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# PHP and MySQL

## 24-Hour Trainer

Andrea Tarr

# PHP AND MYSQL® 24-HOUR TRAINER


**INTRODUCTION** . . . . . xvii

## ▶ SECTION I GETTING STARTED WITH PHP

**LESSON 1** Setting Up Your Workspace . . . . . 3
**LESSON 2** Adding PHP to a Web Page . . . . . 23
**LESSON 3** Learning PHP Syntax . . . . . 33
**LESSON 4** Working with Variables . . . . . 45
**LESSON 5** Debugging Code . . . . . 57
**LESSON 6** Working with Complex Data . . . . . 71

## ▶ SECTION II WORKING WITH PHP CONTROLS, FUNCTIONS, AND FORMS

**LESSON 7** Making Decisions . . . . . 91
**LESSON 8** Repeating Program Steps . . . . . 107
**LESSON 9** Learning about Scope . . . . . 119
**LESSON 10** Reusing Code with Functions . . . . . 125
**LESSON 11** Creating Forms . . . . . 141

## ▶ SECTION III OBJECTS AND CLASSES

**LESSON 12** Introducing Object-Oriented Programming . . . . . 161
**LESSON 13** Defining Classes . . . . . 167
**LESSON 14** Using Classes . . . . . 177
**LESSON 15** Using Advanced Techniques . . . . . 187

## ▶ SECTION IV PREVENTING PROBLEMS

**LESSON 16** Handling Errors . . . . . 205
**LESSON 17** Writing Secure Code . . . . . 217

## ▶ SECTION V USING A DATABASE

**LESSON 18** Introducing Databases . . . . . 227
**LESSON 19** Introducing MySQL . . . . . 239


*Continues*

**LESSON 20** Creating and Connecting to the Database . . . . . 263
**LESSON 21** Creating Tables. . . . . 275
**LESSON 22** Entering Data . . . . . 295
**LESSON 23** Selecting Data . . . . . 313
**LESSON 24** Using Multiple Tables . . . . . 331
**LESSON 25** Changing Data . . . . . 343
**LESSON 26** Deleting Data . . . . . 361
**LESSON 27** Preventing Database Security Issues. . . . . 387

▶ **SECTION VI PUTTING IT ALL TOGETHER**

**LESSON 28** Creating User Logins. . . . . 399
**LESSON 29** Turn the Case Study into a Content Management System. . . . . 419
**LESSON 30** Creating a Dynamic Menu . . . . . 443
**LESSON 31** Next Steps. . . . . 461
**APPENDIX** What's on the DVD?. . . . . 463

**INDEX**. . . . . 467

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Andrea Tarr

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*For my parents, who gave me the feeling that it was perfectly natural for a girl to have a passion for math.*

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# CONTENTS

*INTRODUCTION* *xvii*

## SECTION I: GETTING STARTED WITH PHP

### LESSON 1: SETTING UP YOUR WORKSPACE 3

**Installing XAMPP** **3**
Installing XAMPP on a Windows PC 4
Installing XAMPP on Mac OS X 6
Troubleshooting Your XAMPP Installation 8
Configuring XAMPP 9
**Installing Your Editor** **11**
**Configuring Your Workspace** **12**
Preparing a Place to Put Your Files 12
Using Eclipse for the First Time 14
**Try It** **18**
Lesson Requirements 19
Hints 19
Step-by-Step 19

### LESSON 2: ADDING PHP TO A WEB PAGE 23

**Writing Your First PHP Page** **23**
**Introducing the Case Study** **25**
**Using echo and include** **27**
**Try It** **29**
Lesson Requirements 29
Hints 30
Step-by-Step 30

### LESSON 3: LEARNING PHP SYNTAX 33

**Picking a Formatting Style** **33**
**Learning PHP Syntax** **35**
**Entering Comments** **39**
**Using Best Practices** **40**
**Try It** **40**
Lesson Requirements 41
Hints 41
Step-by-Step 41

**LESSON 4: WORKING WITH VARIABLES** **45**

**Introduction to Variables** **45**
**Working with Text** **46**
Working with the Concatenation Operator 48
Working with String Functions 48
**Understanding Different Types of Numbers** **50**
**Working with Numbers** **50**
**Changing between Text and Numbers** **52**
**Try It** **52**
Lesson Requirements 53
Hints 53
Step-by-Step 53

**LESSON 5: DEBUGGING CODE** **57**

**Troubleshooting Techniques** **57**
Display Errors while Developing 57
Common Issues 59
Seeing What's What 60
**Using Xdebug** **61**
Configuring Xdebug 62
Using Xdebug 66
**Try It** **67**
Lesson Requirements 68
Hints 68
Step-by-Step 68

**LESSON 6: WORKING WITH COMPLEX DATA** **71**

**Working with Arrays** **71**
**Working with Logical Variables** **73**
**Working with Constants** **74**
**Working with Dates** **74**
Time Zone Functions 74
Date/Time Functions 75
**Working with Built-in Functions** **80**
$_GET 80
$_POST 81
Cookies 82
filter_var() 84
**Working with Objects** **86**
**Try It** **86**
Lesson Requirements 86
Hints 86
Step-by-Step 86

## SECTION II: WORKING WITH PHP CONTROLS, FUNCTIONS, AND FORMS


**LESSON 7: MAKING DECISIONS** **91**

**If/Else** **91**
Basic If Statements 91
Comparison Operators for If/Else Statements 94
If/Else with Ternary Operator 96
**Logical Operators** **97**
**Switch Statements** **100**
**Alternative Syntax** **102**
**Try It** **103**
Lesson Requirements 103
Hints 103
Step-by-Step 103

**LESSON 8: REPEATING PROGRAM STEPS** **107**

**While Loops** **107**
**Do/While Loops** **109**
**For Loops** **110**
**Foreach Loops** **112**
**Continue/Break** **114**
**Try It** **115**
Lesson Requirements 115
Hints 115
Step-by-Step 116

**LESSON 9: LEARNING ABOUT SCOPE** **119**

**Learning about Local Variables** **119**
**Learning about Global Variables** **120**
**Try It** **122**
Lesson Requirements 122
Hints 122
Step-by-Step 122

**LESSON 10: REUSING CODE WITH FUNCTIONS** **125**

**Defining Functions** **126**
**Passing Parameters** **127**
**Getting Values from Functions** **131**
**Using Functions** **132**
**Including Other Files** **137**
**Try It** **137**
Lesson Requirements 137
Step-by-Step 138

**LESSON 11: CREATING FORMS** **141**

**Setting Up Forms** **141**
**Processing Forms** **146**
**Redirecting with Headers** **153**
**Try It** **154**
Lesson Requirements 154
Hints 154
Step-by-Step 154

**SECTION III: OBJECTS AND CLASSES**

**LESSON 12: INTRODUCING OBJECT-ORIENTED PROGRAMMING** **161**

**Understanding the Reasons for Using OOP** **161**
**Introducing OOP Concepts** **162**
Objects and Classes 162
Extending Classes 163
**Learning Variations in Different PHP Releases** **163**
**Try It** **164**
Lesson Requirements 164
Hints 164
Step-by-Step 164

**LESSON 13: DEFINING CLASSES** **167**

**Defining Class Variables (Properties)** **168**
**Defining Class Functions (Methods)** **169**
**Try It** **173**
Lesson Requirements 173
Hints 174
Step-by-Step 174

**LESSON 14: USING CLASSES** **177**

**Instantiating the Class** **177**
**Using Objects** **178**
**Try It** **181**
Lesson Requirements 182
Hints 182
Step-by-Step 182

**LESSON 15: USING ADVANCED TECHNIQUES** **187**

**Initializing the Class** **187**
**Understanding Scope** **188**
Properties 188
Methods 191
Classes 192

**Understanding Inheritance** **192**
**Understanding Static Methods and Properties** **197**
**Try It** **199**
Lesson Requirements 199
Hints 199
Step-by-Step 199

## SECTION IV: PREVENTING PROBLEMS

### LESSON 16: HANDLING ERRORS 205

**Testing for Errors** **205**
**Using Try/Catch** **210**
**Try It** **211**
Lesson Requirements 211
Hints 212
Step-by-Step 212

### LESSON 17: WRITING SECURE CODE 217

**Understanding Common Threats** **217**
**Using Proper Coding Techniques** **218**
**Try It** **221**
Lesson Requirements 221
Hints 221
Step-by-Step 221

## SECTION V: USING A DATABASE

### LESSON 18: INTRODUCING DATABASES 227

**What Is a Database?** **227**
**Gathering Information to Define Your Database** **228**
**Designing Your Tables** **229**
**Setting up Relationships between Tables** **229**
**Instituting the Business Rules** **230**
**Normalizing the Tables** **231**
**Try It** **232**
Lesson Requirements 232
Hints 233
Step-by-Step 233

### LESSON 19: INTRODUCING MYSQL 239

**Using phpMyAdmin** **239**
Creating Databases 241
Defining Tables and Columns 244
Entering Data 248
Backing Up and Restoring 250

**Learning the Syntax** **253**
Literal Values 253
Identifiers 254
Comments 255
**Try It** **255**
Lesson Requirements 255
Hints 255
Step-by-Step 256

**LESSON 20: CREATING AND CONNECTING TO THE DATABASE** **263**

**Connecting with mysql/mysqli** **263**
**Connecting with PDO** **269**
**Creating the Database** **270**
**Try It** **271**
Lesson Requirements 271
Hints 272
Step-by-Step 272

**LESSON 21: CREATING TABLES** **275**

**Understanding Data Types** **275**
Strings 275
Numeric 277
Date and Time 278
Other Data Types 279
**Using AUTO_INCREMENT** **279**
**Understanding Defaults** **280**
**Creating Tables in phpMyAdmin** **281**
**Using .sql Script Files** **283**
**Adding MySQL Tables to PHP** **287**
**Try It** **288**
Lesson Requirements 288
Hints 289
Step-by-Step 289

**LESSON 22: ENTERING DATA** **295**

**Understanding the INSERT Command** **295**
**Executing MySQL Commands in PHP** **297**
**Processing Data Entry Forms in PHP** **302**
**Try It** **305**
Lesson Requirements 305
Hints 305
Step-by-Step 306

**LESSON 23: SELECTING DATA** **313**

**Using the SELECT Command** **314**
**Using WHERE** **317**
**Selecting Data in PHP** **319**
**Try It** **321**
Lesson Requirements 322
Hints 322
Step-by-Step 322

**LESSON 24: USING MULTIPLE TABLES** **331**

**Using the JOIN Clause** **332**
**Using Subqueries** **335**
**Try It** **336**
Lesson Requirements 336
Hints 337
Step-by-Step 337

**LESSON 25: CHANGING DATA** **343**

**Using the UPDATE Command** **344**
**Updating Data in PHP** **345**
**Using Prepared Statements** **347**
MYSQLI 348
PHP Data Objects (PDO) 350
**Try It** **352**
Lesson Requirements 352
Hints 352
Step-by-Step 353

**LESSON 26: DELETING DATA** **361**

**Using the DELETE Command** **361**
**Deleting Data in PHP** **364**
**Try It** **365**
Lesson Requirements 365
Hints 366
Step-by-Step 366

**LESSON 27: PREVENTING DATABASE SECURITY ISSUES** **387**

**Understanding Security Issues** **387**
**Using Best Practices** **389**
**Filtering Data** **391**

**Try It** **393**
Lesson Requirements 393
Hints 393
Step-by-Step 393

## SECTION VI: PUTTING IT ALL TOGETHER

**LESSON 28: CREATING USER LOGINS** **399**

**Understanding Access Control** **399**
**Protecting Passwords** **400**
**Using Cookies and Sessions** **402**
**Putting Logins to Work** **403**
**Try It** **404**
Lesson Requirements 405
Hints 405
Step-by-Step 405

**LESSON 29: TURN THE CASE STUDY INTO A CONTENT MANAGEMENT SYSTEM** **419**

**Designing and Creating the Table** **419**
**Creating the Class** **420**
Properties 420
Methods 420
**Creating the Maintenance Pages** **422**
**Creating the Display Page** **422**
**Try It** **425**
Lesson Requirements 425
Hints 425
Step-by-Step 425

**LESSON 30: CREATING A DYNAMIC MENU** **443**

**Setting up the Menu Table** **443**
**Adding the Menu to the Website** **444**
**Try It** **445**
Lesson Requirements 446
Hints 446
Step-by-Step 446

**LESSON 31: NEXT STEPS** **461**

**APPENDIX : WHAT'S ON THE DVD?** **463**

***INDEX*** ***467***

# INTRODUCTION

**PHP IS A POPULAR PROGRAMMING LANGUAGE** that powers many websites. It originally started out as a way to make dynamic websites by generating HTML. Today it stands on its own as a general-purpose programming language and is available on most web hosting sites. Because of its roots, it is very easy to insert bits and pieces of PHP inside of standard HTML/XHTML code.

MySQL is a popular relational database management system. It is the standard database system available on web hosting sites. Although it works with many different programming languages, it is frequently paired with PHP.

## WHO THIS BOOK IS FOR

This book is for beginners who have never programmed before or who have never worked with databases. It's also for those who have copied a few lines of PHP into their HTML pages and want to know more. General programming concepts are explained while you learn to program PHP and manipulate data with MySQL. If you already program other languages, this book may be too basic for you.

To get the most out of this book, you need to understand HTML and the basic concept of CSS. Much of the PHP that you do is aimed at creating HTML, so you need to know what you are trying to create.

## WHAT THIS BOOK COVERS

This book teaches you to take a static website and turn it into a dynamic website run from a database using PHP and MySQL. You start by preparing your computer to run PHP and MySQL by downloading and installing free software. Next, you write your first PHP by including some PHP code on an HTML page. Then you dive into PHP, learning what variables are, how to work with them, and how to debug your programs. You learn how to have your programs make decisions and loop through code.

The modern PHP is object oriented. You learn what that means and how to use it to make your programs less buggy and error prone, and easier to maintain. Along with that you learn best practices and how to write secure code.

You learn how databases work and how to design one, as well as how to use phpMyAdmin to work with MySQL. You learn different ways of connecting to MySQL through PHP, and how to create tables, enter data, select data, change data, and delete data. Finally, you learn how to combine all of these things into creating a mini content management system with a dynamic menu.

PHP is a general-purpose language that isn't limited to running websites. However, this beginning book is concentrated on programming websites because that is a natural extension for those who have been coding in HTML and CSS. By the same token, database programming can be quite complex. This book teaches the fundamentals needed to work with databases and how to do it safely.

## HOW THIS BOOK IS STRUCTURED

This book consists of short lessons, each focusing on a particular aspect of PHP and/or MySQL. The lessons are arranged in a logical order of study. Although you can study the lessons in any order, you often need to know what is taught in the early lessons before the later ones make sense. It is not meant as an exhaustive resource or as an in-depth look at technical aspects of the language. The goal is to teach you what you need to know in order to start using PHP and MySQL in your web pages and applications.

This book consists of 31 lessons, broken into six sections:

- **Section I, "Getting Started with PHP":** In this section you set up your computer to run PHP and MySQL. You learn the fundamentals of programming as you learn the fundamentals of programming in PHP.
- **Section II, "Working with PHP Controls, Functions, and Forms":** In this section you learn how to control what lines your programs will process and how to loop through repeating program steps. You learn about creating your own functions and how to process HTML forms.
- **Section III, "Objects and Classes":** In this section you learn what object-oriented programming is and why you want to use it. Then you learn how to use it.
- **Section IV, "Preventing Problems":** In this section you learn how to handle errors and how to write secure code.
- **Section V, "Using a Database":** In this section you are introduced to databases and how to design a database. You learn the basics of how MySQL works and then how to integrate it with PHP. You learn how to take static information on your HTML page and put it in a database and retrieve it.
- **Section VI, "Putting It All Together":** In this last section you take what you have learned and create user logins, a mini content management system, and a menu based on database information.

The lessons end with a tutorial called "Try It." Each tutorial applies concepts from the lesson.

*A Case Study is used in most of the Try It sections. This Case Study starts as a static website created from HTML and CSS. As the lessons progress, you replace parts of it with PHP and MySQL until at the end you have a website that takes its information from a database that you maintain through pages on the website.*

*As you work through the Case Study, you start most Try It sections with the Case Study that you finished in the previous Try It section. However, at any time you can download the Case Study code as it should be at the beginning of each Try It section and also download the code as it should be at the end of the Try It section.*

You can watch the DVD to see the Try It sections from the lesson done by the author. After you've finished reading the book and watching the DVD, you can visit Wrox's P2P forums, where your author offers support.

## WHAT YOU NEED TO USE THIS BOOK

To get the best results from this book, you should perform the examples and do the Try It sections. In order to do that, you need the following resources:

- PHP and MySQL need to run on a web server. You have two options: You can turn your computer into a local web server or you can use an online web host that runs PHP 5.3 and MySQL 5. This book assumes that you will be running a local web server and the first lesson steps you through the process of downloading free software and configuring your computer.
- You need a text editor that can produce plain-text files. The first lesson shows you how to download and install the Eclipse PDT, which is a very helpful editor for writing PHP. However, other text editors such as Adobe's Dreamweaver in code mode, Notepad, TextWrangler, or NetBeans also work. A word processing program such as Microsoft Word does not work.

## INSTRUCTIONAL VIDEOS ON DVD

Some people learn better with a visual and audio aid. That is why a DVD that includes a video tutorial for each lesson accompanies this book. So if seeing something done and hearing it explained help you understand a subject better than just reading about it, this book-and-DVD combination is just the thing for you.

## CONVENTIONS

To help you get the most from the text and keep track of what's happening, this book uses a number of conventions.

*Boxes like this one hold important, not-to-be forgotten information that is directly relevant to the surrounding text.*

*Notes, tips, hints, tricks, and asides to the current discussion are offset and placed in italic like this.*

*References like this one point you to watch the instructional video on the DVD with the print book or watch online at* `www.wrox.com/go/24phpmysql`.

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- Code appearing in text looks like this: `document.body`.
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```
A monofont type on its own line(s)
denotes code examples.
```

- Important or changed parts of code blocks are highlighted in the following way:

```
Some code examples have
sections that are highlighted which
illustrate different or key parts.
```

## SUPPORTING PACKAGES AND CODE

As you work through the lessons in this book, you can choose to type the code and create all the files manually or you can use the supporting code files that accompany the book. All the code and other support files used in this book are available for download at `www.wrox.com`. On the site, simply locate the book's title (either by using the Search box or by using one of the title lists), and then click the Download Code link on the book's detail page to obtain all the source code for the book.

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# SECTION I
# Getting Started with PHP

- **LESSON 1:** Setting Up Your Workspace
- **LESSON 2:** Adding PHP to a Web Page
- **LESSON 3:** Learning PHP Syntax
- **LESSON 4:** Working with Variables
- **LESSON 5:** Debugging Code
- **LESSON 6:** Working with Complex Data

In this section, you learn the basics of working with PHP. In the first lesson, you learn what PHP requires on your computer before PHP will run. If your computer does not have the necessary software, you can use the instructions provided to download the free software, install it, and configure it to work. In the next lesson, you learn how HTML and PHP work together as you add your first PHP code to a web page. You are also introduced to the Case Study website you use throughout the book.

You learn in the third lesson about the syntax of PHP and how to write PHP statements. In the fourth lesson, you learn what variables are and how to use them. At this point, you will have learned enough to start making mistakes, so in the next lesson you learn about how to find your errors and debug your code. You need to know about debugging as you work with more complex data in the final lesson of this section.

# 1

# Setting Up Your Workspace

Your computer needs to be able to run as a web server with PHP and MySQL. XAMPP is a package of software that installs the web server, PHP, and MySQL for you. You learn how to download and install XAMPP in this lesson.

If you already have a web server with PHP and MySQL running on your computer, you do not need XAMPP. Other packages that fulfill the same need are WAMPServer and MAMP.

You also need a text editor that can produce plain-text files. You learn how to download and install Eclipse PDT in this lesson. Some other text editors that you can use are Adobe's Dreamweaver in code mode, Notepad, TextWrangler, or NetBeans.

## INSTALLING XAMPP

*XAMPP* stands for whatever operating system you have: (X), Apache (A), MySQL (M), PHP (P), and Perl (P). Separate packages are available for each of the different operating systems such as Windows, Mac OS X, or Linux. This lesson covers installing the Windows and Mac versions.

*Perl is another programming language. It's popular for housekeeping tasks and for communications between different programs and programming languages. You won't need to use it for the lessons in this book.*

XAMPP is intended for local development work. It is not set up for running production websites.

*Do not use XAMPP to host websites on the Internet. Although it uses the same building blocks as production hosts, it is not set up to be secure. You will get hacked if you try it.*

## Installing XAMPP on a Windows PC

This section walks you through downloading the proper XAMPP package and installing it on your Windows PC. If you have a Mac, skip forward to the section "Configuring XAMPP on Mac OS X."

1. Go to the Apache Friends website at `www.apachefriends.org/en/xampp.html`.
2. Locate the section labeled XAMPP for Windows and click the title. Scroll down to the Download section that lists the versions available for download. See Figure 1-1.

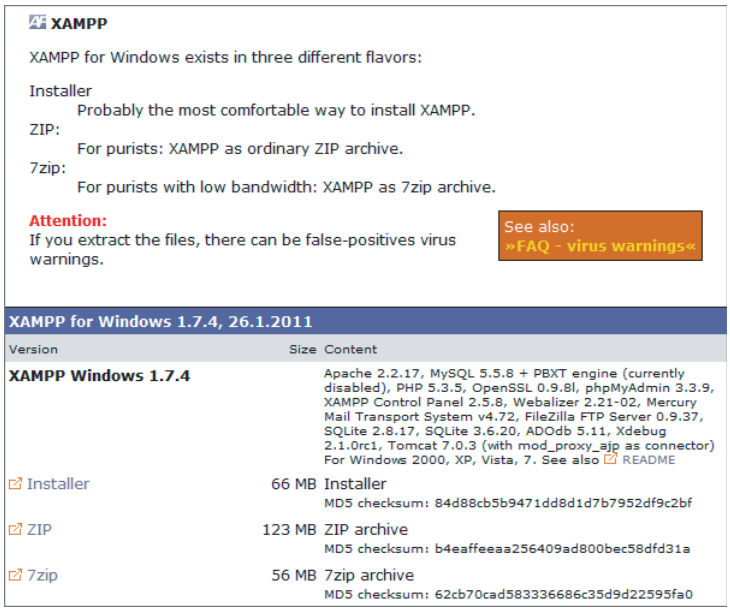



**FIGURE 1-1**

3. You have a choice of three ways to install this package: via the installer, via a ZIP file, or via a 7zip file. The easiest way to change options is to use the installer, but you are more likely to encounter problems. Because you are using the defaults, use the ZIP version. Click the ZIP link and save the ZIP file.
4. Unzip all the files to `c:\`. The ZIP file contains a folder called xampp that holds all the folders and files so unzipping to the `c:` drive creates the `c:\xampp` folder.
5. The program you use is `c:\xampp\xampp-control.exe`. In Windows Explorer, right-click the file and select Create Shortcut. Drag that shortcut to your desktop.

6. Double-click the XAMPP Control desktop icon you just created. The Control Panel is displayed. See Figure 1-2.

**FIGURE 1-2**

7. To start XAMPP, first start the Apache web service by clicking the Start button next to Apache. Then start MySQL by clicking the Start button next to MySQL. You do not need to start FileZilla or Mercury. When you click the Start buttons, they change to Stop buttons to indicate that the processes are running.

8. To stop XAMPP, click the Stop button next to MySQL and then click the Stop icon next to Apache.

9. To test that XAMPP is properly working, go to your browser and enter **`http://localhost/xampp`**. You should see a screen similar to Figure 1-3.

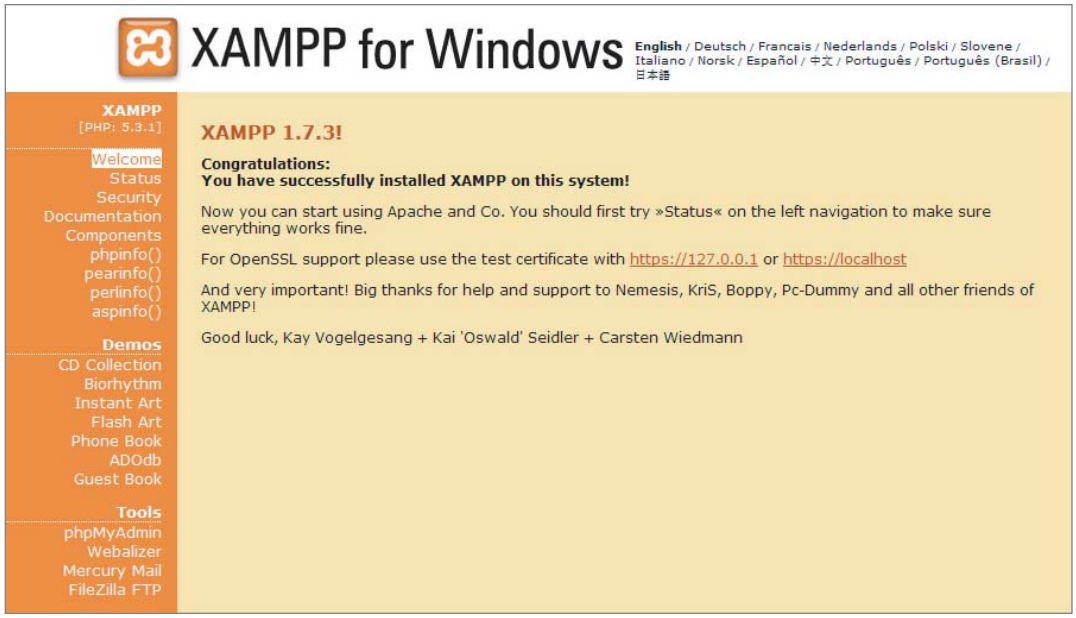


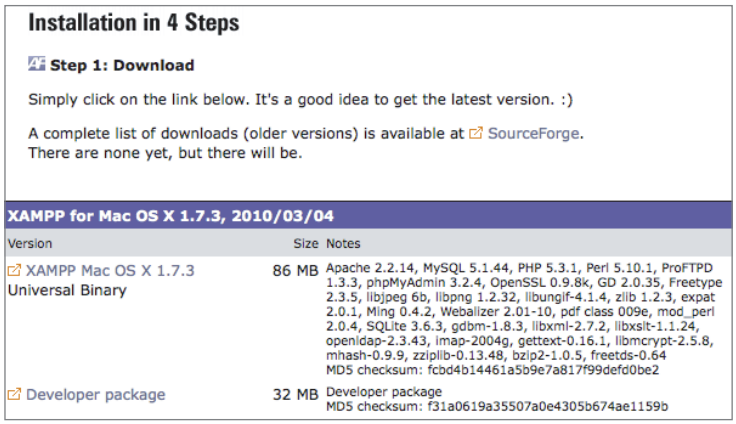

**FIGURE 1-3**

If the installation is successful, skip to the "Configuring XAMPP" section later in this lesson. Otherwise, check out the "Troubleshooting Your XAMPP Installation" section that follows the "Installing XAMPP on Mac OS X" section.

## Installing XAMPP on Mac OS X

This section walks you through downloading the proper XAMPP package and installing it on your Mac OS X system. If you are using a Windows PC, you used the prior section to install XAMPP so you can jump forward to the "Configuring XAMPP" section.

1. Go to the Apache Friends website at `www.apachefriends.org/en/xampp.html`.
2. Locate the section labeled XAMPP for Mac OS X and click the title. Scroll down to find the section labeled Installation in 4 Steps. See Figure 1-4.



**Installation in 4 Steps**

**Step 1: Download**

Simply click on the link below. It's a good idea to get the latest version. :)

A complete list of downloads (older versions) is available at SourceForge.
There are none yet, but there will be.

**XAMPP for Mac OS X 1.7.3, 2010/03/04**

| Version | Size | Notes |
|---|---|---|
| XAMPP Mac OS X 1.7.3 Universal Binary | 86 MB | Apache 2.2.14, MySQL 5.1.44, PHP 5.3.1, Perl 5.10.1, ProFTPD 1.3.3, phpMyAdmin 3.2.4, OpenSSL 0.9.8k, GD 2.0.35, Freetype 2.3.5, libjpeg 6b, libpng 1.2.32, libungif-4.1.4, zlib 1.2.3, expat 2.0.1, Ming 0.4.2, Webalizer 2.01-10, pdf class 009e, mod_perl 2.0.4, SQLite 3.6.3, gdbm-1.8.3, libxml-2.7.2, libxslt-1.1.24, openldap-2.3.43, imap-2004g, gettext-0.16.1, libmcrypt-2.5.8, mhash-0.9.9, zziplib-0.13.48, bzip2-1.0.5, freetds-0.64 MD5 checksum: fcbd4b14461a5b9e7a817f99defd0be2 |
| Developer package | 32 MB | Developer package MD5 checksum: f31a0619a35507a0e4305b674ae1159b |

**FIGURE 1-4**

3. Click XAMPP Mac OS X. You want the Universal Binary, not the Developer Package. Click OK to save the file when asked.
4. Open the `.dmg` file you just saved. Drag the XAMPP icon over to the Applications icon as shown in Figure 1-5.
5. Find the XAMPP `Control.app` in `/Applications/XAMPP/Xamppfiles`. This is the application file that you use to start and stop XAMPP and you will find it convenient to add it to your dock. The first time you open it you receive the standard warning about using files from the Internet. Click the Open button to start the Control Panel. The Control Panel looks like Figure 1-6.
6. To start XAMPP, first start the Apache web service by clicking the Start button next to Apache. Then start MySQL by clicking the Start button next to MySQL. You do not need to start FTP. When you click the Start buttons, they change to Stop buttons to indicate that the processes are running.