginning. In the past, students had to learn the following topics all at once:

- Object-oriented principles
- A complex Integrated Development Environment (IDE), i.e., Xcode, Eclipse, Visual Studio
- The syntax of the programming language
- Programming logic and principles

As a result, Carnegie Mellon University received a grant from the US government and developed Alice. Alice, an innovative 3D programming environment, makes it easy for new developers to create rich graphical applications. Alice is a teaching tool for students learning to program in an OOP environment. The software uses 3D graphics and a drag-and-drop interface to facilitate a more engaging, less frustrating first programming experience.

Alice enables students to focus on learning the principles of OOP without having to focus on learning a complex IDE and Objective-C principles all at once. You get to focus on each topic individually. This helps students feel a real sense of accomplishment as they progress.

As drag-and-drop programming, Alice removes all the complexity of learning an IDE and programming language syntax. You'll see programming is actually fun, and you can develop very cool and sophisticated apps in Alice.

After we introduce the OOP topic and readers feel comfortable with the material, we then move into Xcode, where you get to use your new OOP knowledge in writing Objective-C applications. This way, you can focus on the Objective-C syntax and language without having to learn OOP at the same time.

Learning Objective-C Without Alice

More than a thousand `xcelMe.com` students have used this book to become successful iOS developers. At the end of each course, we ask our students if the Alice sections in the first four sections were useful. More than half of the students thought using Alice at the beginning of the first four chapters to introduce the chapter was critical to their success. However, some of the students didn't feel they needed the Alice examples at the beginning of the first four chapters.

We have laid out the first four chapters of this book with the first part of each chapter introducing the OOP topic with Alice; the remaining part of the chapter introduces the topic using Objective-C. Thus, you can skip the Alice material if you feel comfortable with the topic.

How This Book Is Organized

You'll notice that we are all about successes in this book. We introduce the OOP and Logic concepts in Alice and then move those concepts to Xcode and Objective-C. Many students are visual or learn by doing. We use both techniques. We'll walk you through topics and concepts with visual examples and then take you through step-by-step examples reinforcing the concepts.

We often repeat topics in different chapters to reinforce what you have learned and apply these skills in new ways. This enables new programmers to reapply development skills and feel a sense of accomplishment as they progress. Don't worry if you feel you haven't mastered a topic. Keep moving forward!

The Formula for Success

Learning to program is an interactive process between your program and you. Just like learning to play an instrument, you have to practice. You must work through the examples and exercises in this book. Understanding the concept doesn't mean you know how to apply it and use it.

You will learn a lot from this book. You will learn a lot from working through the exercises in this book. *However, you will really learn when you debug your programs.* Spending time walking through your code and trying to find out why it is not working the way you want is an unparalleled learning process. The downside of debugging is a new developer can find it especially frustrating. If you have never wanted to throw your computer out the window, you will. You will question why you are doing this, and whether you are smart enough to solve the problem. Programming is very humbling, even for the most experienced developer.

Like a musician, the more you practice the better you get. By practicing, we mean programming! You can do some amazing things as a programmer. The world is your oyster. Seeing your app in the iTunes App Store is one of the most satisfying accomplishments. However, there is a price, and that price is time spent coding and learning.

Having taught more than a thousand students to become iOS developers, we have put together a formula for what makes students successful. Here is our formula for success:

- Believe you can do it. You'll be the only one who says you can't do this. So don't tell yourself that.
- Work through all the examples and exercises in this book.
- Code, code, and keeping coding. The more you code, the better you'll get.
- Be patient with yourself. If you were fortunate enough to have been a 4.0 student who can memorize material just by reading it, this will not happen with Objective-C coding. You are going to have to spend time coding.
- You learn by reading this book. You really learn by debugging your code.
- Use the ***free*** xcelMe.com webinars and YouTube videos explained at the end of this chapter.
- Don't give up!

The Development Technology Stack

We will walk you through the process of understanding the development process for your iOS apps and what technology you need. However, briefly looking at all the pieces together is helpful. For a sample iPhone app in a Table View, see Figure 1.

Figure 1. *The iPhone/iPad technology stack*

Required Software, Materials, and Equipment

One of the great things about Alice is it available on the three main operating systems used today:

- Windows
- Mac
- Linux

The other great thing about Alice is it is free! You can download Alice at `www.Alice.org`.

Operating System and IDE

Although you can use Alice on many platforms, the Integrated Development Environment (IDE) that developers use to develop iOS apps is Xcode. You have to use *an Intel-based Mac to use Xcode and submit apps!* Xcode is free and is available in the Mac App Store.

Software Development Kits

You will need to register as an iOS developer. You can do this at `http://developer.apple.com/iphone`.

When you are ready to upload your app to the iTunes App Store, you will need to pay $99/year.

Dual Monitors

We recommend developers have a second monitor connected to their computer. It is great to step through your code and watch your output window and iPad simulator at the same time on dual independent monitors. Apple hardware makes this easy. Just plug your second monitor into the display port of any Intel-based Mac, with the correct Mini DisplayPort adapter of course, and you have two monitors working independently of one another. See Figure 2. Note that dual monitors are not required. You will just have to organize your open windows to fit on your screen if you don't.

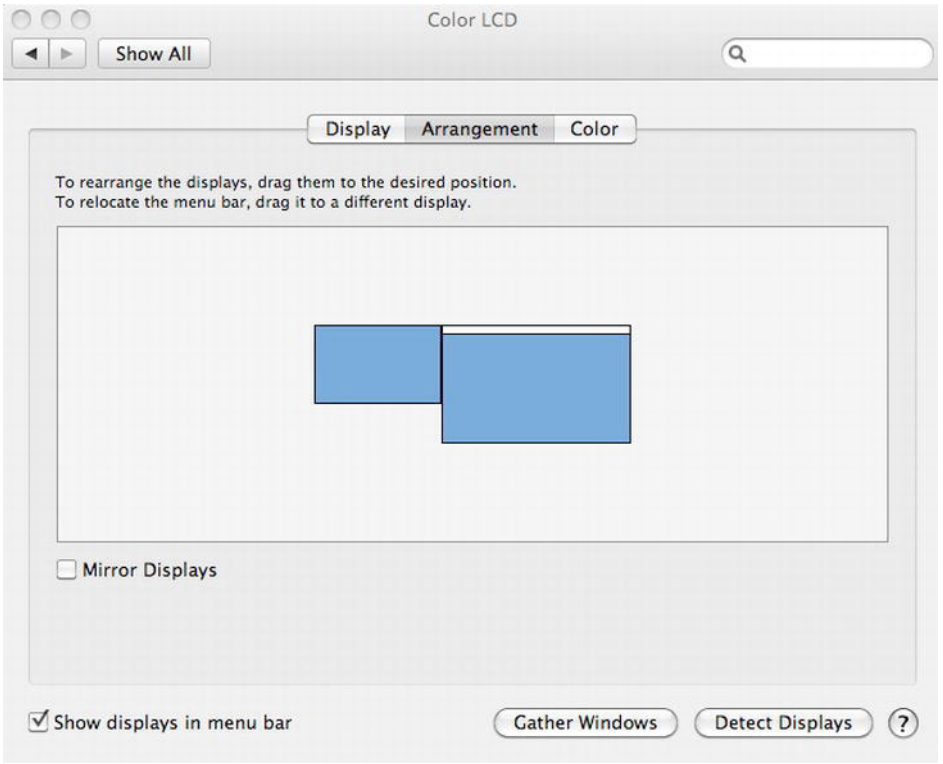

Figure 2. *Dual monitors*

Free Live Webinars, Q&A, and YouTube Videos

Nearly every Wednesday night at 7:30 p.m. Pacific daylight time, we have live webinars and discuss a topic from the book or a timely item of interest. These webinars are free, and you can register for them at `www.xcelme.com/free-webinars.php`.

At the end of the webinars, we do a Q&A. You can ask a question on the topic discussed or any topic in the book.

Additionally, all these webinars are recorded and available on YouTube.

Make sure you subscribe to the YouTube channel so you are notified when new recordings are uploaded.

Figure 3. *Free Objective-C webinars and YouTube videos*

Free Book Forum

We have developed an online forum for this book at `http://forum.xcelme.com`, where you can ask questions while you are learning Objective-C and get answers from the authors. You will also find answers to the exercises and additional exercises to help you learn. See Figure 3.

You can also access answers to exercises and discover helpful links to help you become a successful iPhone/iPad developers and create great apps. See Figure 4. So let's get started!

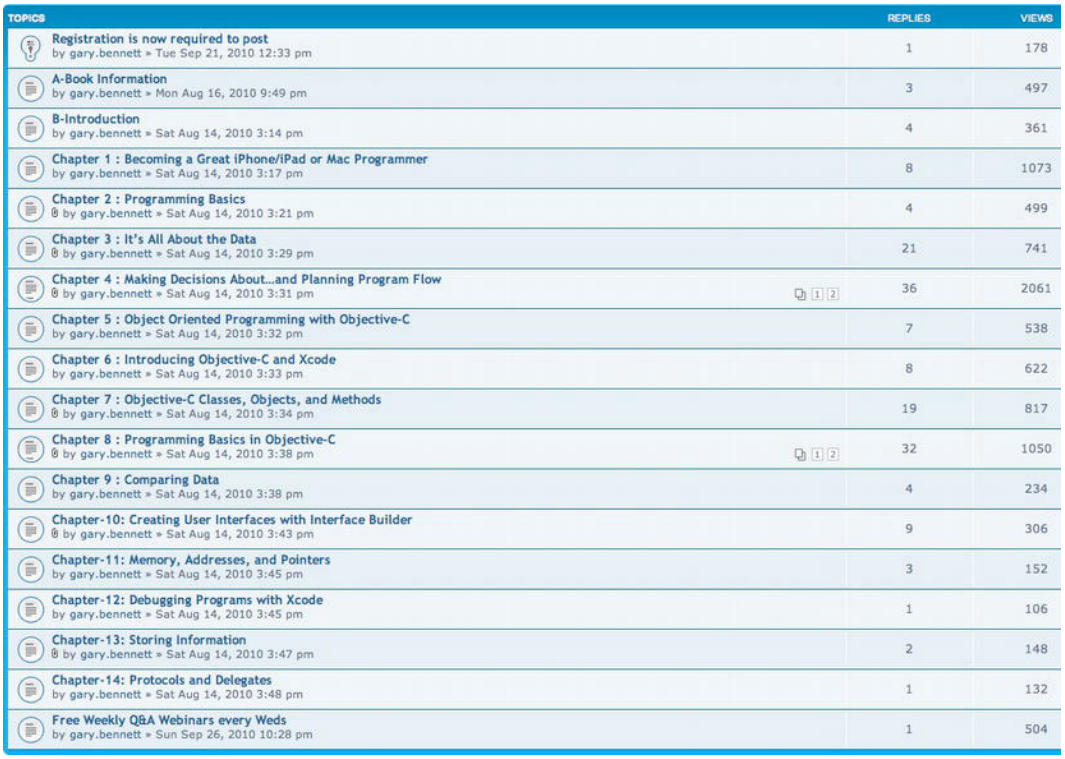

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Figure 4. *Reader Forum for accessing answers to exercise and posting questions for authors*