Web Development Guide

Information Systems

Gabriel Malveaux
May 2013

Web Development Guide

Getting Started

In order to get started with your web development, you will need some basic software. In this guide we will download and install an easy to use software package called XAMPP in order to simplify the process of running the Apache webserver and MySQL database. We will then download Aptana, an open source Web IDE that comes with code assist/code completion abilities. It will prove invaluable when developing your own web based information systems. Finally we will run through some basic examples of web pages and code. The appendix will contain more advanced and complex samples and ideas.

For this tutorial we are assuming you are running Windows 7 and have not installed any of this software previously. You are encouraged to follow along with the screenshots to limit errors.

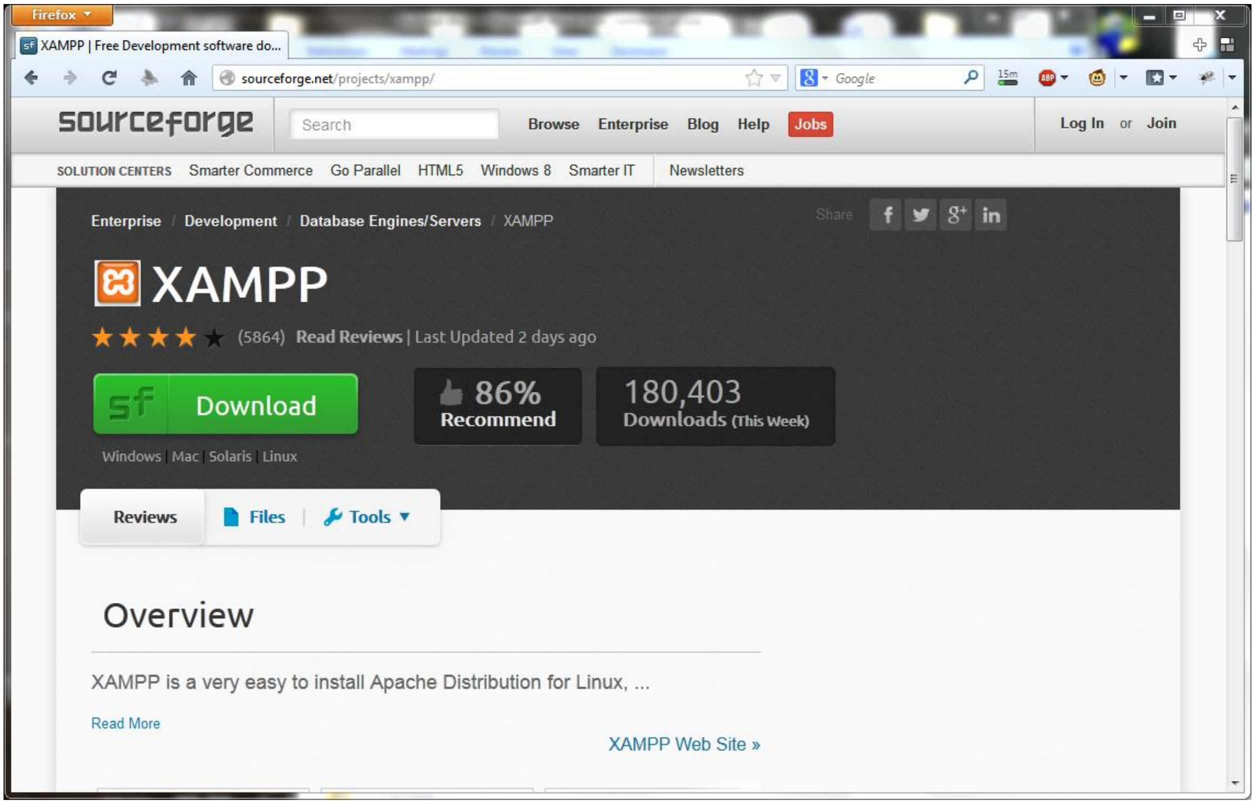
Step 1: XAMPP Download and Installation

Navigate to http://sourceforge.net/projects/xampp/ to pick up the latest copy of the XAMPP software installer. Save the installer to your desktop. When the download is complete, run the installer.

Leave all the defaults as they are, except for the following:

- **Uncheck the box to learn more about BitNami**
- **Uncheck the box to Start Control Panel Now**

Follow along with the screenshots to avoid confusion.



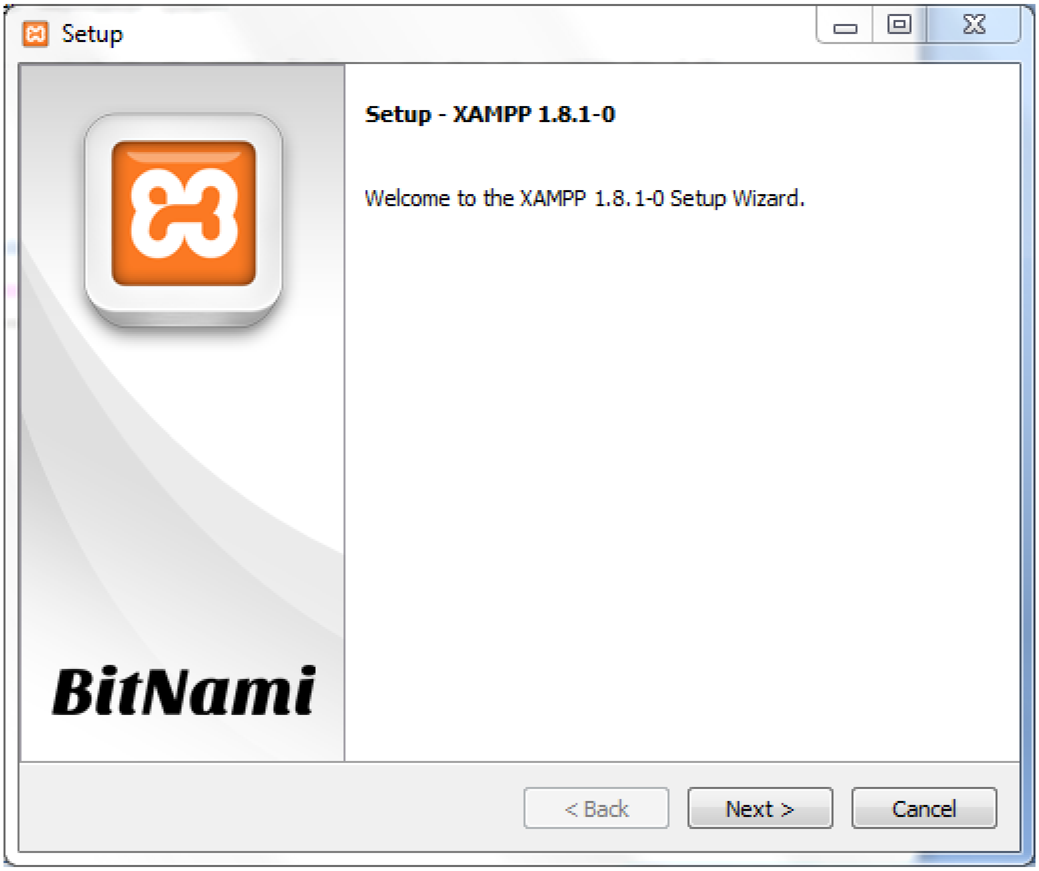
Firefox
XAMPP | Free Development software do...
sourceforge.net/projects/xampp/
Google
sourceforge
Search
Browse
Enterprise
Blog
Help
Jobs
Log In or Join
SOLUTION CENTERS
Smarter Commerce
Go Parallel
HTML5
Windows 8
Smarter IT
Newsletters
Enterprise / Development / Database Engines/Servers / XAMPP
Share
XAMPP
(5864) Read Reviews | Last Updated 2 days ago
sf Download
Windows | Mac | Solaris | Linux
86% Recommend
180,403 Downloads (This Week)
Reviews
Files
Tools ▼

Overview

XAMPP is a very easy to install Apache Distribution for Linux, ...

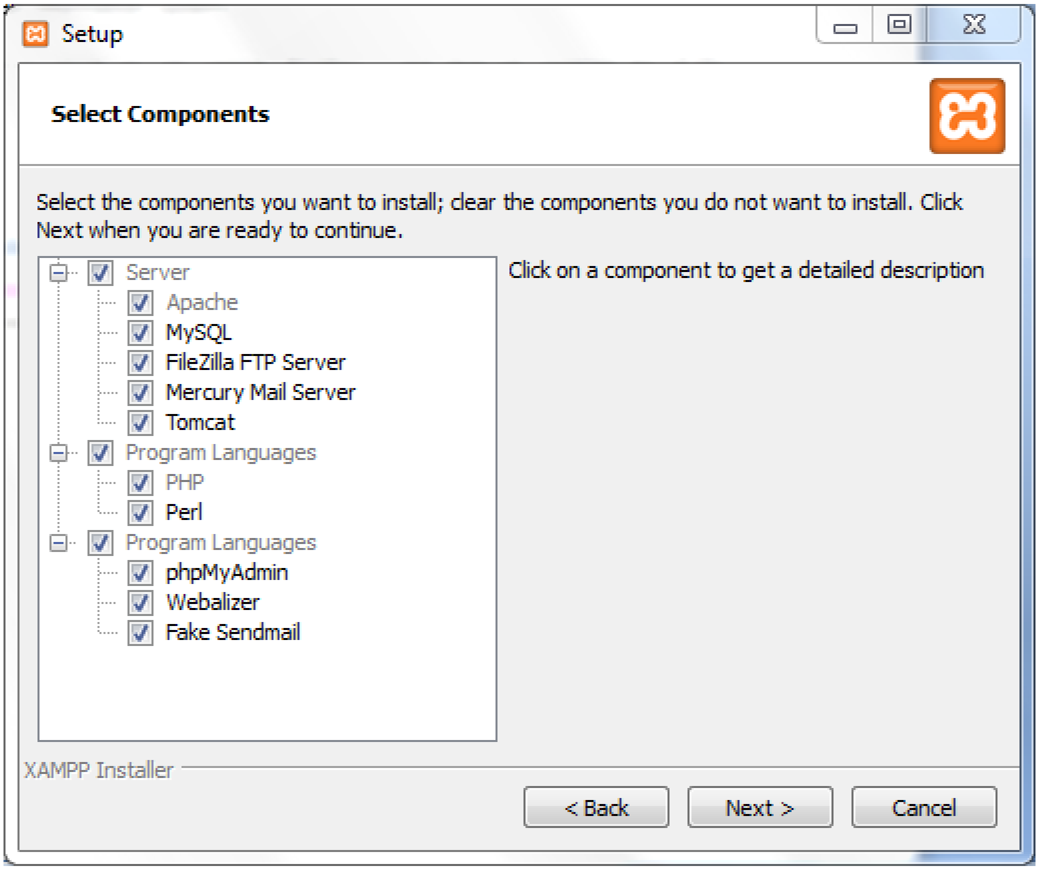
Read More

XAMPP Web Site »



Setup - XAMPP 1.8.1-0

Welcome to the XAMPP 1.8.1-0 Setup Wizard.



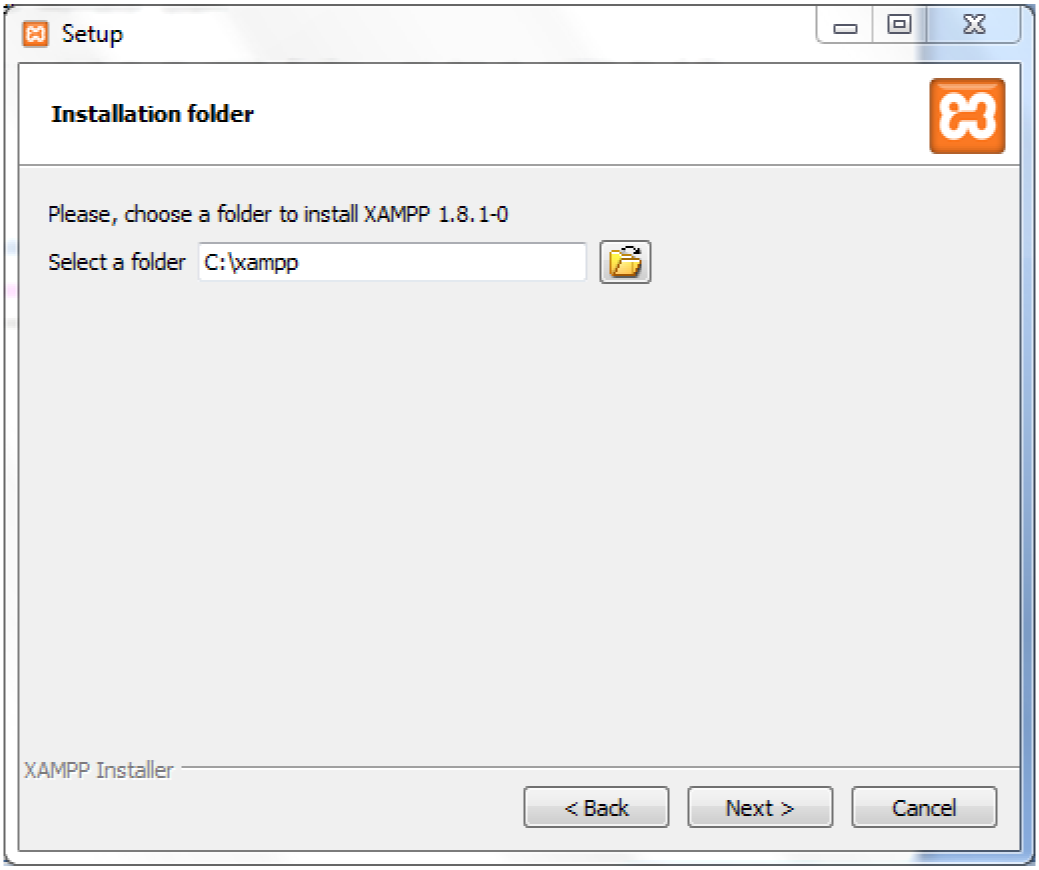
Setup

Select Components

Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue.

- ☑ Server
  - ☑ Apache
  - ☑ MySQL
  - ☑ FileZilla FTP Server
  - ☑ Mercury Mail Server
  - ☑ Tomcat
- ☑ Program Languages
  - ☑ PHP
  - ☑ Perl
- ☑ Program Languages
  - ☑ phpMyAdmin
  - ☑ Webalizer
  - ☑ Fake Sendmail

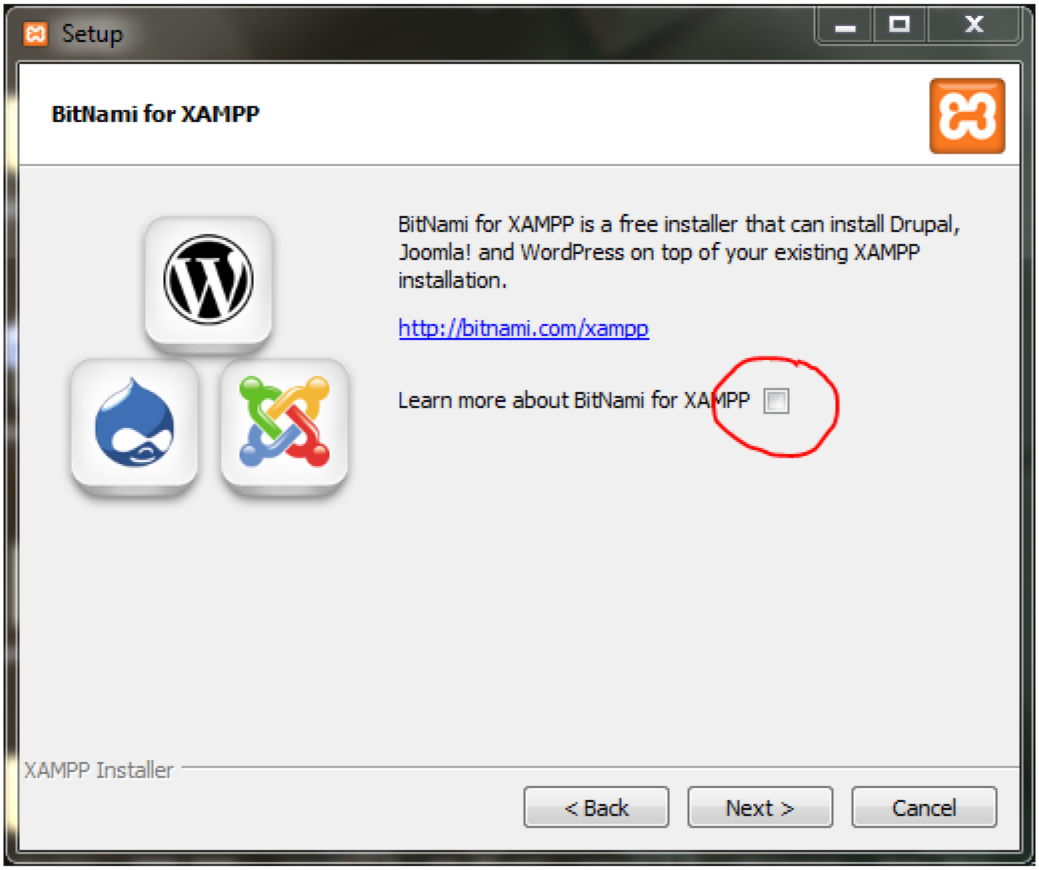
Click on a component to get a detailed description



Installation folder

Please, choose a folder to install XAMPP 1.8.1-0

Select a folder C:\xampp



Setup

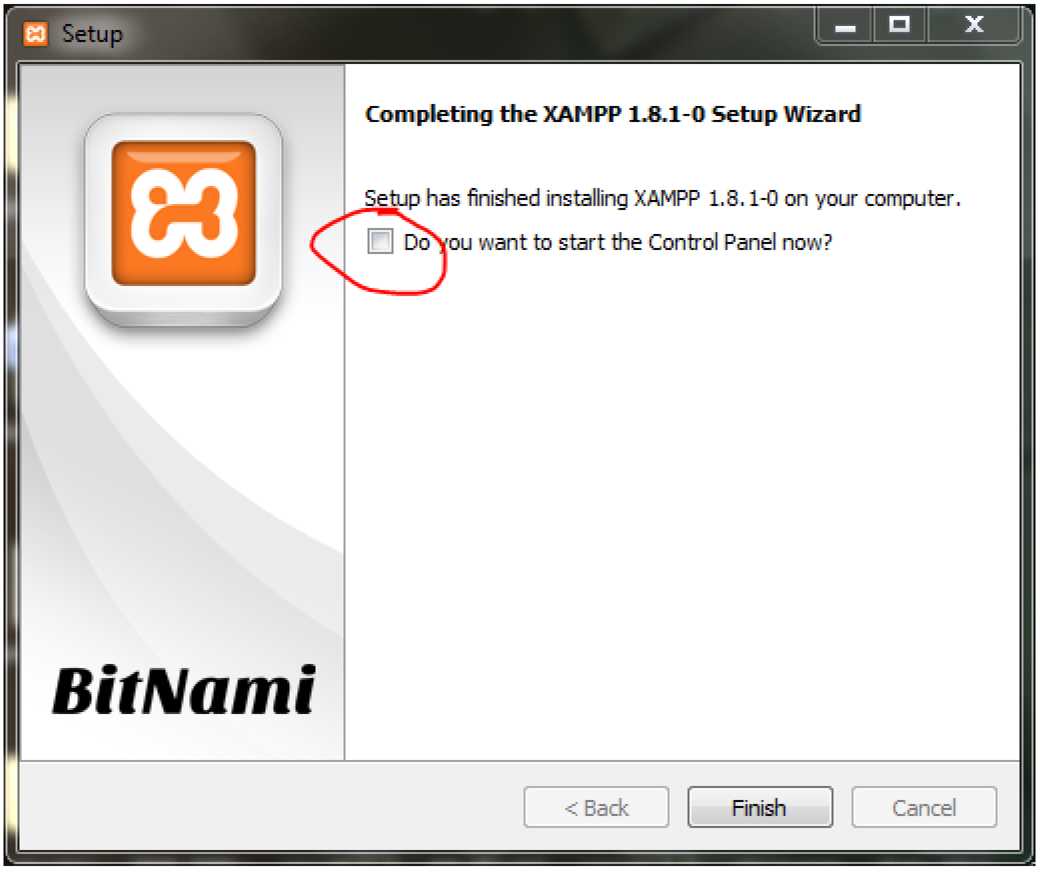
BitNami for XAMPP

BitNami for XAMPP is a free installer that can install Drupal, Joomla! and WordPress on top of your existing XAMPP installation.

http://bitnami.com/xampp

Learn more about BitNami for XAMPP □

XAMPP Installer



Completing the XAMPP 1.8.1-0 Setup Wizard

Setup has finished installing XAMPP 1.8.1-0 on your computer.

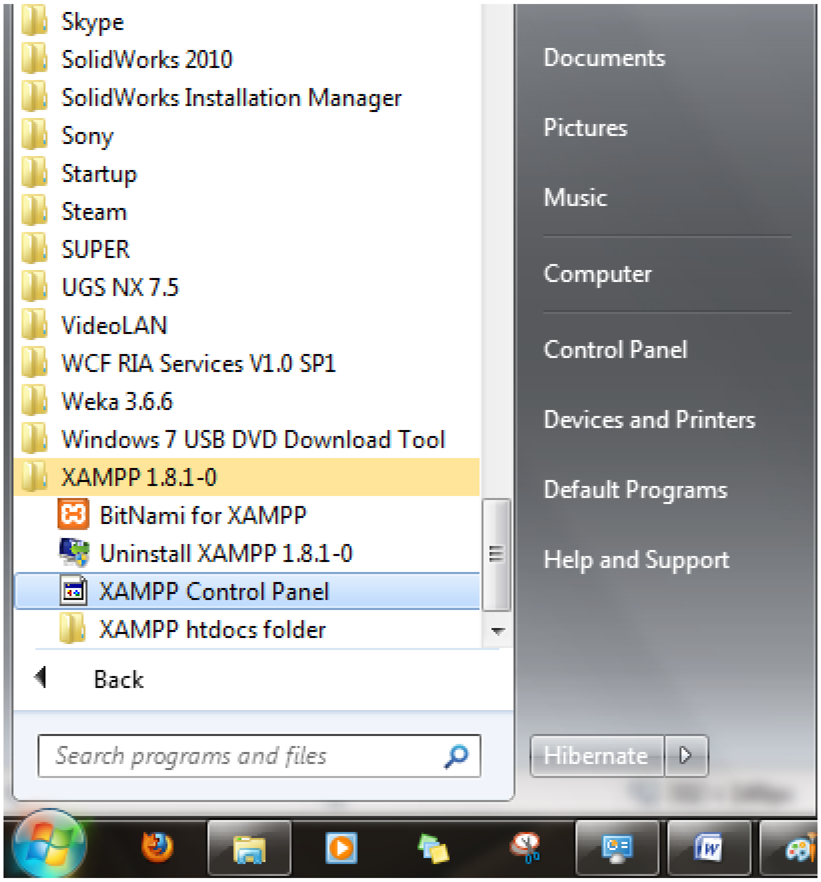
□ Do you want to start the Control Panel now?

Step 2: Running XAMPP, Starting Apache and MySQL, First Run Configuration, Shutdown Procedure

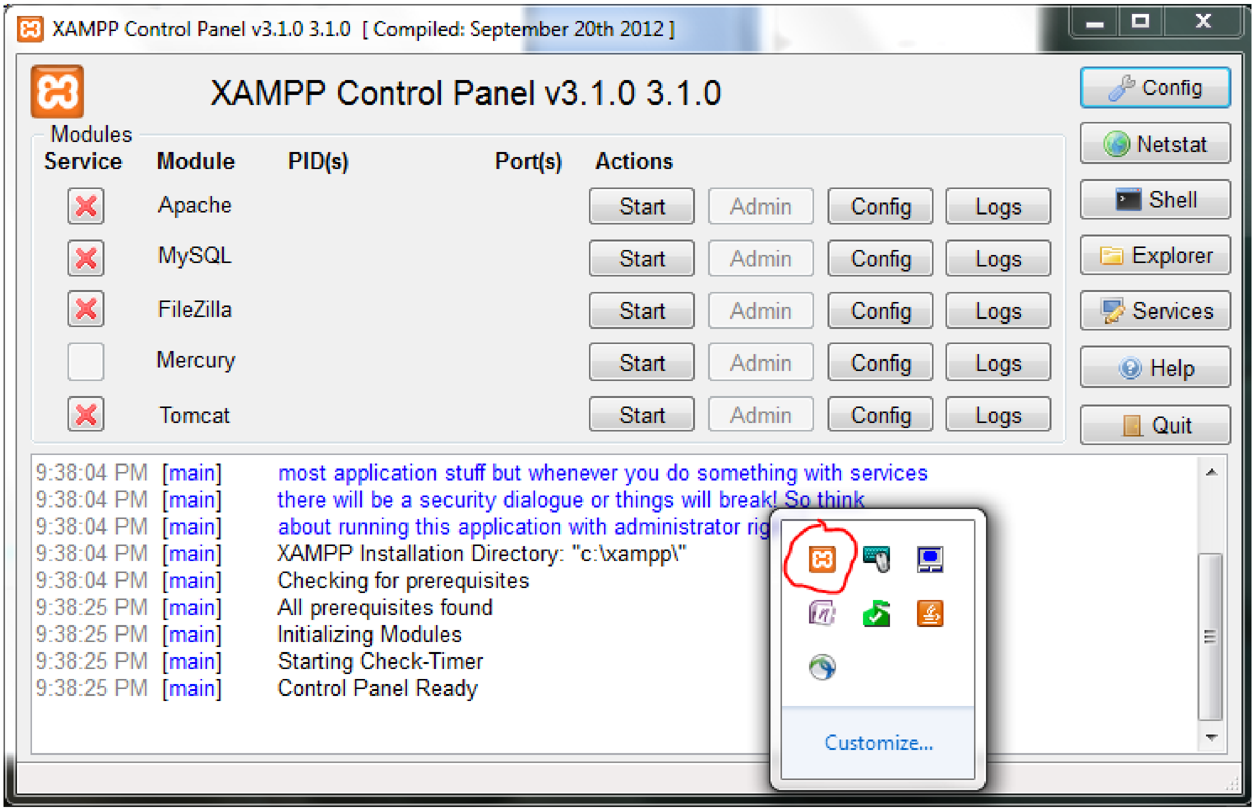
At this point you should have XAMPP installed. We will now show how to start the XAMPP Control Panel, start the Apache webserver, start the MySQL databse, and run through first run configuration. We will then go through how to shutdown Apache and MySQL and close XAMPP.

Opening XAMPP Control Panel and Starting Apache/MySQL

Open the XAMPP Control Panel by opening the Windows Start Menu and finding XAMPP Control Panel in the All Programs List. The Control Panel can take a few moments to initiate.



After you have opened the XAMPP Control Panel, you should see the following. Notice that the panel is also available from the system tray.



XAMPP Control Panel v3.1.0 3.1.0 [Compiled: September 20th 2012]

XAMPP Control Panel v3.1.0 3.1.0

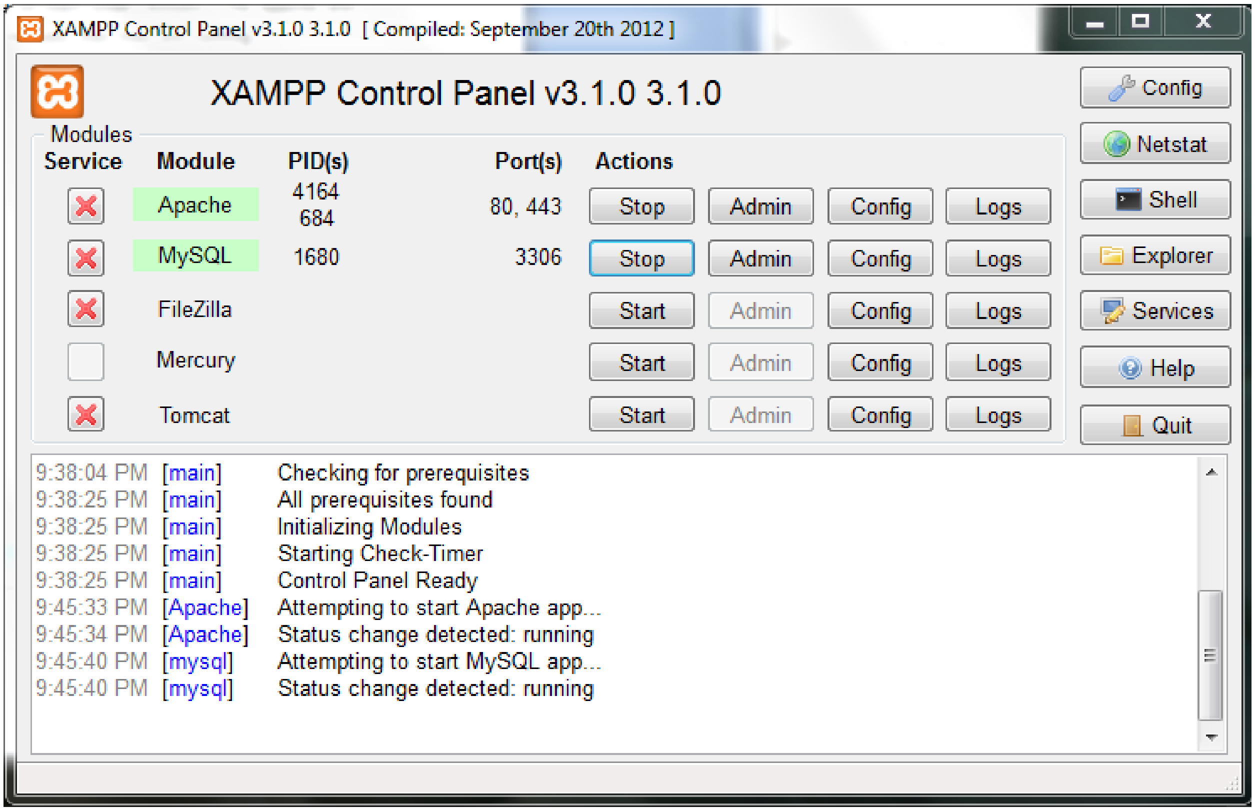
Modules

Service	Module	PID(s)	Port(s)	Actions
☒	Apache			Start Admin Config Logs
☒	MySQL			Start Admin Config Logs
☒	FileZilla			Start Admin Config Logs
□	Mercury			Start Admin Config Logs
☒	Tomcat			Start Admin Config Logs

```
9:38:04 PM  [main]    most application stuff but whenever you do something with services
9:38:04 PM  [main]    there will be a security dialogue or things will break! So think
9:38:04 PM  [main]    about running this application with administrator rig
9:38:04 PM  [main]    XAMPP Installation Directory: "c:\xampp\"
9:38:04 PM  [main]    Checking for prerequisites
9:38:25 PM  [main]    All prerequisites found
9:38:25 PM  [main]    Initializing Modules
9:38:25 PM  [main]    Starting Check-Timer
9:38:25 PM  [main]    Control Panel Ready
```

Start the Apache web server and MySQL database by clicking on Start under Actions. The Apache and MySQL modules should turn green in the Control Panel and indicate that they are running.

(NOTE: If you use Skype, it is common for MySQL to start but not Apache. The reason is that Skype will occasionally use the same ports as Apache. To fix this, close Skype completely and try to run Apache again.)



XAMPP Control Panel v3.1.0 3.1.0 [Compiled: September 20th 2012]

XAMPP Control Panel v3.1.0 3.1.0

Modules

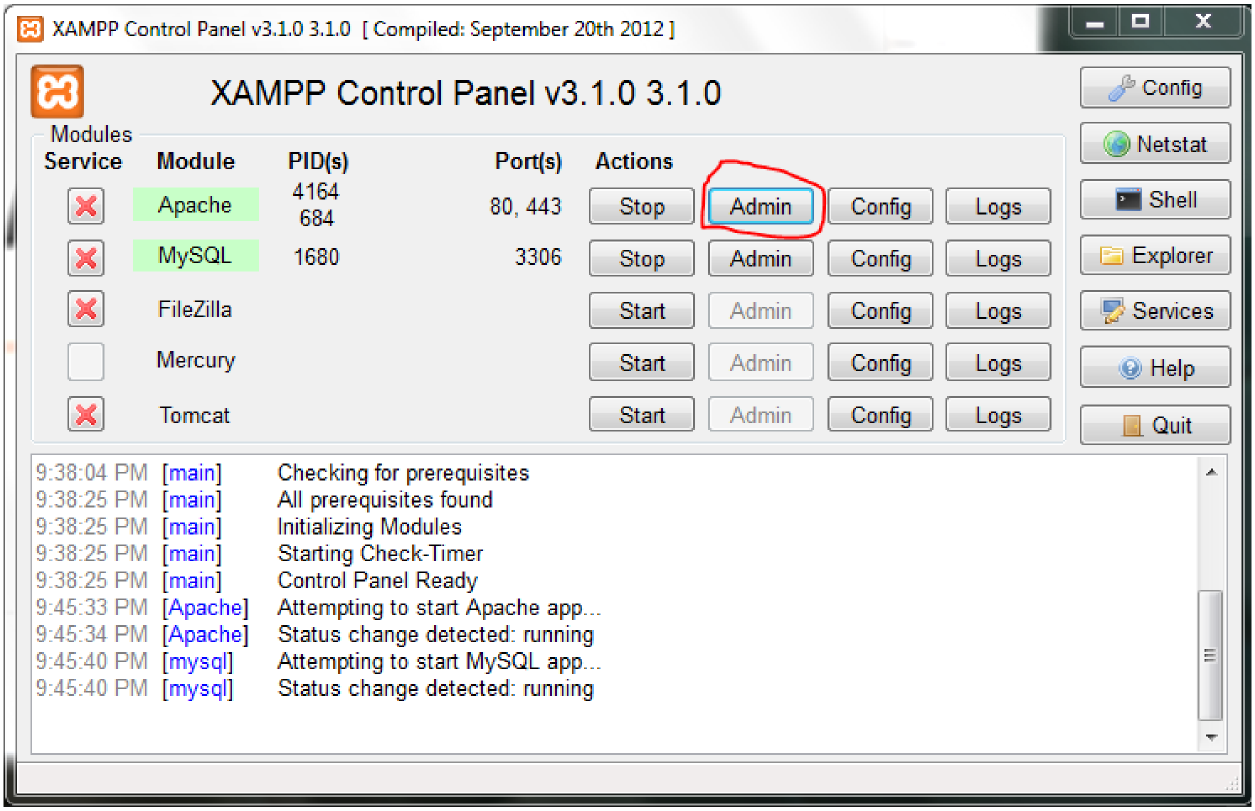
Service	Module	PID(s)	Port(s)	Actions			
☒	Apache	4164 684	80, 443	Stop	Admin	Config	Logs
☒	MySQL	1680	3306	Stop	Admin	Config	Logs
☒	FileZilla			Start	Admin	Config	Logs
□	Mercury			Start	Admin	Config	Logs
☒	Tomcat			Start	Admin	Config	Logs

```
9:38:04 PM  [main]     Checking for prerequisites
9:38:25 PM  [main]     All prerequisites found
9:38:25 PM  [main]     Initializing Modules
9:38:25 PM  [main]     Starting Check-Timer
9:38:25 PM  [main]     Control Panel Ready
9:45:33 PM  [Apache]   Attempting to start Apache app...
9:45:34 PM  [Apache]   Status change detected: running
9:45:40 PM  [mysql]    Attempting to start MySQL app...
9:45:40 PM  [mysql]    Status change detected: running
```

First Run Configuration

You will need to make the following configuration changes only the first time you run Apache and MySQL.

In the XAMPP Control Panel, once the Apache Server and MySQL Database have been started, click on the Admin button under Actions for Apache. Your web browser should open to a XAMPP splash page.



XAMPP Control Panel v3.1.0 3.1.0 [Compiled: September 20th 2012]

XAMPP Control Panel v3.1.0 3.1.0

Modules

Service	Module	PID(s)	Port(s)	Actions			
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☒	MySQL	1680	3306	Stop	Admin	Config	Logs
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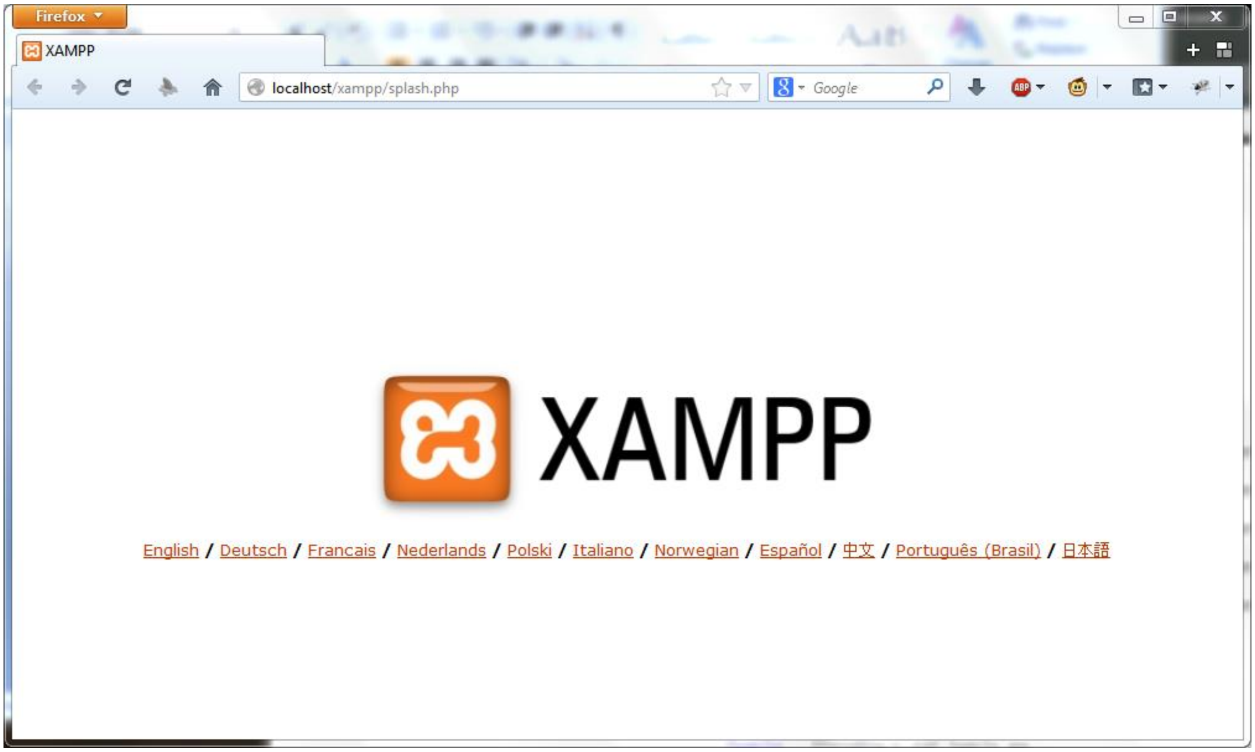
□	Mercury			Start	Admin	Config	Logs
☒	Tomcat			Start	Admin	Config	Logs

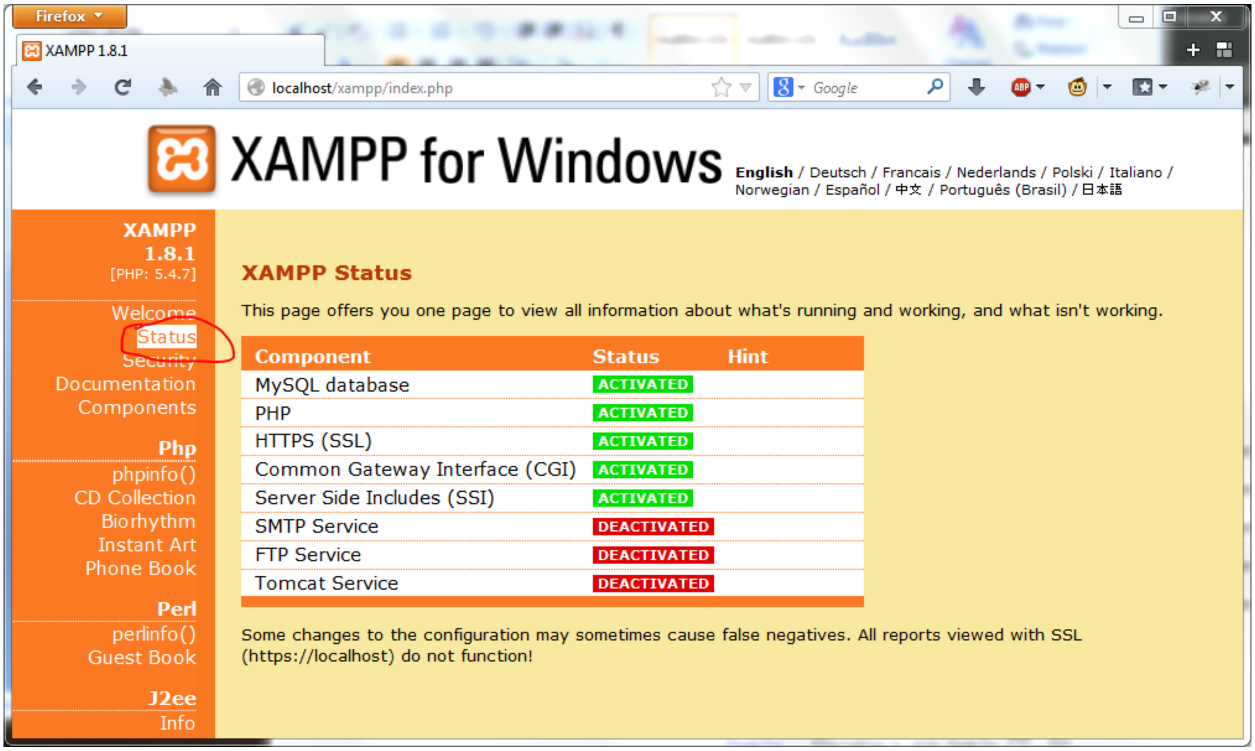
```
9:38:04 PM  [main]      Checking for prerequisites
9:38:25 PM  [main]      All prerequisites found
9:38:25 PM  [main]      Initializing Modules
9:38:25 PM  [main]      Starting Check-Timer
9:38:25 PM  [main]      Control Panel Ready
9:45:33 PM  [Apache]    Attempting to start Apache app...
9:45:34 PM  [Apache]    Status change detected: running
9:45:40 PM  [mysql]     Attempting to start MySQL app...
9:45:40 PM  [mysql]     Status change detected: running
```



localhost/xampp/splash.php

English / Deutsch / Francais / Nederlands / Polski / Italiano / Norwegian / Español / 中文 / Português (Brasil) / 日本語

Click on English to continue. Next click on STATUS, in the left side navigation area. Confirm that at least MySQL Database and PHP are Activated.



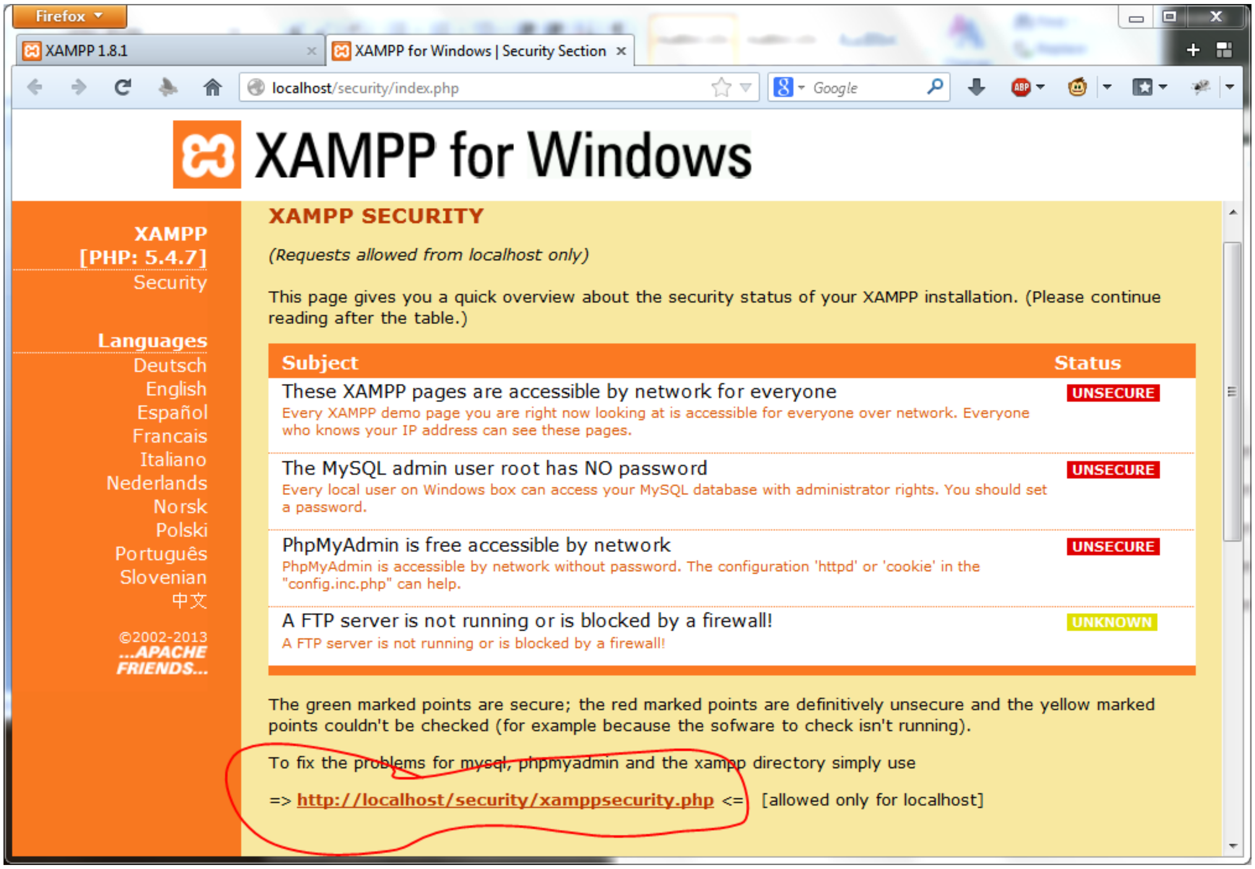
XAMPP Status

This page offers you one page to view all information about what's running and working, and what isn't working.

Component	Status	Hint
MySQL database	ACTIVATED	
PHP	ACTIVATED	
HTTPS (SSL)	ACTIVATED	
Common Gateway Interface (CGI)	ACTIVATED	
Server Side Includes (SSI)	ACTIVATED	
SMTP Service	DEACTIVATED	
FTP Service	DEACTIVATED	
Tomcat Service	DEACTIVATED	

Some changes to the configuration may sometimes cause false negatives. All reports viewed with SSL (https://localhost) do not function!

Next click on the SECURITY link under STATUS in the left side navigation. It will take you to a security page. Near the bottom there is a link that will fix security issues. Click on the link to continue.



XAMPP SECURITY

(Requests allowed from localhost only)

This page gives you a quick overview about the security status of your XAMPP installation. (Please continue reading after the table.)

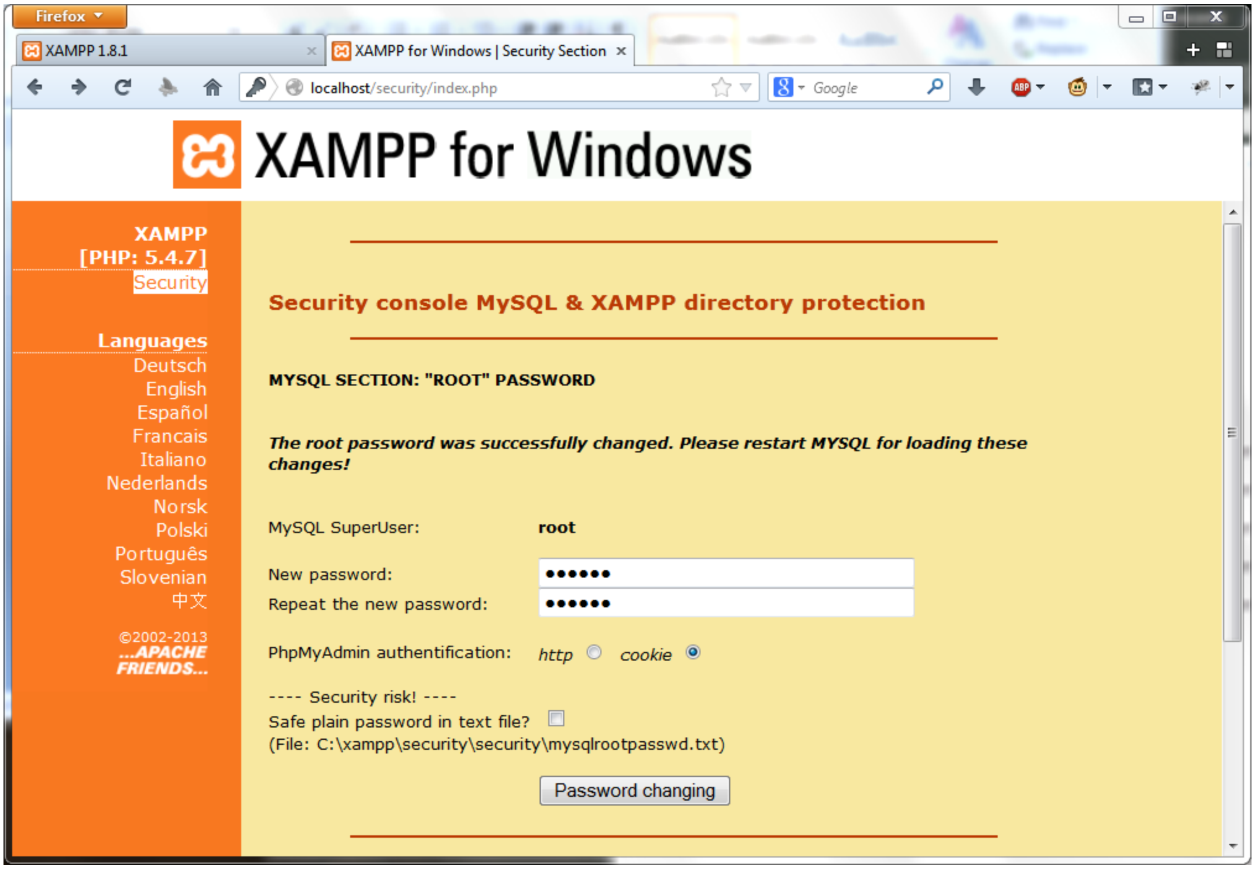
Subject	Status
These XAMPP pages are accessible by network for everyone Every XAMPP demo page you are right now looking at is accessible for everyone over network. Everyone who knows your IP address can see these pages.	UNSECURE
The MySQL admin user root has NO password Every local user on Windows box can access your MySQL database with administrator rights. You should set a password.	UNSECURE
PhpMyAdmin is free accessible by network PhpMyAdmin is accessible by network without password. The configuration 'httpd' or 'cookie' in the "config.inc.php" can help.	UNSECURE
A FTP server is not running or is blocked by a firewall! A FTP server is not running or is blocked by a firewall!	UNKNOWN

The green marked points are secure; the red marked points are definitively unsecure and the yellow marked points couldn't be checked (for example because the sofware to check isn't running).

To fix the problems for mysql, phpmyadmin and the xampp directory simply use

=> http://localhost/security/xamppsecurity.php <= [allowed only for localhost]

On the next page, you have to option of setting a password for the MySQL root user, as well as setting directory protection for the XAMPP folder. You should do so now for the MySQL root user. (For example, give root the password infosys2013). Hit Password Changing, to change the password.



Security console MySQL & XAMPP directory protection

MYSQL SECTION: "ROOT" PASSWORD

The root password was successfully changed. Please restart MYSQL for loading these changes!

MySQL SuperUser: **root**

New password: ••••••

Repeat the new password: ••••••

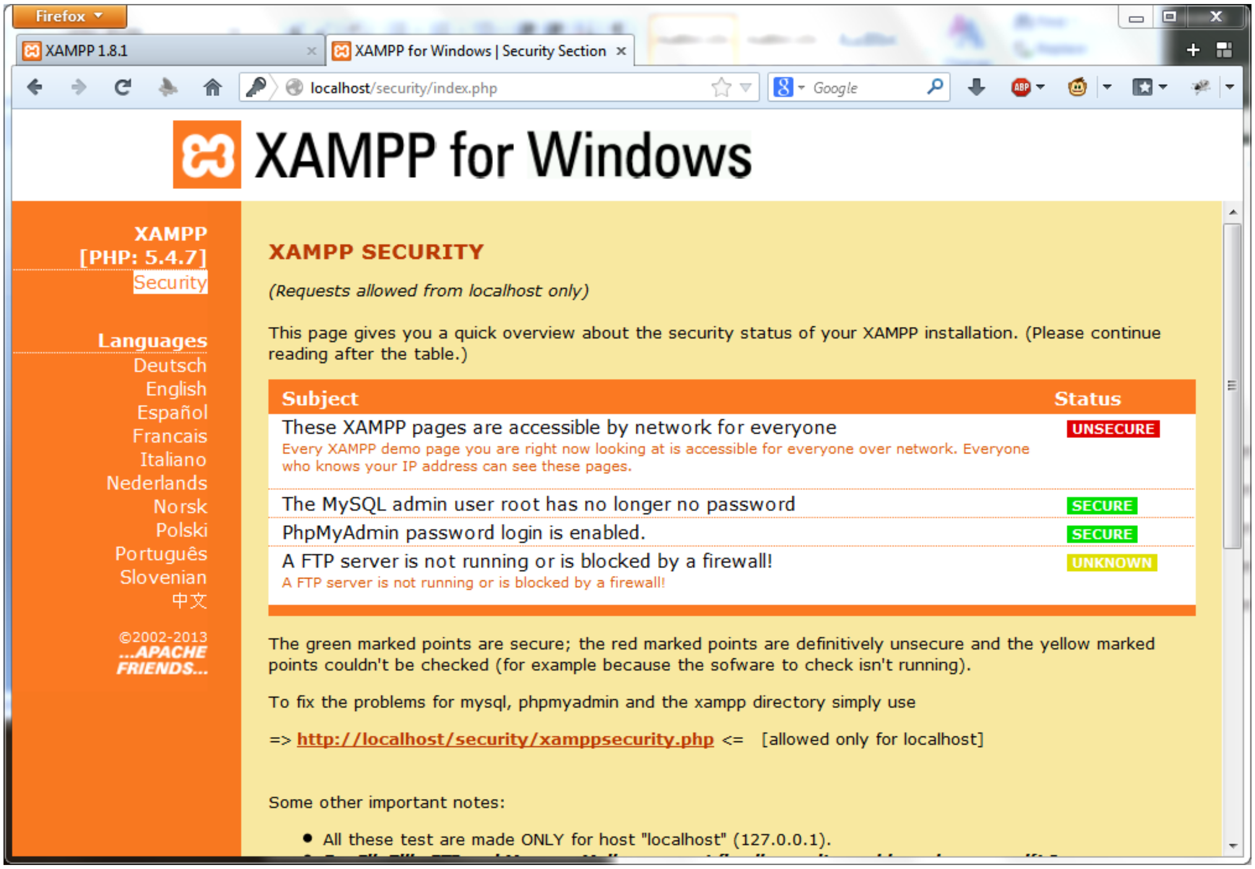
PhpMyAdmin authentification: *http* ○ *cookie* ●

---- Security risk! ----

Safe plain password in text file? □

(File: C:\xampp\security\security\mysqlrootpasswd.txt)

Restart the MySQL Server by going back to the XAMPP Control Panel and hitting stop, waiting for it to stop and then hitting start to start it up again. Click on SECURITY in the left side navigation to confirm that the MySQL root user has a password (SECURE) and that PhpMyAdmin password login is enabled (SECURE).



XAMPP SECURITY

(Requests allowed from localhost only)

This page gives you a quick overview about the security status of your XAMPP installation. (Please continue reading after the table.)

Subject	Status
These XAMPP pages are accessible by network for everyone Every XAMPP demo page you are right now looking at is accessible for everyone over network. Everyone who knows your IP address can see these pages.	UNSECURE
The MySQL admin user root has no longer no password	SECURE
PhpMyAdmin password login is enabled.	SECURE
A FTP server is not running or is blocked by a firewall! A FTP server is not running or is blocked by a firewall!	UNKNOWN

The green marked points are secure; the red marked points are definitively unsecure and the yellow marked points couldn't be checked (for example because the sofware to check isn't running).

To fix the problems for mysql, phpmyadmin and the xampp directory simply use

=> http://localhost/security/xamppsecurity.php <=   [allowed only for localhost]

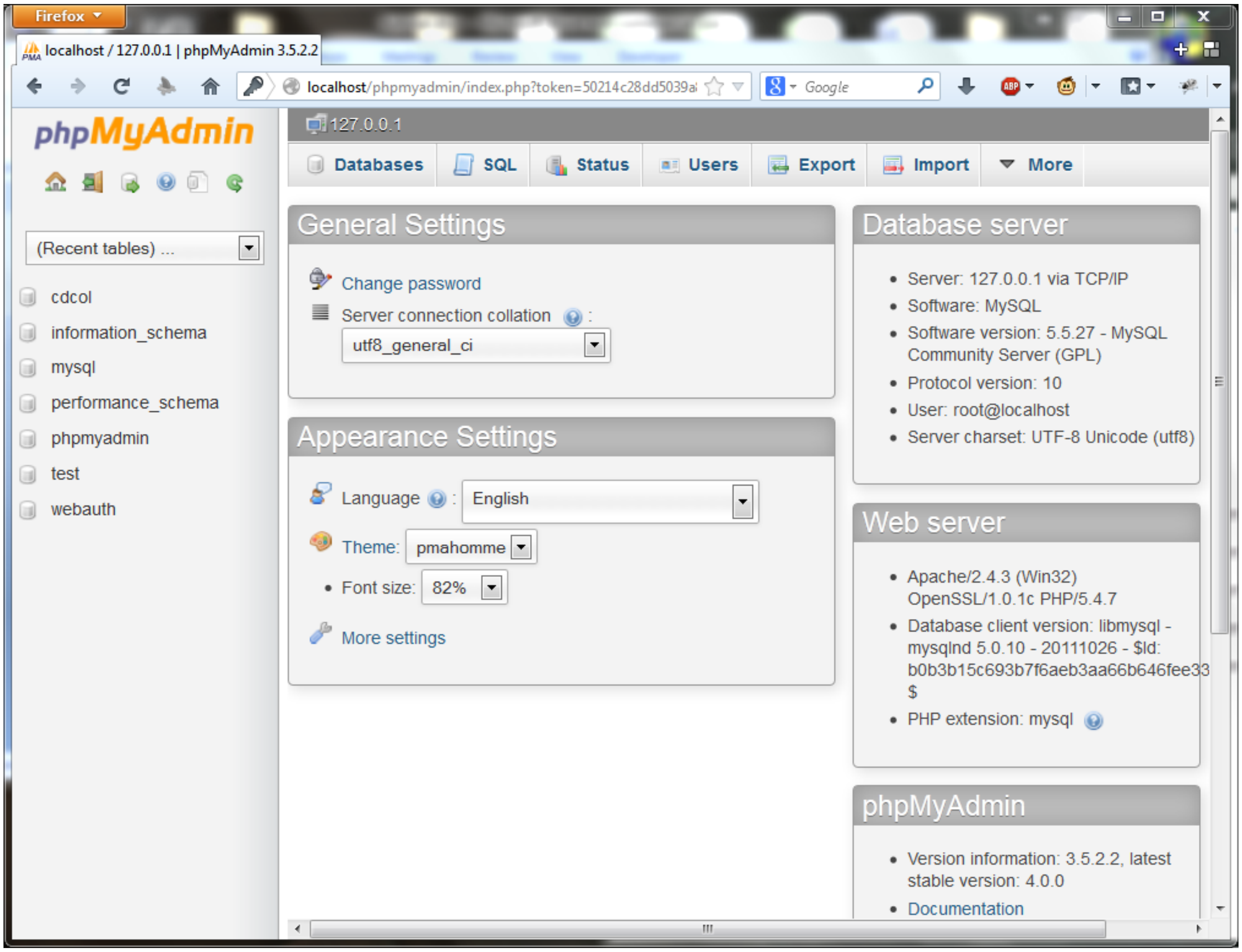
Some other important notes:

- All these test are made ONLY for host "localhost" (127.0.0.1).

Next, navigate to http://localhost/phpmyadmin

For the login, enter the user as **root** and the password as **infosys2013** (or whatever you set it to be).

You should be taken to the following screen after you log in. You will be using PhpMyAdmin often, so it is recommended you bookmark this page now.


Firefox
localhost / 127.0.0.1 | phpMyAdmin 3.5.2.2
localhost/phpmyadmin/index.php?token=50214c28dd5039a
Google
phpMyAdmin
(Recent tables) ...
127.0.0.1
Databases
SQL
Status
Users
Export
Import
More

- cdcol
- information_schema
- mysql
- performance_schema
- phpmyadmin
- test
- webauth

General Settings

- Change password
- Server connection collation: utf8_general_ci

Appearance Settings

- Language: English
- Theme: pmahomme
- Font size: 82%
- More settings

Database server

- Server: 127.0.0.1 via TCP/IP
- Software: MySQL
- Software version: 5.5.27 - MySQL Community Server (GPL)
- Protocol version: 10
- User: root@localhost
- Server charset: UTF-8 Unicode (utf8)

Web server

- Apache/2.4.3 (Win32) OpenSSL/1.0.1c PHP/5.4.7
- Database client version: libmysql - mysqlnd 5.0.10 - 20111026 - $Id: b0b3b15c693b7f6aeb3aa66b646fee33 $
- PHP extension: mysql

phpMyAdmin

- Version information: 3.5.2.2, latest stable version: 4.0.0
- Documentation

If you have gotten to this point, your Apache and MySQL installation is sound. If not, you should attempt to fix (or redo) your installation as you will most likely have trouble for the remainder of its use.

Shutting Down Apache, MySQL and XAMPP Control Panel

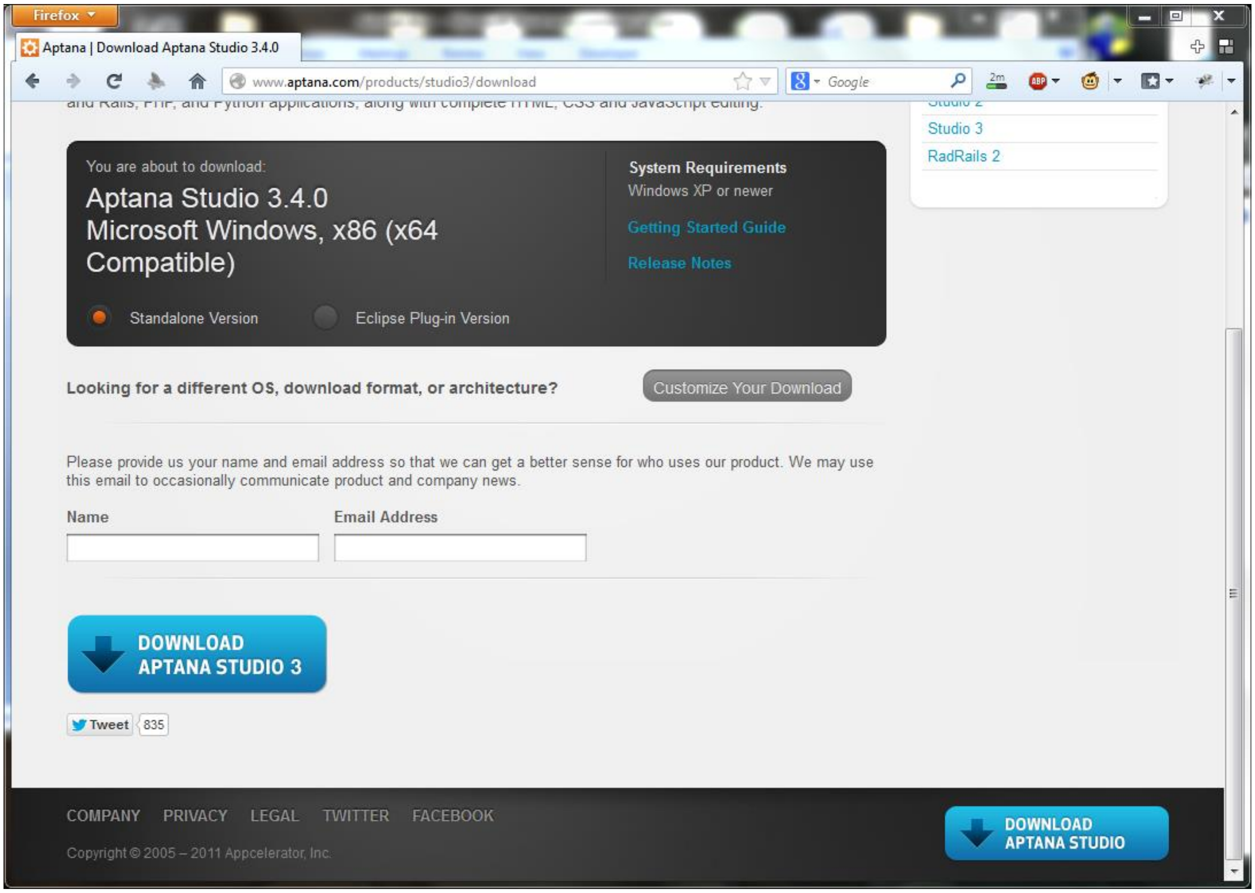
To shut down Apache and MySQL return to the XAMPP Control Panel and press the Stop button for each module respectively. When both modules have been stopped, you may Quit the XAMPP Control Panel.

Step 3: Download and Install Aptana, Basic PHP Example

In this next step we will download and install Aptana, an Open Source web IDE (integrated development environment). We will then run through a very basic example of creating a webpage with some PHP. More advanced examples are available in the Appendix of this guide.

Downloading and Installing Aptana

Navigate to http://www.aptana.com/products/studio3/download and download the Stand-Alone version. You do not need to sign up to download the program. Save the installer to your desktop. When the download is complete, run the installer.



Firefox
Aptana | Download Aptana Studio 3.4.0
www.aptana.com/products/studio3/download
Google
Studio 2
Studio 3
RadRails 2

and Rails, PHP, and Python applications, along with complete HTML, CSS and JavaScript editing.

You are about to download:
Aptana Studio 3.4.0
Microsoft Windows, x86 (x64 Compatible)

System Requirements
Windows XP or newer

● Standalone Version ○ Eclipse Plug-in Version

Looking for a different OS, download format, or architecture?

Please provide us your name and email address so that we can get a better sense for who uses our product. We may use this email to occasionally communicate product and company news.

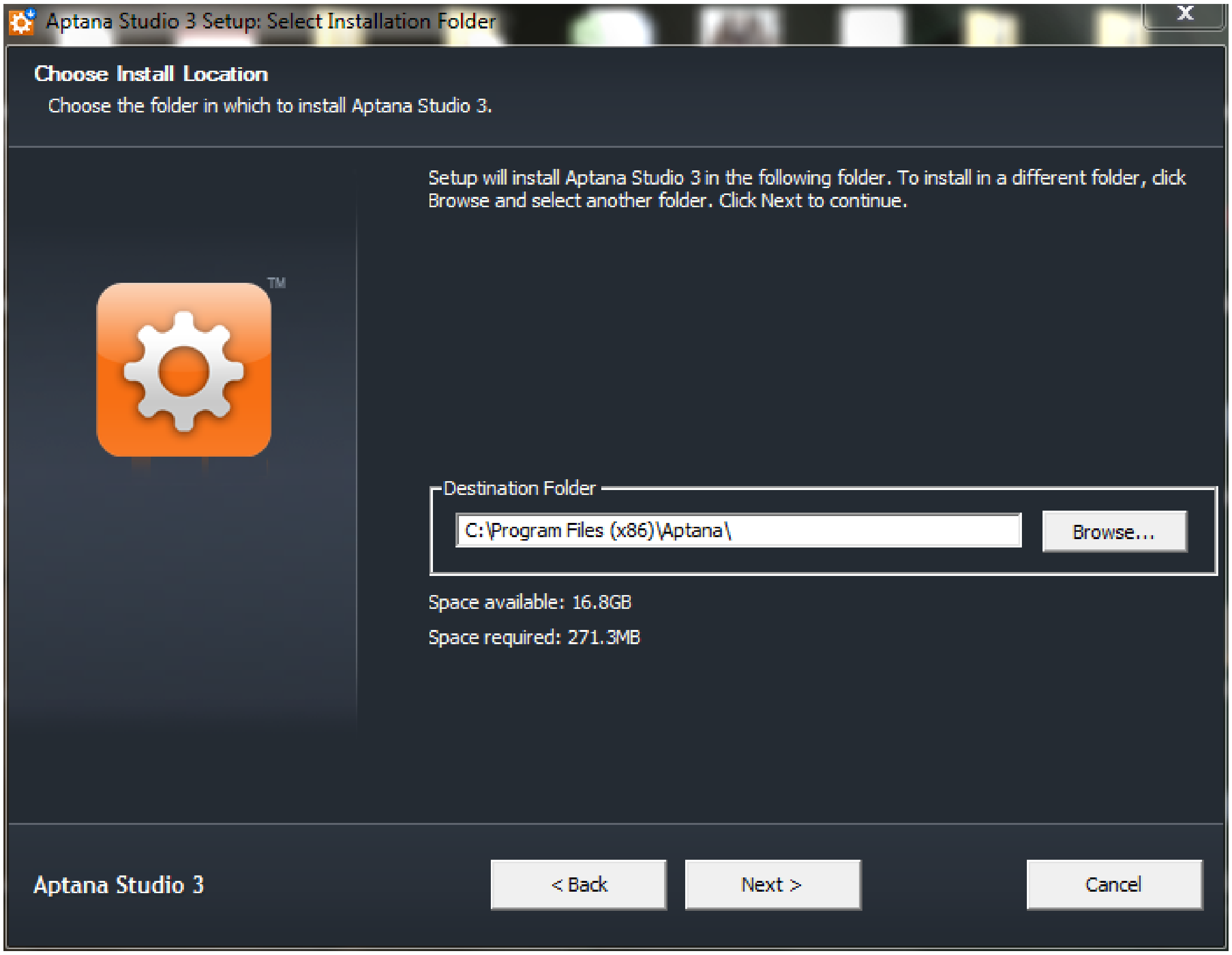
Name

Email Address

Copyright © 2005 – 2011 Appcelerator, Inc.

When the installer gets to the Install Location screen, do not install to the default directory. Instead, install to the following directory:

C:\Program Files (x86)\Aptana\



Aptana Studio 3 Setup: Select Installation Folder

Choose Install Location

Choose the folder in which to install Aptana Studio 3.

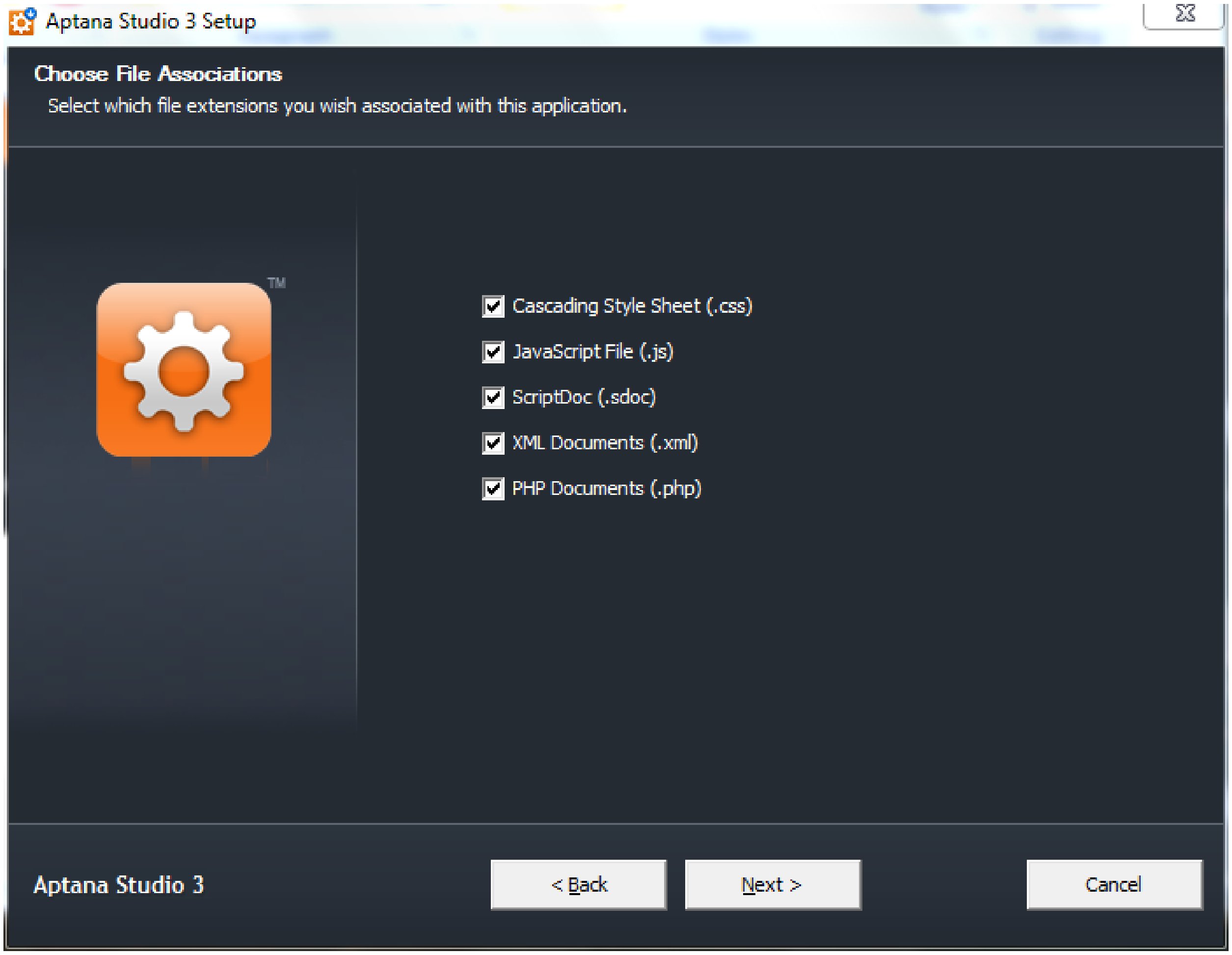
Setup will install Aptana Studio 3 in the following folder. To install in a different folder, click Browse and select another folder. Click Next to continue.

Destination Folder: C:\Program Files (x86)\Aptana\

Space available: 16.8GB

Space required: 271.3MB

When you must choose which File Associations to make, make sure all boxes are checked.



Choose File Associations

Select which file extensions you wish associated with this application.

☑ Cascading Style Sheet (.css)
☑ JavaScript File (.js)
☑ ScriptDoc (.sdoc)
☑ XML Documents (.xml)
☑ PHP Documents (.php)

When the installer is finished, proceed to the next section.

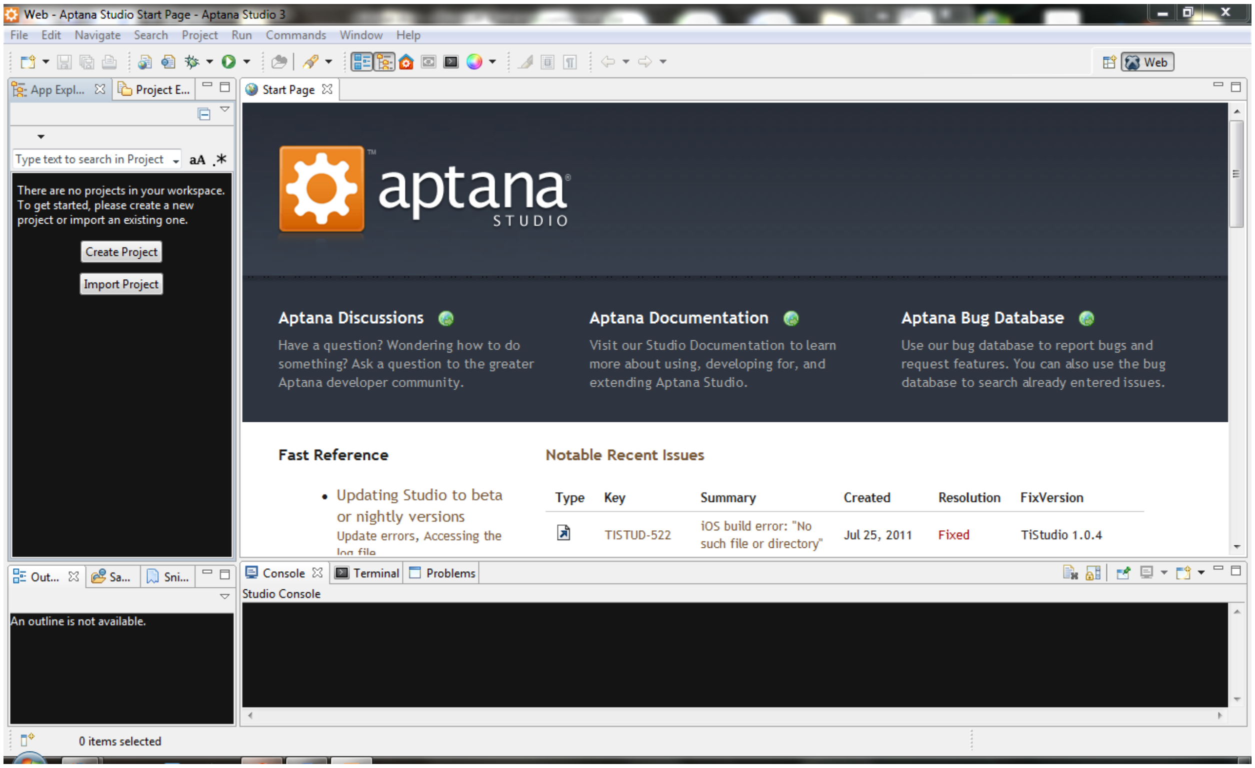
Running Aptana For The First Time

Go to the Windows Start Menu, find and run Aptana. It may ask you to Select a Workspace. If so, instead of the default workspace, use this directory instead:

C:\xampp\htdocs

Check the Use this as the default and do not ask again box and then click OK

You should be presented with the following interface.



Web - Aptana Studio Start Page - Aptana Studio 3
File Edit Navigate Search Project Run Commands Window Help
Web
App Expl...
Project E...
Start Page
Type text to search in Project
aA
Create Project
Import Project
aptana STUDIO
Out...
Sa...
Sni...
Console
Terminal
Problems
Studio Console

There are no projects in your workspace. To get started, please create a new project or import an existing one.

Aptana Discussions

Have a question? Wondering how to do something? Ask a question to the greater Aptana developer community.

Aptana Documentation

Visit our Studio Documentation to learn more about using, developing for, and extending Aptana Studio.

Aptana Bug Database

Use our bug database to report bugs and request features. You can also use the bug database to search already entered issues.

Fast Reference

- Updating Studio to beta or nightly versions
  Update errors, Accessing the log file

Notable Recent Issues

Type	Key	Summary	Created	Resolution	FixVersion
	TISTUD-522	iOS build error: "No such file or directory"	Jul 25, 2011	Fixed	TiStudio 1.0.4

An outline is not available.

0 items selected

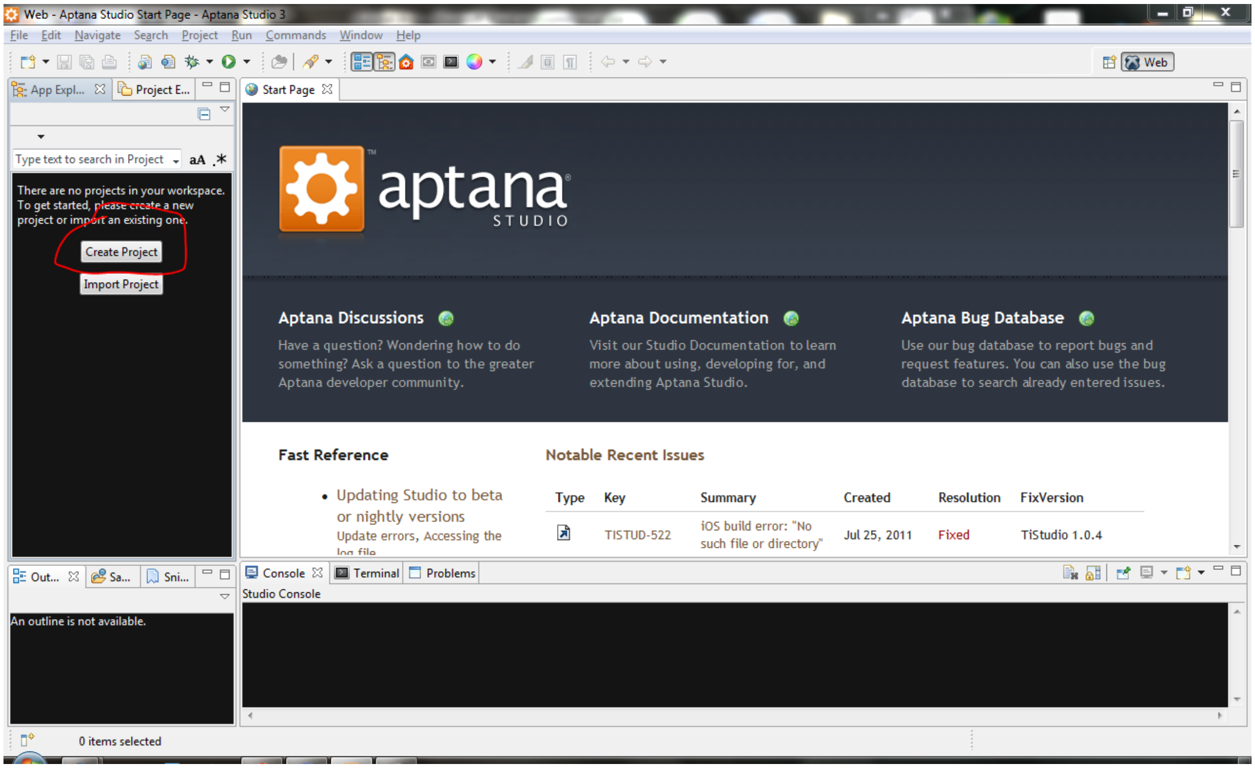
You are now ready to use Aptana to create a basic website.

Using Aptana: A Basic Example

At this point you should have all the software necessary to create a basic website from scratch. We will now explore a basic example that will combine all the software we have acquired.

A Basic Webpage

Open the XAMPP Control Panel and start Apache and MySQL. Open Aptana as well. Create a new project in Aptana by going to File > New > PHP Project. We will name the project **testone.** Make sure it is in the default location that we have set up (C:\xampp\htdocs). PHP Compatibility should be at least 5.3x.


Web - Aptana Studio Start Page - Aptana Studio 3
File Edit Navigate Search Project Run Commands Window Help
Web
App Expl...
Project E...
Type text to search in Project
aA
Start Page
Create Project
Import Project
Out...
Sa...
Sni...
Console
Terminal
Problems
Studio Console
0 items selected

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aptana STUDIO

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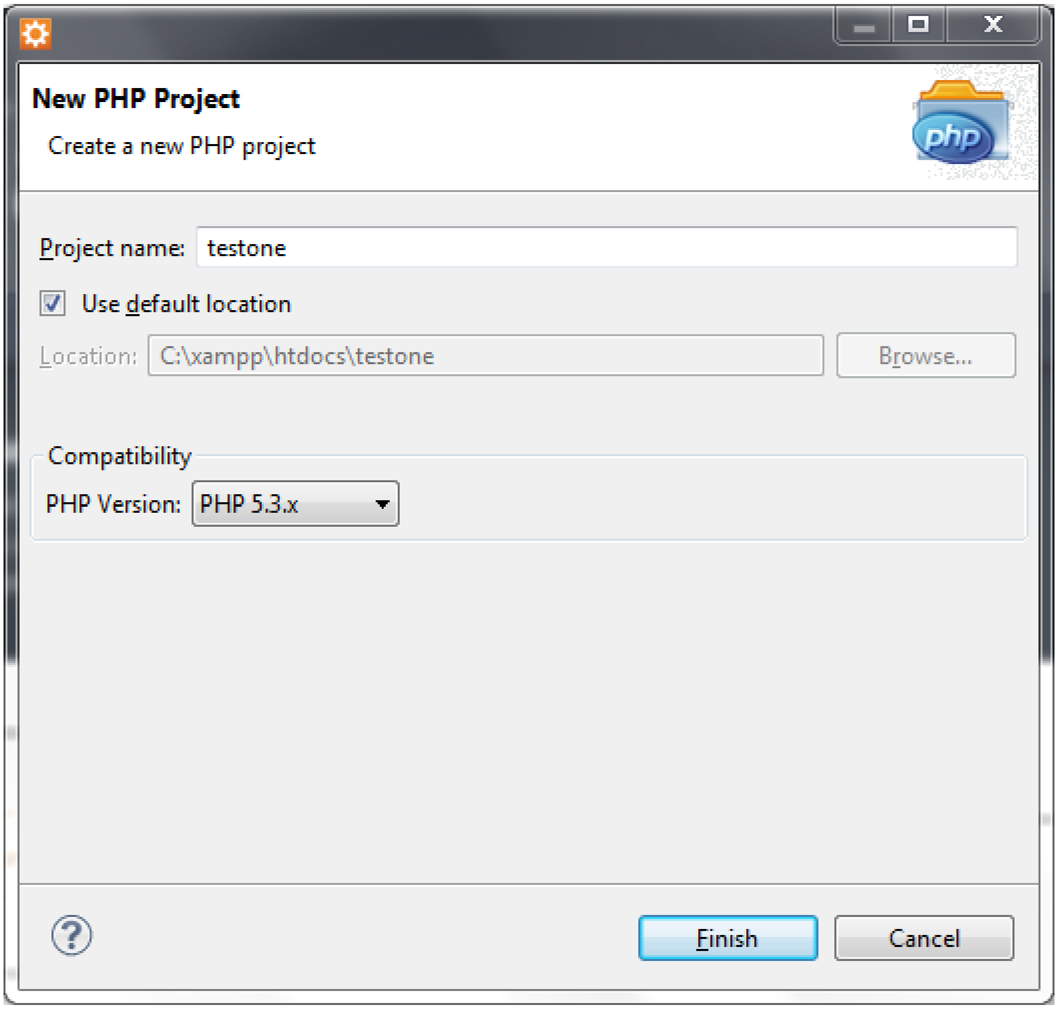
An outline is not available.



New PHP Project

Create a new PHP project

Project name: testone

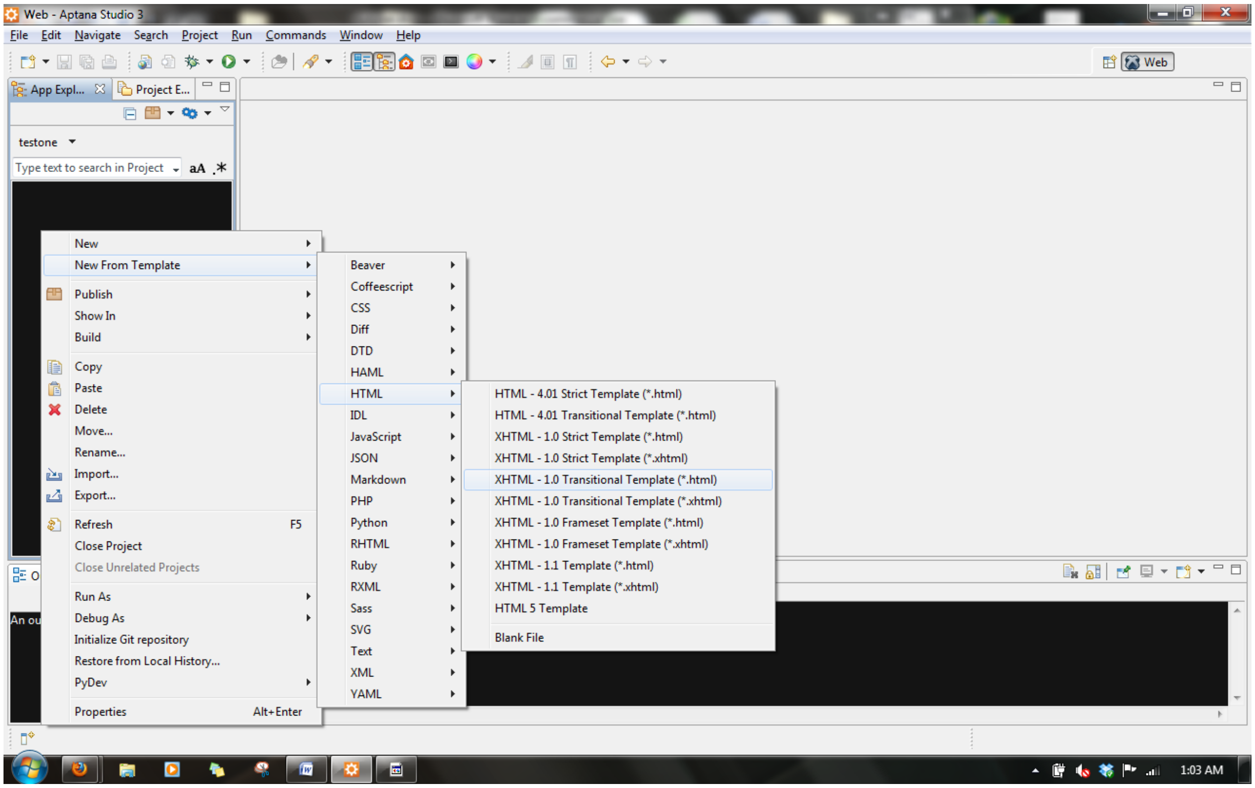
☑ Use default location

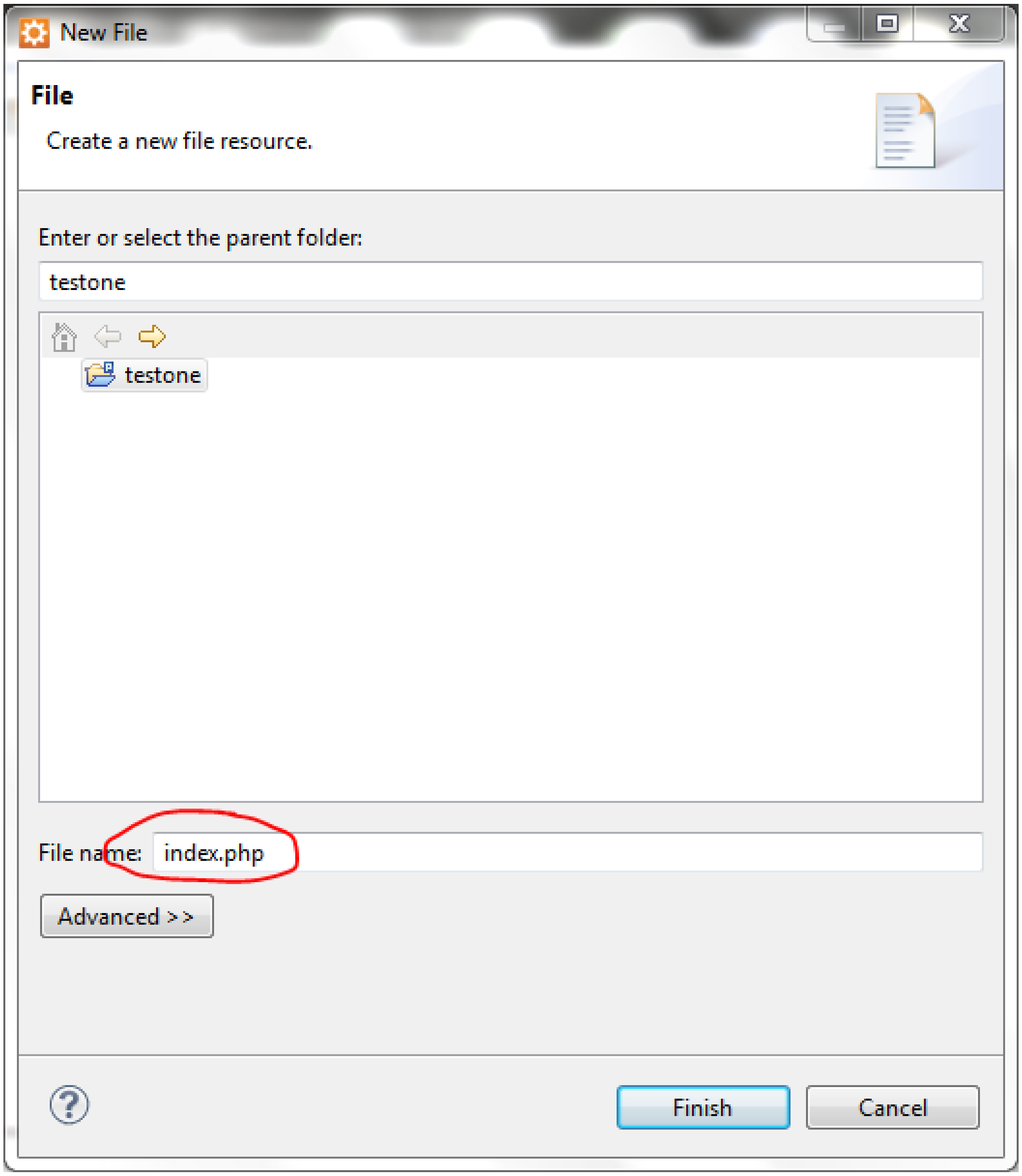
Location: C:\xampp\htdocs\testone

Compatibility

PHP Version: PHP 5.3.x

Next we will add an HTML file to the project. Right-Click in the testone project workspace in the App Explorer on the left side of the IDE window. Select New From Template > HTML > XHTML – Transitional (*.html). Name the file **index.php**


Web - Aptana Studio 3
File
Edit
Navigate
Search
Project
Run
Commands
Window
Help
Web
App Expl...
Project E...
testone
Type text to search in Project
aA
.*
New
New From Template
Publish
Show In
Build
Copy
Paste
Delete
Move...
Rename...
Import...
Export...
Refresh F5
Close Project
Close Unrelated Projects
Run As
Debug As
Initialize Git repository
Restore from Local History...
PyDev
Properties Alt+Enter
Beaver
Coffeescript
CSS
Diff
DTD
HAML
HTML
IDL
JavaScript
JSON
Markdown
PHP
Python
RHTML
Ruby
RXML
Sass
SVG
Text
XML
YAML
HTML - 4.01 Strict Template (*.html)
HTML - 4.01 Transitional Template (*.html)
XHTML - 1.0 Strict Template (*.html)
XHTML - 1.0 Strict Template (*.xhtml)
XHTML - 1.0 Transitional Template (*.html)
XHTML - 1.0 Transitional Template (*.xhtml)
XHTML - 1.0 Frameset Template (*.html)
XHTML - 1.0 Frameset Template (*.xhtml)
XHTML - 1.1 Template (*.html)
XHTML - 1.1 Template (*.xhtml)
HTML 5 Template
Blank File
An ou
1:03 AM



New File

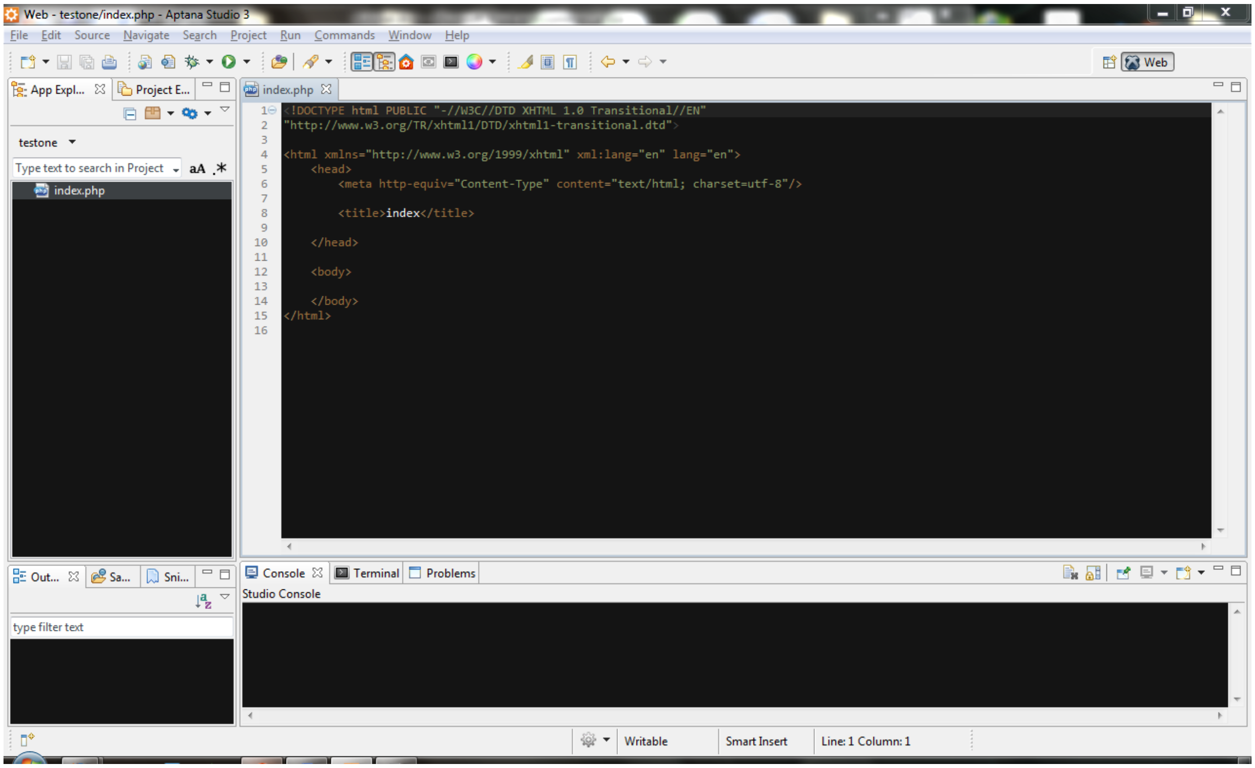
File

Create a new file resource.

Enter or select the parent folder: testone

File name: index.php

Your view should change to the following:



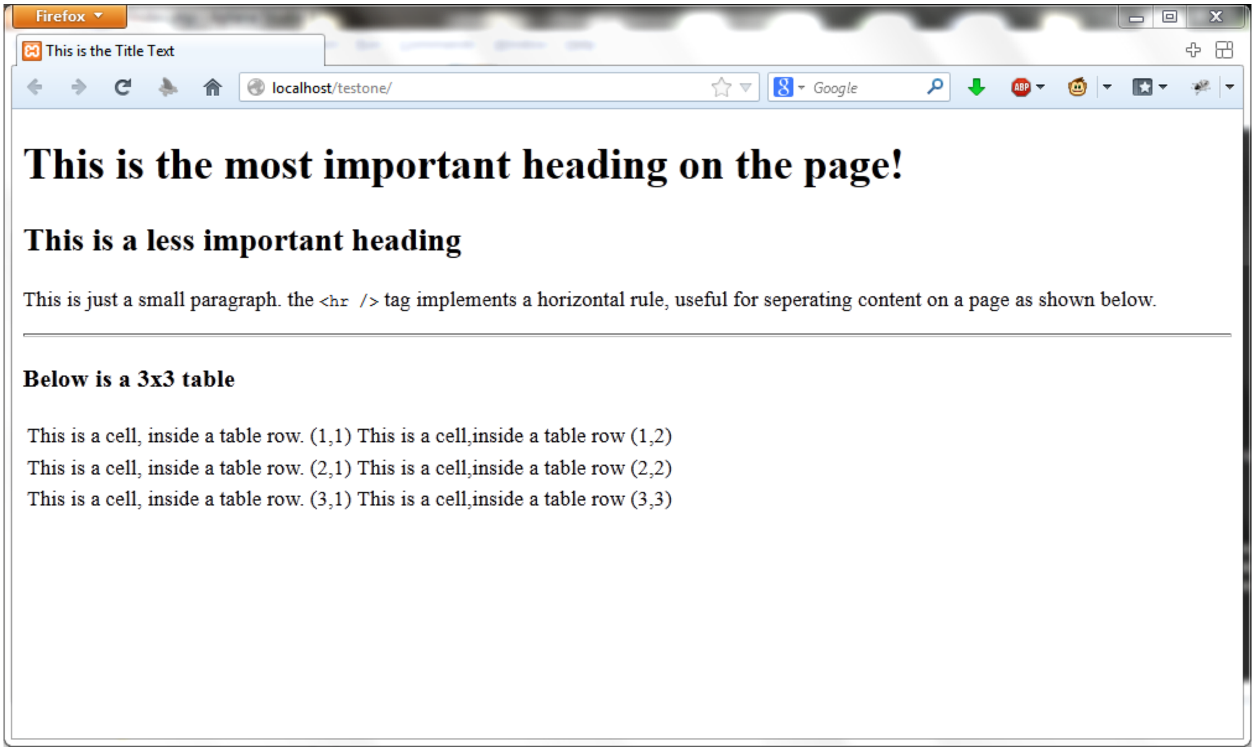
```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=utf-8"/>

        <title>index</title>

    </head>

    <body>

    </body>
</html>
```

There are many resources available online on how to write HTML and PHP code. http://w3schools.com is a highly recommended resource on familiarizing yourself with the languages. Make your file look like the following, then save the file.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
         <head>
                  <meta http-equiv="Content-Type" content="text/html; charset=utf-8"/>

                  <title>This is the Title Text</title>

         </head>

         <body>
         <h1>This is the most important heading on the page!</h1>

         <h2>This is a less important heading</h2>

         <!-- This is an HTML Comment -->
         <p>This is just a small paragraph. the <code>&lt;hr /&gt;</code> tag implements a horizontal rule, useful for seperating content on a page as shown below.</p>

         <hr />
         <h3>Below is a 3x3 table</h3>
         <table>
         <tr><td>This is a cell, inside a table row. (1,1)</td><td>This is a cell,inside a table row (1,2)</td></tr>
         <tr><td>This is a cell, inside a table row. (2,1)</td><td>This is a cell,inside a table row (2,2)</td></tr>
         <tr><td>This is a cell, inside a table row. (3,1)</td><td>This is a cell,inside a table row (3,3)</td></tr>
         </table>


         </body>
</html>
```

You have created a webpage, now let's view it! Open up your browser and navigate to http://localhost/testone

If you have done everything correctly, your page should look like the following:



This is the most important heading on the page!

This is a less important heading

This is just a small paragraph. the <hr /> tag implements a horizontal rule, useful for seperating content on a page as shown below.

Below is a 3x3 table

This is a cell, inside a table row. (1,1) This is a cell,inside a table row (1,2)
This is a cell, inside a table row. (2,1) This is a cell,inside a table row (2,2)
This is a cell, inside a table row. (3,1) This is a cell,inside a table row (3,3)

At this point we have successfully created a plain HTML page. This is a very basic example, but for the purposes of this guide it will be enough.

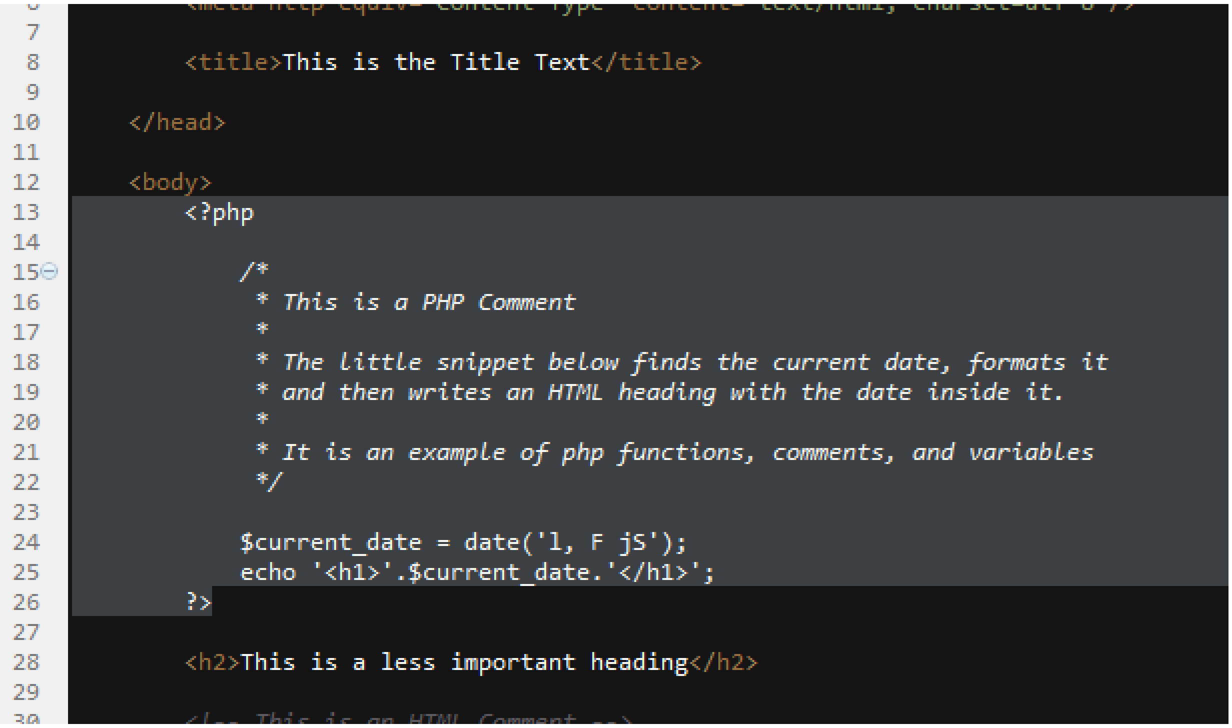
Lets Add PHP

For the next part, we will write some simple PHP code to improve our webpage.

Let us replace the largest heading on the page with the current date. We will do so however, without knowing anything about PHP. The PHP Manual will prove to be very useful when searching for answers to questions such as these. A quick search for "php date" returns the following page: http://php.net/manual/en/function.date.php

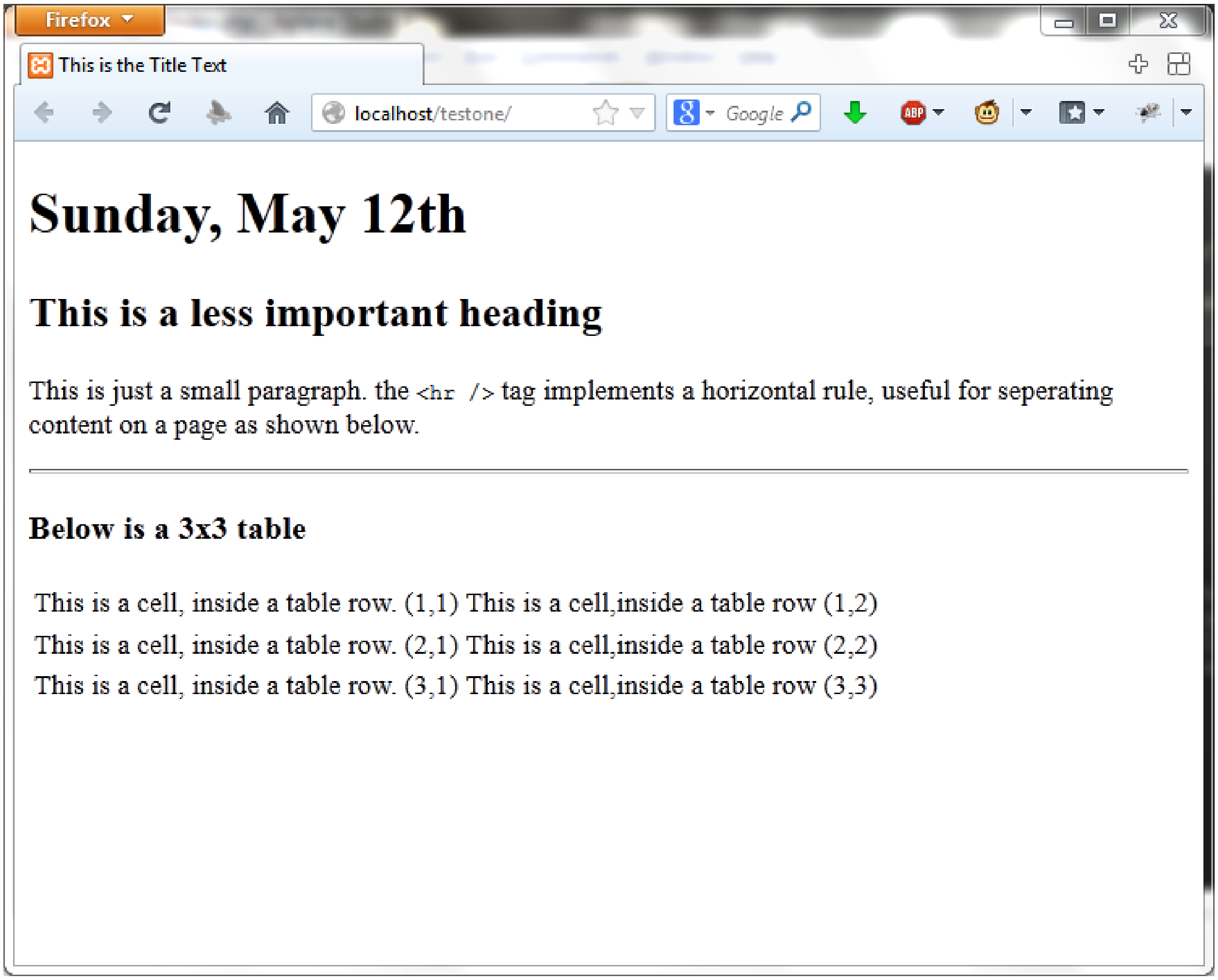
From the manual we can see that the date() function is just what we need. We will now replace the <h1></h1> tag with the following code:

```
<?php
        $current_date = date('l, F jS');
        echo '<h1>'.$current_date.'</h1>';
?>
```



```
        <meta http-equiv="Content-Type" content="text/html; charset=utf-8">

        <title>This is the Title Text</title>

    </head>

    <body>
        <?php

            /*
             * This is a PHP Comment
             *
             * The little snippet below finds the current date, formats it
             * and then writes an HTML heading with the date inside it.
             *
             * It is an example of php functions, comments, and variables
             */

            $current_date = date('l, F jS');
            echo '<h1>'.$current_date.'</h1>';
        ?>

        <h2>This is a less important heading</h2>

        <!-- This is an HTML Comment -->
```

You should get the following result:



Sunday, May 12th

This is a less important heading

This is just a small paragraph. the <hr /> tag implements a horizontal rule, useful for seperating content on a page as shown below.

Below is a 3x3 table

This is a cell, inside a table row. (1,1)	This is a cell,inside a table row (1,2)
This is a cell, inside a table row. (2,1)	This is a cell,inside a table row (2,2)
This is a cell, inside a table row. (3,1)	This is a cell,inside a table row (3,3)

This example shows us how to use PHP functions and variables, as well as how to output HTML. Next we will integrate MySQL into our example.

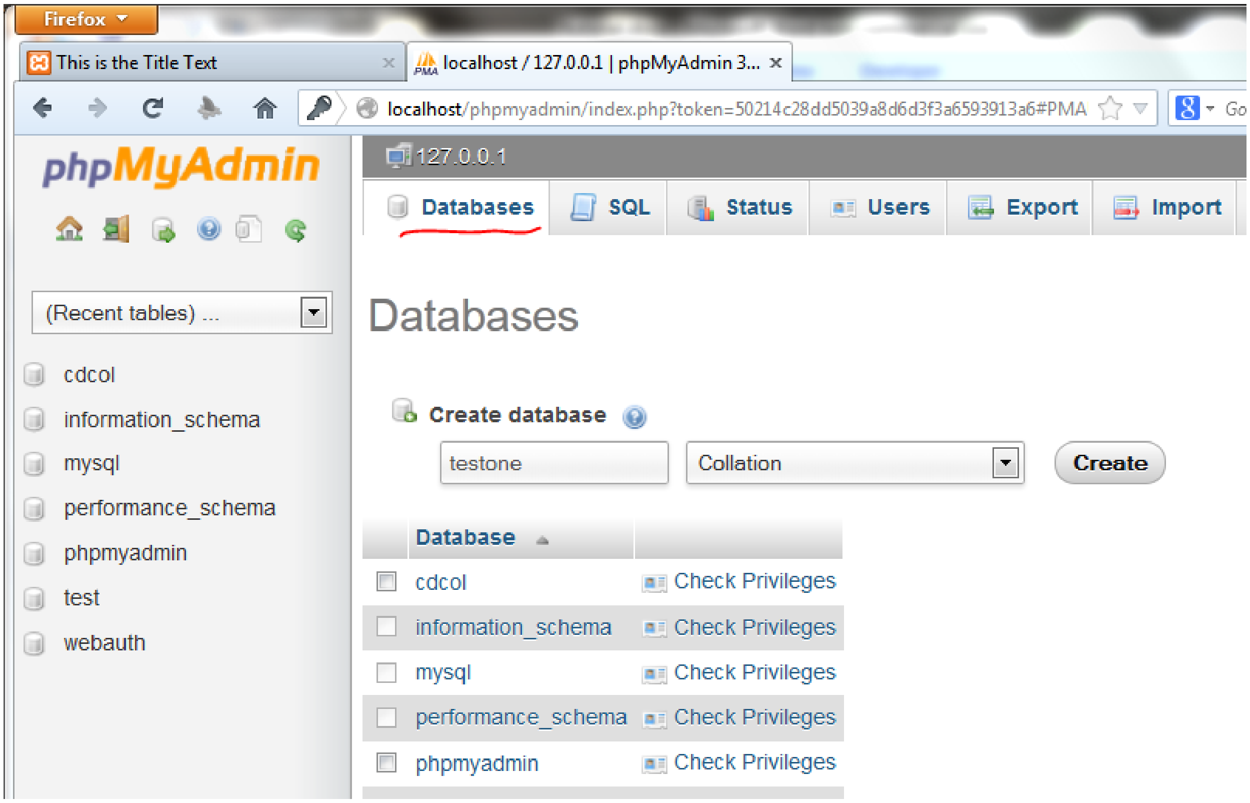
Adding a Database to the Mix

In this part of our example, we will go through the basics of how to create databases and table in MySQL, create HTML forms, submit form data to the database, and then display it on a page. This will be a basic walkthrough – for more advanced material please see the appendix.

Let us recount where we left off in the previous section. We have an HTML page and some PHP code that prints out the current date for us. We will use this page to show the data that our database contains (we have yet to create it). We will also need to create a form to add data to the database. First however, let us create the database!

Navigate to http://localhost/phpmyadmin

After logging into PhpMyAdmin, click on the Databases tab at the top of the page. In the create database form type in testone and press create.



Databases

Create database

testone | Collation | Create

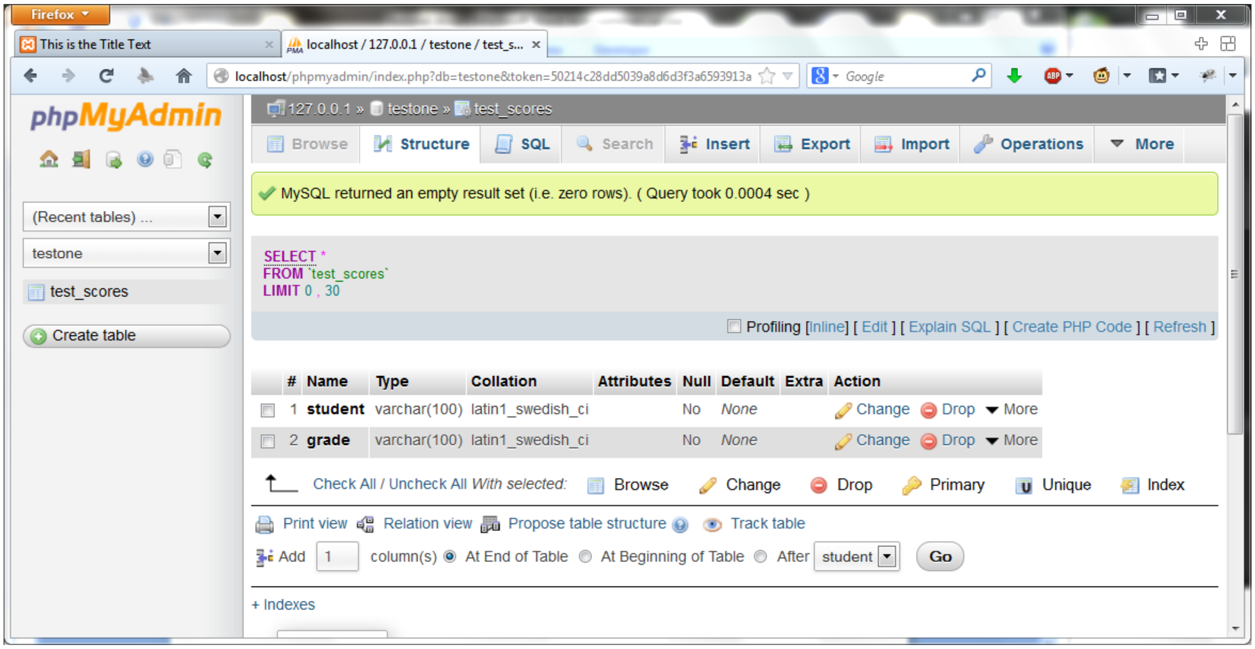
	Database	
□	cdcol	Check Privileges
□	information_schema	Check Privileges
□	mysql	Check Privileges
□	performance_schema	Check Privileges
□	phpmyadmin	Check Privileges

The database will be created and added to the list of databases. Click on the one you just created so that we may add tables to it.

For this simple example, let us create a table with only two columns. We will call the table **test_scores**

There should be two fields: **student** and **grade** both of type **VARCHAR** and length **100**

Creating this table and clicking BROWSE on it will bring up the following screen:



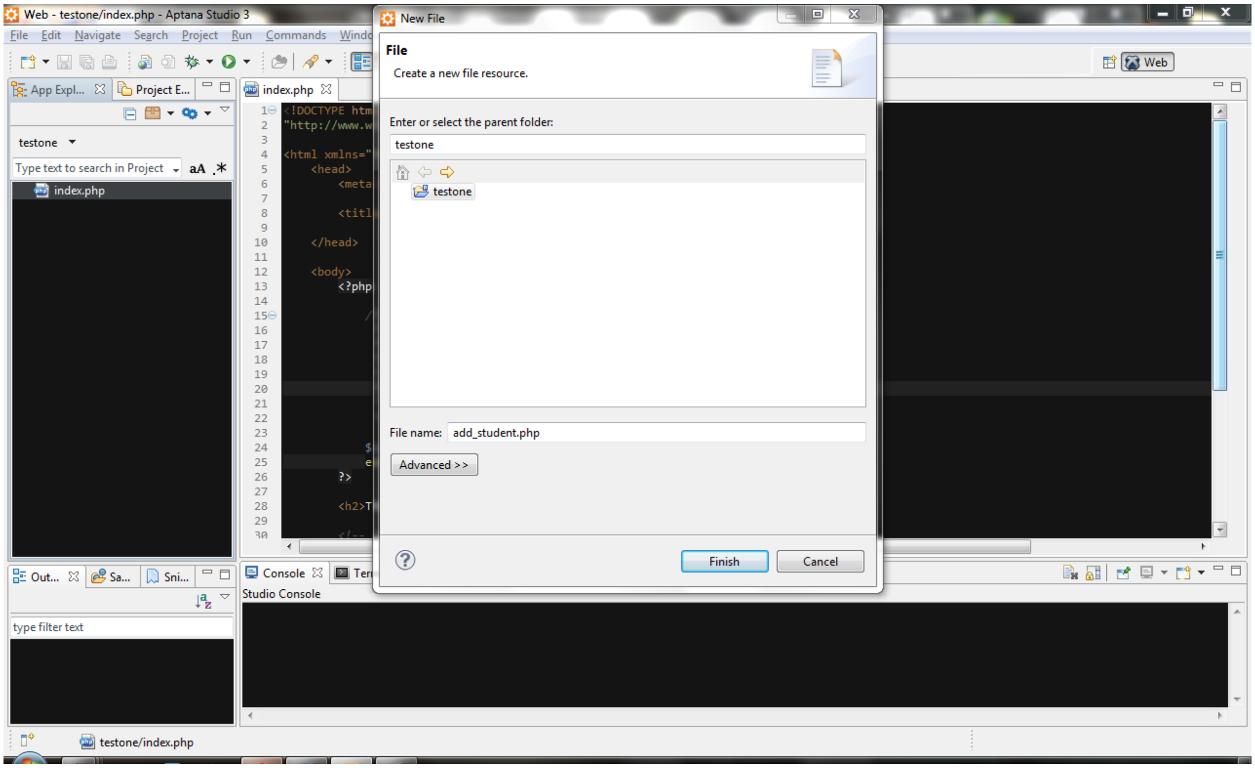
✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0004 sec)

```
SELECT *
FROM `test_scores`
LIMIT 0 , 30
```

	#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
□	1	**student**	varchar(100)	latin1_swedish_ci		No	*None*		Change Drop More
□	2	**grade**	varchar(100)	latin1_swedish_ci		No	*None*		Change Drop More

We have now created a database called testone, and added a table to it called test_scores. The test_scores table has two fields, student and grade both of type varchar and of length 100. We can now interface with this table using PHP.

Add another new page to your Aptana testone project. Right-click in the project App Explorer and Select New From Template > HTML > XHTML – Transitional (*.html). Name the file **add_student.php**



File

Create a new file resource.

Enter or select the parent folder: testone

File name: add_student.php

On this new page we need to add an HTML form that will allow us to submit a student name and a grade to the Apache server, to be then processed by PHP and added into the MySQL database.

The HTML for the form is as follows:

```
    <body>
    <form method="post" action="insert.php">
        <input type="text" name="name" placeholder="Student Name"/>
        <input type="text" name="grade" placeholder="Student Grade"/>
        <input type="submit" value="Submit" />
    </form>
    <a href="index.php" >View List</a>
    </body>
```

This form will take the data that was input and pass it onto insert.php. We now need to write insert.php, which will take that form data and insert it into the test_scores table. Let us create that file now.

Once again, in the testone App Explorer Right-Click and add a new file from template. This time however select PHP > PHP Template. Name the file **insert.php**

Clear any code between the <?php ?> tags.

For this example, we are going to assume that the data will always be sound. That is, there will always be a student and a grade input at the same time. In a more serious setting, a validation step must take place that ensures the data is fit to be processed into the database.

Therefore, the first thing this script must do is connect to the database. It does so with the following code:

```
        /*
         * Code to Connect to the Database
         *
         */
        $server   = 'localhost';
        $username = 'root';
        $password = 'infosys2013';
        $database = 'testone';
        mysql_connect($server,$username,$password) or die(mysql_error());
        mysql_select_db($database) or die(mysql_error());
```

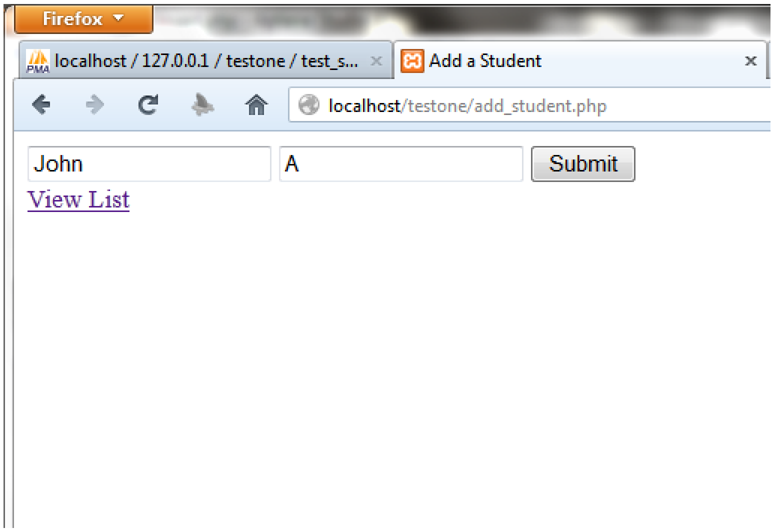
The next thing the script needs to do is insert the submitted values from the form into the test_scores table. To do so we add the following:

```
        /*
         * Get data out of $_POST array
         * and do a query to insert it into test_scores table
         *
         */
        $name = $_POST['name'];
        $grade = $_POST['grade'];
        $sql = "INSERT INTO `test_scores` (`student` ,`grade`) VALUES ('".$name."', '".$grade."')";
        $result = mysql_query($sql) or die(mysql_error());
```

After the data has been added to the table, we should send the user to the homepage, which will show all of the entries we have in the test_scores table. To do so, we add the following line just before the end of the insert.php script:

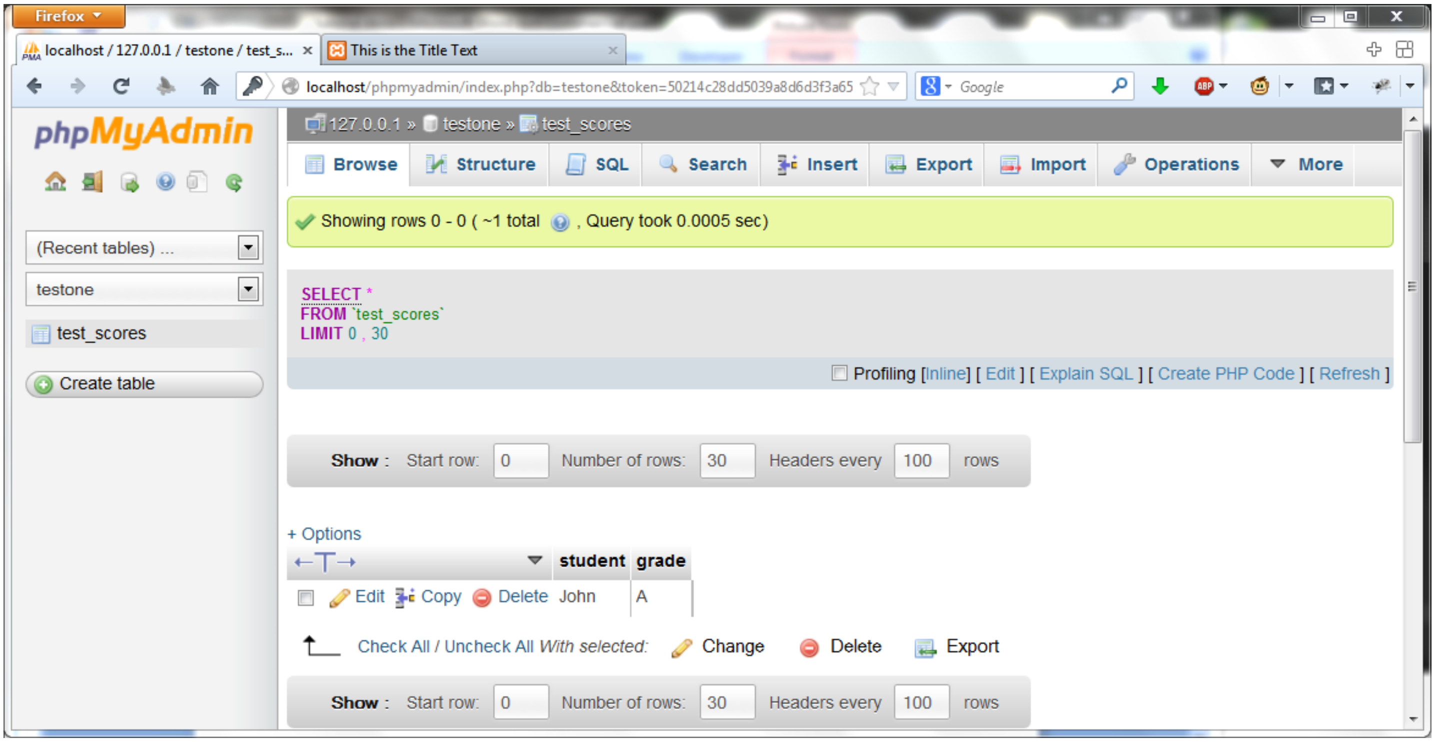
```
        // After processing data into table, redirect back to homepage
        header('Location: http://localhost/testone/');
```

We should now be able to fill out the form at http://localhost/testone/add_student.php and have it inserted into the database. Let us test this now by doing so. We can check to see that it was actually added by going into phpmyadmin and browsing the table.


Firefox
localhost / 127.0.0.1 / testone / test_s...
Add a Student
localhost/testone/add_student.php
Submit
View List

John

A


Firefox
localhost / 127.0.0.1 / testone / test_s...
This is the Title Text
localhost/phpmyadmin/index.php?db=testone&token=50214c28dd5039a8d6d3f3a65
Google
phpMyAdmin
(Recent tables) ...
testone
test_scores
Create table
127.0.0.1 » testone » test_scores
Browse
Structure
SQL
Search
Insert
Export
Import
Operations
More
Profiling [Inline] [Edit] [Explain SQL] [Create PHP Code] [Refresh]
+ Options
Check All / Uncheck All With selected:
Change
Delete
Export

Showing rows 0 - 0 (~1 total , Query took 0.0005 sec)

```
SELECT *
FROM `test_scores`
LIMIT 0 , 30
```

Show : Start row: 0 Number of rows: 30 Headers every 100 rows

	student	grade
□ Edit Copy Delete	John	A

There is now one final part remaining for us. We will alter index.php so that it links to add_student.php and we will make it display the contents of the table test_scores table.

First let us add a link to add_student.php. Add the following anchor element to index.php:

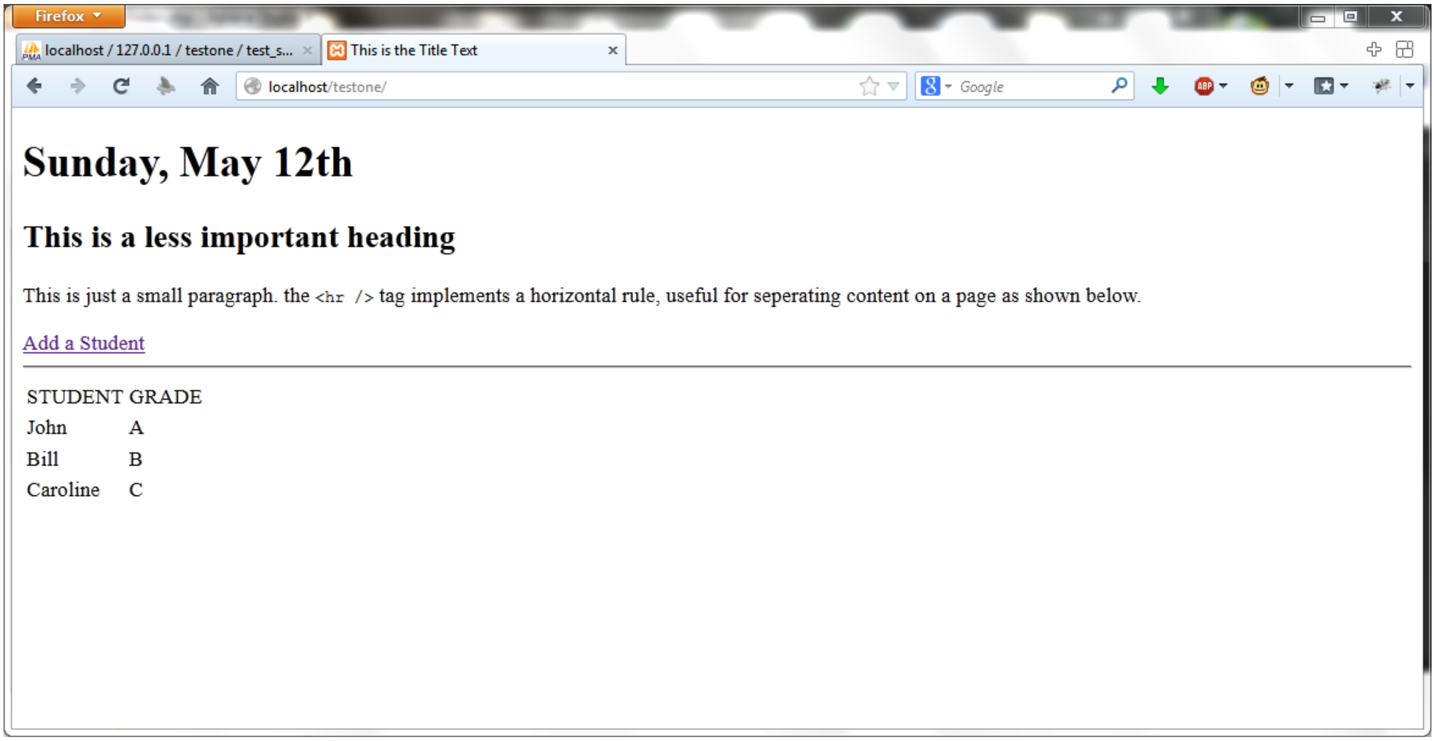
```
<a href="add_student.php" >Add a Student</a>
```

Next let us add some PHP code that will fill the table we have made with HTML. First we need to connect to the database. This is the same as in insert.php, so we can just copy the code for the connection. We then create a SELECT query and execute it. The results are displayed as rows within a table.

Either replace the old table or add to the index.php page with the following code:

```
            <table>
                  <tr><td>STUDENT</td><td>GRADE</td></tr>
                  <?php
                        /*
                         * Code to Connect to the Database
                         *
                         */
                        $server   = 'localhost';
                        $username = 'root';
                        $password = 'infosys2013';
                        $database = 'testone';
                        mysql_connect($server,$username,$password) or die(mysql_error());
                        mysql_select_db($database) or die(mysql_error());


                        /*
                         * Select query
                         *
                         */
                        $sql = "SELECT * FROM test_scores";
                        $result = mysql_query($sql);

                        /*
                         * Output results
                         *
                         */
                        while($row = mysql_fetch_array($result))
                          {
                          echo "<tr>";
                          echo "<td>" . $row['student'] . "</td>";
                          echo "<td>" . $row['grade'] . "</td>";
                          echo "</tr>";
                          }

                  ?>
            </table>
```

Your output should look similar to the following:



Sunday, May 12th

This is a less important heading

This is just a small paragraph. the `<hr />` tag implements a horizontal rule, useful for seperating content on a page as shown below.

Add a Student

STUDENT	GRADE
John	A
Bill	B
Caroline	C

This concludes this basic example. You can now create HTML pages, databases and tables, as well as use PHP to integrate database data with web pages. For more advanced topics please see the appendix.

APPENDIX

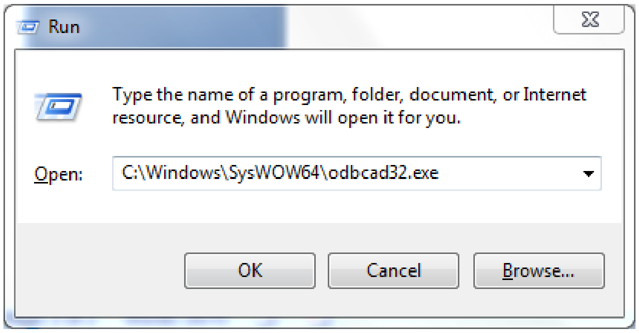
Web Development Guide

Connecting Databases via ODBC

Manage ODBC Data Sources

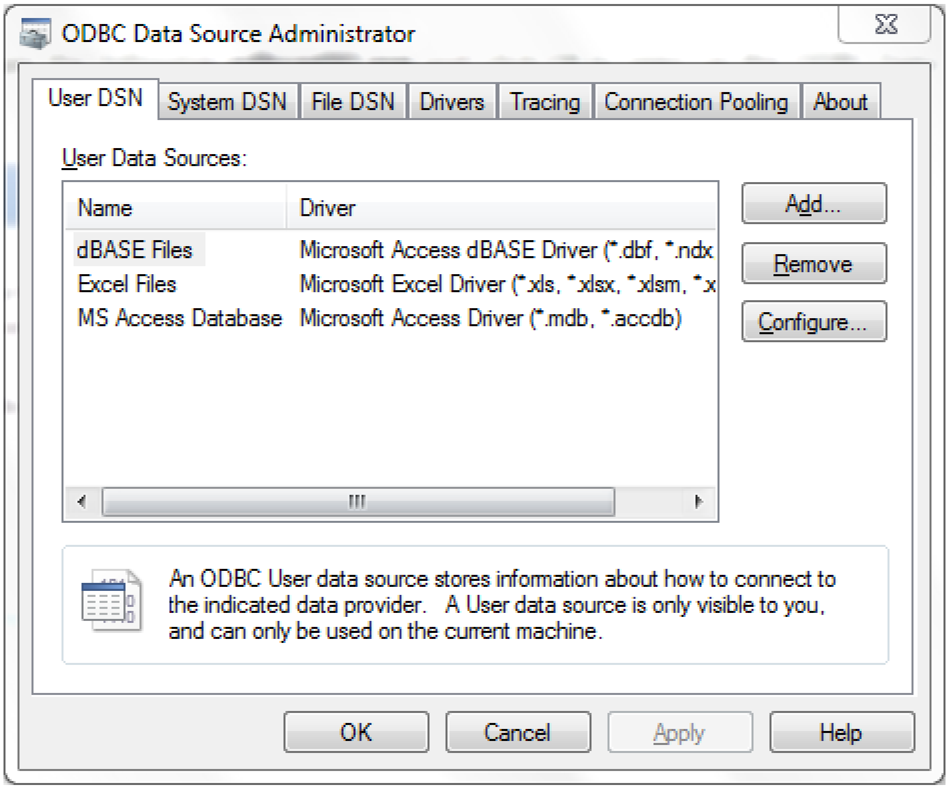
In order to manage ODBC Data Sources, open up the Windows Start Menu and search for **Run** (also located under All Programs > Accessories > Run)

In the prompt type the following **C:\Windows\SysWOW64\odbcad32.exe** and click OK to open up the ODBC Data Source Administrator



Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: C:\Windows\SysWOW64\odbcad32.exe



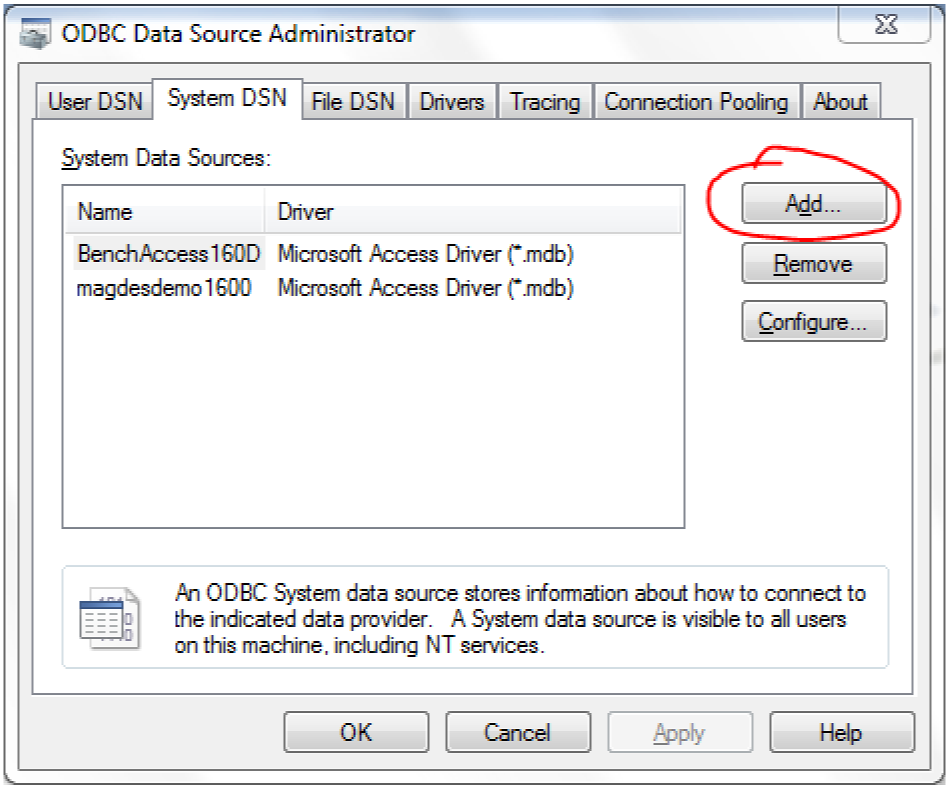
User Data Sources:

Name	Driver
dBASE Files	Microsoft Access dBASE Driver (*.dbf, *.ndx
Excel Files	Microsoft Excel Driver (*.xls, *.xlsx, *.xlsm, *.x
MS Access Database	Microsoft Access Driver (*.mdb, *.accdb)

An ODBC User data source stores information about how to connect to the indicated data provider. A User data source is only visible to you, and can only be used on the current machine.

Adding a Database

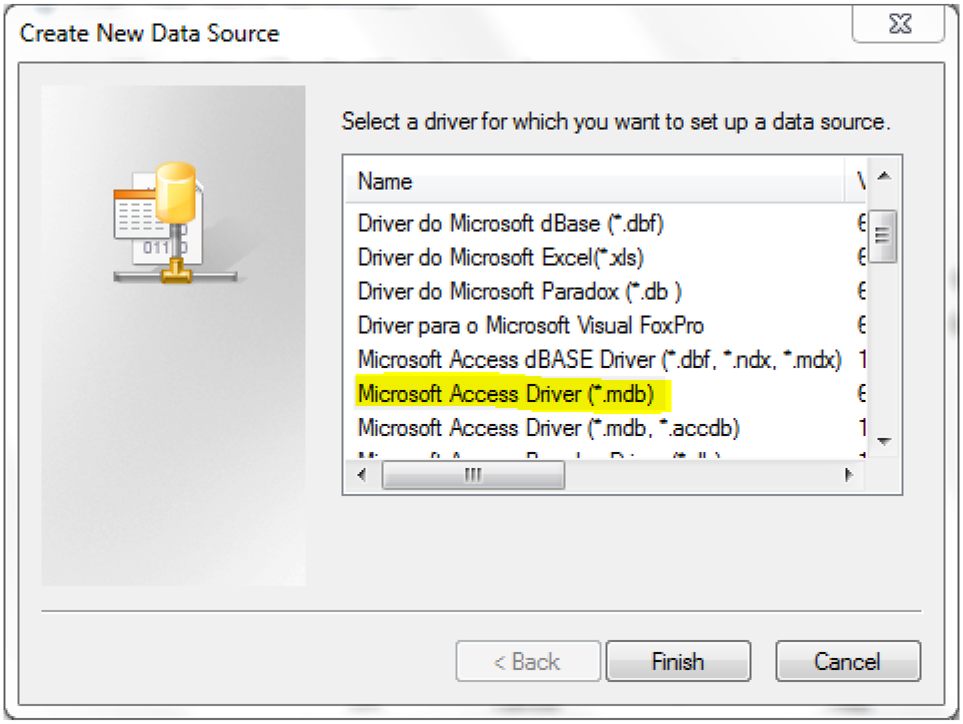
In order to add a database, open the System DSN tab. These sources will be available to applications system-wide (necessary for our Apache installation). Click the Add button on the right side.



System Data Sources:

Name	Driver
BenchAccess160D	Microsoft Access Driver (*.mdb)
magdesdemo1600	Microsoft Access Driver (*.mdb)

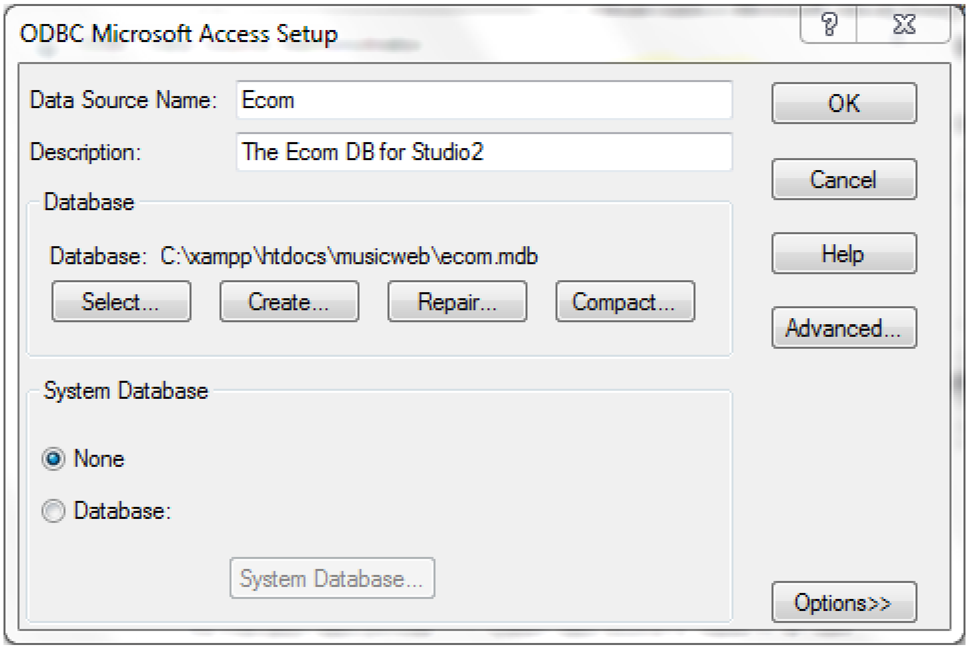
An ODBC System data source stores information about how to connect to the indicated data provider. A System data source is visible to all users on this machine, including NT services.



Select a driver for which you want to set up a data source.

Name
Driver do Microsoft dBase (*.dbf)
Driver do Microsoft Excel(*.xls)
Driver do Microsoft Paradox (*.db)
Driver para o Microsoft Visual FoxPro
Microsoft Access dBASE Driver (*.dbf, *.ndx, *.mdx)
Microsoft Access Driver (*.mdb)
Microsoft Access Driver (*.mdb, *.accdb)

In this example we are adding the **Ecom** database for Studio 2, which we have placed in the htdocs/musicweb/ folder (you may have it in any folder you wish, but make sure you are connecting the same database that you edit). Now when the system calls for a connection to Ecom, it will be able to connect via ODBC.



Data Source Name: Ecom

Description: The Ecom DB for Studio2

Database

Database: C:\xampp\htdocs\musicweb\ecom.mdb

System Database

● None

○ Database:

Web Development Guide

Alternatives to Microsoft Access: LibreOffice Base connected via ODBC

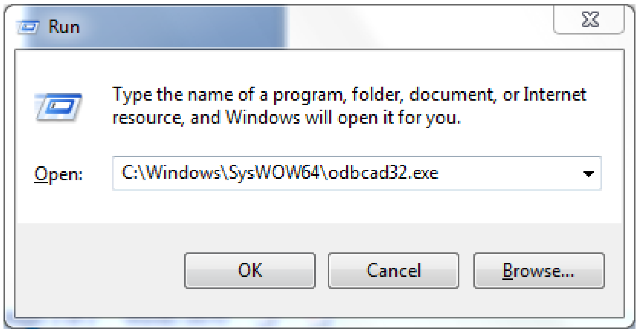
Occasionally you may need to edit a database that you do not have software for. This tutorial focuses on the case of a user who needs to edit a .mdb database file, but does not have Microsoft Access. The solution is to use the open source program, LibreOffice Base and an ODBC connection to communicate with the database.

In this tutorial we will first cover how to add an ODBC Data Source. Then we will download LibreOffice and use Base to connect to the database (musicweb.mdb) via ODBC.

Manage ODBC Data Sources

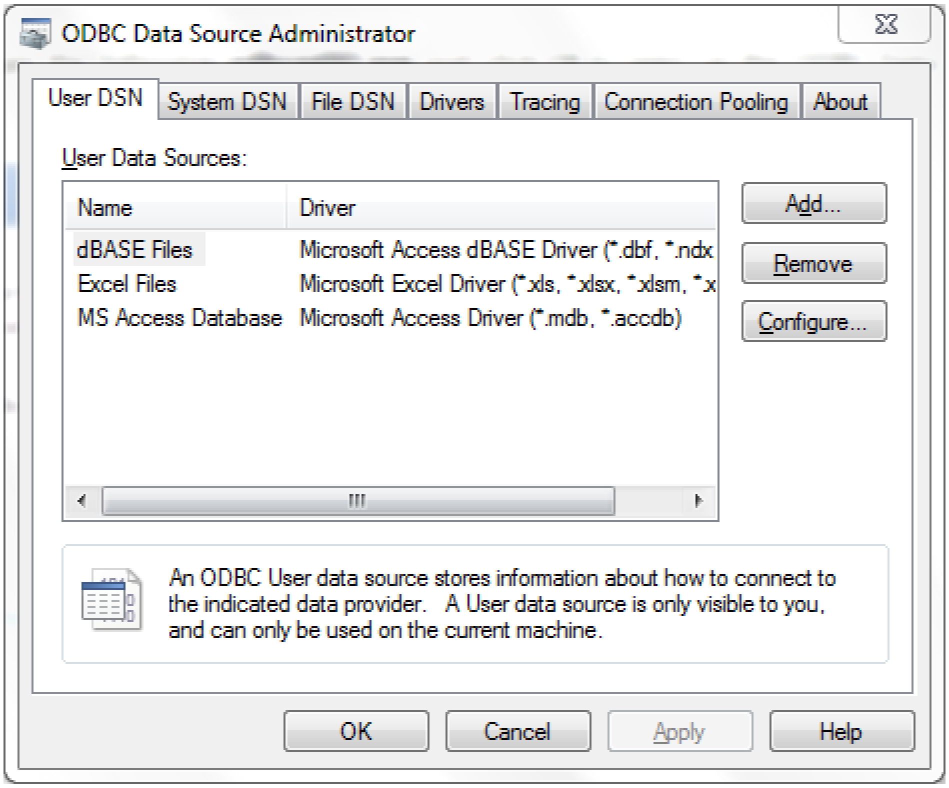
In order to manage ODBC Data Sources, open up the Windows Start Menu and search for **Run** (also located under All Programs > Accessories > Run)

In the prompt type the following **C:\Windows\SysWOW64\odbcad32.exe** and click OK to open up the ODBC Data Source Administrator



Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: C:\Windows\SysWOW64\odbcad32.exe

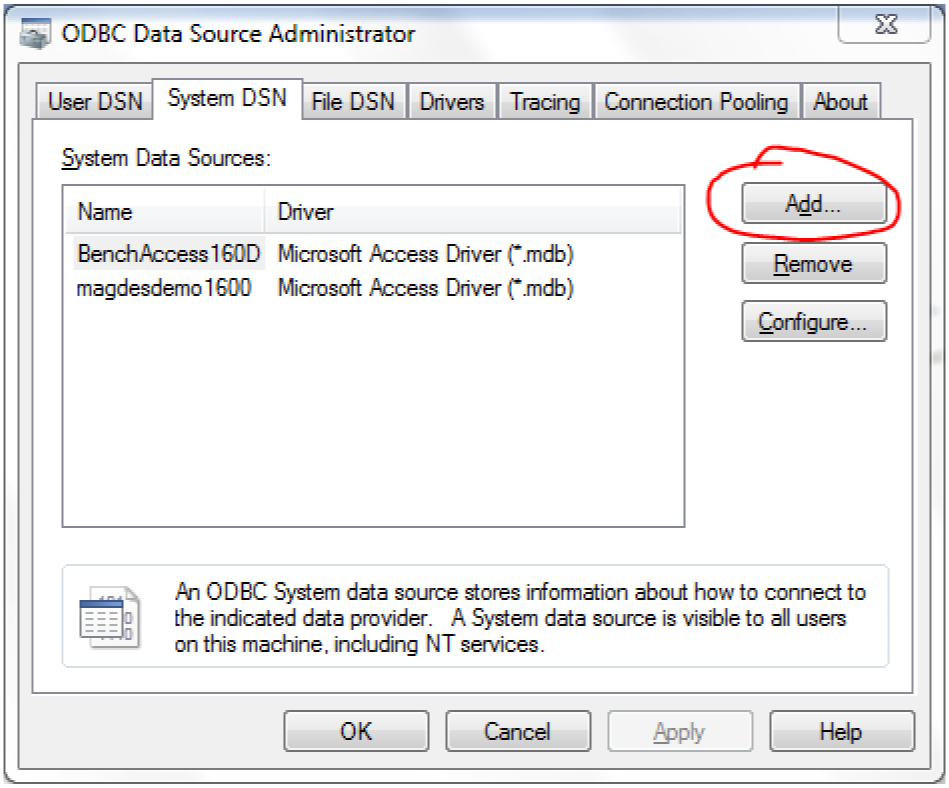


Name	Driver
dBASE Files	Microsoft Access dBASE Driver (*.dbf, *.ndx
Excel Files	Microsoft Excel Driver (*.xls, *.xlsx, *.xlsm, *.x
MS Access Database	Microsoft Access Driver (*.mdb, *.accdb)

An ODBC User data source stores information about how to connect to the indicated data provider. A User data source is only visible to you, and can only be used on the current machine.

Adding a Database

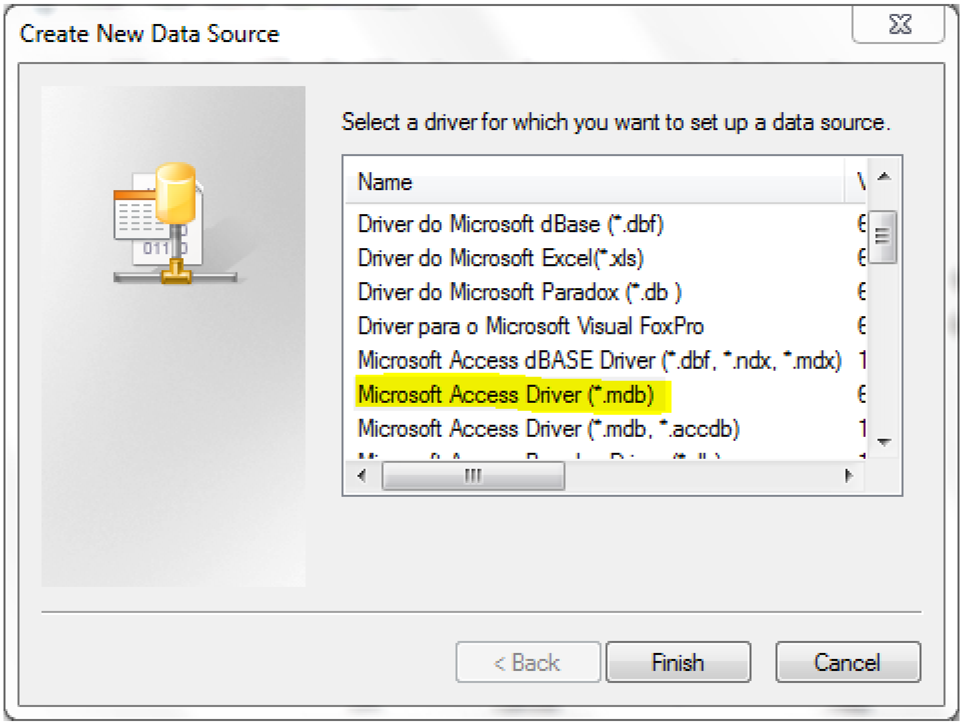
In order to add a database, open the System DSN tab. These sources will be available to applications system-wide (necessary for our Apache installation). Click the Add button on the right side.



System Data Sources:

Name	Driver
BenchAccess160D	Microsoft Access Driver (*.mdb)
magdesdemo1600	Microsoft Access Driver (*.mdb)

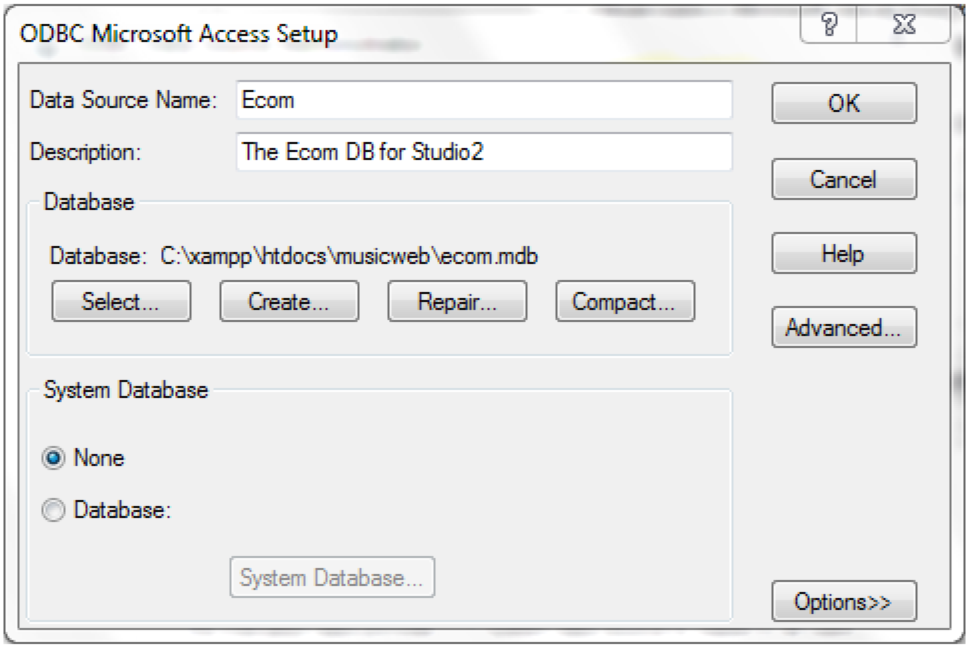
An ODBC System data source stores information about how to connect to the indicated data provider. A System data source is visible to all users on this machine, including NT services.



Select a driver for which you want to set up a data source.

Name
Driver do Microsoft dBase (*.dbf)
Driver do Microsoft Excel(*.xls)
Driver do Microsoft Paradox (*.db)
Driver para o Microsoft Visual FoxPro
Microsoft Access dBASE Driver (*.dbf, *.ndx, *.mdx)
Microsoft Access Driver (*.mdb)
Microsoft Access Driver (*.mdb, *.accdb)

In this example we are adding the **Ecom** database for Studio 2, which we have placed in the htdocs/musicweb/ folder (you may have it in any folder you wish, but make sure you are connecting the same database that you edit). Now when the system calls for a connection to Ecom, it will be able to connect via ODBC.



ODBC Microsoft Access Setup

Data Source Name: Ecom

Description: The Ecom DB for Studio2

Database

Database: C:\xampp\htdocs\musicweb\ecom.mdb

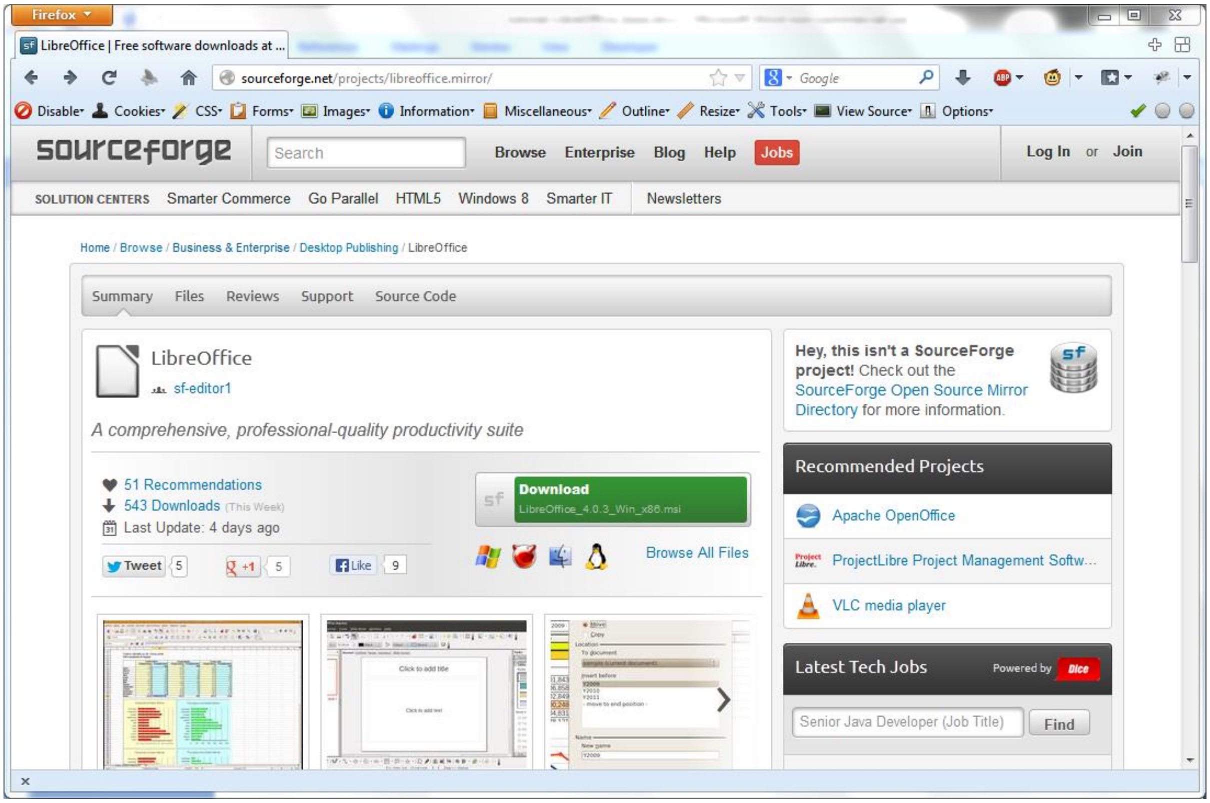
System Database

● None

○ Database:

Download and Install LibreOffice

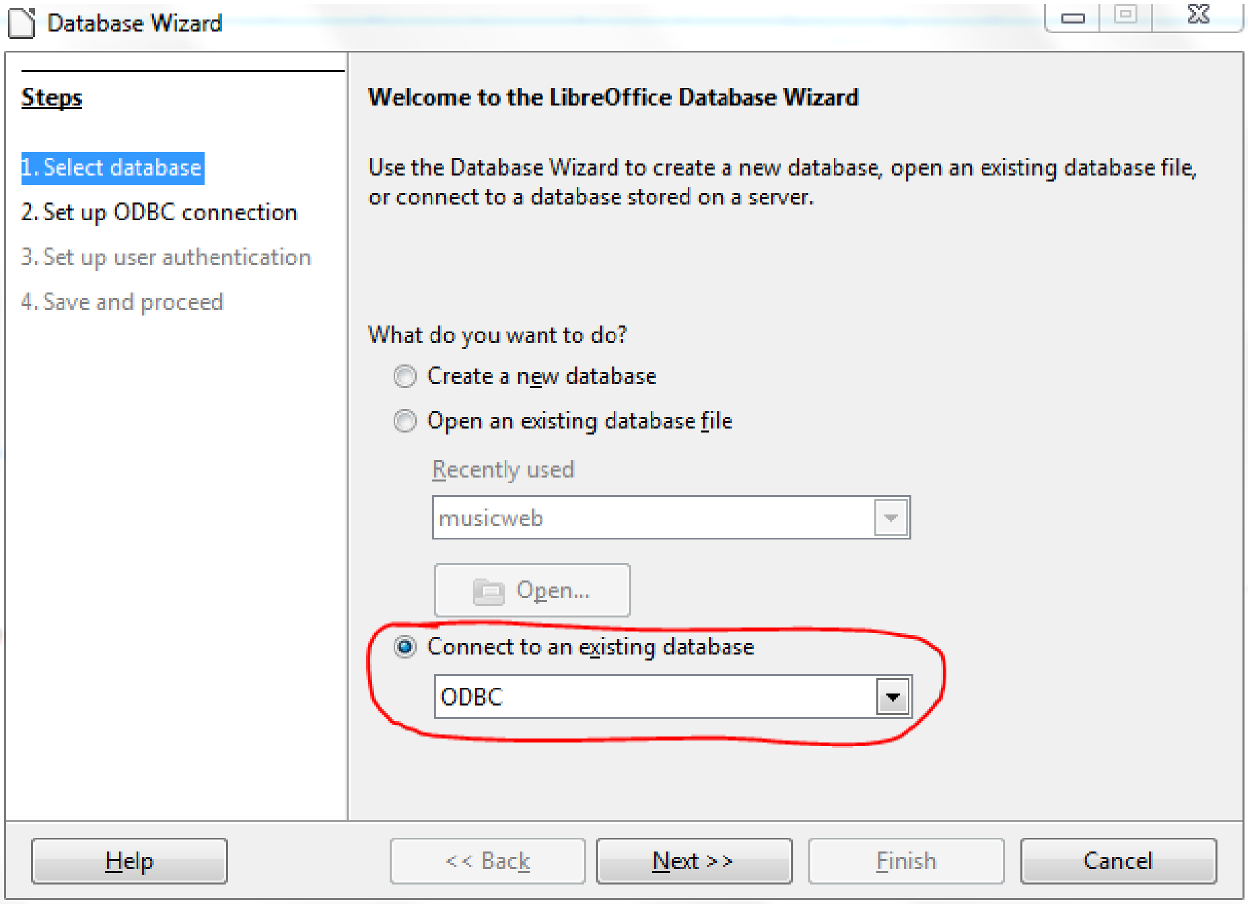
Base is part of the LibreOffice suite, so we will have to download the suite first. Get the installer from http://sourceforge.net/projects/libreoffice.mirror/ and download it to your desktop.


Firefox
LibreOffice | Free software downloads at ...
sourceforge.net/projects/libreoffice.mirror/
Google
Disable▾ Cookies▾ CSS▾ Forms▾ Images▾ Information▾ Miscellaneous▾ Outline▾ Resize▾ Tools▾ View Source▾ Options▾
sourceforge
Search
Browse Enterprise Blog Help Jobs
Log In or Join
SOLUTION CENTERS Smarter Commerce Go Parallel HTML5 Windows 8 Smarter IT Newsletters
Home / Browse / Business & Enterprise / Desktop Publishing / LibreOffice
Summary Files Reviews Support Source Code
LibreOffice
sf-editor1
51 Recommendations
543 Downloads (This Week)
Last Update: 4 days ago
Download
LibreOffice_4.0.3_Win_x86.msi
Browse All Files
Tweet 5
+1 5
Like 9
Recommended Projects
Apache OpenOffice
ProjectLibre Project Management Softw...
VLC media player
Latest Tech Jobs
Powered by Dice
Senior Java Developer (Job Title)
Find

A comprehensive, professional-quality productivity suite

Hey, this isn't a SourceForge project! Check out the SourceForge Open Source Mirror Directory for more information.

Let the installer run through with all of the defaults. When the install is complete, find and run LibreOffice Base. It is very similar to Microsoft Access. When it first opens it will run a database wizard. Select the option to Connect to an Existing Database via ODBC.



Steps

1. Select database
2. Set up ODBC connection
3. Set up user authentication
4. Save and proceed

Welcome to the LibreOffice Database Wizard

Use the Database Wizard to create a new database, open an existing database file, or connect to a database stored on a server.

What do you want to do?

○ Create a new database

○ Open an existing database file

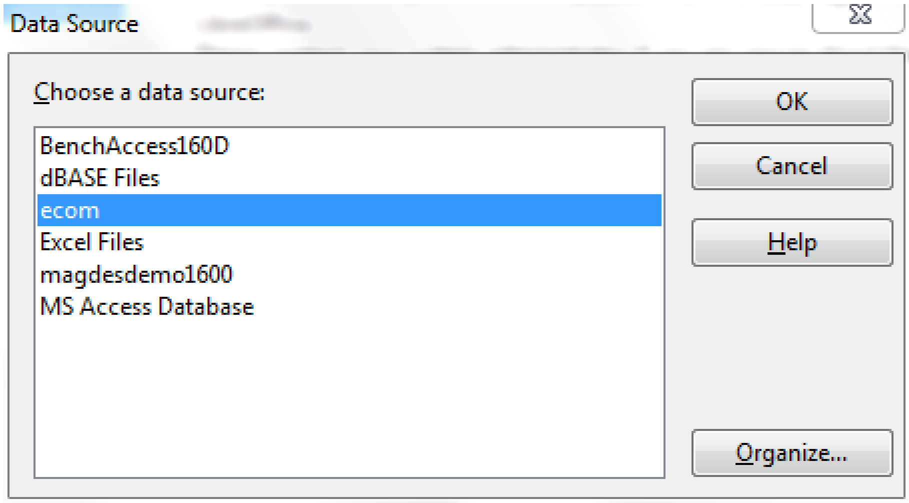
Recently used: musicweb

Open...

● Connect to an existing database

ODBC

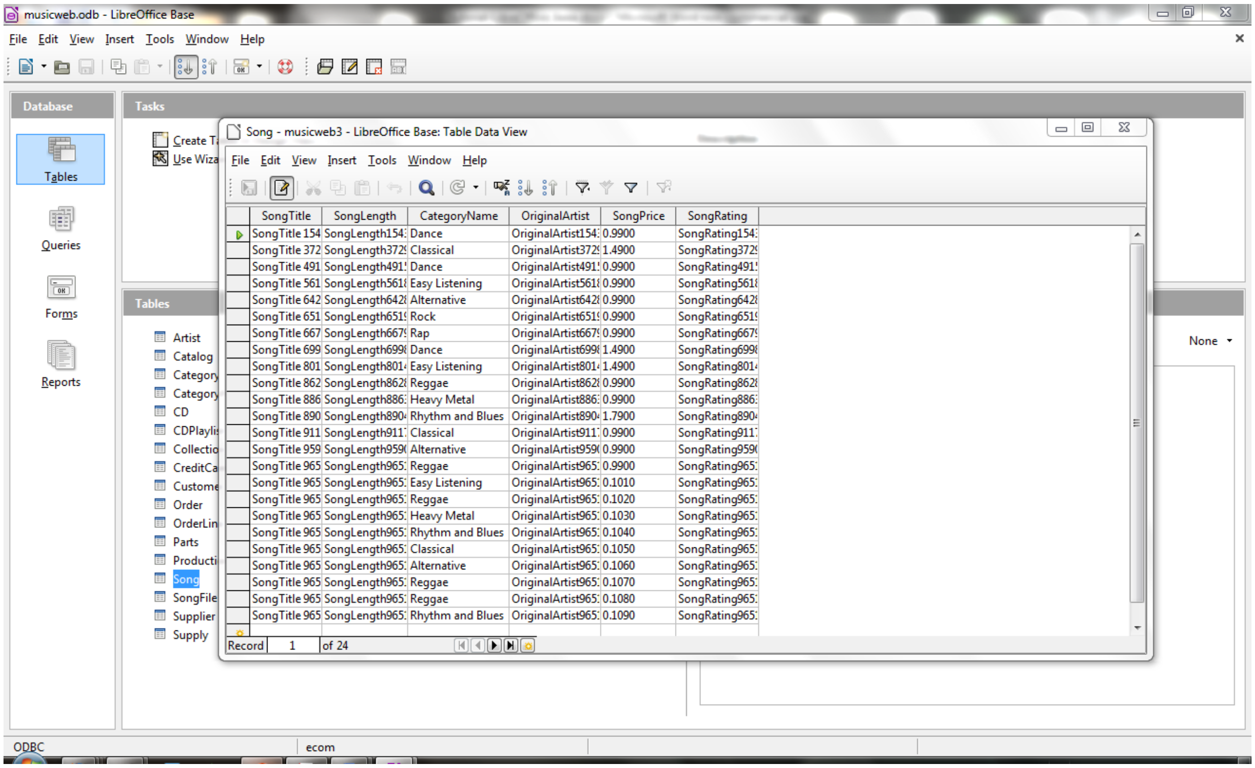
Hit Next, and then select the ODBC Data Source that you wish to connect to (in our case ecom). If you set up a username and password hit next to enter the login information, otherwise press the Finish button. Save the database as .odb when it asks you in order to proceed to the database view.



Choose a data source:

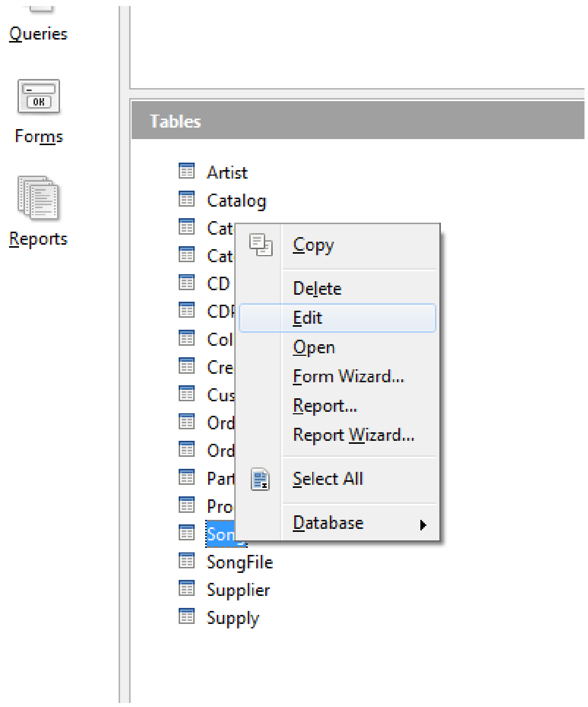
- BenchAccess160D
- dBASE Files
- ecom
- Excel Files
- magdesdemo1600
- MS Access Database

In order to open up a table view, double click on a table. To design tables, right-click on a table and select Edit in order to bring up table schema.



SongTitle	SongLength	CategoryName	OriginalArtist	SongPrice	SongRating
SongTitle 154	SongLength154	Dance	OriginalArtist154	0.9900	SongRating154
SongTitle 372	SongLength372	Classical	OriginalArtist372	1.4900	SongRating372
SongTitle 491	SongLength491	Dance	OriginalArtist491	0.9900	SongRating491
SongTitle 561	SongLength561	Easy Listening	OriginalArtist561	0.9900	SongRating561
SongTitle 642	SongLength642	Alternative	OriginalArtist642	0.9900	SongRating642
SongTitle 651	SongLength651	Rock	OriginalArtist651	0.9900	SongRating651
SongTitle 667	SongLength667	Rap	OriginalArtist667	0.9900	SongRating667
SongTitle 699	SongLength699	Dance	OriginalArtist699	1.4900	SongRating699
SongTitle 801	SongLength801	Easy Listening	OriginalArtist801	1.4900	SongRating801
SongTitle 862	SongLength862	Reggae	OriginalArtist862	0.9900	SongRating862
SongTitle 886	SongLength886	Heavy Metal	OriginalArtist886	0.9900	SongRating886
SongTitle 890	SongLength890	Rhythm and Blues	OriginalArtist890	1.7900	SongRating890
SongTitle 911	SongLength911	Classical	OriginalArtist911	0.9900	SongRating911
SongTitle 959	SongLength959	Alternative	OriginalArtist959	0.9900	SongRating959
SongTitle 965	SongLength965	Reggae	OriginalArtist965	0.9900	SongRating965
SongTitle 965	SongLength965	Easy Listening	OriginalArtist965	0.1010	SongRating965
SongTitle 965	SongLength965	Reggae	OriginalArtist965	0.1020	SongRating965
SongTitle 965	SongLength965	Heavy Metal	OriginalArtist965	0.1030	SongRating965
SongTitle 965	SongLength965	Rhythm and Blues	OriginalArtist965	0.1040	SongRating965
SongTitle 965	SongLength965	Classical	OriginalArtist965	0.1050	SongRating965
SongTitle 965	SongLength965	Alternative	OriginalArtist965	0.1060	SongRating965
SongTitle 965	SongLength965	Reggae	OriginalArtist965	0.1070	SongRating965
SongTitle 965	SongLength965	Reggae	OriginalArtist965	0.1080	SongRating965
SongTitle 965	SongLength965	Rhythm and Blues	OriginalArtist965	0.1090	SongRating965

Record 1 of 24



Web Development Guide

Studio 2.4: MusicWeb

This guide is intended as a supplement to Studio 2 Part 4 located at http://viu.eng.rpi.edu/lab/2/s2_4.html. This guide will attempt to walk through the studio keeping in mind the deliverables. We shall walk through how to get the MusicWeb website, including database set up in the XAMPP installation discussed in the Getting Started tutorial. We will then attempt to implement Customer Checkout.

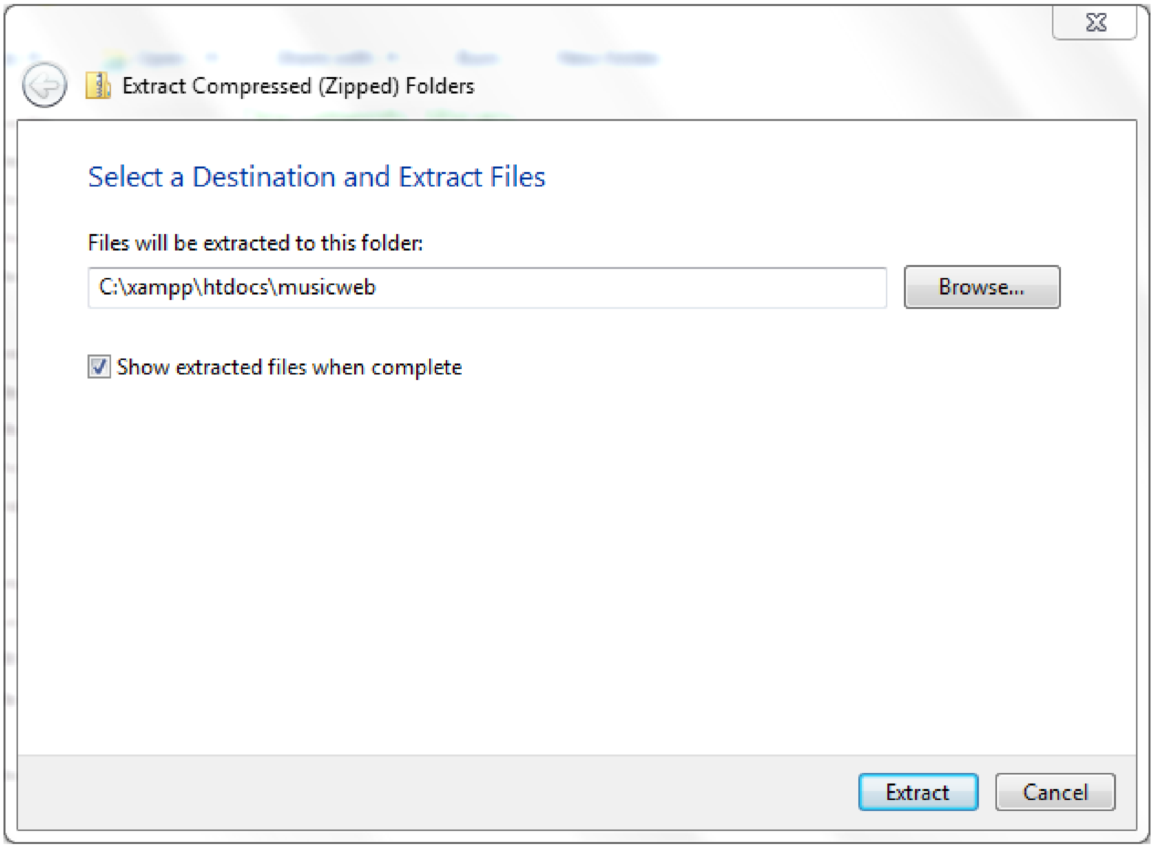
We assume that you are using the XAMPP based Apache and MySQL installation and have set up the Ecom ODBC connection as per the ODBC Tutorial associated with this guide.

If you have not yet set up the Ecom database, download a populated file from http://viu.eng.rpi.edu/lab/2/musicweb.mdb and use it as the ecom ODBC Data Connection, as mentioned in the next section.

Uploading MusicWeb to the XAMPP/Apache Installation

In order to get MusicWeb installed on our server, we must download the ZIP archive at http://viu.eng.rpi.edu/lab/2/musicweb.zip as well as the populated database (if you do not already have it set up) from http://viu.eng.rpi.edu/lab/2/musicweb.mdb

Save the archive to your desktop. When it is downloaded, right click on it and Extract All to a folder called musicweb inside the htdocs folder of your XAMPP/Apache installation (you may need to create the musicweb folder). (*C:\xampp\htdocs\musicweb*)



Extract Compressed (Zipped) Folders

Select a Destination and Extract Files

Files will be extracted to this folder:

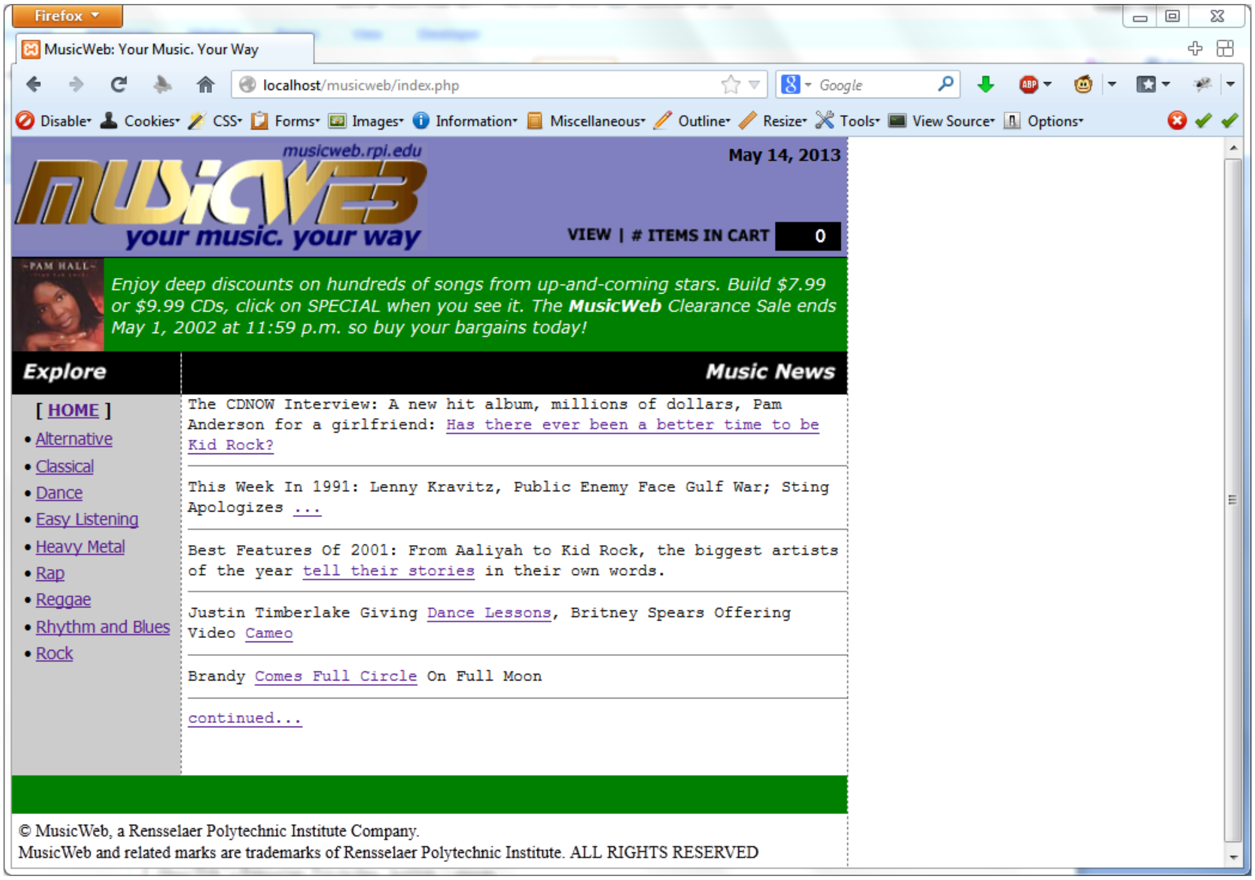
C:\xampp\htdocs\musicweb

☑ Show extracted files when complete

Next, download the file at http://homepages.rpi.edu/~malveg/func and **overwrite the current func.php** in the musicweb directory. This is a critical step as the default installation will not work with modern PHP versions (4+).

Now we will check to make sure the installation was successful. Start your web server. (If you have been following this guide you must open the XAMPP Control Panel and then start the Apache web server). When the server is started, open your browser and navigate to http://localhost/musicweb

If your installation was successful, your screen should look like the following:



May 14, 2013

VIEW | # ITEMS IN CART 0

Enjoy deep discounts on hundreds of songs from up-and-coming stars. Build $7.99 or $9.99 CDs, click on SPECIAL when you see it. The ***MusicWeb*** *Clearance Sale ends May 1, 2002 at 11:59 p.m. so buy your bargains today!*

Explore

[HOME]

- Alternative
- Classical
- Dance
- Easy Listening
- Heavy Metal
- Rap
- Reggae
- Rhythm and Blues
- Rock

Music News

The CDNOW Interview: A new hit album, millions of dollars, Pam Anderson for a girlfriend: Has there ever been a better time to be Kid Rock?

This Week In 1991: Lenny Kravitz, Public Enemy Face Gulf War; Sting Apologizes ...

Best Features Of 2001: From Aaliyah to Kid Rock, the biggest artists of the year tell their stories in their own words.

Justin Timberlake Giving Dance Lessons, Britney Spears Offering Video Cameo

Brandy Comes Full Circle On Full Moon

continued...

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If you have errors or warnings on your page regarding ODBC connections, you may have not set up ODBC correctly for the Ecom database. Please make sure you follow the ODBC tutorial associated with this guide and have a populated database (such as is available at http://viu.eng.rpi.edu/lab/2/musicweb.mdb)

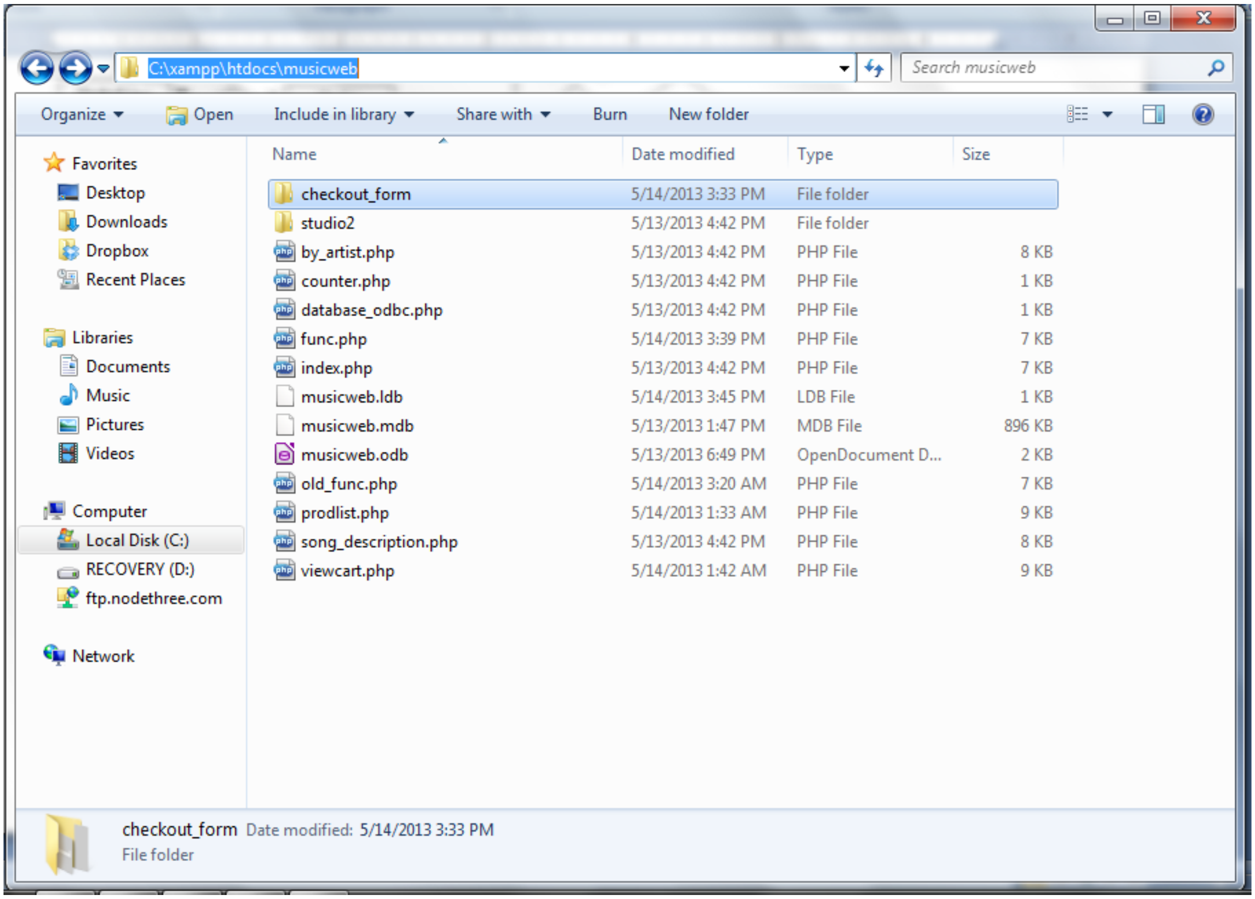
Implementing the Checkout Process

Now that the MusicWeb front-end (customer facing side) is up and running, we would like to implement the checkout process.

From a more general view of the process, we will need to get customer specifics such as name, credit card, shipping and billing information. We will also need to submit the customer's cart to production. Carrying out this process will require us to create a form and then a function that will communicate with the database, as we have seen previously through the loading of categories and songs.

The first thing we are going to do is build the checkout form. When a customer clicks the checkout button, they will be directed to this form. On the form they will input their information and then have the option to Submit their Order.

Download the checkout_form folder at http://homepages.rpi.edu/~malveg/checkout_form.zip and upload it into your htdocs/musicweb directory. The form was built using the form builder at http://www.phpform.org/, and then had some elements of the viewcart.php file combined into it.



C:\xampp\htdocs\musicweb

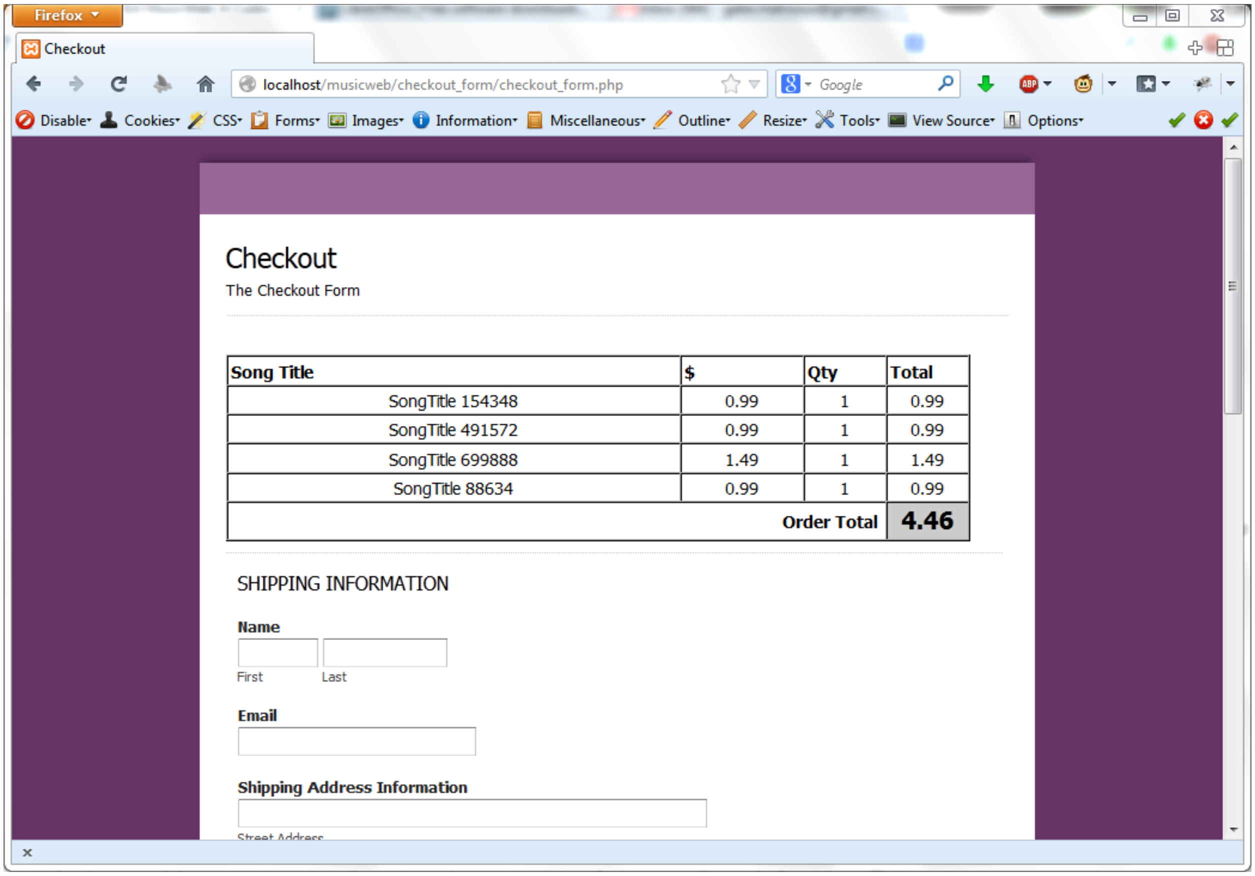
Name	Date modified	Type	Size
checkout_form	5/14/2013 3:33 PM	File folder	
studio2	5/13/2013 4:42 PM	File folder	
by_artist.php	5/13/2013 4:42 PM	PHP File	8 KB
counter.php	5/13/2013 4:42 PM	PHP File	1 KB
database_odbc.php	5/13/2013 4:42 PM	PHP File	1 KB
func.php	5/14/2013 3:39 PM	PHP File	7 KB
index.php	5/13/2013 4:42 PM	PHP File	7 KB
musicweb.ldb	5/14/2013 3:45 PM	LDB File	1 KB
musicweb.mdb	5/13/2013 1:47 PM	MDB File	896 KB
musicweb.odb	5/13/2013 6:49 PM	OpenDocument D...	2 KB
old_func.php	5/14/2013 3:20 AM	PHP File	7 KB
prodlist.php	5/14/2013 1:33 AM	PHP File	9 KB
song_description.php	5/13/2013 4:42 PM	PHP File	8 KB
viewcart.php	5/14/2013 1:42 AM	PHP File	9 KB

checkout_form Date modified: 5/14/2013 3:33 PM
File folder

We must now edit the func.php file to take the user to the form, receive the inputs and then process them into the database. First we will add the following lines just before the end of the file (just before the closing ?> tag):

```
if(isset($_POST["checkout"]))
{
	header("Location: checkout_form/checkout_form.php");
}
```

These lines will move the user to the checkout form when they click the Checkout >> button. If everything is correctly set up, when the customer clicks on the Checkout >> Button when in the shopping cart, they will be taken to the following form:



Checkout

The Checkout Form

Song Title	$	Qty	Total
SongTitle 154348	0.99	1	0.99
SongTitle 491572	0.99	1	0.99
SongTitle 699888	1.49	1	1.49
SongTitle 88634	0.99	1	0.99
		Order Total	4.46

SHIPPING INFORMATION

Name

First Last

Email

Shipping Address Information

Street Address

Next we need to create a function to handle the inputs received from the form and insert them into the database. The following function will take the form inputs and insert them into the Customer and CreditCard tables. It will also add a CD to the CD table and then create an entry in the Order table from the combination of Customer, CreditCard, and CD information. As a final step, it will empty the shopping cart and send the user back to the homepage.

Add the following code just before the closing php (?>) tag in func.php:

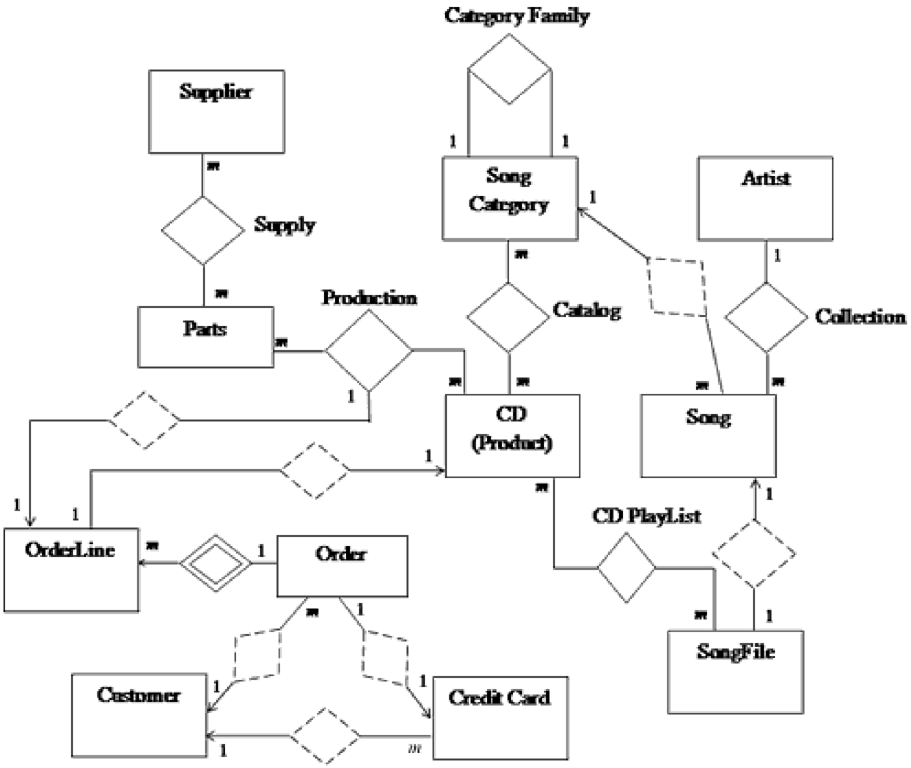
```
if(isset($_POST["doCheckout"]))
{
	session_start();
```

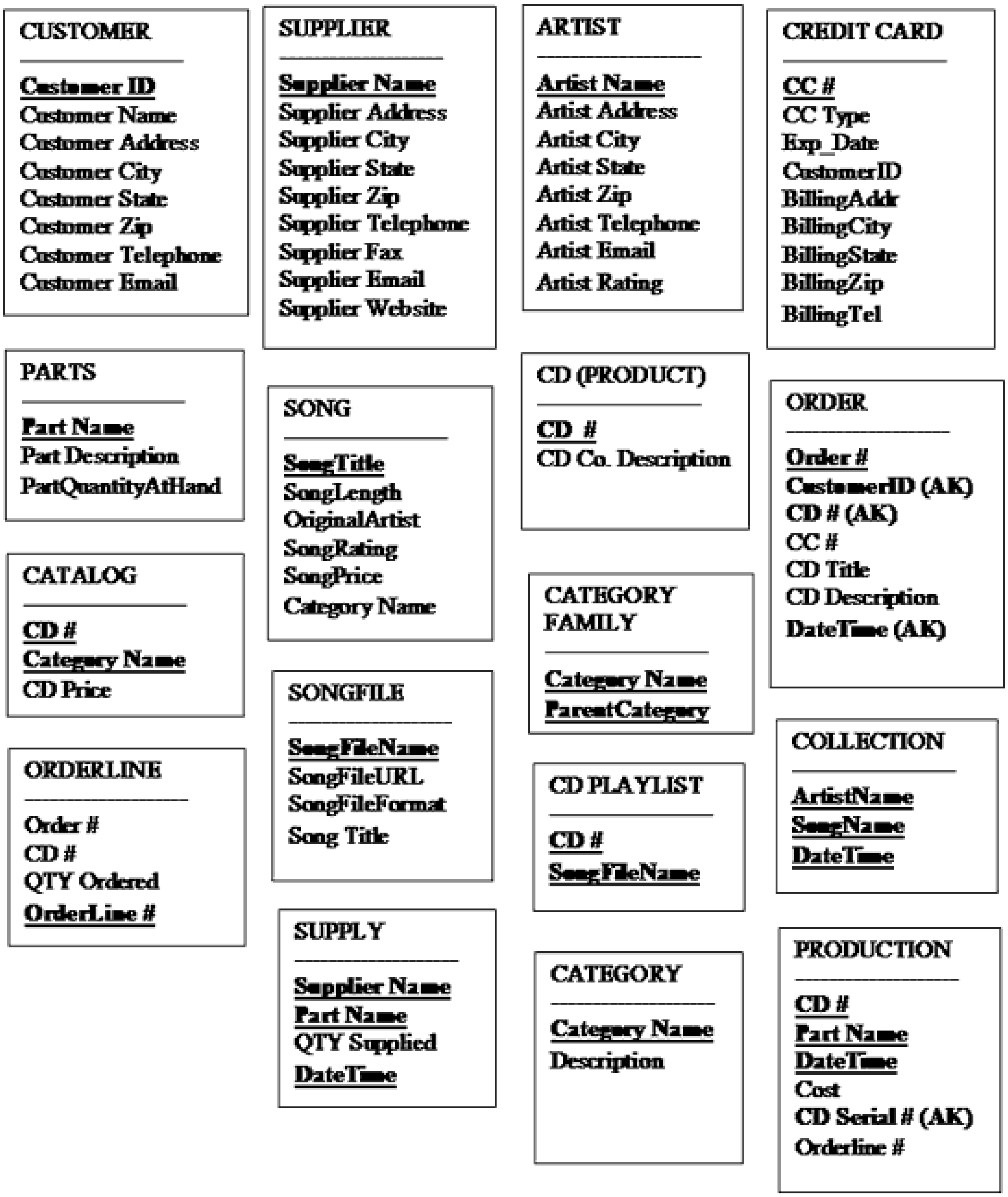
```
        $post=$_POST;
        $cart=$_SESSION['cart'];
        doCheckout($post,$cart);
}
function doCheckout($post,$cart){

        //--- Get Customer SHIPPING Info
        $name = $post['element_1_1'].' '.$post['element_1_2'];
        $email = $post['element_3'];
        $shipping_street_address= $post['element_2_1'].' '.$post['element_2_2'];
        $shipping_city = $post['element_2_3'];
        $shipping_state = $post['element_2_4'];
        $shipping_zip = $post['element_2_5'];
        $shipping_country = $post['element_2_6'];      // Country not used in DB

        //--- Get Customer CREDIT CARD
        $cc_number = $post['element_4'];
        $cc_type = $post['element_5'];
        $cc_exp = $post['element_6_1'].'/'.$post['element_6_2'].'/'.$post['element_6_3'].' 12:00 AM';

        //--- Get Customer BILLING Info
        $billing_street_address= $post['element_7_1'].' '.$post['element_7_2'];
        $billing_city = $post['element_7_3'];
        $billing_state = $post['element_7_4'];
        $billing_zip = $post['element_7_5'];
        $billing_country = $post['element_7_6'];       // Country not used in DB

        $phone = $post['element_8_1'].$post['element_8_2'].$post['element_8_3'];


        // Connect to database
        $conn = odbc_connect('ecom','','');
        if (!$conn) {
                echo odbc_error();
        }

        // INSERT INTO Customer Table
        $sql = "INSERT INTO `Customer` (`CustomerName`, `CustomerAddress`, `CustomerCity`, `CustomerState`, `CustomerZip`,
`CustomerTelephone`, `CustomerEmail`)".
                " VALUES ('".$name."', '".$shipping_street_address."', '".$shipping_city."', '".$shipping_state."', '".$shipping_zip."',
'".$phone."', '".$email."')";

    $result = odbc_exec($conn,$sql);

        // Get CustomerID
        $sql = "SELECT * from `Customer` WHERE CustomerName='".$name."' AND CustomerEmail='".$email."' AND CustomerTelephone='".$phone."'
ORDER BY 'CustomerID' DESC";
        $result = odbc_exec($conn,$sql);
        $cust_ID = odbc_result($result,"CustomerID");

        // INSERT INTO CreditCard Table
        $sql = "INSERT INTO `CreditCard` (`CC#`, `CCType`, `Exp_Date`, `CustomerID`, `BillingAddr`, `BillingCity`, `BillingState`,
`BillingZip`, `BillingTel`)".
                " VALUES ('".$cc_number."', '".$cc_type."', '".$cc_exp."', '".$cust_ID."', '".$billing_street_address."',
'".$billing_city."', '".$billing_state."', '".$billing_zip."', '".$phone."')";

        $result = odbc_exec($conn,$sql);


        // --- Create a CDPlaylist and CD
        $cd = rand();      // give the CD a random number

        // add to CD table
        $sql = "INSERT INTO `CD` (`CD#`,`CDTitle`,`CDDescription`) VALUES ('".$cd."','Various Artists -".$cd."','Description ".$cd."')";
        $result = odbc_exec($conn,$sql);

        // add to CDPlaylist table
        foreach($cart as $s){
                $sql = "INSERT INTO `CDPlaylist` (`CD#`,`SongFileName`) VALUES ('".$cd."','".trim($s['ProductID'],'SongTitle_')."')";
                $result = odbc_exec($conn,$sql);
        }

        // generate order for Order table
        $sql = "INSERT INTO `Order` (`CustomerID`,`CD#`,`CC#`,`CD Title`,`CD Description`,`DateTime`) VALUES
('".$cust_ID."','".$cd."','".$cc_number."','Various Artists -".$cd."','Description ".$cd."','".date
        $result = odbc_exec($conn,$sql);


        //--- Finish up: Close out cart, redirect to homepage
        unset($_SESSION['cart']);
        echo "<p>Your Order has been submitted - THANK YOU!</p>";
        echo "<p>You will be redirected in 5 seconds...</p>";
        sleep(5);
        header("Location: index.php");

}
```

We have now successfully set up the MusicWeb website in our own XAMPP development environment, and have gone a step further and implemented the customer checkout procedure.

Database Normalization (Customers, Credit Cards and Orders)

It is worthwhile to review the concept of a normalized database and see how it is applicable to this example. Recall that the point of database normalization is to minimize redundancy and dependency. The procedure aims to put data into simple tables and then define relationships between them.





CUSTOMER

Customer ID
Customer Name
Customer Address
Customer City
Customer State
Customer Zip
Customer Telephone
Customer Email

PARTS

Part Name
Part Description
PartQuantityAtHand

CATALOG

CD #
Category Name
CD Price

ORDERLINE

Order #
CD #
QTY Ordered
OrderLine #

SUPPLIER

Supplier Name
Supplier Address
Supplier City
Supplier State
Supplier Zip
Supplier Telephone
Supplier Fax
Supplier Email
Supplier Website

SONG

SongTitle
SongLength
OriginalArtist
SongRating
SongPrice
Category Name

SONGFILE

SongFileName
SongFileURL
SongFileFormat
Song Title

SUPPLY

Supplier Name
Part Name
QTY Supplied
DateTime

ARTIST

Artist Name
Artist Address
Artist City
Artist State
Artist Zip
Artist Telephone
Artist Email
Artist Rating

CD (PRODUCT)

CD #
CD Co. Description

CATEGORY FAMILY

Category Name
ParentCategory

CD PLAYLIST

CD #
SongFileName

CATEGORY

Category Name
Description

CREDIT CARD

CC #
CC Type
Exp_Date
CustomerID
BillingAddr
BillingCity
BillingState
BillingZip
BillingTel

ORDER

Order #
CustomerID (AK)
CD # (AK)
CC #
CD Title
CD Description
DateTime (AK)

COLLECTION

ArtistName
SongName
DateTime

PRODUCTION

CD #
Part Name
DateTime
Cost
CD Serial # (AK)
Orderline #

The MusicWeb database is a good example of normalization. Let us look at the process of generating an order. An order is defined by a customer, their CD purchase, and their credit card information. Looking at the Order table one would see that it does not store the actual customer name or telephone or address information. Instead it keeps just the CustomerID. The CustomerID is unique to a customer in the Customer table, and all personal information is stored there. This is an example of keeping redundancy to a minimum, as there is no need for both the Order table and the Customer table to keep personal information about the customer. The CreditCard table is the same way. While each card is unique, there can be multiple cards for a given customer.

For those still unconvinced about the benefits of normalization, imagine that the customer info, credit card and order tables were combined into one large table. Every time a returning customer pays with a different credit card, a new row would have to be made containing mostly similar information except for credit card information. This scenario could easily develop Insertion or Update Problems. For example if a customer wanted to change their credit card information on record, they would be forced to submit a new order. Furthermore, querying the table could become very costly due to the excess amount of data that would have to be parsed for a simple change.

Database design needs to consider the future. In particular, it needs to consider all queries, not just expected queries. A normalized database can be effectively used no matter what the query is. For example, in this case we could ask which credit card type is the most popular. Although this is not exactly a query that the database designer may have anticipated when designing table structure, because the database is normalized we can simply query the CreditCard table and derive the answer.

When developing a database for an information system, one should try to make it as normalized as possible. The mission for the information system can change over time, but if the information in the database is in a normalized form then the database can stay the same. A little bit of effective planning can limit costly future changes.