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Beginning Zend Framework

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To my parents, Guillermo Padilla and Francisca Osuna. To my friend Susannah Halweg. You have shaped the person that I am today. Thank you.

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About the Author

Armando Padilla has spent the last 3.5 years working on Zend Framework projects such as `http://www.dundermifflininfinity.com` (NBC/Universal) as well as personal projects. His PHP experience began in 1998, when he created small PHP web pages for Thomas Jefferson High School (Los Angeles). Armando's most recent work was for NBC/Universal, where he built medium- to large-scale applications.

Armando now spends much of his time working for Shine (Yahoo!), reading the Zend Framework API, creating extensions for the Framework, and expanding his skill set by pursuing a master's degree in computer science.

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About the Technical Reviewer

Adam DeFields is a consultant specializing in web application development, project management, technical writing/editing, and instructional design. He lives in Grand Rapids, Michigan, where he runs Emanation Systems, LLC (`www.emanationsystemsllc.com`), an IT services company he founded in 2002. Adam has coauthored or reviewed more than a dozen books on various technologies, including Java, PHP, Apache, MySQL, and Zend Framework.

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Acknowledgments

There were times that I felt I could not write this book. I think all first-time authors must feel this way, no matter how knowledgeable they might be in a certain field. It's a very humbling feeling.

I know I wouldn't have grown from this experience without the Apress team. I want to thank all of them. Thanks especially to Beth Christmas for putting up with my "deadline malfunctions" and having the patience to work with me. Thanks to Steve Anglin for taking a chance and giving me the opportunity to write this book, and a big thank you to Matthew Moodie for taking the time to lend a hand.

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Introduction

Welcome to *Beginning Zend Framework*! The primary goal of this book is to set the foundation for your journey into Zend Framework. You can be a beginner or a seasoned developer—this book includes something for everyone. For the Zend Framework beginner, this book covers everything from the basic setup to answering questions about what a controller is. For the seasoned developer, it includes chapters on the caching and the search component of Zend Framework.

What the book doesn't include is a how-to of PHP. Because the book is entirely focused on using PHP, you need at least a basic understanding of the language.

Overview

Following is a chapter-by-chapter breakdown—the road map.

Chapter 1: "Getting Started with Zend Framework"

You need a starting point, and there is nothing better than setting up a working development environment to get off on the right foot. This chapter covers all the tools you need to get a simple and complex application powered by Zend Framework up and running. It furnishes step-by-step instructions on how to install and test each component, and finishes up by showing you how to create a small application using Zend Framework's Zend_Tool.

Chapter 2: "The Application"

If you're reading this book chapter by chapter, here you will create a small application called Loudbite, which is a small music mashup site. The application leaves plenty of room for you to expand on and is only used for the examples. This chapter provides not only the background but also the database ERD and overall architecture of the application.

Chapter 3: "Writing Controllers Using Zend_Controller"

Zend Framework has a unique way of controlling user requests, and this chapter covers the basic building blocks of this process. The chapter describes the URL structure as well as how Zend Framework treats each piece of the URL to route the user to the appropriate controller-action of the application.

Chapter 4: "Views, Forms, Filters, and Validators"

What would a Framework book be without a chapter on the crucial elements web developers create everyday on a project? Forms! This chapter covers how Zend Framework eases the grueling tasks of creating, validating, and filtering forms.

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Chapter 5: "Database Communication, Manipulation, and Display"

Because most web applications require a persistent storage unit such as a database, this chapter looks at the database support that Zend Framework provides. This chapter covers using PDO, creating statements, executing statements, retrieving information, using object-oriented statements, and working with built-in pagination support.

Chapter 6: "Sending and Receiving E-mail"

E-mail! Zend Framework did not stop at database and typical web layer functions; it also created a solid e-mail component for sending and retrieving e-mail. This chapter shows you how to create e-mail, how to send e-mail using text and HTML, and how to send attachments.

Chapter 7: "Web Services and Feeds"

For today's developers, REST and RSS feeds are part of the standard vernacular. So it's no surprise that Zend Framework has included support for these services and has gone one step further by providing wrappers for your favorite open APIs. This chapter covers how Zend Framework works with the current web service alphabet soup: REST. It also shows you how to create web services, call web services, and create and consume feeds.

Chapter 8: "Creating a Search Engine Using Zend_Search_Lucene"

This chapter discusses search engines and how Zend Framework has packaged a proven search engine such as Lucene. It takes you step by step into creating each of the building blocks of the search engine: from creating an index to adding content using the built-in wrappers for Word, HTML documents, and Excel files.

Chapter 9: "Caching with Zend Framework"

The last chapter discusses how you can get that extra juice by speeding up applications using cache. You will learn how to successfully implement the Zend Caching component for standard HTML to database records.

Contacting the Author

As a reader of technical manuals, I tend to have more questions about topics covered in the book after each chapter. If you encounter any questions, I'm here to help. You can reach me directly at `armando_padilla_81@yahoo.com` or you can find me posting Zend Framework–related items as well as answering any questions you may have with this book on this site: `www.beginningzendframework.com`.

All source code for this book can be found on the Apress web site as well as on `http://www.loudbite.com` and `http://www.beginningzendframework.com`. Enjoy!

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CHAPTER 1

Getting Started with Zend Framework

Regardless of your programming skills, you have decided to make your way into the Zend Framework world. Some of you might be new to programming; others might be seasoned developers heading a large team. Regardless of your status or reasons why you want to enter the Zend Framework world, everyone starts on the same page. Yes, stop your groaning; that means setting up the environment and dealing with the technology that will get you up and running toward building your application powered by Zend Framework.

You might be wondering why you need to go through this process. That's fair; when I started developing PHP applications, I asked the same question—but I continued to follow the steps to set up the environment. Looking back to my experience, I can say that setting up the environment will give you a few things right away. For new developers, it will introduce the technology Zend Framework needs to successfully start developing applications. Think about it like this: if I gave you a box of tools and asked you to build a house, how on earth would you go about accomplishing that task if you didn't know how to use each of the tools in the box? So you also need to learn which tools you need to build your figurative house: a Zend Framework application.

If you know which tools are needed to run applications, you will understand the limitations of those applications. If your boss came up to you, stared into your eyes, and (besides telling you that you rock) said, "I need a Zend Framework application that will handle ten million users per month, a few hundred thousand hits per minute and have a response time of less than a second. Can you do it?" You should be able to tell him, "Yeah, I rock. What's new?" You can also say, "Yes! You'll have it in a month, with all the bells and whistles you asked for." I can't promise that Zend Framework will handle 1,000 hits per second because that's for your load balancer to handle, but I do promise that Zend Framework will make it fun for you to deliver the product on time.

The goal of this chapter is to set up a development environment with all the free tools available:

- Apache 2.2
- MySQL 5.1 or later
- PHP 5.2.4 or later.
- Zend Framework 1.8

You will also create your first Hello World application powered by Zend Framework and review the basic components required to power all Zend Framework applications efficiently.

The Tools

Let's open up that toolbox now and see what's in there. You see a hammer, some nails, and a blow torch, enough to start a house. Don't worry; installing your tools will be an easy process. If you're a senior developer, take a look at the list of software and determine whether you need to read this section or not. If you feel comfortable installing the tools on your own, or if you already have a development

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environment that will run the required PHP version, skip these few sections and start with the "Installing Zend Framework" section later in this chapter.

Regardless of your experience, take the time to read through the installation and setup process of Zend Framework and create the small Hello World application outlined in this chapter. Trust me; it will prove invaluable to read the section and create the test application.

Let's begin installing the development environment step by step.

■ **Note** Windows users should continue reading; Mac users can skip to the section called "Installing a Mac Development Environment." We don't cover Linux/Unix installation because your distribution will have its own way of installing Apache, MySQL, and PHP (although we do discuss installing Zend Framework). Refer to your distribution's documentation if you are unsure or need more help.

Apache

You will start with the base software that most web applications need: Apache. Without Apache, most web applications installed on computers could not communicate with the world.

Installing Apache on Windows

As of this writing, Apache has released version 2.2.x of its free web server. If you have a hosted web server you can use it; depending on your setup you might need to skip this section and head toward the "Installing Zend Framework" section. For everyone else, let's start the process of installing Apache on your computer.

Pull up the Apache web site (http://httpd.apache.org), click the "Download! from a mirror" link on the left side, and select from one of the mirror sites shown on the following page. Windows users: download the Windows installer file apache_2.2.x-win32-x86-no_ssl-r2.msi.

After the file has completely downloaded, open the installer. The initial window will be a security warning (see Figure 1-1). Depending on your version of Windows, ignore it and click Run to get into the installation.

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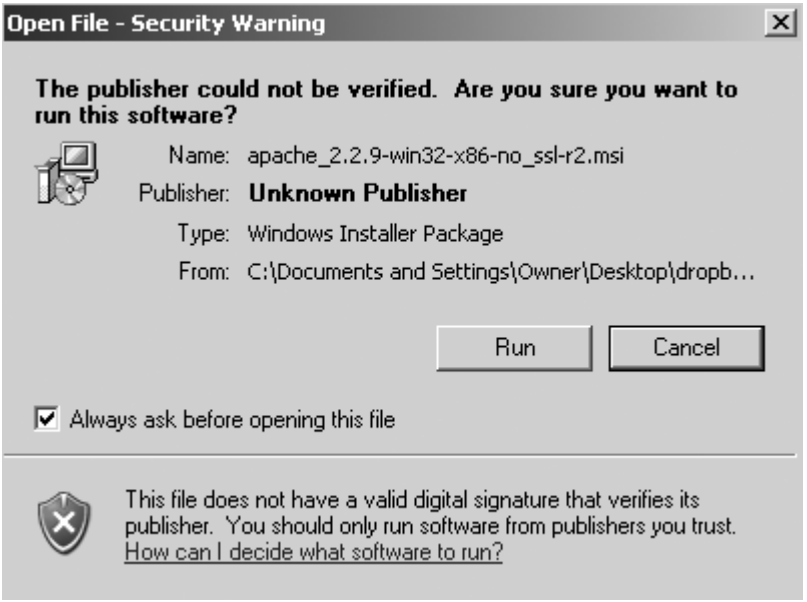

Figure 1-1. Windows installation security warning

The next window is the Apache setup window. If you have a previous version of Apache installed, you might see another pop-up window that asks you to remove the previous installation before you begin the new one.

■ **Note** If you don't want to upgrade, skip the steps dealing with Apache.

Click Next on the initial window (see Figure 1-2).

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Figure 1-2. *Apache installation welcome window*

In the License Agreement window that displays, select "I accept the terms in the license agreement" and click Next (see Figure 1-3). Click Next in the following window.

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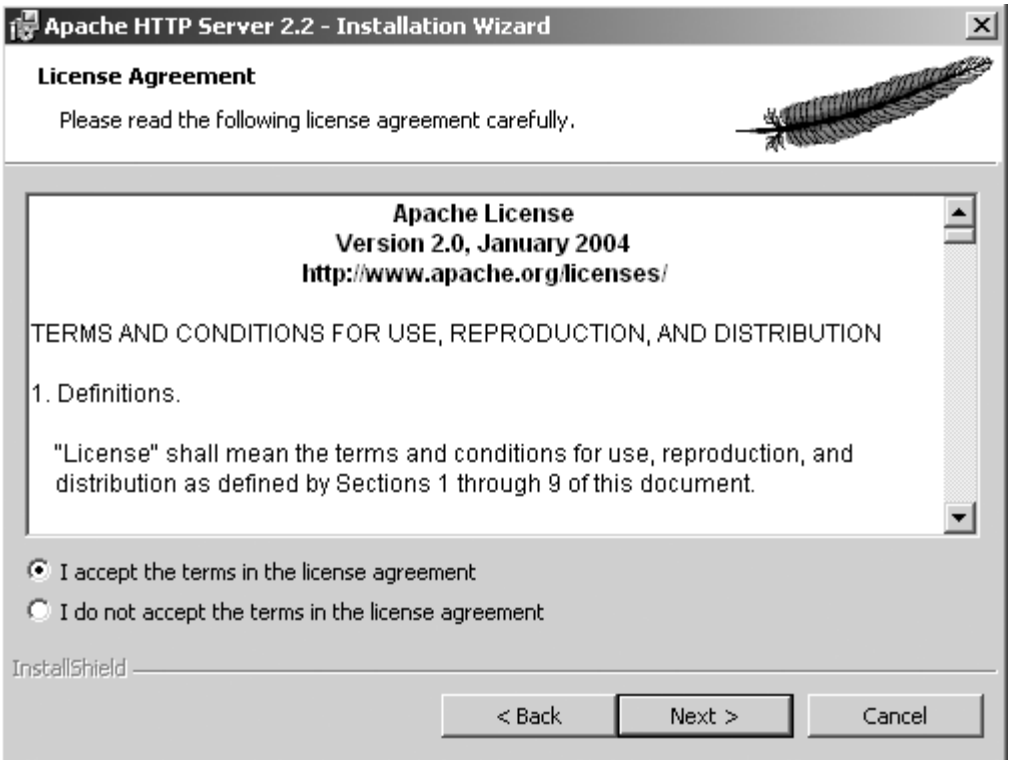

Figure 1-3. *Apache server terms and conditions window*

The Server Information window displays (see Figure 1-4). You need to fill in all the fields. Because this will be a web server operating on your desktop, you can add any domain name and network name into the Network Domain and Server Name fields, respectively. I chose to enter **localhost** for both of those fields. Enter your e-mail address in the Administrator's Email Address field and then click Next.

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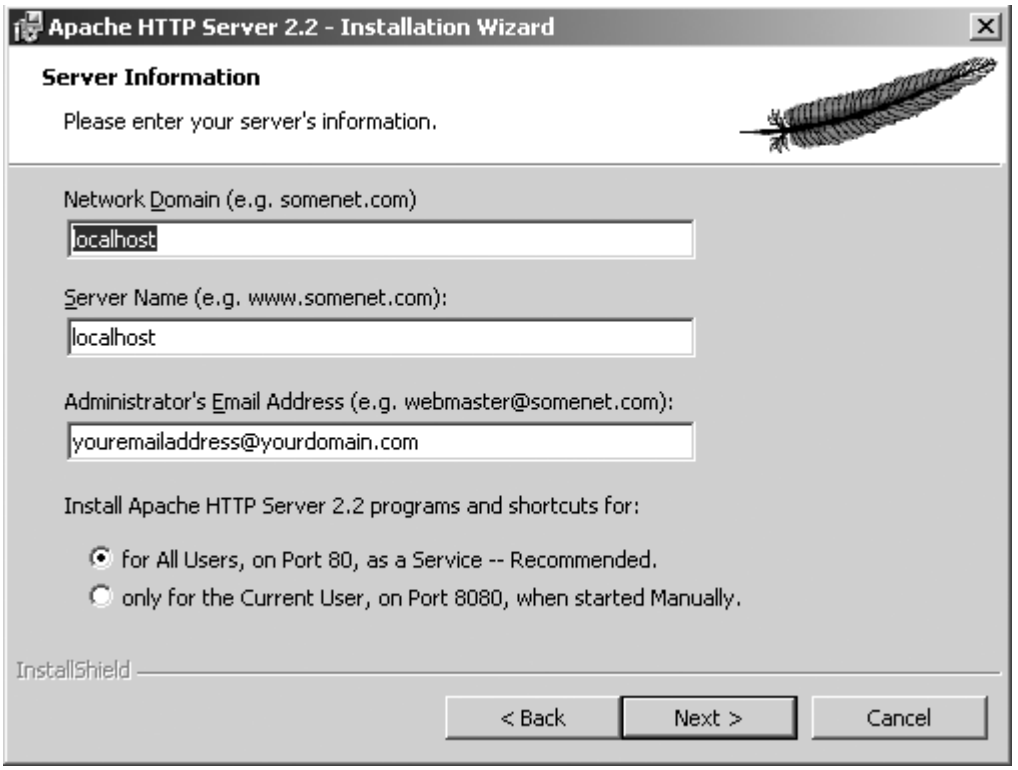

Figure 1-4. *Apache Server Information window*

Next, start installing the software. You need to tell the Apache Installation Wizard where to install it. The window shown in Figure 1-5 allows you to do just that. Click Custom and then click Next.

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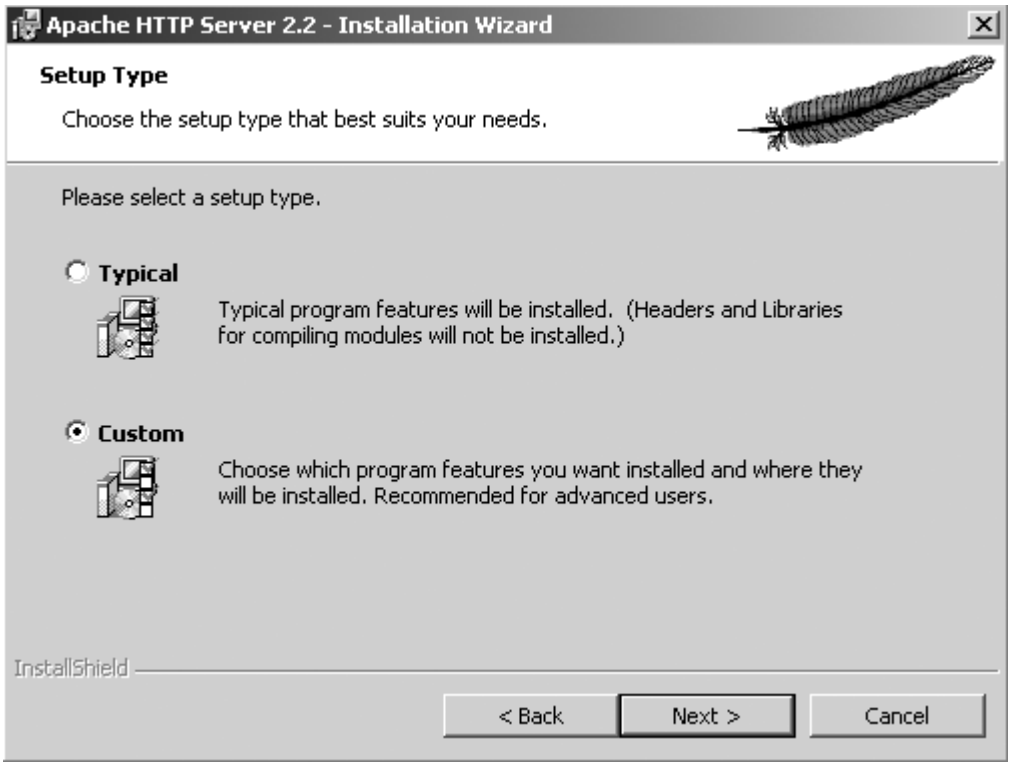

Figure 1-5. *Apache Setup Type window*

In the Custom Setup window shown in Figure 1-6, click Change.

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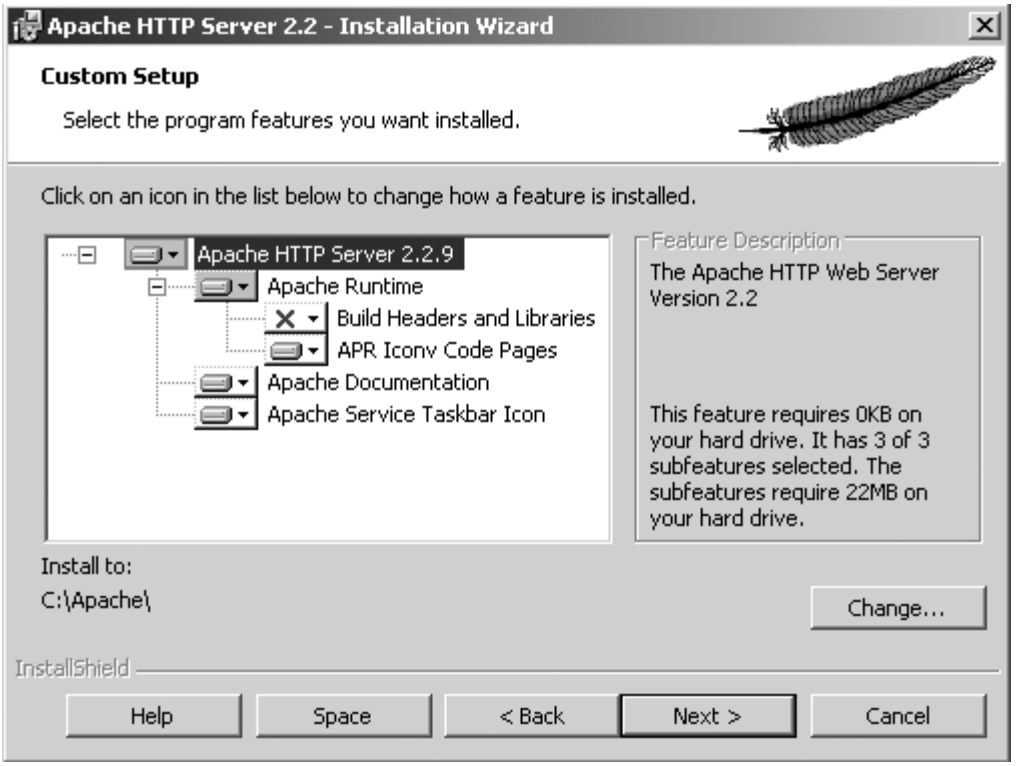

Figure 1-6. *Apache Custom Setup window*

For ease of use throughout this book, I recommend that you change the location of the installation directory in the Change Current Destination Folder window to C:\Apache (if you want to save Apache in an alternative location, that's fine, too).

■ **Note** For future reference, remember that C:\Apache will be referred to as APACHE_HOME from here on out.

Click OK and then click Next.

Finally you're at the last window. Click Install and watch it go. That's all there is to it. You have successfully installed a web serveron your computer.

Installing a Mac Development Environment

Mac users, you're in luck. Installing a complete development environment with Apache, MySQL, and PHP requires you to download only one all-in-one package, MAMP (Macintosh, Apache, MySQL, and

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PHP). The package can be found here: http://www.mamp.info. Go ahead and load the URL in your browser as you continue reading.

After the page loads, click the Downloads link. You'll see two available versions of the package at this point. For your environment, you'll be okay with the basic MAMP version, not the MAMP & MAMP Pro version. Click the Download link and wait for it to download.

As soon MAMP completely downloads, double-click the .dmg file saved to your computer and install MAMP into the Applications folder.

■ **Caution** It's critical that you do not install MAMP in a subfolder; it will not work properly if this is done.

Open the Applications directory, click the MAMP directory, and click the MAMP manager, as shown in Figure 1-7.

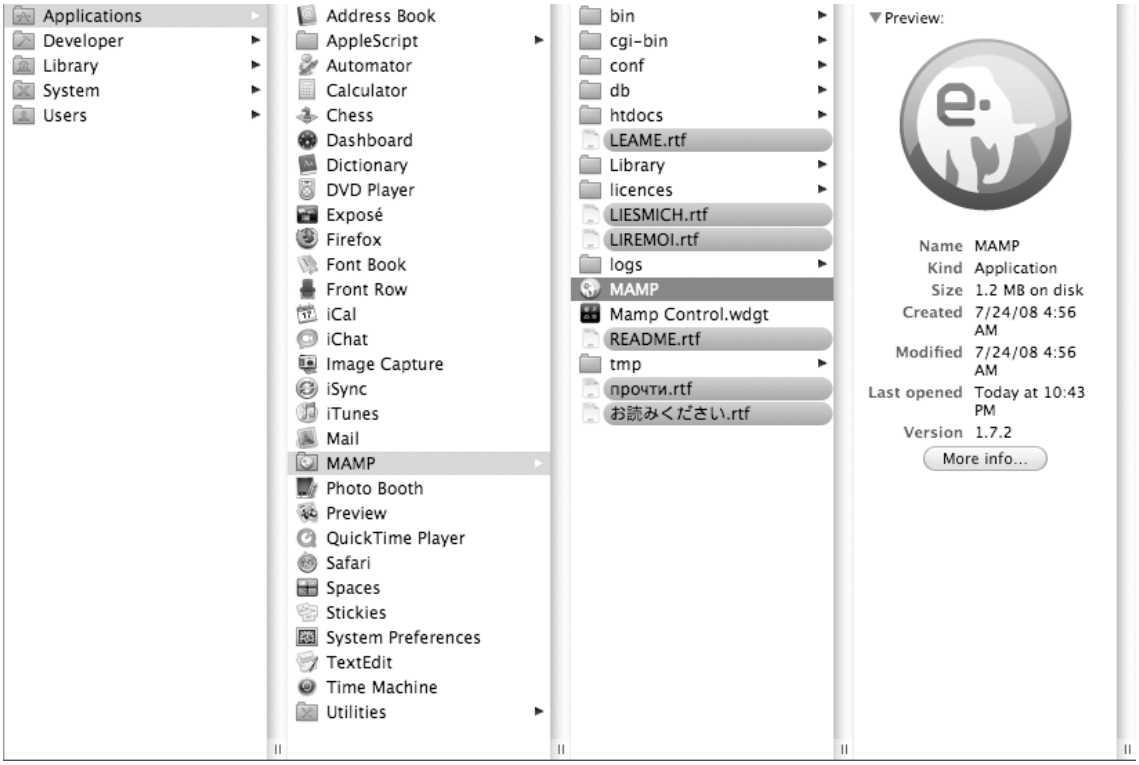

Figure 1-7. *MAMP executable in the Applications directory*

The manager will appear. If everything worked as expected, you should see the MAMP manager display a green indicator on both the Apache Server status and the MySQL Server status (see Figure 1-8).

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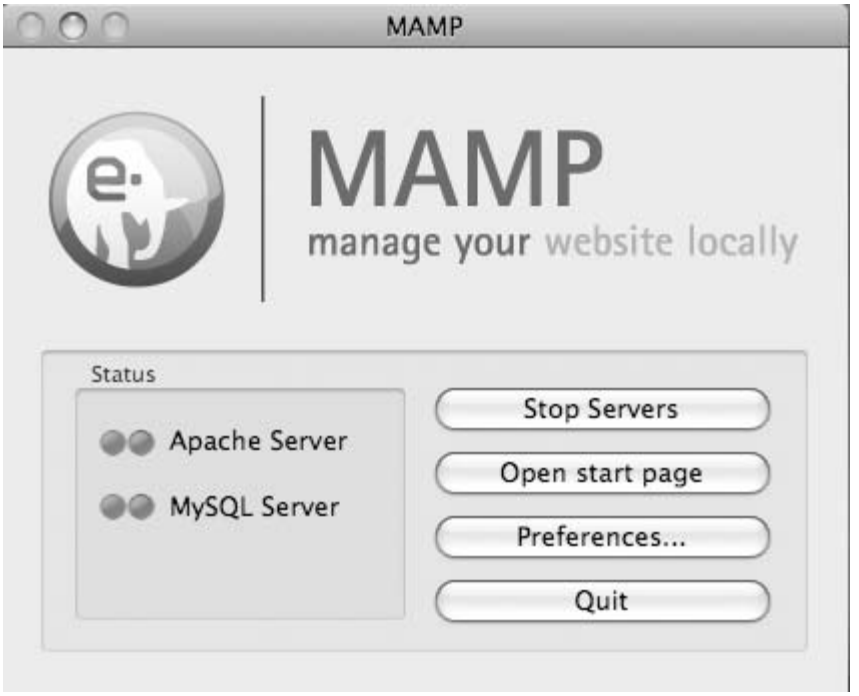

Figure 1-8. *MAMP Manager servers running OK*

You're almost done. Click Preferences, and you'll be presented with a window much like Figure 1-9.

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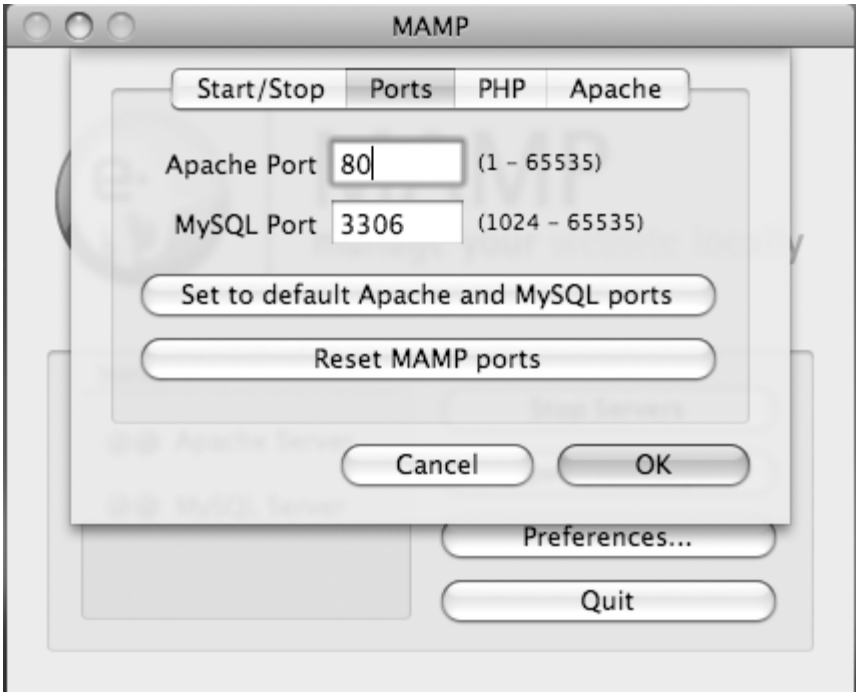

Figure 1-9. *MAMP Preference Manager*

Click "Set to default Apache and MySQL ports" and then click OK. This will allow you to disregard the port number when loading a URL on your browser. You now have installed not only a web server but also a database server.

■ **Note** The default installation of MAMP sets the MySQL and HTTP port number to X and X, respectively. The port numbers, though effective, are not the standard for both services. By default, MySQL should operate under port number 3306; Apache should operate under port number 80.

Post-Apache Installation

If there were no errors during the installation of Apache on Windows, you should see the Apache Monitor icon in the task bar (see Figure 1-10). Right-click it and then click Open Apache Monitor, which is the tool that allows you to start and stop the web server. Mac users open the MAMP manager and verify that the status indicators on both Apache and MySQL are green.

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■ **Tip** For easier access to the manager, I suggest you install the MAMP widget included in the installation bundle.

■ **Note** During this process, you might have to go back to this tool to restart Apache, so remember where this icon is located.

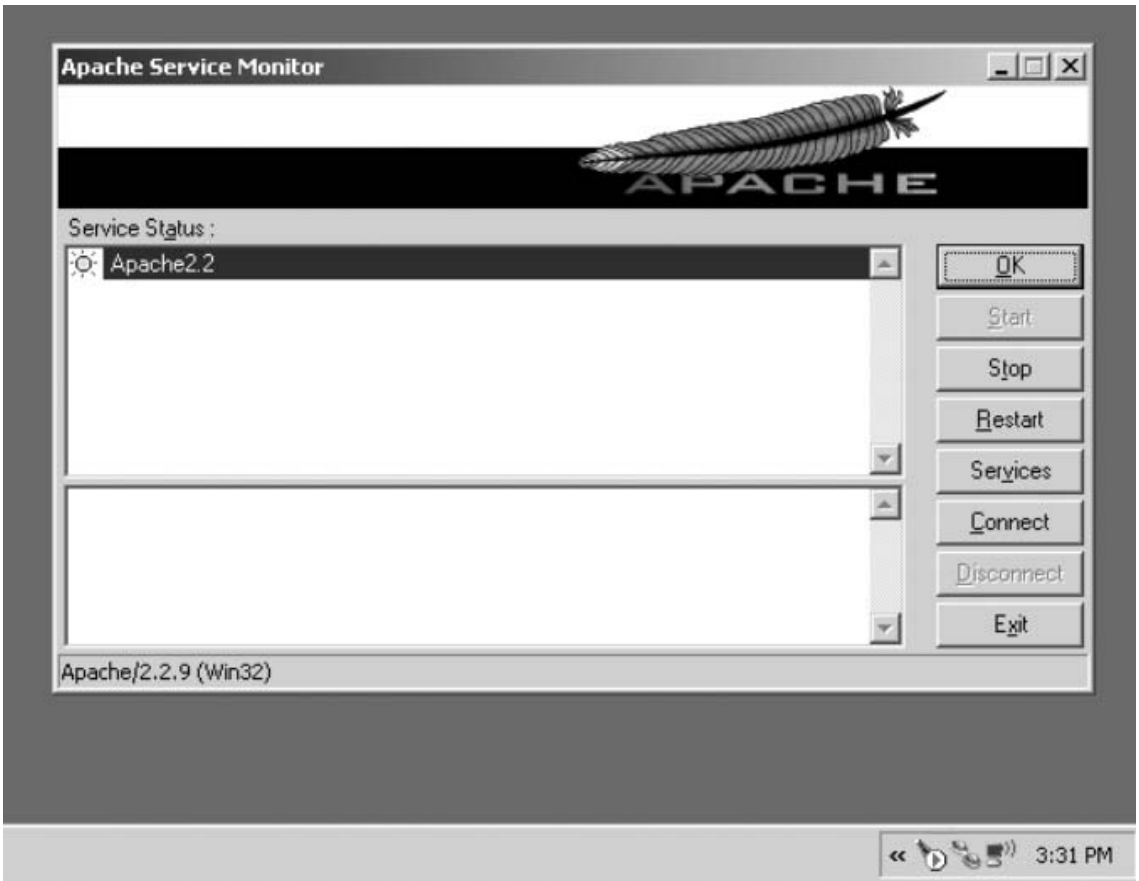

Figure 1-10. *Windows task icon for Apache Monitor*

Now make sure that Apache is running on the computer. To do this, you need to call Apache from the web browser. Pull up your favorite web browser and type in the following URL: http://localhost. You should now see the result, as shown in Figure 1-11.

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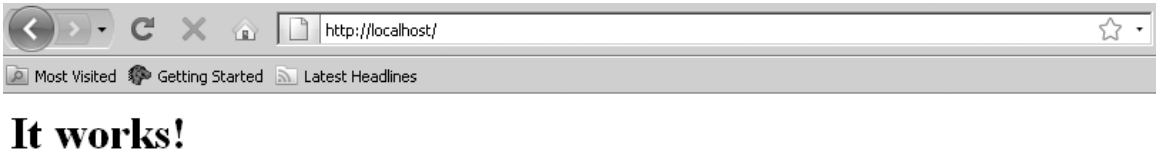

Figure 1-11. *Apache index success page*

■ **Tip** If you have any issues and can't see the page, look in the Apache error logs located at APACHE_HOME/logs/error.log. The problem can often be found here and easily taken care of by simply reading the errors saved to these files.

MySQL

You have turned your computer into a nice web server in which you can begin creating your application. Great! The next piece of the puzzle is installing a database to store user-entered data for the application. By doing this, you can ask customers to enter data such as favorite bands, favorite songs, and usernames they want to use. You can then save this data for later use so you don't have to ask them every time they visit the site.

There are many database software packages available, but here's one that works well with PHP: MySQL. You will now turn your computer not only into a web server but also into a database server.

■ **Note** Mac users: you should skip to the "Post-MySQL Installation" section. You should already have MySQL installed if you've been following along.

Installing MySQL on Windows

Installing MySQL 5.1 or later is very straightforward. Head to the web site http://www.mysql.com and download the latest software by clicking the Downloads link on the top menu bar. After you reach the new page, click the Download button under MySQL Community Server and scroll down until you reach a portion of the page containing the different download options.

Like Apache, MySQL gives you the option to install the software in either Windows or Linux. Windows users should download the Windows MSI installer (x86) ; Linux users should download the appropriate installer for the Linux flavor by clicking any of the installers under the specific distribution you have. Once you select a package (by clicking "Pick a mirror"), you are asked to log into your account. Click "No thanks, just take me to the downloads!", and a list of mirror links displays. Select one of the mirror links and start downloading.

As soon as the download is complete, run the setup file to start installing MySQL. On the initial welcome window, click Next.

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In the Setup Type window, you're presented with the option of setting up a typical installation or a custom installation (see Figure 1-12). Click Custom and then click Next. This process enables you to install MySQL in a directory of your choice.

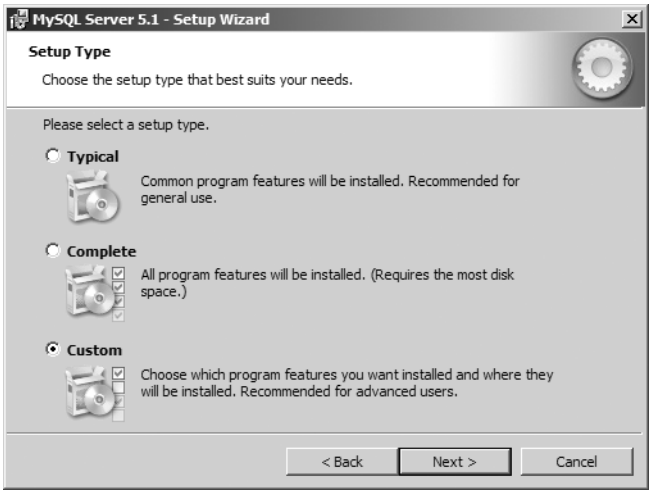

Figure 1-12. *MySQL installer Setup Type window*

As soon as the Custom Setup window displays, click Change. The Change Current Destination Folder displays. For simplicity, install your MySQL files in the location C:\mysql (see Figure 1-13).

■ **Note** In subsequent chapters, I will refer to this path as MYSQL_HOME.

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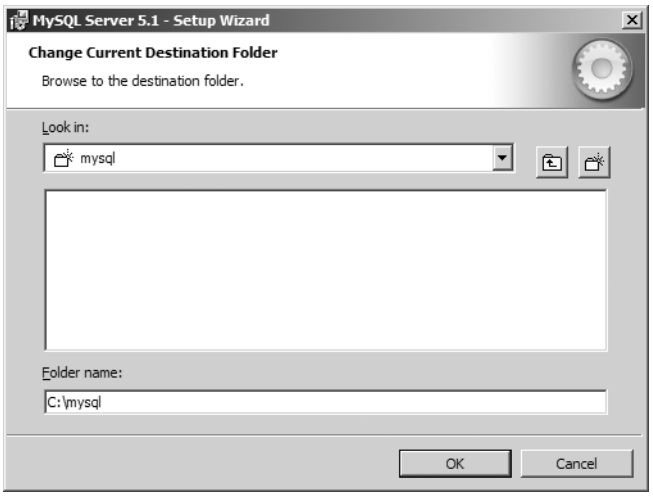

Figure 1-13. *MySQL installer Change Current Destination window*

Click OK and then click Next. The Ready to Install the Program window displays (see Figure 1-14). Click Install and watch MySQL install. If you're prompted with additional screens, click Next.

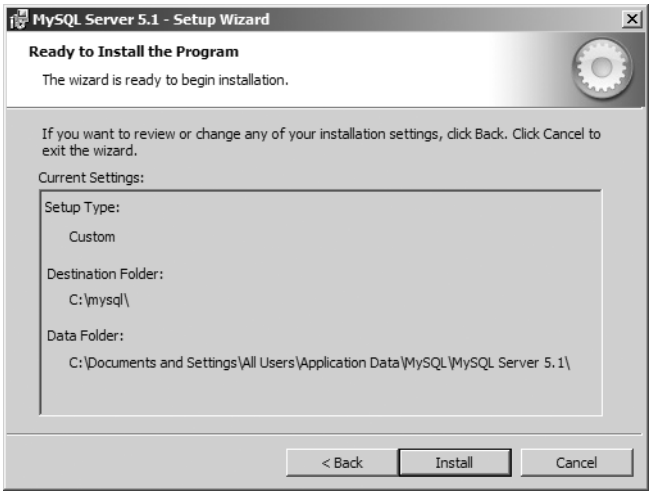

Figure 1-14. *MySQL installer Ready to Install the Program window*

If there were no errors during the MySQL installation process, MySQL has been installed on your computer, and a configuration window will pop up.

Let's now go through the steps of configuring yourinstance of MySQL.

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Configuring MySQL

Configuring MySQL takes only a minute. In the first window that displays, click Next to start the configuration process (see Figure 1-15).

Figure 1-15. *MySQL Configuration Wizard* welcome *window*

In the MySQL Server Instance Configuration window shown in Figure 1-16, click the Standard Configuration button to speed up the process of configuration and then click Next to continue.

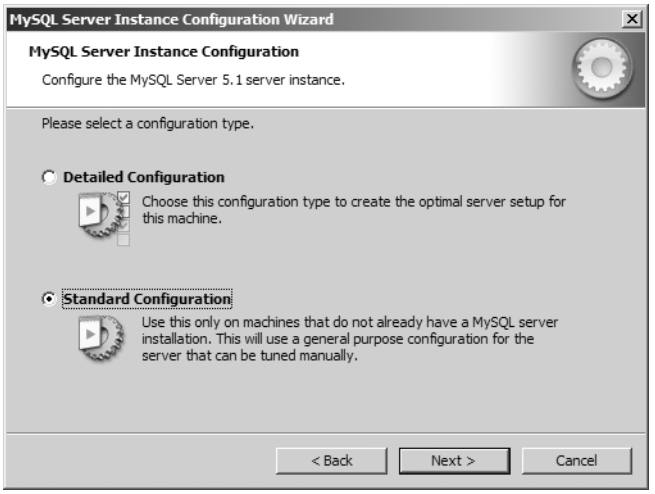

Figure 1-16. *Choosing standard configuration*

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In the screen shown in Figure 1-17, choose the default Install As Windows Service option and click Next.

Figure 1-17. *MySQL configuration Windows options*

Almost done. In the window shown in Figure 1-18, you need to set up a password. Enter a password for all the fields, leaving Modify Security Settings checked, and then click Next.

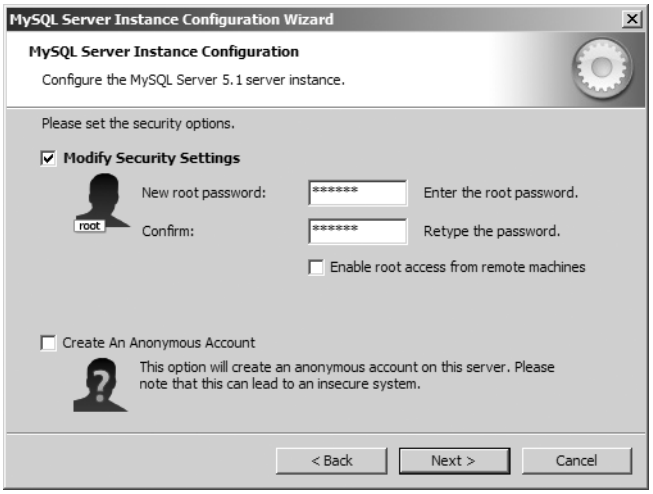

Figure 1-18. *Choosing security options*

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Finally, click Execute and watch the check marks come up. If the installation and configuration completed successfully, you'll see four check marks that indicate no errors (see Figure 1-19). Congratulations! You finished the setup. Click Finish and relax.

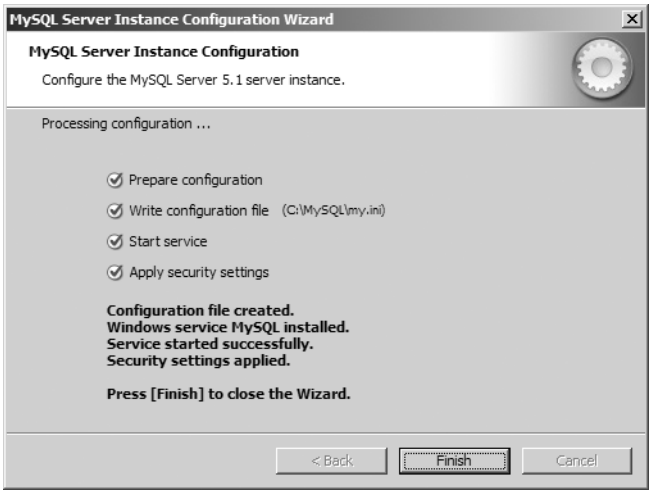

Figure 1-19. *Finishing the configuration*

Installing MySQL GUI Tools

At this point, all basic tools are on your workstation. To make things easier for you as a Windows user, download and install a free MySQL GUI tool: MySQL Query Browser. The tool allows you to connect to the newly installed database server, view table schemas on the fly by simply clicking a button, and (most importantly) run SQL queries on the data.

Head back to the MySQL home page, located at http://www.mysql.com, and click the Downloads link. After the Downloads page loads, click the GUI Tools link located on the left navigation bar. The MySQL GUI Tools Downloads page displays.

■ **Note** At the time of writing, the MySQL GUI tools target version 5.0, but are compatible with 5.1. You'll notice that the following figures mention MySQL version 5.0 for this reason.

There are two types of installers: a Windows version and a Linux version. Windows users can download the Windows (x86) installer; Linux users should select the appropriate installer by clicking the "Pick a mirror" option next to the specific Linux distribution you have installed. When the next window comes up, it prompts you to log in. Ignore it and click the "No thanks, just take me to the downloads!" link. After the page loads, scroll down until you locate a mirror in your country and start to download.

After your download completes, open the downloaded file to start the installation process. In the initial MySQL Tools welcome window, shown in Figure 1-20, click Next.

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Figure 1-20. *MySQL Tools welcome window*

Accept the terms and conditions presented by MySQL on the next window by clicking "I accept the terms in the license agreement" button and then click Next to continue. The MySQL Tools Destination Folder window displays (see Figure 1-21). Click Change. In the Folder name field, type in the MYSQL_HOME/tools path, click OK, and then click Next.

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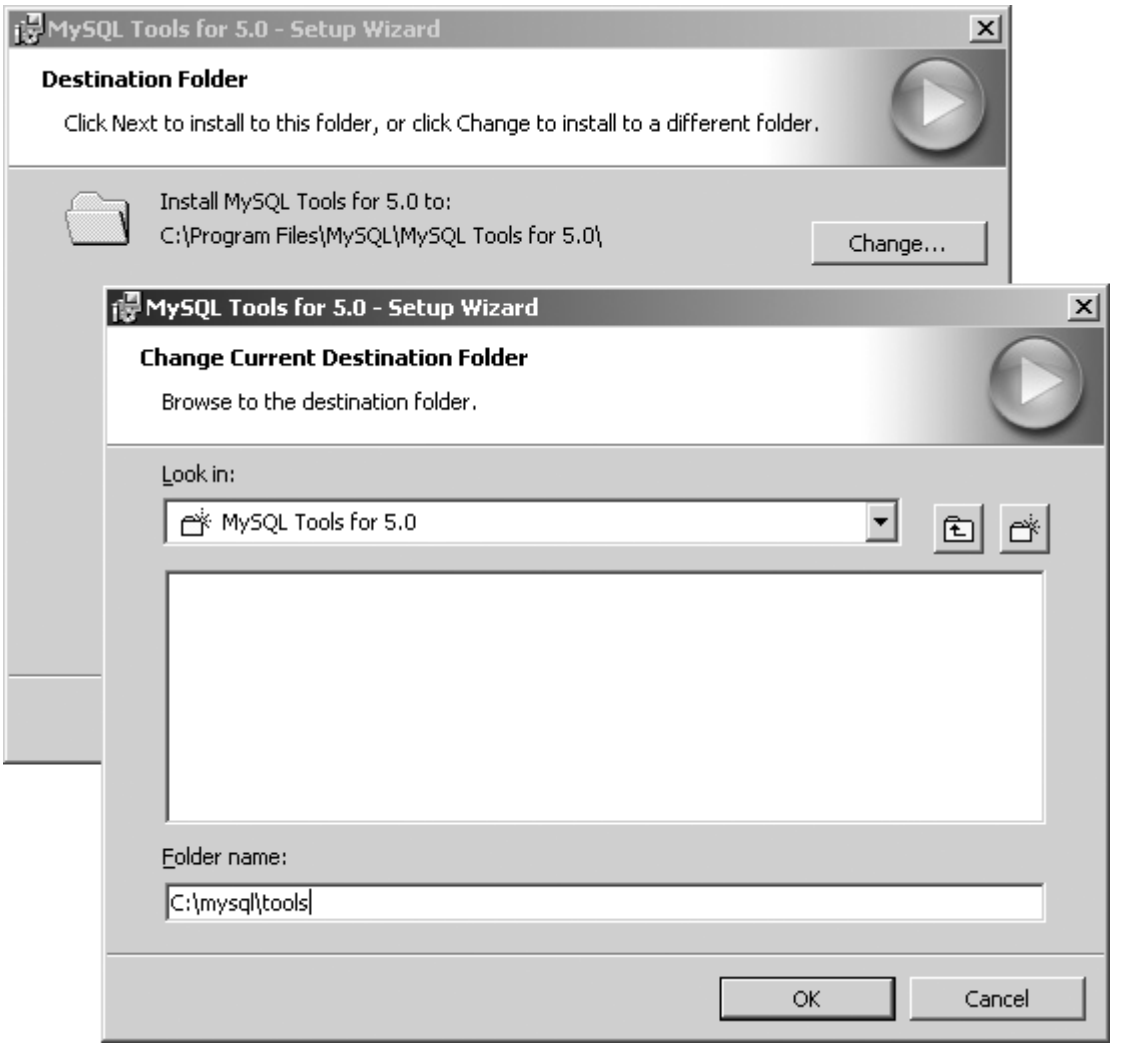

Figure 1-21. *Choosing the destination folder*

The MySQL Tools Setup Type window displays. Click Complete and then click Next to reach the Ready to Install the Program window. Click Install and let the setup do the rest. If you encounter any additional windows after this point, simply click Next until you reach the MySQL Tools Wizard Complete window. Click Finish, and you're done.

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Post-MySQL Installation

All should have gone well, but let's make sure. You'll create a database and add a table into the new database in the MySQL instance. Windows users: click the Start Windows button, typically located in the bottom-left of the screen, and open the MySQL folder. In the folder you'll find a few other applications, but you're currently interested only in the MySQL Query Browser, so click it and wait for it to load. You should see a window that prompts you for a few pieces of information (see Figure 1-22).

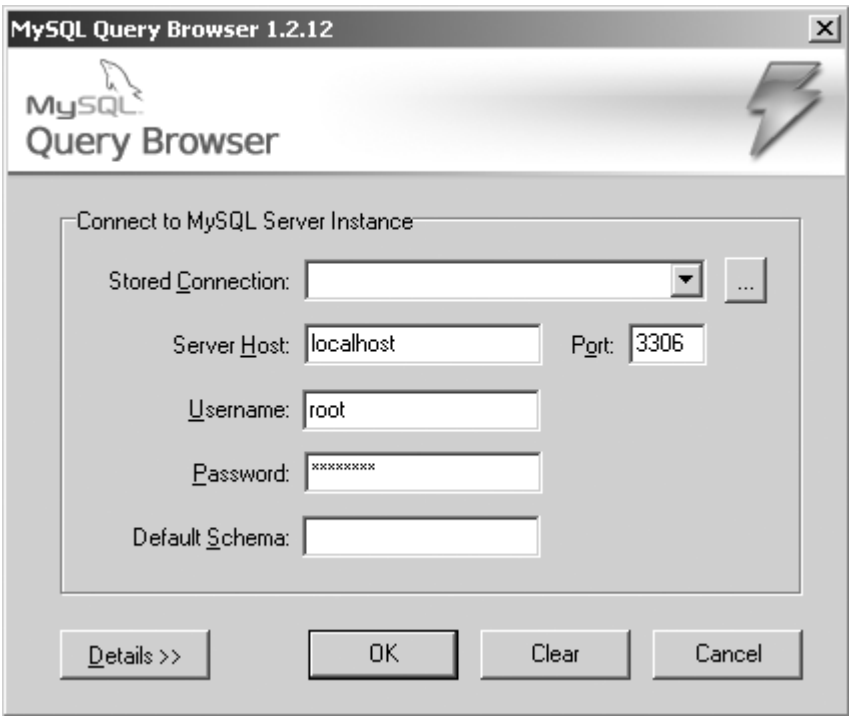

Figure 1-22. *MySQL Tools connection information window*

Type in the information you used during the MySQL server installation and then click OK. If you've been following along, you should enter **localhost** in the Server Host field, **root** in the Username field, and the password you used during the installation of MySQL.

You should now see the MySQL GUI window shown in Figure 1-23. By default, it contains a list of all your databases on the right side of the window, a place to write your SQL queries, and an Execute button with a lightning bolt on it. You will use these tools to write and execute your SQL statements.

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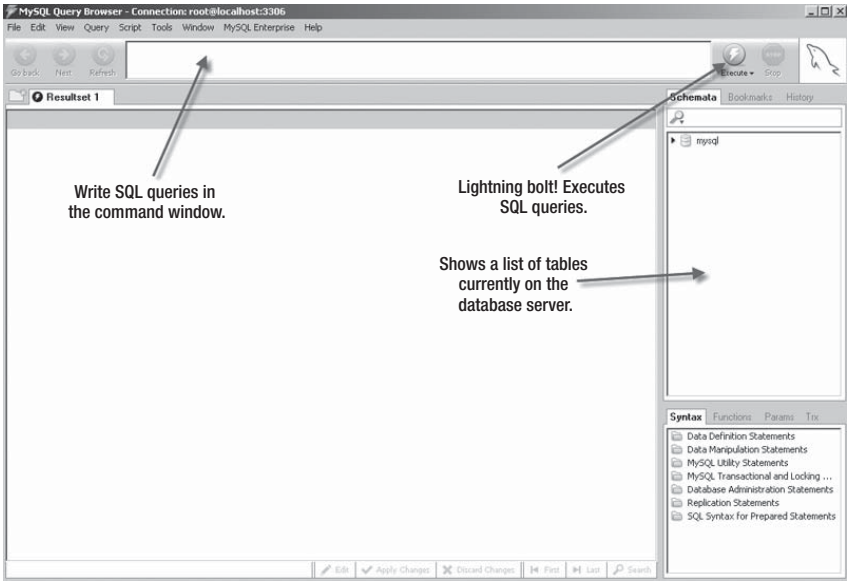

Figure 1-23. *MySQL tools GUI*

Mac users: open the MAMP manager once more and click the "Open start page" button on the right side of the manager. This will open up a web browser with a link to phpMyAdmin, a web-based MySQL manager, on the top navigation menu. Click the phpMyAdmin link and wait for the application to load. After phpMyAdmin has loaded, click the SQL icon on the left menu bar and continue to the next section to create your first database.

Creating a Test Database

Create a test database by typing the following SQL command into the command window on the GUI tool for Windows users or the phpMyAdmin SQL window for Mac users:

```
CREATE DATABASE zend_test;
```

Click OK or the lightning bolt icon to run the SQL. If all went well, right-click the list of databases on the right side and click Refresh on the GUI tool, or look at the list of databases currently present in the left side of the phpMyAdmin window. You will see your zend_test database appear.

Now, select zend_test as the database you want to use (or click the database if you're using phpMyAdmin):

```
USE zend_test;
```

The database name should now be bold, indicating that you're working with the zend_test database (or the phpMyAdmin window should load a new window containing only zend_test options):

Create a table called Accounts, as follows:

```
CREATE TABLE Accounts (id int(11));
```


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If all these commands ran without errors, MySQL is installed and waiting for calls from your application.

PHP

One of the critical pieces of your application is PHP 5.2.4 or later. You must have PHP 5.2.4 at minimum installed because it contains the object-oriented features that Zend Framework requires. Without PHP 5.2.4, Zend Framework can't run. So let's go download it.

■ **Note** Mac users: MAMP installed the required PHP version. Continue to the "Installing Zend Framework" section.

Installing PHP

The PHP installer can be downloaded at http://www.php.net. Again you have the option to either download a Linux installer or a Windows executable. In this case, if you are using a Windows environment, download the .zip file, not the Windows EXE installer. To find the .zip file, click the link for Current PHP 5 Stable on the right of the page under the Stable Releases header and look for the .zip package under the Windows Binaries heading. After you click that link, you'll see a list of mirrors from which you can download. Click the link for a mirror in your country to begin the download. The .zip file contains added extensions and libraries that you will need.

As soon as the PHP installer finishes downloading, extract the files to a directory of your choosing. I'm installing the files in the C:\PHP5\ directory, and I recommend you do the same.

■ **Note** For ease of use, this directory path will be referred to as PHP_HOME throughout the book.

Getting PHP and Apache to Talk

When all the files are extracted, you need to modify the httpd.conf file that was installed by Apache. Go to the APACHE_HOME/conf directory and open the file.

This file allows Apache to be manually configured. Because Apache by default does not know how to interpret PHP files, you need to tell Apache what translator it needs to use when it is asked for a .php file by users. If you miss the step this far in the process of installing the environment, any time you try to load a .php file on any browser, the browser either prompts you to download the file or simply displays the PHP code on the page. So let's tell Apache what translator to use. In this case, the translator is the PHP engine you finished installing. Toward the end of the file, type in the following text:

```
AddType application/x-httpd-php .php
PHPIniDir "C:/PHP5/"
LoadModule php5_module "PHP_HOME/php5apache2_2.dll"
```


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