

# 1

## Installing Xcode

Xcode is part of the Xcode Developer Tools suite developed and distributed by Apple Computer. If you haven't installed it already, read this chapter to find out how to do so. If the tools are already installed, you can skip to the next chapter.

**If you've already installed Xcode, be aware that the default installation choices do not include all Xcode components. Features described in some chapters may require you to reinstall the omitted packages before you can use them. Return to this chapter to reinstall, upgrade, or remove the Xcode Developer Tools in your system.**

The Xcode Development Tools encompass a huge amount of material: dozen of applications, scores of utilities, hundreds of sample projects, and tens of thousands of pages of documentations. Despite its scope, the developer tools team at Apple has made it remarkably easy to install this wealth of tools in only a few minutes.

### The Xcode Installer

To install the Xcode Developer Tools, you must be running Mac OS X and have access to an Xcode Developer Tools installer. At the time this book was published, the current version of Xcode was 2.2, which requires that you be running Mac OS X 10.4 or later. This entire book was written with, and assumes you are using, Xcode version 2.2.

The Xcode Developer Tools installer is included on every Mac OS X 10.4 installation and upgrade DVD. So if you have a Mac OS X 10.4 installer DVD, you should already have a copy of Xcode. However, the copy of Xcode on the original release of OS X 10.4 is Xcode version 2.1. Although you can successfully use this book with Xcode 2.1, there are numerous small differences between 2.1 and 2.2. Download and install Xcode 2.2 if you can.

You can download a disk image of the latest Xcode Developer Tools from the Apple Developers Connection at <http://developer.apple.com/>. Anyone with an ADC account can download the latest development tools, software development kits, and example code directly from Apple.

Online ADC accounts are free and require only that you create an ADC account and agree to the nondisclosure agreement that covers all Apple development technologies. Student, Select, and Premier accounts can be purchased and include many additional benefits. One of these is the monthly ADC mailing, which ships current copies of the tools and reference material to you on CD or DVD. Other perks include discounts on hardware used for development and direct access to Apple engineers for technical questions. If you are serious about developing software for Mac OS X, you should invest in a Student or Select membership.

## Running the Installer

Open the Xcode Tools folder found on the Mac OS X install DVD, shown on the left in Figure 1-1 or open the Xcode Developer Tools disk image, shown on the right in Figure 1-1 — whichever you are using. To begin the installation process, open the `Xcode Tools.mpkg` package. This launches the installer utility.

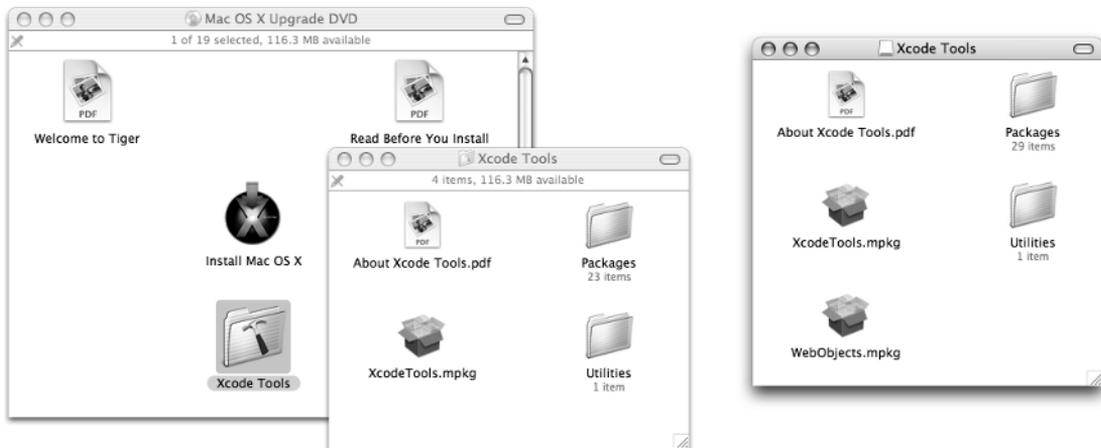


Figure 1-1

The installer presents a simple greeting screen. Click the Continue button. It next presents the software licensing agreement that accompanies the use of all of the developer tools provided by Apple Computer. The pop-up menu at the top of the window allows you to read the licensing agreement in English or Japanese. Review the document using the scroll bar. If you like, you can save it as a PDF file for review or for your records by clicking the Save button. The Print button prints the licensing agreement on any available printer.

After you click the Continue button, a dialog box asks you to confirm that you agree to the terms of the license. Click the Agree button.

Use the next screen, shown in Figure 1-2, to select the volume where the Xcode tools will be installed. The Xcode Development Tools can only be installed on the volume your operating system is currently booted from. In addition, the operating system you are running must meet the minimum requirements of the version of Xcode you are trying to install. If these conditions are not met, the volume has a red alert badge. Select the volume to find out why the tools can't be installed there.



Figure 1-2

After selecting your boot volume, click the Continue button again. In the next screen, the installer offers to perform a basic installation or upgrade of the Xcode tools. This is suitable for most beginning developers. Remember that you can always run the installer again to install additional packages in the future.

If you want to expand or contract the set of software tools that get installed, click the Customize button. The pane changes to a list of packages, as shown in Figure 1-3.

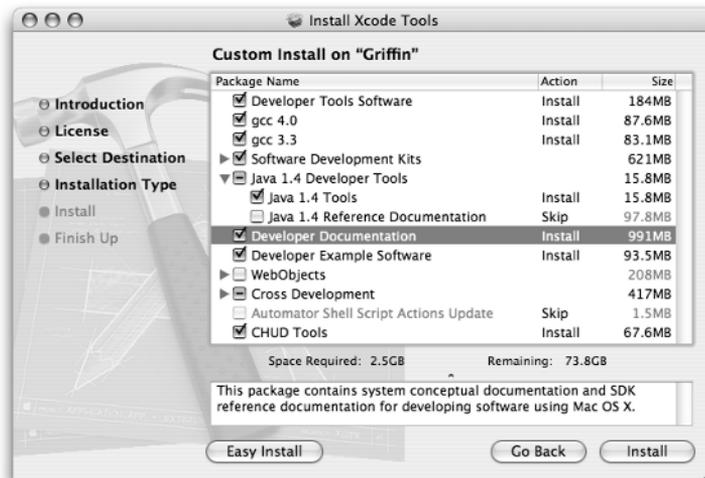


Figure 1-3

Each package is listed, along with an action and the estimated amount of disk space that package will consume on the volume. Select a package in the list for a brief description of what the package contains.

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The following table explains the contents and usefulness of the various Xcode Developer Tools packages.

Package	Description
Developer Tools Software	This package contains the core set of development tools, including the Xcode IDE. You must install this package if you plan on working with Xcode.
gcc 4.0	The latest version of the gcc compiler. By default, all new projects will use gcc 4.0. You should install this package.
gcc 3.3	The previous version of the gcc compiler. Install this package if you need to compile programs that were written for gcc 3.3 and don't want to compile cleanly with gcc 4.0 — for whatever reason. I recommend installing this package if you plan to build any pre-existing software, be that Xcode projects or open source.
Software Development Kits	This is a group of packages that contains the headers, libraries, and development tools needed to develop applications using these technologies. To write any kind of Macintosh software, you must install the Mac OS X SDK. To write any kind of command-line tool or to use any of the standard C libraries, you will need the BSD SDK. If you have no plans to write an X11 application or FireWire driver, you can save some disk space by omitting the more obscure packages. If you have <i>any</i> doubts, install them all. You could waste a lot of time trying to figure out why you can't use a particular set of APIs only to remember later that you didn't install the necessary SDK.
Java Developer Tools	This group of packages includes the basic Java developer tools and documentation. Even if you don't plan to write Java applications, install the tools package anyway. They actually take up very little space — most of the Java tools are part of the Java framework that's included in the OS — and it's just easier to install them now than wonder why things don't work later. The documentation, on the other hand, is a different matter. If you plan to write Java code, install the reference documentation. The size shown for the documentation is not accurate. The size listed is for the compressed archive of documentation that will be expanded when installed. On my system, the Java documentation occupies about 135MB of disk space.
Developer Documentation	This is the ADC Reference library. It contains an invaluable collection of core developer documentation, API documentation, articles, and technical nodes. You should definitely install this package.

Package	Description
WebObjects	WebObjects is a group of WebObjects-related development packages. This book doesn't cover WebObjects development. If you have a WebObjects license and are planning to write WO applications, then you will need to install these packages. Otherwise, skip them.
Cross Development	Cross-development is a means of writing a Mac OS X application that runs on earlier versions of the operating system. These packages include a complete set of SDKs from earlier versions of the OS. This allows you to compile and link your applications using these older SDKs, just as if you were developing your project on an older version of the OS and Xcode. By default, Xcode installs the 10.3.9 and 10.4.x SDKs. If you plan to write applications that will run on Mac OS X 10.2, install the 10.2.8 SDK package as well.
Automator Shell Scripts and Actions	This is a set of Automator actions that let you build projects, check them in and out of source control, and prepare finished applications for installation. Install this package if you plan to use Automator in your development workflow.
CHUD Tools	This package contains an advanced set of performance analysis and debugging tools, including the amazing Shark application that is used extensively in Chapter 16. The CHUD tools are often updated independently of Xcode and have their own installer. If you plan to use these tools, check the ADC web site for a more recent version.

If you decide against selecting a custom set of packages, you can return again to the default installation choices by clicking the Easy Install button.

After you choose what you want to install, click the Install button to start the installation process, shown in Figure 1-4. You will have to supply the account name and password of an administrator when asked.

The installer takes longer than what you would infer from observing the progress bar in the installer window. Most of the documentation gets unpacked from compressed archives. This occurs at the end of the normal installation process, so be patient. The installer may say that it has “less than a minute” remaining for ten or more minutes. *Do not panic and force the installer to quit!* You'll end up with a royal mess and have to start all over again.

The bulk of the installation occurs in the /Developer folder that is created at the root level of your boot volume, shown in Figure 1-5. Here you will find all of the Xcode applications, command-line tools, example code, and documentation. Do not attempt to move or rename this folder. The installer places support files in the system-wide /Library/Application Support/Apple/Developer Tools folder. It installs some special development frameworks, resources, and a few patches into the /System folder. Finally, it installs several UNIX man pages and a handful of tools into the /usr and /bin folders.



Figure 1-4

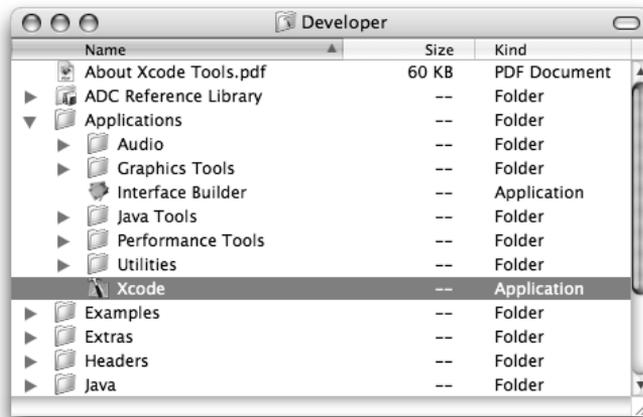


Figure 1-5

After the installer is finished, check out the About Xcode Tools.pdf document for an overview of the Xcode Developers Tool package and for any late-breaking news, additions, or corrections. The installer does not require you to restart your system afterwards. You can now skip to Chapter 2.

## Upgrading Xcode

If you already have an older version of Xcode installed, you'll find some subtle differences when you run the installer again. The installer automatically detects the version of any package that you have previously installed. A basic installation upgrades any packages that need to be upgraded. The custom package selection, shown in Figure 1-6, displays which packages can be upgraded, installed, or skipped. An upgrade indicates that the installer has a newer version of the package to install. The size indicates the estimated amount of *additional* disk space required to upgrade the package. Skipped packages will not be upgraded or installed. If a package is disabled, Xcode has determined that the existing package does not need to be, or cannot be, upgraded. This is typically because you already have the most current, or a later, version of this software installed. The Xcode installer will never “downgrade” a package by attempting to install an older version over a newer one.

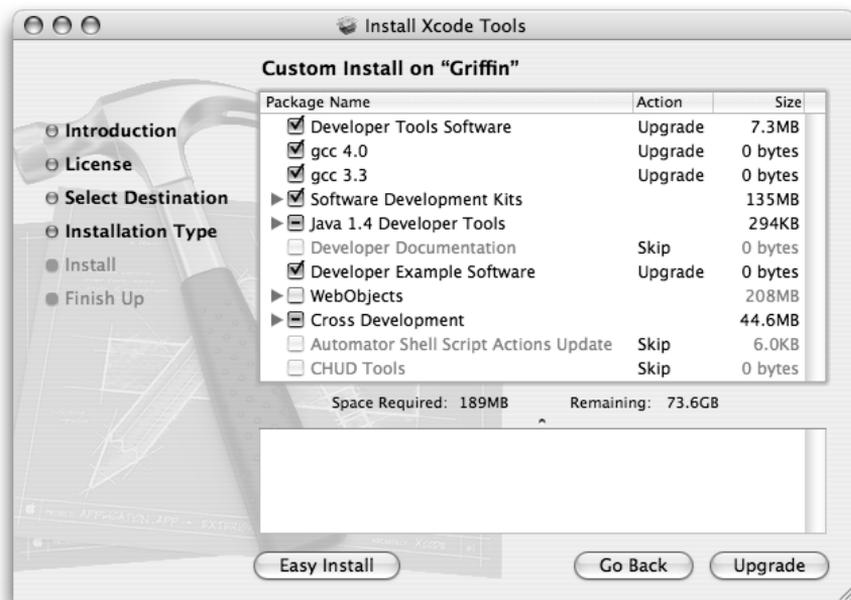


Figure 1-6

After you selected the packages you want upgraded, click the Upgrade button. The installer runs much as it does when installing for the first time.

Typically you won't have any problems using your upgraded tools as soon as the installer is finished. However, if you immediately start using some of the performance analysis tools or attempt distributed builds, you may run into problems. These facilities use daemons and system frameworks that may need to be reloaded. Restart your system after upgrading your Xcode tools.

# Removing and Reinstalling Xcode

The Xcode Development Tools includes the means of completely eradicating itself — the entire suite of tools, support files, libraries, and frameworks — from your system. One really good reason to do this is the need to perform a clean installation of the tools. Apple often makes pre-release versions of Xcode available to ADC members. As a general rule, you cannot install a release version over a pre-release version even when that release version is newer. You may also have some need to downgrade your installation, something the regular installation process won't allow.

To remove your installation of Xcode, open a Terminal window and enter the following command.

```
sudo perl /Developer/Tools/uninstall-devtools.pl
```

If this file is not present, you can run the script from whatever Xcode Developer Tools install disc or image you have. Mount the disc or image and run the script directly from there. This will be something like the following command but possibly with a different path:

```
sudo perl /Volumes/Xcode\ Tools/Utilities/uninstall-devtools.pl
```

The script must be run from an administrator's account. The `sudo` command prompts you for the password to that account.

The script uses the receipts left by previous installations of Xcode to surgically remove everything that was previously installed. It also takes care of a few special cases, such as removing symbolic links that get created during the post-installation process.

After the old copy of the developer tools is removed, you can reinstall whatever version of Xcode you want. The installer treats this as a new installation, installing fresh copies of everything.

After you reinstall the tools, you must restart your system. The `uninstall-devtools` script stops processes like the distributed build daemon, but the installer does not restart them again. Removing system frameworks and then replacing them with altered versions can seriously confuse the operating system. Restarting your computer causes all of these resources to be reloaded, reinitialized, and restarted properly.

## Summary

You're probably eager to start exploring Xcode, but installing the software first is a necessary evil. As you've seen, the process is relatively painless and quick.

Now, on to the grand tour.