

iPhone and iPad Apps for Absolute Beginners, iOS5 Edition



Dr. Rory Lewis

Apress®

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To my best friend, my wife, my life, my light, my Kera.

—Dr. Rory Lewis

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Foreword: About the Author

"Rory and I met in L.A. in 1983. He reminds me of one of my favorite film characters, Buckaroo Banzai—always going in six directions at once. If you stop him and ask what he's doing, he'll answer comprehensively and with amazing detail. Disciplined, colorful, and friendly, he has the uncanny ability to explain the highly abstract in simple, organic terms. He always accomplishes what he sets out to do, and he'll help you do the same."

Why you'll relate to Dr. Lewis

While attending Syracuse University as a computer-engineering student, Rory scrambled to pass his classes and make enough money to support his wife and two young daughters. In 1990, he landed a choice on-campus job as a proctor in the computer labs in the LC Smith College of Engineering. Even though he was struggling with subjects in the Electrical Engineering program, he was always there at the Help Desk. It was a daunting experience for Rory because his job was only to help his fellow students with computer lab *equipment* questions, but he invariably found his classmates asking deeper and harder questions: *"Dude, did you understand the calculus assignment? Can you help me?!"*



These students assumed that, because Rory was the proctor, he knew the answers. Afraid and full of self-doubt, he sought a way to help them without revealing his inadequacies. Rory learned to start with: *"Let's go back to the basics. Remember that last week the professor presented us with an equation...?"* By going back to the fundamentals, restating and rebranding them, Rory began to develop a technique that would, more often than not, lead to working solutions. By the time his senior year rolled around, there was often a line of students waiting at the Help Desk on the nights Rory worked.

Fast-Forward 17 Years

Picture a long-haired, wacky professor walking through the campus of the University of Colorado at Colorado Springs, dressed in a stunning contrast of old-school and drop-out. As he walks into the Engineering Building, he is greeted by students and faculty who smile and say hearty hellos, all the while probably shaking their heads at his tweed jacket, Grateful Dead t-shirt, khaki pants, and flip flops. As he walks down the hall of the Computer Science Department, there's a line of students standing outside his office. Reminiscent of the line of students that waited for him at the Help Desk in those early years as a proctor in the computer lab, they turn and greet him, *"Good morning, Dr. Lewis!"* Many of these students at UC-Colorado Springs are not even in his class, but they know that Dr. Lewis will see them and help them anyway.

Past—Present—Future

Dr. Lewis holds three academic degrees. He earned a Bachelor of Science in Computer Engineering from Syracuse University. Syracuse's LC Smith College of Engineering is one of the country's top schools. It is there that Intel, AMD, and Microsoft send their top employees to study for their PhDs.

Upon completing his BS (with emphasis on the mathematics of electronic circuitry in microprocessors), he went across the quad to the Syracuse University School of Law. During his first summer at law school, Fulbright & Jaworski, the nation's most prolific law firm, recruited Rory to work in its Austin office, where some of the attorneys specialize in high-tech intellectual-property patent litigation. As part of his clerking experience, Lewis worked on the infamous *AMD v. Intel* case; he helped assess the algorithms of the mathematics of microprocessor electrical circuitry for the senior partners.

During his second summer in law school, Skjerven, Morrill, MacPherson, Franklin, & Friel—the other firm sharing the work on the *AMD v. Intel* case—recruited Rory to work with them at their Silicon Valley branches (San Jose and San Francisco). After immersing himself in law for several years and receiving his JD at Syracuse, Lewis realized his passion was for the *mathematics* of computers, not the legal ramifications of hardware and software. He preferred a learning and creative environment rather than the fighting and arguing intrinsic in law.

After three years away from academia, Rory Lewis moved south to pursue his PhD in Computer Science at the University of North Carolina at Charlotte. There, he studied under Dr. Zbigniew W. Ras, known worldwide for his innovations in data mining algorithms and methods, distributed data mining, ontologies, and multimedia databases. While studying for his PhD, Lewis taught computer science courses to computer engineering undergraduates, as well as e-commerce and programming courses to MBA students.

Upon receiving his PhD in Computer Science, Rory accepted a tenure-track position in Computer Science at the University of Colorado at Colorado Springs, where his research is in the computational mathematics of neurosciences. Most recently, he co-wrote a grant proposal on the mathematical analysis of the genesis of epilepsy with respect to the hypothalamus. However, with the advent of Apple's revolutionary iPhone and its uniquely flexible platform—and market—for mini-applications, games, and personal computing tools, he grew excited and began experimenting and programming for his own pleasure. Once his own fluency was established, Lewis figured he could teach a class on iPhone apps that would include *non-engineers*. With his insider knowledge as an iPhone beta tester, he began to integrate the parameters of the proposed iPad platform into his lesson plans—even before the official release in April 2010.

The class was a resounding success and the feedback was overwhelmingly positive, from students and colleagues alike. When approached about the prospect of converting his course into a book to be published by Apress, Dr. Lewis jumped at the opportunity. He happily accepted an offer to convert his course outlines, class notes, and videos into the book you are now holding in your hands.

Why Write This Book?

The reasons Dr. Lewis wrote this book are the same reasons he originally decided to create a class for both engineering and non-engineering majors: the challenge and the fun! According to Lewis, the iPhone and iPad are “...some of the coolest, most powerful, and most technologically advanced tools ever made—period!”

He is fascinated by the fact that, just under the appealing touch screen of high-resolution images and fun little icons, the iPhone and iPad are programmed in *Objective-C*, an incredibly difficult and advanced language. More and more, Lewis was approached by students and colleagues who wanted to program apps for the iPhone and would ask his opinion on their ideas. It seemed that, with every new update of the iPhone, not to mention the advent of the expanded interface of the iPad, the floodgates of interest in programming apps were thrown wider and wider. Wonderful and innovative ideas just needed the proper channel to flow into the appropriate format and then out to the world.

Generally speaking, however, the people who write books about Objective-C write for people who know Java, C#, or C++ at an advanced level. So, because there seemed to be no help for the average person who, nevertheless, has a great idea for an iPhone/iPad app, Dr. Lewis decided to launch such a class. He realized it would be wise to use his own notes for the first half of the course, and then to explore the best existing resources he could find.

As he forged ahead with this plan, Lewis was most impressed with *Beginning iPhone 3 Development: Exploring the iPhone SDK*. This best-selling instructional book from Apress was written by Dave Mark and Jeff Lamarche. Lewis concluded that their book would provide an excellent, high-level target for his lessons...a “stepping stones” approach to comprehensive and fluent programming for all Apple’s multi-touch devices.

After Dr. Lewis’s course had been successfully presented, and during a subsequent conversation with a representative from Apress, Lewis happened to mention that he’d only started using that book about half-way through the semester, as he had to bring his non-engineering students up to speed first. The editor suggested converting his notes and outlines into a primer—an introductory book tuned to the less-technical programming crowd. At that point, it was only a matter of time and details—like organizing and revising Dr. Lewis’s popular instructional videos to make them available to other non-engineers excited to program their own iPhone and/or iPad apps.

So, that’s the story of how a wacky professor came to write this book. We hope you are inspired to take this home and begin. *Arm yourself with this knowledge and begin now to change your life!*

Ben Easton
Author, Teacher, Editor

About the Contributing Authors



Ben Easton is a graduate of Washington & Lee University and has a B.A. in Philosophy. His eclectic background includes music, banking, sailing, hang gliding, and retail. Most of his work has involved education in one form or another. Ben taught school for 17 years, mostly middle-school mathematics. More recently, his experience as a software trainer and implementer reawakened his long-time affinity for technical subjects. As a freelance writer, he has written several science fiction stories and screenplays, as well as feature articles for magazines and newsletters. Ben resides in Austin, Texas, and is currently working on his first novel.



Brian Parks PhD Student, Computer Science and **Anthony Magee**, MS student at UCCS work with Dr. Lewis and assisted in studying the various versions of the beta Xcode.

Brian is in the Ph.D. program in Computer Science at the University of Colorado at Colorado Springs, where he regularly collaborates with Dr. Terrance Boulton and Dr. Rory Lewis. He received his B.S. in Computer Science from Lehigh University, Pennsylvania. Brian specializes in software design and development techniques with an eye toward software engineering and architecture, especially with data-driven

applications. Brian is also an educator and an academic; focusing on software engineering and design and, most recently, computer organization and assembly language programming while research focuses on computer vision and its relationship with psychological theories of vision.

Anthony is currently finishing work towards a Masters degree in Computer Science at the University of Colorado at Colorado Springs, where he also received his Bachelors degree. Anthony is experienced in the design and development of software and has spearheaded the implementation and release of several software applications over his career. He has specialized in several fields as part of his collegiate and personal interests. These include theoretical and applied mathematics, software design, user interface design, computer science education, computer vision, and the list continues to expand.

Brian and Anthony are the managing partners of Synapse Software.

About the Technical Reviewer



Matthew Knott is a Learning Platform developer and SharePoint expert. He has been programming since a young age and hasn't stopped learning since. An experienced C and C# developer, Matthew has recently started developing iOS apps to mobilize the Learning Platform. He lives in Wales, United Kingdom with his wife and two children and likes to write on his blog (mattknott.com) from time to time.

Acknowledgments

When I arrived in America in 1981 at the age of 20, I had no experience, money, or the knowledge to even use an American payphone. Since then, it's been a wonderful road leading to this book and my life as an Assistant Professor at two University of Colorado campuses. I am such a lucky man to have met so many wonderful people.

First, to my wife, Kera, who moved mountains to help with graphics, meals, dictations, keeping me working, and sustaining a nominal level of sanity in our house. Thank you, Kera.

To my mother, Adeline, who was always there to encourage me, even in the darkest of times when I almost dropped out of Electrical Engineering. To my sister, Vivi, who keeps me grounded, and my late brother Murray, a constant reminder of how precious life is. To Keith and Nettie Lewis, who helped me figure out those American payphones. To Ben Easton, Brian Bucci, and Dennis Donahue, all of whom invited me into their families when I had nobody.

A special thanks to Dr. Zbigniew Ras, my PhD advisor, who became like a father to me, and to Dr. Terry Boulton, my mentor and partner in the Bachelor of Innovation program at UCCS.

Last, but not least, to Clay Andres at Apress—he walked me through this process and risked his reputation by suggesting to a bunch of really intelligent people that I could author such a book as this.

Many thanks to you all.

Preface

What *This* Book Will Do For You

Let me get this straight: you want to learn how to program for the iPhone or the iPad, and you consider yourself to be pretty intelligent—but whenever you read computer code or highly technical instructions, your brain seems to shut down. Do your eyes glaze over when reading gnarly instructions? Does a little voice in your head chide you, *“How about that! Your brain shut down six lines ago, but you’re still scanning the page—pretending you’re not as dense as you feel. Great!”*

See if you can relate to this...you’re having an issue with something pretty technical and you decide to Google it and troubleshoot the problem. You open the top hit and somebody else has asked the exact same question! You become excited as the page loads, but, alas, it’s only a bulletin board (a chat site for all those geeks who yap at one another in unintelligible code). You see your question followed by...but it’s too late! Your brain has already shut down, and you feel the tension and frustration as knots form in your belly.

Sound familiar?

Yes? Then this book’s for you! My guess is that you’re probably standing in a bookstore or in the airport, checking out a magazine stand for something that might excite you. Because you’re reading this in some such upscale place, you can probably afford an iPhone, a Mac, a car, and plane tickets. You’re probably intrigued by the burgeoning industry of handhelds and the geometric rate at which memory and microprocessors are evolving...how quickly ideas can be turned into startlingly new computing platforms, into powerful software applications, into helpful tools and clever games...perhaps even into greenbacks! And now you are wondering if you can get in on the action—using your intellect and technical savvy to serve the masses.

How do I know this about you?

Easy! Through years of teaching students to program, I know that if you’re still reading this, then you’re both intelligent enough and sufficiently driven to step onto the playing field of programming, especially for a device as sweet as the iPhone or as sexy as the iPad. If you identify with and feel connected to the person I’ve described above, then I know you. We were introduced to one another long ago.

You are an intelligent person who may have mental spasms when reading complex code—even if you have some background in programming. And, even if you do have a pretty strong background in various programming languages, you are a person who simply wants an easy, on-point, no-frills strategy to learn how to program the iPhone and iPad. No problem! I can guide you through whatever psychological traffic jams you typically experience and help you navigate around any technical obstacles, real or imagined. I’ve done this a thousand times with my students, and my methodology will work for you too.

The Approach I Take

I don't try and explain everything in minute detail. Nor do I expect you to know every line of code in your iPhone/iPad application at this stage. What I will do is show you, step by step, how to accomplish key actions. My approach is simultaneously comprehensive and easy-going, and I take pride in my ability to instruct students and interested learners along a wide spectrum of knowledge and skill sets.

Essentially, I will lead you, at your own pace, to a point where you can code, upload, and perhaps sell your first iPhone/iPad app, simple or complex. *Good news*: the most downloaded apps are *not* complex. The most popular ones are simple, common-sense tools for life...finding your car in a parking lot, or making better grocery lists, or tracking your fitness progress. However, when you complete this book, you may want to graduate to other books in the Apress and Friends of ED series. You have quite a few options here, and down the road I'll advise you regarding the best ways to move forward. Right now, though, you may want to read a little about me so you will feel confident in taking me on as your immediate guide in this exciting adventure.

May you experience great joy and prosperity as you enter this amazing and magical world.

Peace!

A handwritten signature in black ink, appearing to read 'Rory A. Lewis', with a stylized flourish at the end.

Rory A. Lewis, PhD, JD

Before We Get Started

This introductory chapter will ensure that you have all of the required tools and accessories to proceed fully and confidently through this book. Some of you may already have Xcode, an up-to-date iOS simulator, and Interface Builder installed on your Mac and you may believe that because you are solid on these points, you are ready to jump right in. If so, you may want to jump ahead to Chapter 2 and start immediately on your first program.

It will behoove you, though, to understand why I teach certain things and skip over others. For those of you who have never programmed in Objective-C, it is quite a challenge—even for my engineering students who know Java, C, and C#. Nevertheless, with the appropriate preparation and mindset, you will accomplish programming in Objective-C.

So—I urge you to read on. The time you will invest in this chapter will be well worth it in peace of mind and confidence. Chapter 1 will help to structure the way that your brain will file away all of the rich content that is to come.

Necessities and Accessories

In order to program for the iPhone and/or iPad, and to follow along with the exercises, tutorials, and examples presented in this book, you'll need to have 5 minimal requirements. You may not completely understand them right now, but that's OK—just roll with me for a second. I'll explain everything as we go through these steps. Briefly, the 5 you need are:

- A Mac
- The correct operating system for your Mac called an "OS X"
- Registration as a developer (discussed in detail below)
- The correct operating system for your iPhone, called an iOS
- The correct Software Development Kit for your iPhone, called an SDK that runs a program called Xcode.

Let's go into some of these in a bit more detail.

First, you will need an Intel-based Macintosh running Lion (OS X 10.7.2 or later). If your system was bought after 2006, you're OK. I purposely program everything on a MacBook bought in 2006. All of the videos on the net are screencast from either my MacBook from 2006, or if I broadcast from my 2010 iMac, I first run it on my MacBook bought in 2006. You don't need the latest revved up Mac. If you haven't bought one yet, I suggest you get a basic, no-frills MacBook Air. If you do own an older Mac, then you may be able to add some RAM. Make an appointment at the Genius Bar at an Apple Store and ask them to increase the RAM as much as possible. Also, ask them explicitly: "Can this old computer run Lion *at least* 10.7.2, iOS5, and Xcode 4.2 or later?"

If you do not have a Mac, then keep in mind that, as mentioned, I have made a point to code and run every program in this book on Apple's smallest and cheapest model, the MacBook. Apple has discontinued the MacBook; they now sell the MacBook Air for \$999, which is more advanced than the Author's MacBook. You can purchase a MacBook on eBay and other such sites. See Figure 1–1.



Figure 1–1. I use the cheapest 2006 Mac on the market, the MacBook, to perform all the coding and compiling in this book. Essentially, there is no need at all to buy a more expensive or higher-end Mac to perform all the exercises.

Second, you will need the correct OS X. As I write this, it is OS X 10.7.2. We need to make sure that you have the latest and greatest operating system (OS X) inside your Mac. I cannot tell you the number of emails and forum questions that show that many of you will think: *“Ahh my code probably did not compile correctly because Dr. Lewis has a different OS X or/and iOS on his machine ...”*

NOTE: The operating system that runs your computer (OS X) is different from the iPhone/iPad Operating System, commonly known as “iOS.” Even if you think that everything is up to date, I suggest that you follow along with me and make sure that your system has the latest OS X and the latest iOS inside it. As you follow along with me and tackle all the programs that I teach you in this book, there will be times when your code will not work the first time you run it. In fact, most of the time your code will not work the first time you run it (or “compile it” as us geeky guys say.) So! Let’s take care of this now.

Close every program running on your Mac, so that the only program running is “Finder”. Go up to the little apple located on the upper left-hand corner of your Mac and select “About This Mac,” as illustrated in Figure 1–2.



Figure 1–2. Go to your Desktop, click on the Apple, and select “About This Mac.”

Once you have selected this, you will see a window called “About This Mac,” as illustrated in Figure 1–3.



Figure 1–3. The “About This Mac” window, and Xcode version window. Here you can see that my MacBook is using OS X 10.7.2. We will discuss iOS later in this chapter. If you have already installed Xcode (or after you install Xcode), under “Xcode,” click on “About Xcode” and you will see what version you are running (as shown here on the right).

Note again that I have OS X 10.7.2 and this is the operating system I will use for this book. By the time you read this book, it will most likely have changed to a higher level. You need to bear two things in mind here. First, you need to update to that latest OS X, as shown below, and secondly, you need to go to the book’s online forum to see if there is anything you need to know about changes in the new version of the OS X that may impact this book. So, let’s look at how you need to update your system to the latest OS X.

With all of your programs closed except for “Finder,” go back up to the apple in the upper left-hand corner of your Mac and select “Software Update ...,” as illustrated in Figure 1–4. Next, simply follow the instructions and the four screen prompts, as illustrated in Figure 1–5.



Figure 1–4. Go to your Desktop, click on the Apple and select “Software Update...”



Figure 1–5. Top - Checking for new software; 2nd from the top - Select the option to download the new software; 2nd from the bottom - Wait for your new software to download; Bottom – Select “Restart” to have your Mac properly install the new software.

If, by the time you are reading this book, you realize that the OS X, and/or the iOS make my pictures appear dated, then do not freak out. I have a forum that is always online

where I and many volunteers love to help others. We always update the forum with news regarding recent updates of the OS X and the iOS. Visit the forum here: www.rorylewis.com/ipad_forum/ or bit.ly/oLVwpY. See Figure 1–20.

Thirdly, you will need to become a registered developer via the iPhone/iPad Software Development Kit (SDK) and download Xcode. If you are a student, it's likely that your professor has already taken care of this, and you may already be registered under your professor's name. If you are not a student, then you will need to follow these numbered steps to sign up.

NOTE: Even if you absolutely do not want to be a developer, you can still download Xcode with your purchase of Lion or buy it at the Mac store. I have yet to have a student last for more than a week trying alternatives to this. The \$100 allows you to have access to the Apple developer tool kits, tutorials, example code, and help forums, and to receive a provisioning license to run your apps on a physical iPhone or iPad. Lastly, you're reading this book so you can make an app and sell it on iTunes store and make \$\$—you need to pay the \$100 for this alone. Buying a Mac, Xcode, and this book—but not buying the \$100 registered license—is like paying to learn to drive a car, buying a car, but then never obtaining a driver's license. Many of the tools that I teach you to use in this book to debug assume you have a license. It's your choice.

1. Go to developer.apple.com/programs/ios/ or bit.ly/qu04ow, which will bring you to a page similar to the one shown in Figure 1–6. Click the Enroll Now button.



Figure 1–6. Click the “Enroll Now button”.

2. Click the Continue button, as illustrated in Figure 1–7.



Figure 1–7. Click the Continue button.

3. Most people reading this book will select the “I need to create a new account for ...” option (arrow 1 in Figure 1–8). Next, click the Continue button as illustrated by arrow 2 in Figure 1–8. If you already have an existing account, then you have been through this process before. Go ahead with the process beginning with the “I currently have an Apple ID ...” option, and I’ll meet you at step 6, where we will log onto the iPhone/iPad development page and download the SDK.

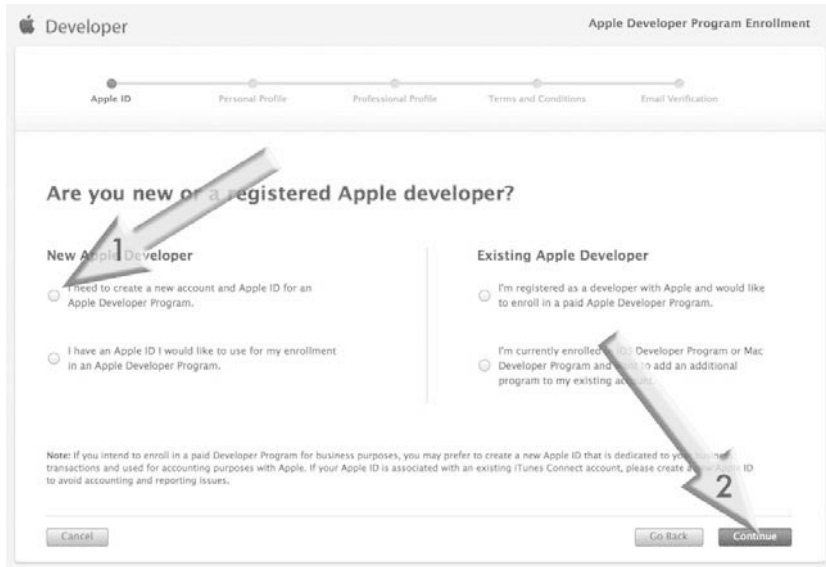


Figure 1–8. Click the “I need to create an Apple ID...” option to proceed.

4. You are probably going to be enrolling as an individual, so click the Individual link, as illustrated in Figure 1–9. If you are enrolling as a company, click the Company option to the right and follow the appropriate steps; I’ll meet you at step 6.

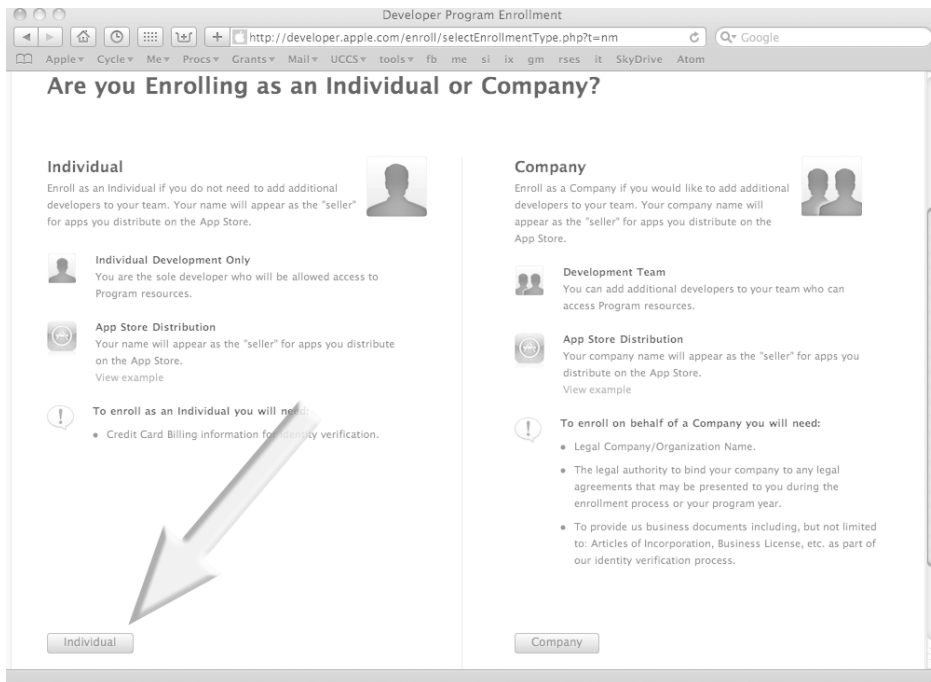


Figure 1–9. Click the Individual option.

- From here, you will enter all of your information, as shown in Figure 1–10, and you will pay your fee of \$99 for the Standard Program. This provides you with all of the tools, resources, and technical support that you will need. (If you're reading this book, you really do not want to buy the Enterprise program at \$299, as it is for commercial in-house applications.) After paying, save your Apple ID and Username; then receive and interact with your confirmation email appropriately.

The screenshot shows a web browser window titled "Apple Developer Program Enrollment". The address bar shows the URL: <https://connect.apple.com/cgi-bin/WebObjects/register.woa/wa/default?user/>. The page has a navigation bar with the Apple logo and "Developer" on the left, and "Apple Developer Program Enrollment" on the right. Below the navigation bar is a progress indicator with six steps: "Enter Account Info", "Select Program", "Review & Submit", "Agree to License", "Purchase Program", and "Activate Program". The "Enter Account Info" step is currently active. The main content area is titled "Complete your personal profile" with the subtext "(All form fields are required)". There are two columns of form fields. The left column includes "Create Apple ID" with fields for "Email Address:", "Password:" (6–32 characters), and "Re-enter Password:" (6–32 characters). Below that is "Security Information" with "Birthday:" fields for "Select Month" and "Select Day", and a "Security Question:" field. The right column contains informational text: "Apple ID" (The email address you enter will be your Apple ID. You will be asked for your Apple ID and password to access certain areas of the Apple Developer website.) and "Security Information" (In the event you do not remember your Apple ID and password, you will be asked the security question you chose when you created your Apple ID account.).

Figure 1–10. Enter all of your information accordingly.

NOTE: Before we move onto Step 6, you will want to make sure that you have received your confirmation email and have chosen a password to complete the last step of setting yourself up as a *bona fide* Registered Apple Developer. Congratulations!

- Use your Apple ID to log into the main iPhone/iPad development page at developer.apple.com. This page has three icons for the three types of Apple programmers. As shown by the arrow in Figure 1–11, click on the top icon—iOS Dev Center—to get to the download page for iPhone/iPad Operating System software.

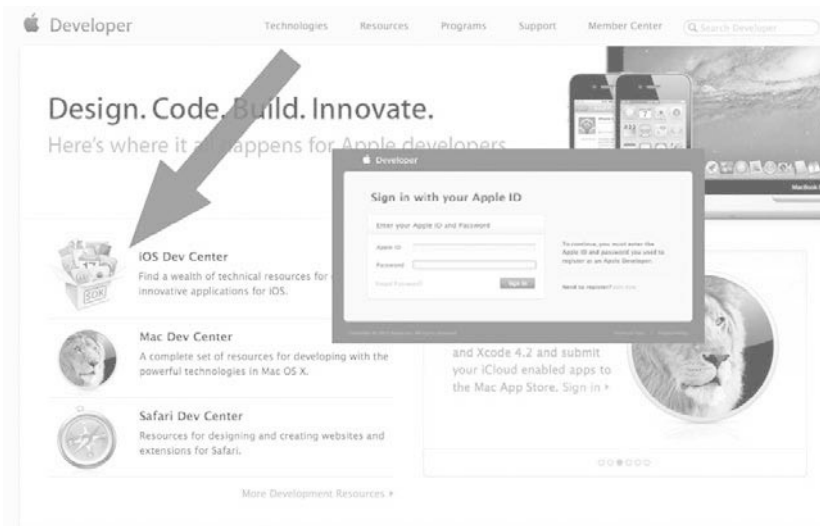


Figure 1–11. For now, click on the “iOS Dev Center” icon indicated by the arrow. Later, you may also want to program apps for the Mac Computer or the Safari Web Browser.

NOTE: While we’re here, let’s go over the other 2 download options. The icon below the iOS is for people who want to download an environment to program wonderful things that run on a Mac. The third and last icon is for people who want an environment to program apps that operate inside Safari’s web browser. Maybe one day you will want to connect your cool zany innovative idea that has made thousands of dollars to Safari. Well, this is the place you will want to do that.

7. After logging in to iOSDev with your username and password, as described in step 6, you will see a screen similar to that shown in Figure 1–12. The iOS Dev Center contains all the tools necessary to build iPhone and iPad apps. Later on you will spend time here, but for now we just want to go to the Developer Page of the latest build of the iOS SDK. Locate the 'Downloads' icon indicated by the arrow and click it. You may notice that this only takes you to the bottom of the page, as illustrated in Figure 1–13. Whether you scrolled down or clicked down here, just click on the "Download Xcode 4" button so that you can get to the Xcode 4 and iOS SDK 4.3 page.

NOTE: Again, at the time I wrote this book, Xcode 4.2 and iOS SDK 5 were the latest versions. The chance is great that by the time you read this book, these may have larger numbers. This is not a problem; just go on to Step 8. If, by chance, something has really thrown us all a curve ball, it will be discussed and solved for you in easy-to-read English at our forum located at www.rorylewis.com/ipad_forum/ or bit.ly/oLVwpY.

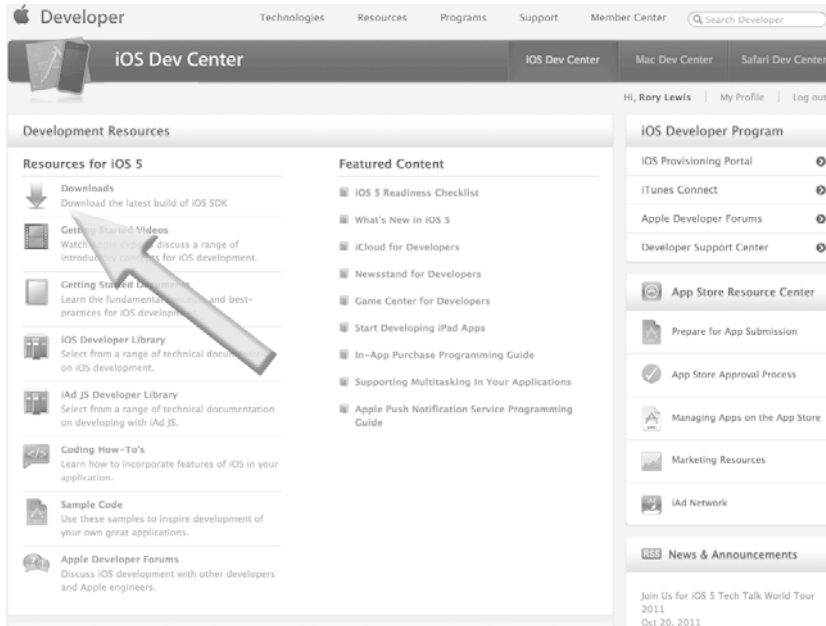


Figure 1–12. This takes you to the bottom of the page, as shown in Figure 1–13.

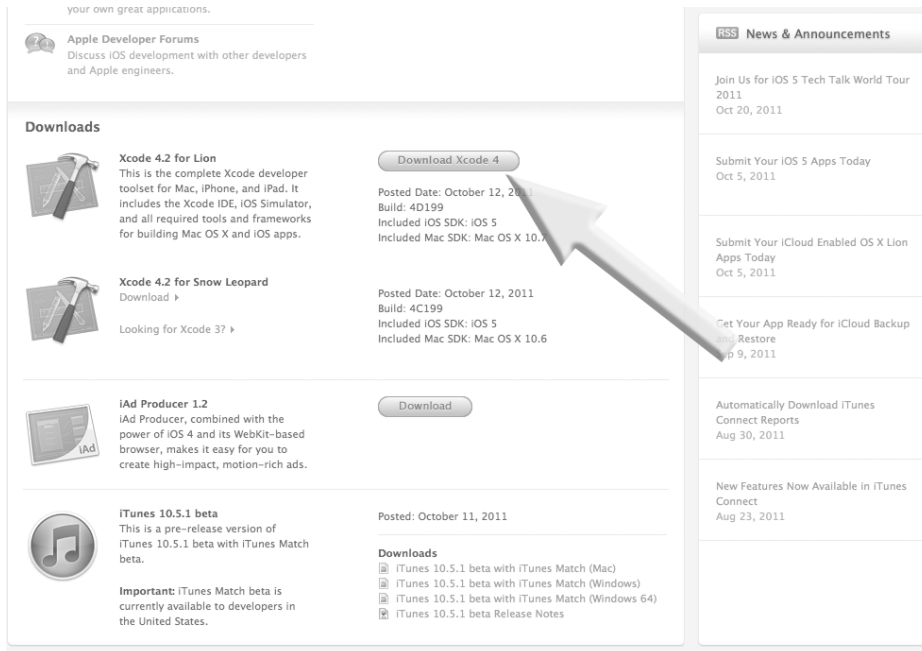


Figure 1–13. Click on the “Download Xcode 4” button and that will take you to the Xcode 4 Developer Page.

8. I know you're probably thinking: "Gee, I just want to download it!" Remember that there are thousands of downloads at Apple.com. This page, illustrated in Figure 1–14, is called the Xcode 4 Developer Page and it has all of the relevant downloads for you. For now, we want to click on the latest version. These figures show the latest version at the time of this printing. It WILL be different by the time you read this in print. Right now, the latest version available at this point is "Xcode 4.2 for Lion," so this is the link that is indicated by the arrow. It will look similar at this point—click on it.

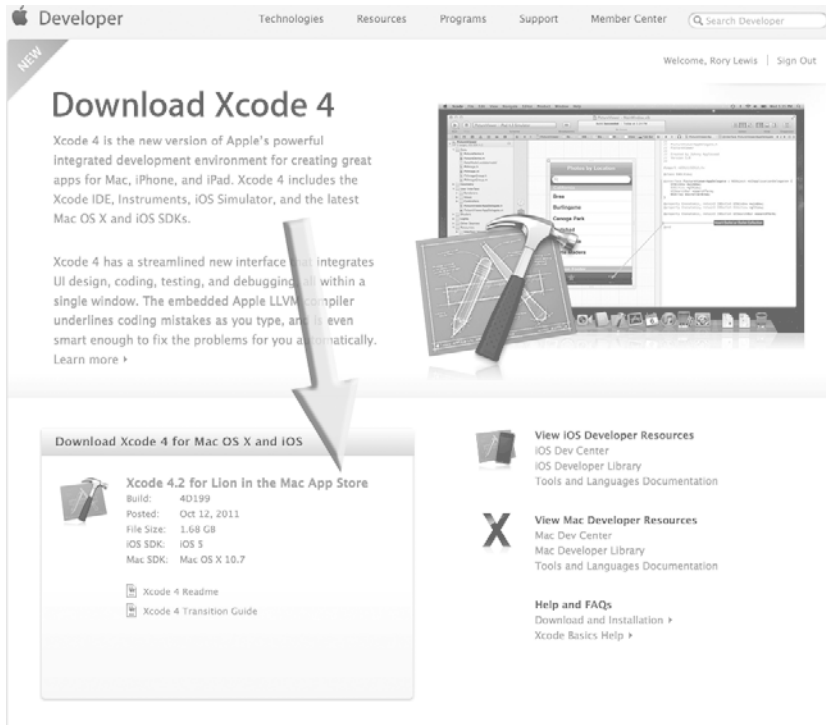


Figure 1–14. Click on the "Xcode 4.2 for Lion in the Mac App Store" link.

9. Your download will start and, depending upon your connection speed, it may take somewhere between 2 to 15 minutes. Your screen should look something like the one shown in Figure 1–15.

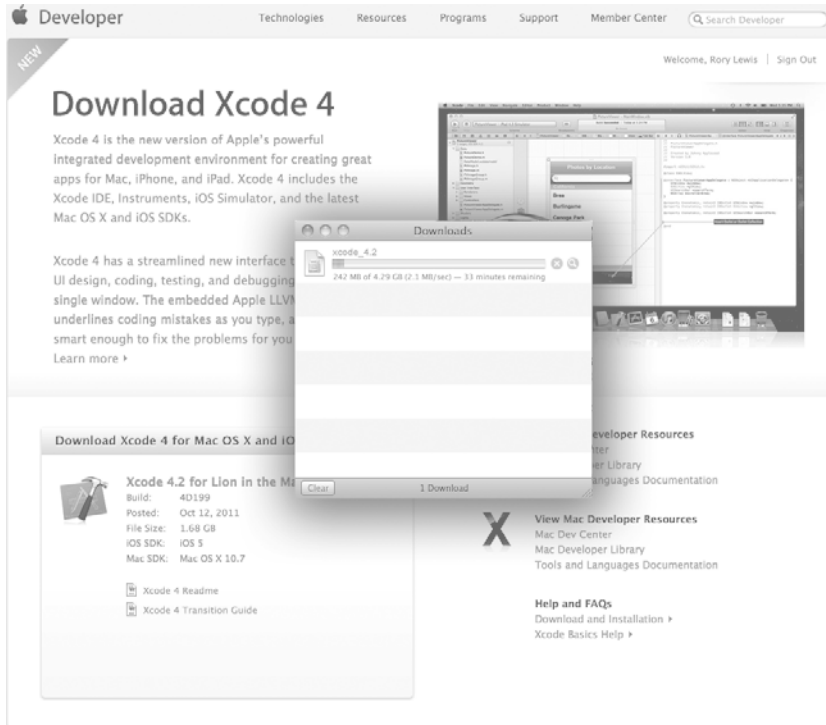


Figure 1–15. Wait for the download to complete.

10. Once the download has completed, the Xcode and iOS SDK drive icon will appear on your desktop and a window with your Xcode and iOS SDK.mpkg will appear, as shown in Figure 1–16. Click on the "Xcode and iOS SDK.mpkg," as indicated by the arrow in Figure 1–16.