

# CNT 4714: Enterprise Computing Fall 2008

## Introduction to PHP – Part 1

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# Introduction to PHP

- PHP is officially known as PHP: Hypertext Preprocessor and is very rapidly becoming the most popular server-side scripting language for creating dynamic web pages.
- PHP was created in 1994 by Rasmus Lerdorf (who currently works for Linuxcare, Inc. as a senior open-source researcher) to track users at his Web site. Lerdorf originally called it Personal Home Page Tools in a package he released in 1995. It eventually became an Apache Software Foundation project.
- PHP2 featured built-in database support and form handling. In 1997, PHP3 was released and featured a new parser which substantially increased performance and led to an explosion in PHP use.



# Introduction to PHP (cont.)

- PHP4 featured the Zend Engine and was considerably faster and more powerful than its predecessors and further enhanced the popularity of PHP.
- The current release is PHP 5.2.6 and features the Zend Engine 2, which provides further increases in speed and functionality. You can download the latest version of PHP at [www.php.net](http://www.php.net). For more details on the Zend Engine 2 see [www.zend.com](http://www.zend.com).
- Today more than 17 million domains utilize PHP technology.
- All of the examples we'll be looking at use the latest stable version of PHP which is 5.2.6 and was released May 1, 2008.



# Introduction to PHP (cont.)

- The power of the Web resides not only in serving content to users, but also in responding to requests from users and generating Web pages with dynamic content.
- Interactivity between the user and the server has become a crucial part of Web functionality. While other languages can also perform these functions, PHP was written specifically for interacting with the Web.
- PHP code is embedded directly into XHTML documents. This allows the document author to write XHTML in a clear, concise manner, without having to use multiple `print` statements, as is necessary with other CGI-based languages.



# Introduction to PHP (cont.)

- PHP script file names usually end with `.php`, although a server can be configured to handle other file extensions.
- To run a PHP script, PHP must first be installed on your system. Download PHP 5.2.6 from [www.php.net](http://www.php.net). (Most recent version is 5.2.6.)
- Although PHP can be used from the command line, a Web server is required to take full advantage of the scripting language. I would suggest the Apache server available from [www.apache.org](http://www.apache.org). (Note: this is not the Tomcat server you've already used.) Current version is 2.2.8 which is a new major version change from the previous 2.0.xx versions (mostly in the areas of security).
- The easiest way to get this setup is to use WAMP Server. The current version of this is WAMP 2.0 which automatically loads and configures Apache 2.2.8, MySQL 5.0.51b and PHP 5.2.6 This is how I'll show you to get it set-up. Go to [www.wampserver.com](http://www.wampserver.com).



WAMP Server  
Homepage

# WampServer

Apache, PHP, MySQL on Windows



**Web Server with PHP**  
Pick a Reliable, Affordable Server. IT Infrastructure from The Planet.

**MySQL GUI - Download Now**  
Manage and develop your MySQL with a GUI. Fast & Intuitive. Download!

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## Apache, MySQL, PHP on Windows



### LATEST RELEASE

**WampServer 2.0d [12/01/08]**  
Includes :  
- Apache 2.2.10  
- MySQL 5.1.30  
- PHP 5.2.6

changelog

### NEWSLETTER

To receive the WampServer news

**WAMP SERVER 2.0**

- Localhost
- phpMyAdmin
- SQLiteManager
- www directory
- Apache
- PHP
- MySQL
- Quick Admin**
  - Start All Services
  - Stop All Services

Click here to download.



# Downloads

WampServer is an open source project, free to use (GPL licence). If you think our work deserves it and you want to help us, you can make a donation with paypal.

**WARNING : do not try to install WampServer 2 over WAMP5. If WAMP5 is installed on your computer, save your data, uninstall it and delete the WAMP5 directory before installing WampServer 2.**

<b>DOWNLOAD</b>
<b>WampServer 2.0d</b>
(December 01 2008)
Apache 2.2.10
PHP 5.2.6 + PECL
SQLitemanager
MySQL 5.1.30
Phpmysqladmin
size: 16Mo

Download page



## WampServer 2.0d [12/01/08]

- Includes :
- Apache 2.2.10
  - MySQL 5.1.30
  - PHP 5.2.6

[changelog](#)

### NEWSLETTER

To receive the WampServer news (and only that), enter your email address :

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WAMP5 Homepage - Windows Internet Explorer

http://localhost/

File Edit View Favorites Tools Help

Google G Go Bookmarks 0 blocked Check AutoLink AutoFill Settings

WAMP5 Homepage CNN.com - Breaking New...



Version 2.0 [Version Française](#)

## Server Configuration

**Apache Version :** 2.2.8

**PHP Version :** 5.2.6

**Loaded Extensions :**

• bcmath	• calendar	• com_dotnet	• ctype
• session	• filter	• ftp	• hash
• iconv	• json	• odbc	• pcre
• Reflection	• date	• libxml	• standard
• tokenizer	• zlib	• SimpleXML	• dom
• SPL	• wddx	• xml	• xmlreader
• xmlwriter	• apache2handler	• gd	• mbstring
• mysql	• mysqli	• PDO	• pdo_mysql
• SQLite			

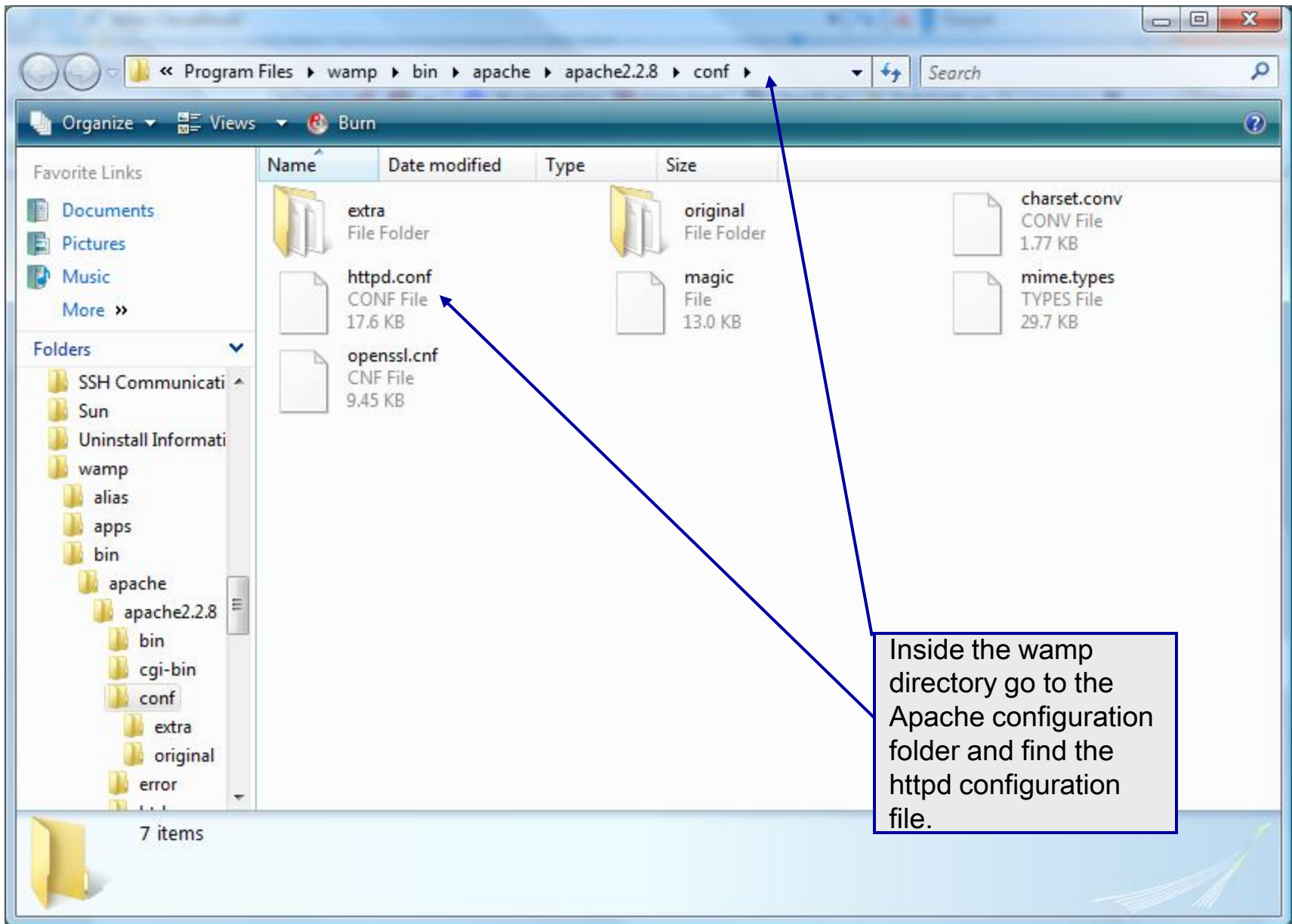
**MySQL Version :** 5.0.51b

## Tools

Done Internet | Protected Mode: Off 100%





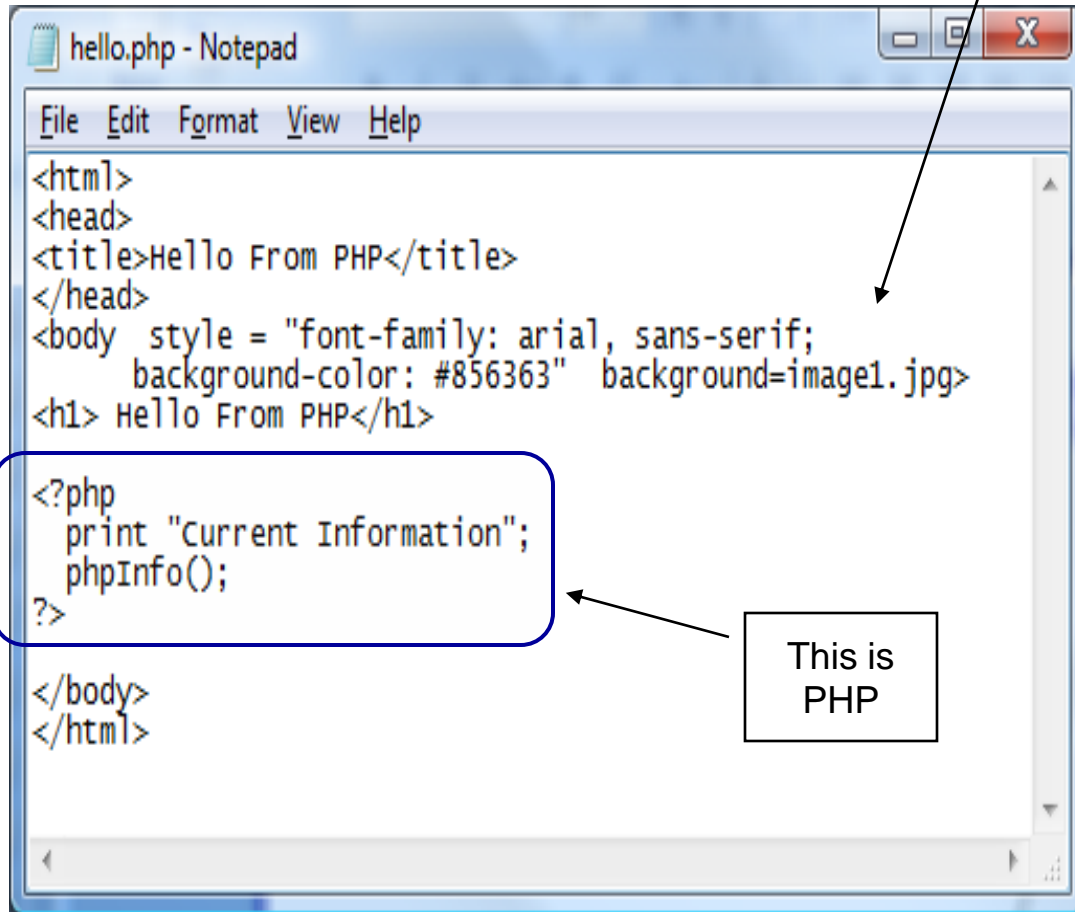


```
C:\Program Files\wamp\bin\apache\apache2.2.8\conf\httpd.conf - Notepad++
File Edit Search View Format Language Settings Macro Run TextFX Plugins Window ?
underconstruction.html practice problem 26.html slide show 1.html httpd.conf
37 #
38 # Listen: Allows you to bind Apache to specific IP addresses and/or
39 # ports, instead of the default. See also the <VirtualHost>
40 # directive.
41 #
42 # Change this to Listen on specific IP addresses as shown below to
43 # prevent Apache from glomming onto all bound IP addresses.
44 #
45 #Listen 12.34.56.78:80
46 #Listen 80
47 Listen 8081
48
49 #
50 # Dynamic Shared Object (DSO) Support
51 #
52 # To be able to use the functionality of a module which was built as a DSO you
53 # have to place corresponding 'LoadModule' lines at this location so the
54 # directives contained in it are actually available _before_ they are used.
55 # Statically compiled modules (those listed by 'httpd -l') do not need
56 # to be loaded here.
57 #
58 # Example:
59 # LoadModule foo_module modules/mod_foo.so
60 #
61 LoadModule actions_module modules/mod_actions.so
```

Edit the httpd configuration file to have the Apache server listen on port 8081 instead of port 80 as is the default case.



# A PHP Test Example



```
File Edit Format View Help
<html>
<head>
<title>Hello From PHP</title>
</head>
<body style = "font-family: arial, sans-serif;
background-color: #856363" background=image1.jpg>
<h1> Hello From PHP</h1>

<?php
print "Current Information";
phpInfo();
?>

</body>
</html>
```

This is PHP

Create this file named `hello.php` and save it to the `www` folder in the WAMP server. Then start the WAMP server, enter the URL: <http://localhost:8081/hello.php> and you should see output similar to that shown on the next slide.



Internet Explorer window showing "Hello From PHP" at http://localhost:8081/hello.php. The page displays "Current Information" for PHP Version 5.2.6, including system details, build date, configuration command, server API, virtual directory support, configuration file path, loaded configuration file, PHP API, and PHP extension.

<b>System</b>	Windows NT 9VQ2JH1-PC 6.0 build 6001
<b>Build Date</b>	May 2 2008 18:01:20
<b>Configure Command</b>	cscript /nologo configure.js "--enable-snapshot-build" "--with-gd=shared" "--with-extra-includes=C:\Program Files (x86)\Microsoft SDK\Include;C:\PROGRA~2\MICROS~2\VC98\ATL\INCLUDE;C:\PROGRA~2\MICROS~2\VC98\INCLUDE;C:\PROGRA~2\MICROS~2\VC98\MFC\INCLUDE" "--with-extra-libs=C:\Program Files (x86)\Microsoft SDK\Lib;C:\PROGRA~2\MICROS~2\VC98\Lib;C:\PROGRA~2\MICROS~2\VC98\MFC\Lib"
<b>Server API</b>	Apache 2.0 Handler
<b>Virtual Directory Support</b>	enabled
<b>Configuration File (php.ini) Path</b>	C:\Windows
<b>Loaded Configuration File</b>	C:\Program Files\wamp\bin\apache\apache2.2.8\bin\php.ini
<b>PHP API</b>	20041225
<b>PHP Extension</b>	20060613

A callout box points to the "Configuration File (php.ini) Path" field with the text: "The default directory for the php.ini file. Set by WAMP."



# A First PHP Example

- The following two pages illustrate a simple PHP “hello world” program.
- In PHP, code is inserted between the scripting delimiters `<?php` and `?>`. PHP code can be placed anywhere in XHTML markup, as long as the code is enclosed in these scripting delimiters.
- Place all of your XHTML and PHP files inside the WAMP www directory.



# welcome.php Example

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

```
<!-- welcome.php -->
```

```
<!-- XHTML file containing a PHP script. -->
```

```
<?php
```

```
  $name = "Mark";    //php declaration and assignment
```

```
?>
```

PHP code  
declaring a  
variable.

```
<html xmlns = "http://www.w3.org/1999/xhtml">
```

```
<!-- head section of document -->
```

```
<head>
```

```
  <title>A Simple PHP Document</title>
```

```
</head>
```

```
<!-- body section of document -->
```

```
<body style = "font-size: 2em">
```

```
  <hr>
```

```
  <font color = blue><h1> Generating HTML From PHP </h1></font color>
```

```
  <p>
```



# welcome.php Example

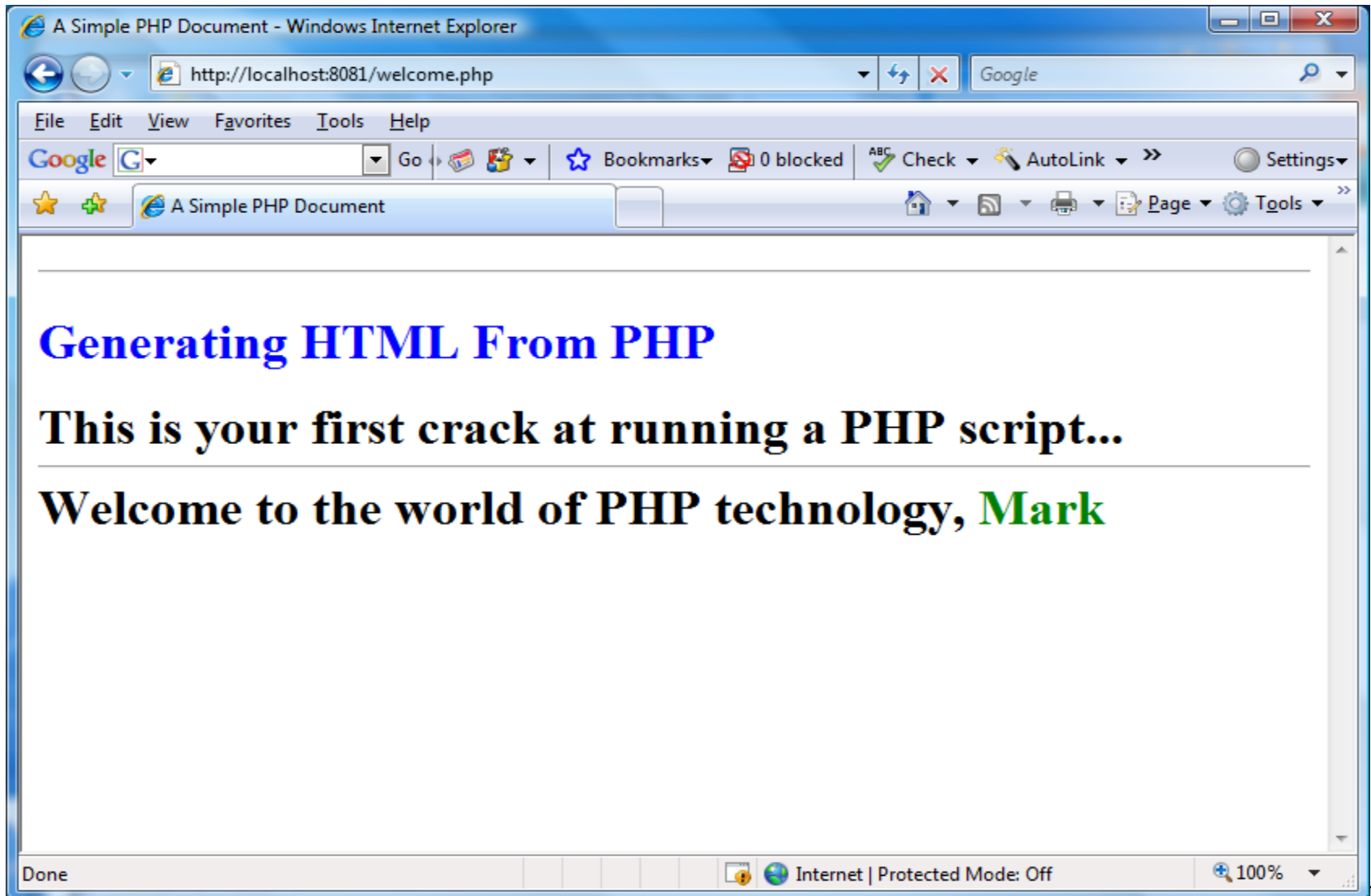
```
<strong>
  <!--print variable name's value in the message-->
  {
  <?php
    print("This is your first crack at running a PHP script...");
    print("<HR>");
    print("Welcome to the world of PHP technology, ");
  ?>
  <font color = green>
  {
  <?php
    print("$name");
  ?>
  </font color>
  }
  </strong>
</p>
</body>
</html> <!-- end XHTML document -->
```

PHP code

PHP code



# welcome.php Example Output





# Viewing Client/Server Environment Variables

- Knowledge of a client's execution environment is useful to system administrators who want to provide client-specific information.
- Environment variables contain information about a script's environment, such as the client's web browser, the HTTP host and the HTTP connection.
  - The table on the next page summarizes some of the superglobal arrays defined by PHP.
- The XHTML document on page 19 displays the values of the server's environment variables in a table. PHP stores the server variables and their values in the `$_SERVER` array. Iterating through the array allows one to view all of the server's environment variables.



# Some Superglobal Environment Arrays

Variable Name	Description
<code>\$_SERVER</code>	Data about the currently running server.
<code>\$_ENV</code>	Data about the client's environment.
<code>\$_GET</code>	Data posted to the server by the <code>get</code> method.
<code>\$_POST</code>	Data posted to the server by the <code>post</code> method.
<code>\$_COOKIE</code>	Data contained in cookies on the client's computer.
<code>\$GLOBALS</code>	Array containing all global variables.



# server.php Example

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<!-- server.php          -->
<!-- Program to display $_SERVER variables -->
<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <title>SERVER Variables Display</title>
  </head>

  <body style = "font-family: arial, sans-serif;
    background-color: #856363" background=image1.jpg>

    <table border = "0" cellpadding = "2" cellspacing = "0"
      width = "100%">
      <?php
        // print the key and value for each element
        // in the $_SERVER array
        foreach ( $_SERVER as $key => $value )
          print( "<tr><td bgcolor = '#11bbff'">
            <strong>$key</strong></td> <td>$value</td></tr>" );
      ?>
    </table>
  </body>
</html>
```

Iterate through the  
\$\_SERVER array to list all  
of the SERVER variables for  
the current server on which  
PHP is running.



Output from executing server.php

```

HTTP_ACCEPT image/gif, image/x-xbitmap, image/jpeg, image/pjpeg, application/x-ms-application, application/vnd.ms-xpsdocument, application/xaml+xml, application/x-ms-xbap, application/x-silverlight, application/vnd.ms-excel, application/vnd.ms-powerpoint, application/msword, application/x-shockwave-flash, */*
HTTP_ACCEPT_LANGUAGE en-us
HTTP_UA_CPU x86
HTTP_ACCEPT_ENCODING gzip, deflate
HTTP_USER_AGENT Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 6.0; SLCC1; .NET CLR 2.0.50727; .NET CLR 3.0.04506; InfoPath.2)
HTTP_HOST localhost:8081
HTTP_CONNECTION Keep-Alive
PATH C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;C:\Program Files\MySQL\MySQL Server 5.0\bin;C:\Program Files\QuickTime\QTSystem\
SystemRoot C:\Windows
COMSPEC C:\Windows\system32\cmd.exe
PATHEXT .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
WINDIR C:\Windows

```



# Form Processing and Business Logic

- XHTML forms enable web pages to collect data from users and send it to a web server for processing.
- Interaction of this kind between users and web servers is vital to e-commerce applications. Such capabilities allow users to purchase products, request information, send and receive web-based email, perform on-line paging and take advantage of various other online services.
- The XHTML document on the next few pages collects information from a user for the purposes of adding them to a mailing list.
- The PHP file on page 23 validates the data entered by the user through the form and “registers” them in the mailing list database.



# form.html Example

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<!-- form.html -->
<!-- Form for use with the form.php program -->
```

This XHTML document generates the form that the user will submit to the server via form.php

```
<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <title>Sample form to take user input in XHTML</title>
  </head>
  <body>
```

```
    <h1>This is a sample registration form.</h1>
```

Please fill in all fields and click Register.

```
    <!-- post form data to form.php -->
    <form method = "post" action = "form.php">
      <img src = "images/user.gif" alt = "User" /><br />
      <span style = "color: blue">
        Please fill out the fields below.<br />
      </span>
      <!-- create four text boxes for user input -->
      <img src = "images/fname.gif" alt = "First Name" />
      <input type = "text" name = "fname" /><br />
```



```
<img src = "images/lname.gif" alt = "Last Name" />
<input type = "text" name = "lname" /><br />
<img src = "images/email.gif" alt = "Email" />
<input type = "text" name = "email" /><br />
<img src = "images/phone.gif" alt = "Phone" />
<input type = "text" name = "phone" /><br />
<span style = "font-size: 10pt">
  Must be in the form (555)555-5555</span>
<br /><br />
<img src = "images/downloads.gif"
  alt = "Products" /><br />
```

```
<span style = "color: blue">
  Which publication would you like information about?
</span><br />
```

```
<!-- create drop-down list containing magazine names -->
<select name = "magazine">
  <option>Velo-News</option>
  <option>Cycling Weekly</option>
  <option>Pro Cycling</option>
  <option>Cycle Sport</option>
    <option>RadSport</option>
    <option>Mirror du Cyclisme</option>
</select>
<br /><br />
```



```
<img src = "images/os.gif" alt = "Operating System" />
<br /><span style = "color: blue">
  Which operating system are you currently using?
<br /></span>
<!-- create five radio buttons -->
<input type = "radio" name = "os" value = "Windows XP"
  checked = "checked" />
  Windows XP
<input type = "radio" name = "os" value =
  "Windows 2000" />
  Windows 2000
<input type = "radio" name = "os" value =
  "Windows 98" />
  Windows 98<br />
<input type = "radio" name = "os" value = "Linux" />
  Linux

<input type = "radio" name = "os" value = "Other" />
  Other<br />

<!-- create a submit button -->
<input type = "submit" value = "Register" />
</form>
```

```
</body>
</html>
```





# form.php Example

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

```
<!-- form.php -->
```

```
<!-- Read information sent from form.html -->
```

```
<html xmlns = "http://www.w3.org/1999/xhtml">
```

```
<head>
```

```
<title>Form Validation</title>
```

```
</head>
```

```
<body style = "font-family: arial,sans-serif">
```

```
<?php
```

```
extract($_POST);
```

```
// determine whether phone number is valid and print an error message if not
```

```
if ( !ereg( "^\([0-9]{3}\)[0-9]{3}-[0-9]{4}$",
```

```
$phone ) ){
```

```
print( "<p><span style = \"color: red; font-size: 2em\">
```

```
INVALID PHONE NUMBER:</span><br />
```

```
A valid phone number must be in the form
```

```
<strong>(555)555-5555</strong><br />
```

```
<span style = \"color: blue\">
```

```
Click the Back button, enter a valid phone number and resubmit.<br /><br />
```

```
Thank You.</span></p></body></html>" );
```

```
die(); // terminate script execution
```

```
}
```

```
?>
```

Function extract (associativeArray) creates a variable-value pair corresponding to each key-value pair in the associative array \$\_POST.

See page 36 for explanation of regular expressions.

Function die() terminates script execution. An error has occurred, no need to continue.



```

<p>Hi
  <span style = "color: blue"> <strong> <?php print( "$fname" ); ?> </strong> </span>.
  Thank you for completing the survey.<br />
  You have been added to the <span style = "color: blue">
    <strong> <?php print( "$magazine " ); ?> </strong> </span> mailing list.
</p>
<strong>The following information has been saved in our database:</strong><br />
<table border = "0" cellpadding = "0" cellspacing = "10">
  <tr>
    <td bgcolor = "#ffffaa">Name </td>
    <td bgcolor = "#ffffbb">Email</td>
    <td bgcolor = "#ffffcc">Phone</td>
    <td bgcolor = "#ffffdd">OS</td>
  </tr>
  <tr>
    <?php
      // print each form field's value
      print( "<td>$fname $lname</td> <td>$email</td> <td>$phone</td> <td>$os</td>" );
    ?>
  </tr>
</table>
<br /><br /><br />
<div style = "font-size: 10pt; text-align: center">
  This is only a sample form.  You have not been added to a mailing list.
</div>
</body>
</html>

```



Sample form to take user input in XHTML - Windows Internet Explorer

http://localhost:8081/form.html

File Edit View Favorites Tools Help

Google G Go Bookmarks 0 blocked Check AutoLink Settings

Sample form to take user input in XHTML

# This is a sample registration form.

Please fill in all fields and click Register.

**User Information**  
Please fill out the fields below.

First Name

Last Name

Email

Phone

Must be in the form (555)555-5555

**Publications**  
Which publication would you like information about?

Velo-News

**Operating System**  
Which operating system are you currently using?

Windows Vista  Windows XP  Windows 2000  
 Linux  Other

Register

Execution of form.html within a web browser

Done Internet | Protected Mode: Off 100%



Sample form to take user input in XHTML - Windows Internet Explorer

http://localhost:8081/form.html

File Edit View Favorites Tools Help

Google G Go Bookmarks 0 blocked Check AutoLink Settings

Sample form to take user input in XHTML

# This is a sample registration form.

Please fill in all fields and click Register.

**User Information**

Please fill out the fields below.

First Name

Last Name

Email

Phone

Must be in the form (555)555-5555

**Publications**

Which publication would you like information about?

Pro Cycling

**Operating System**

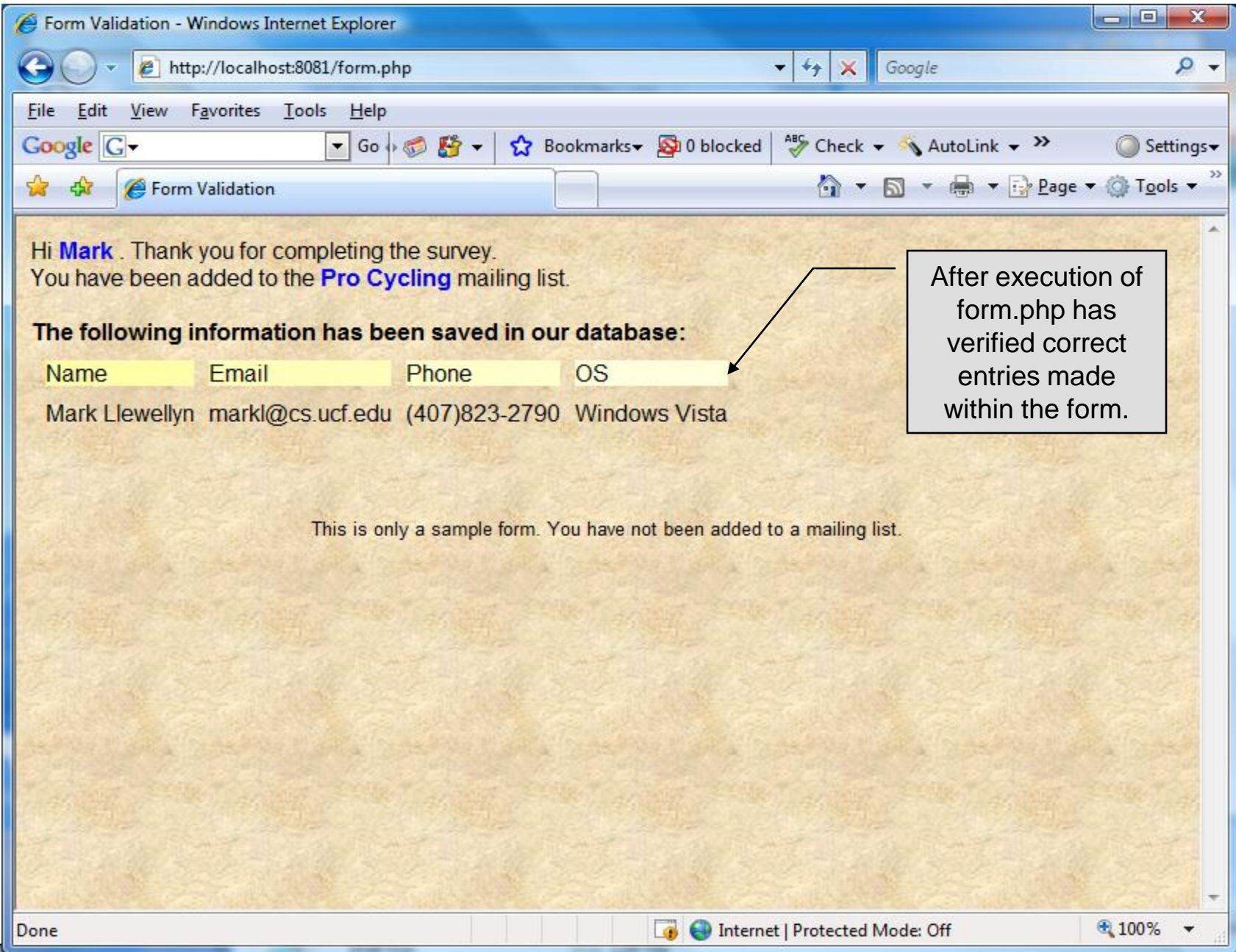
Which operating system are you currently using?

Windows Vista  Windows XP  Windows 2000

Linux  Other

Internet | Protected Mode: Off 100%





Sample form to take user input in XHTML - Windows Internet Explorer

http://localhost:8081/form.html

File Edit View Favorites Tools Help

Google G Go Bookmarks 0 blocked Check AutoLink Settings

Sample form to take user input in XHTML

# This is a sample registration form.

Please fill in all fields and click Register.

User Information

Please fill out the fields below.

First Name Mark

Last Name Llewellyn

Email markl@cs.ucf.edu

Phone 407-323-2790

Must be in the form (555)555-5555

Publications

Which publication would you like information about?

Pro Cycling

Operating System

Which operating system are you currently using?

Windows Vista  Windows XP  Windows 2000

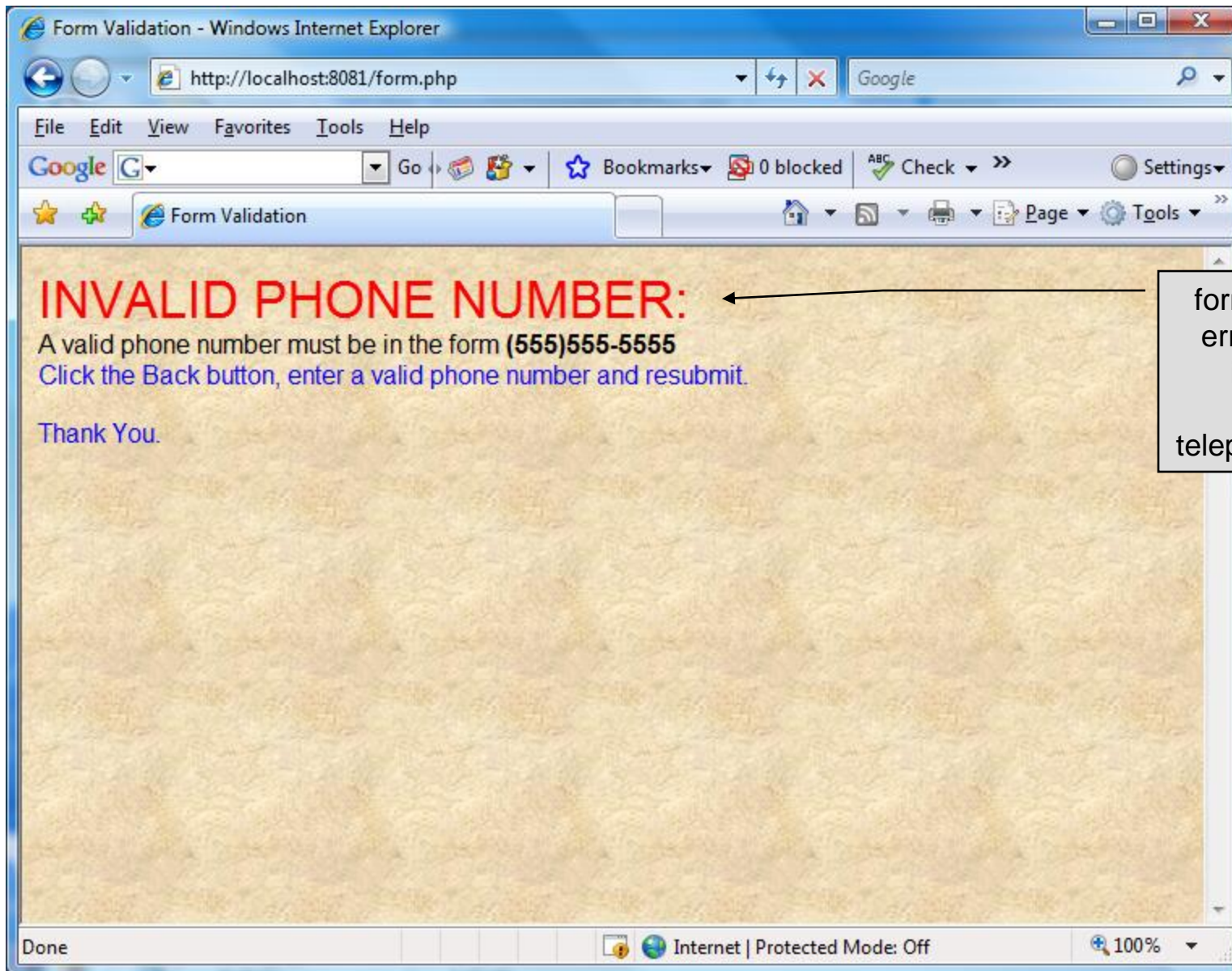
Linux  Other

Register

Done Internet | Protected Mode: Off 100%

User enters an improperly formatted telephone number in the form.





# How the Form Example Works

- The `action` attribute of the form element, indicates that when the user clicks the `Register` button, the form data will be posted to `form.php` for processing.
- Using `method = "post"` appends the form data to the browser request that contains the protocol (i.e., HTTP) and the requested resource's URL. Scripts located on the web server's machine (or accessible through the network) can access the form data sent as part of the request.
- Each of the form's input fields are assigned a unique name. When `Register` is clicked, each field's name and value are sent to the web server.
- Script `form.php` then accesses the value for each specific field through the global array `$_POST`.





## How the Form Example Works (cont.)

- The superglobal arrays are associative arrays predefined by PHP that hold variable acquired from the user input, the environment, or the web server and are accessible in any variable scope.
  - If the information from the form had been submitted via the HTTP method `get`, then the superglobal array `$_GET` would contain the name-value pairs.
- Since the HTML form and the PHP script “communicate” via the name-value pairs, it is a good idea to make the XHTML object names meaningful so that the PHP script that retrieves the data is easier to understand.



# Register\_globals

- In PHP versions 4.2 and higher, the directive `register_globals` is set to `Off` by default for security reasons.
- Turning off `register_globals` means that all variables sent from an XHTML form to a PHP document now must be accessed using the appropriate superglobal array (either `$_POST` or `$_GET`).
- When this directive was turned `On`, as was the default case in PHP versions prior to 4.2, PHP created an individual global variable corresponding to each form field.



# Validation of Form Generated Data

- The form example illustrates an important concept in the validation of user input. In this case, we simply checked the validity of the format of the telephone number entered by the client user.
- In general, it is crucial to validate information that will be entered into database or used in mailing lists. For example, validation can be used to ensure that credit-card numbers contain the proper number of digits before the numbers are encrypted to a merchant.
- In this case, the form.php script is implementing the **business logic** or **business rules** for our application.



# Pattern Matching in PHP

- For powerful string comparisons (pattern matching), PHP provides functions `ereg` and `preg_match`, which use regular expressions to search a string for a specified pattern.
- Function `ereg` uses **Portable Operating System Interface (POSIX)** extended regular expressions.
  - POSIX-extended regular expressions are a standard to which PHP regular expression conform.
- Function `preg_match` provides **Perl-compatible regular expressions**.
- Perl-compatible regular expressions are more widely used than POSIX regular expressions. PHP's support for Perl-compatible regular expressions eases migration from Perl to PHP. The following examples illustrate these concepts.



# expression.php - Example

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<!-- expression.php -->
<!-- Using regular expressions -->
<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <title>Regular expressions</title>
  </head>
  <body>
    <?php
      $search = "Now is the time";
      print( "Test string is: '$search'<br /><br />" );
      // call function ereg to search for pattern 'Now' in variable search
      if ( ereg( "Now", $search ) )
        print( "String 'Now' was found.<br />" );

      // search for pattern 'Now' in the beginning of the string
      if ( ereg( "^Now", $search ) )
        print( "String 'Now' found at beginning of the line.<br />" );

      // search for pattern 'Now' at the end of the string
      if ( ereg( "Now$", $search ) )
        print( "String 'Now' was found at the end of the line.<br />" );
```

^ matches at beginning  
of a string

\$ matches at end of a  
string



Uses a regular expression to match a word ending in "ow".

```
// search for any word ending in 'ow'
if ( ereg( "[[:<:]]([a-zA-Z]*ow)[[:>:]]", $search,
    $match ) )
    print( "Word found ending in 'ow': " .
        $match[ 1 ] . "<br />" );

// search for any words beginning with 't'
print( "Words beginning with 't' found: " );

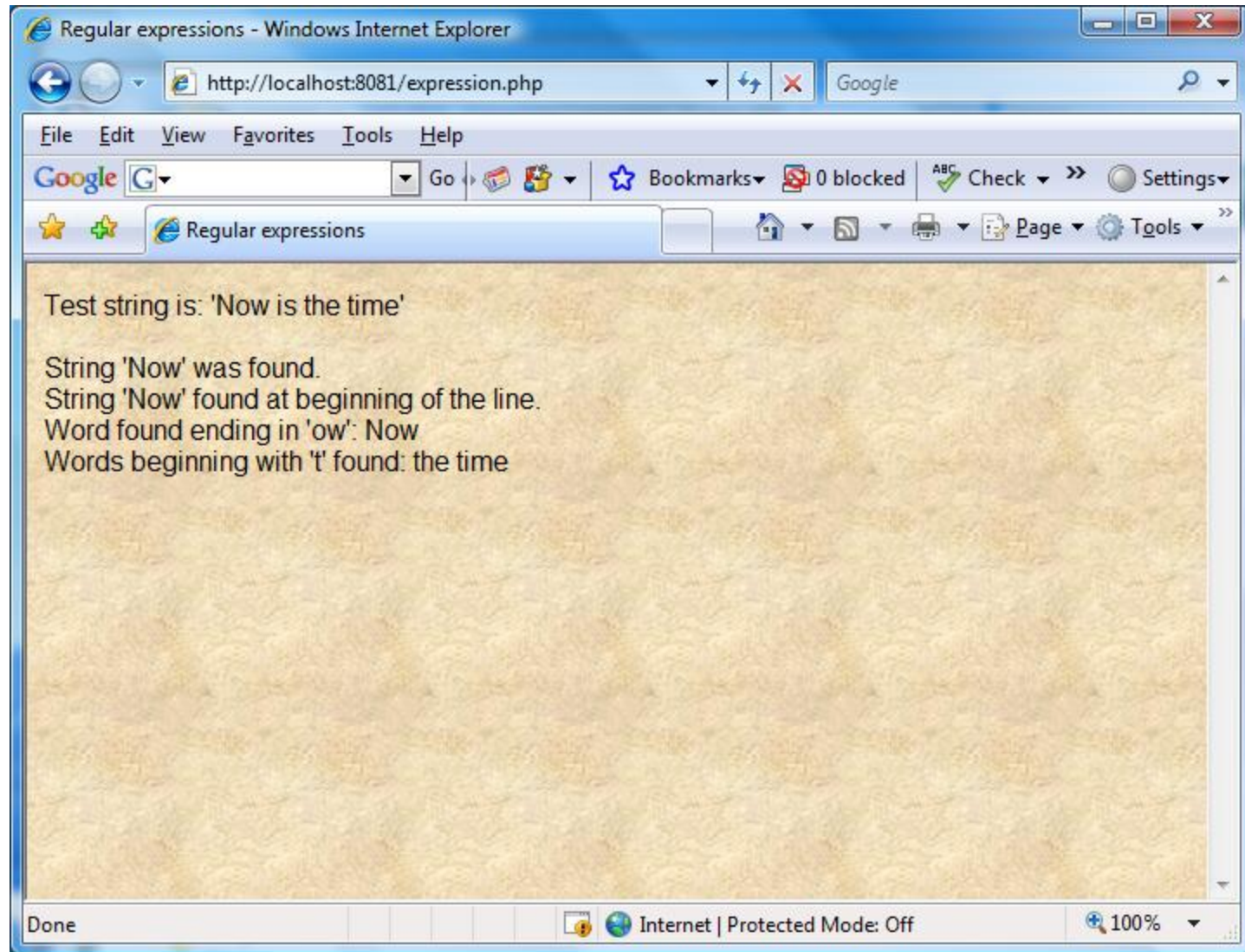
while ( eregi( "[[:<:]](t[[:alpha:]]+)[[:>:]]",
    $search, $match ) ) {
    print( $match[ 1 ] . " " );

    // remove the first occurrence of a word beginning
    // with 't' to find other instances in the string
    $search = ereg_replace( $match[ 1 ], "", $search );
}

print( "<br />" );
?>
</body>
</html>
```



# Output From `expression.php` - Example



# Verifying a Username and Password Using PHP

- It is often the case that a private website is created which is accessible only to certain individuals.
- Implementing privacy generally involves username and password verification.
- In the next example, we'll see an XHTML form that queries a user for a username and password. The fields `USERNAME` and `PASSWORD` are posted to the PHP script `verify.php` for verification.
  - For simplicity, data is not encrypted before sending it to the server.
  - For more information on PHP encryption functions visit: <http://www.php.net/manual/en/ref.mcrypt.php>.





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

```
<!-- password.html -->
<!-- XHTML form sent to password.php for verification -->
```

```
<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <title>Verifying a username and a password.</title>
    <style type = "text/css">
      td { background-color: #DDDDDD }
    </style>
  </head>
  <body style = "font-family: arial">
    <p style = "font-size: 18pt">
      <font color=red><B> Welcome to the COP 4610 High Security WebPage </B></font><HR>
    <p style = "font-size: 13pt">
      Type in your username and password below.
      <br />
      <span style = "color: #0000FF; font-size: 10pt;
        font-weight: bold">
        Note that password will be sent as plain text - encryption not used in this application
      </span>
    </p>
```



```
<!-- post form data to password.php -->
<form action = "password.php" method = "post">
  <br />
  <table border = "3" cellspacing = "3" style = "height: 90px; width: 150px;
  font-size: 10pt" cellpadding = "1">
    <tr>
      <td colspan = "3"> <strong>Username:</strong> </td>
    </tr>
    <tr>
      <td colspan = "3"> <input size = "40" name = "USERNAME"
      style = "height: 22px; width: 115px" /> </td>
    </tr>
    <tr>
      <td colspan = "3"> <strong>Password:</strong> </td>
    </tr>
    <tr>
      <td colspan = "3"> <input size = "40" name = "PASSWORD"
      style = "height: 22px; width: 115px" type = "password" /> <br/></td>
    </tr>
    <tr>
      <td colspan = "1">
        <input type = "submit" name = "Enter" value = "Enter" style = "height: 23px;
        width: 47px" /> </td>
      <td colspan = "2"> <input type = "submit" name = "NewUser" value = "New User"
      style = "height: 23px" />
    </td>
    </tr>
  </table> </form> <HR> </body> </html>
```



```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<!-- password.php -->
<!-- Searching a database for usernames and passwords. -->

<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <?php
      extract( $_POST );
      // check if user has left USERNAME or PASSWORD field blank
      if ( !$USERNAME || !$PASSWORD ) {
        fieldsBlank();
        die();
      }
      // check if the New User button was clicked
      if ( isset( $NewUser ) ) {
        // open password.txt for writing using append mode
        if ( !( $file = fopen( "password.txt", "a" ) ) ) {

          // print error message and terminate script
          // execution if file cannot be opened
          print( "<title>Error</title></head><body>
            Could not open password file
            </body></html>" );
          die();
        }
      }
    }
  }
}
```



```
// write username and password to file and call function userAdded
fputs( $file, "$USERNAME,$PASSWORD\n" );
userAdded( $USERNAME );
}
else {

// if a new user is not being added, open file
// for reading
if ( !( $file = fopen( "password.txt", "r" ) ) ) {
    print( "<title>Error</title></head>
        <body>Could not open password file
        </body></html>" );
    die();
}

$userVerified = 0;

// read each line in file and check username and password
while ( !feof( $file ) && !$userVerified ) {

    // read line from file
    $line = fgets( $file, 255 );

    // remove newline character from end of line
    $line = chop( $line );

    // split username and password using comma delimited string
    $field = split( ",", $line, 2 );
```



```
// verify username
if ( $USERNAME == $field[ 0 ] ) {
    $userVerified = 1;

    // call function checkPassword to verify user's password
    if ( checkPassword( $PASSWORD, $field ) == true )
        accessGranted( $USERNAME );
    else
        wrongPassword();
}
}

// close text file
fclose( $file );

// call function accessDenied if username has not been verified
if ( !$userVerified )
    accessDenied();
}

// verify user password and return a boolean
function checkPassword( $userpassword, $filedata )
{
    if ( $userpassword == $filedata[ 1 ] )
        return true;
    else
        return false;
}
```



```
// print a message indicating the user has been added
function userAdded( $name ) {
    print( "<title>Thank You</title></head>
        <body style = \"font-family: arial;
        font-size: 1em; color: blue\">
        <strong>You have been added
        to the user list, $name. Please remember your password.
        <br />Enjoy the site.</strong>" );
}

// print a message indicating permission has been granted
function accessGranted( $name ) {
    print( "<title>Thank You</title></head>
        <body style = \"font-family: arial;
        font-size: 1em; color: blue\">
        <strong>Permission has been
        granted, $name. <br />
        Enjoy the site.</strong>" );
}

// print a message indicating password is invalid
function wrongPassword() {
    print( "<title>Access Denied</title></head>
        <body style = \"font-family: arial;
        font-size: 1em; color: red\">
        <strong>You entered an invalid
        password.<br />Access has
        been denied.</strong>" );
}
```



```
// print a message indicating access has been denied
function accessDenied() {
    print( "<title>Access Denied</title></head>
        <body style = \"font-family: arial;
        font-size: 1em; color: red\">
        <strong>
        You were denied access to this server.
        <br /></strong>" );
}

// print a message indicating that fields
// have been left blank
function fieldsBlank() {
    print( "<title>Access Denied</title></head>
        <body style = \"font-family: arial;
        font-size: 1em; color: red\">
        <strong>
        Please fill in all form fields.
        <br /></strong>" );
}
?>
</body>
</html>
```



Verifying a username and a password. - Windows Internet Explorer

http://localhost:8081/password.html

File Edit View Favorites Tools Help

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Verifying a username and a password.

## Welcome to the CNT 4714 High Security WebPage

Type in your username and password below.  
Note that password will be sent as plain text - encryption not used in this application

Username:

Password:

Enter New User

Execution of password.html. Client-side XHTML form. User clicks on New User button to enter their information.

Thank You - Windows Internet Explorer

http://localhost:8081/password.php

File Edit View Favorites Tools Help

Google G

Thank You

You have been added to the user list, Mark Llewellyn. Please remember your password. Enjoy the site.

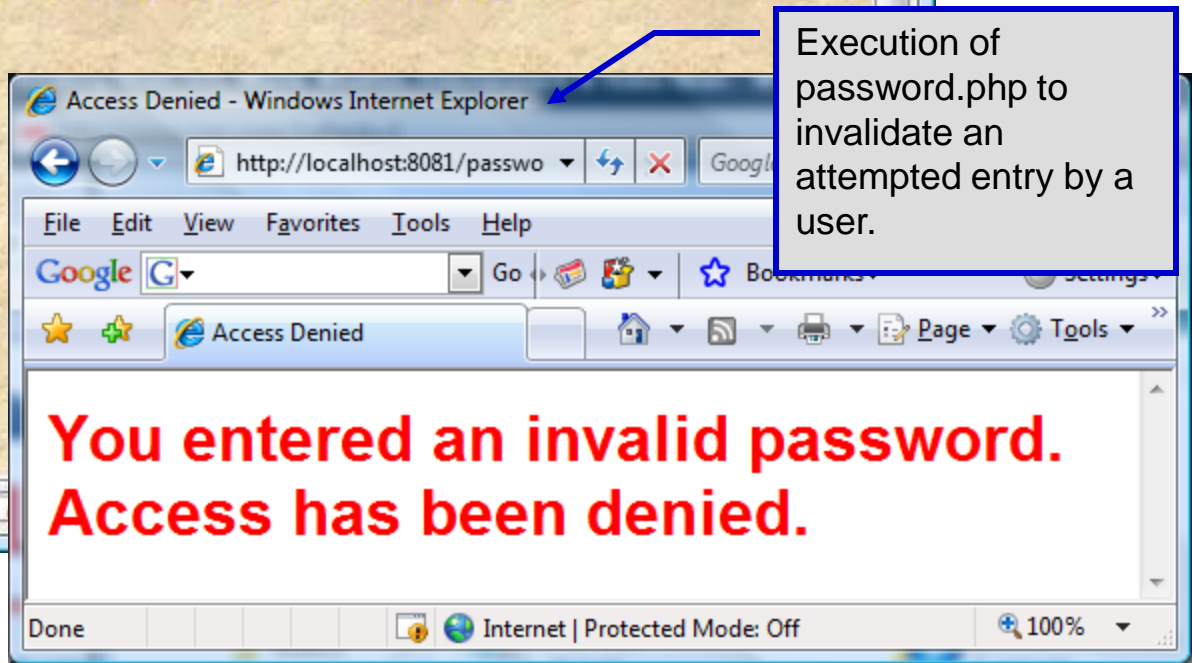
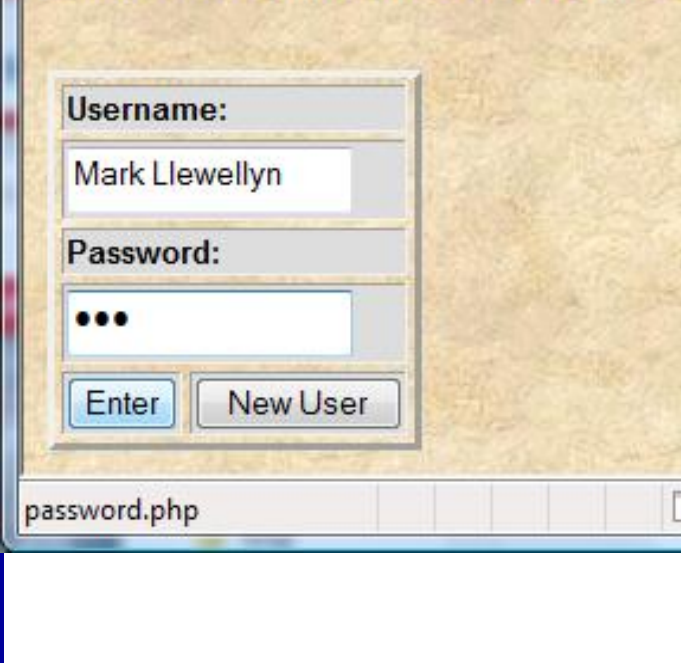
Execution of password.php to enter a new user.







Execution of password.html. Client-side XHTML form. User clicks on Enter button to submit and verify their information.

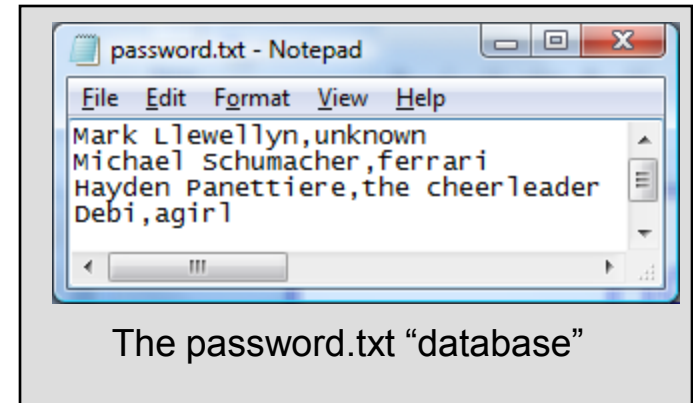


Execution of password.php to invalidate an attempted entry by a user.



# How password.php Works

- The PHP script `password.php` verifies the client's username and password by querying a database. For this example, the “database” of usernames and passwords is just a text file (for simplicity). Existing users are validated against this file, and new users are appended to it.
- Whether we are dealing with a new user is determined by calling function `isset` to test if variable `$NewUser` has been set.
- When the user submits the `password.html` form to the server, they click either **Enter** or **New User** button. After calling function `extract`, either variable `$NewUser` or `$Enter` is created depending on which button was selected. If `$NewUser` has not been set, we assume the user clicked **Enter**.

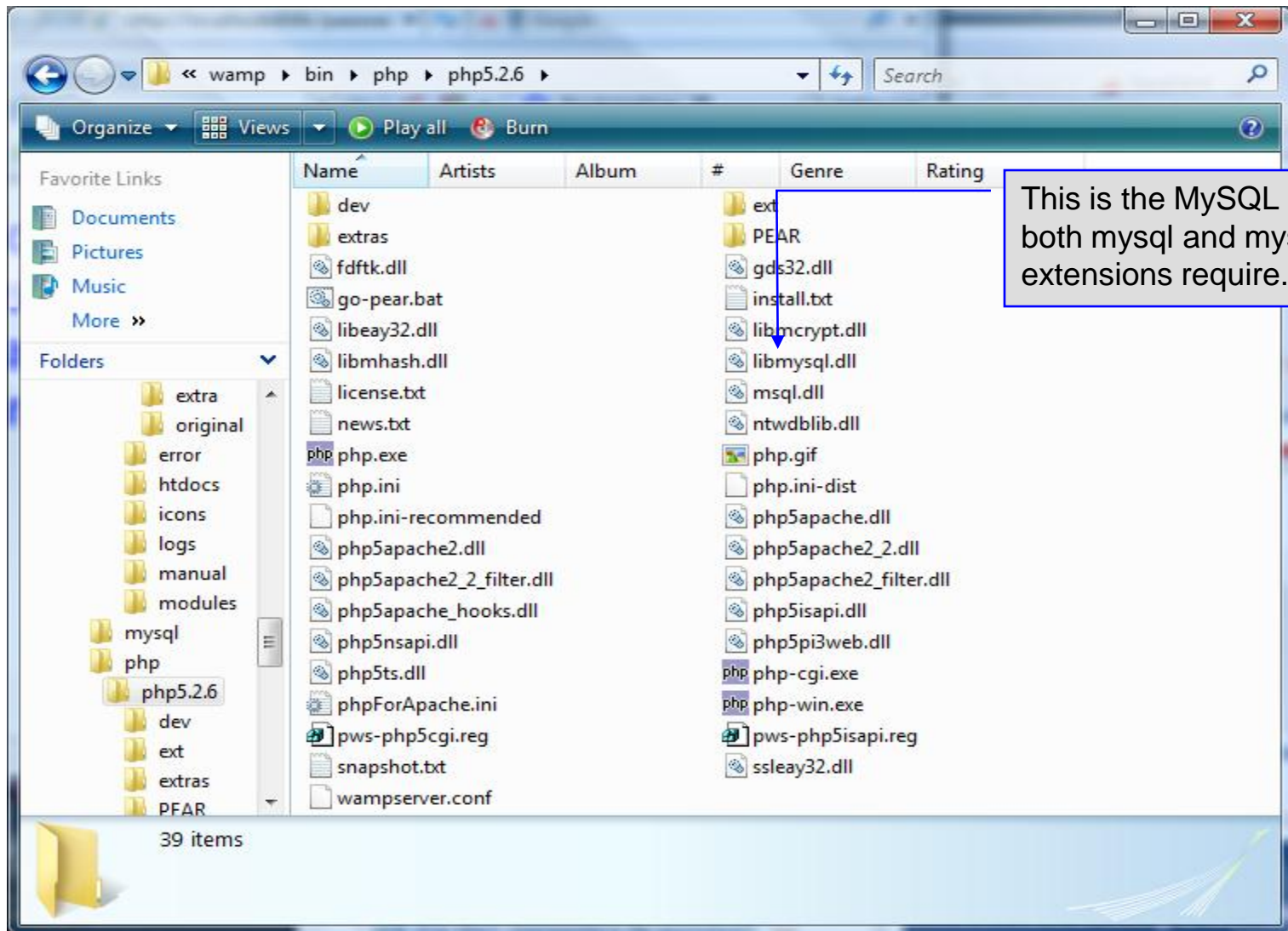


# PHP and Database Connectivity

- PHP offers built-in support for a wide variety of database systems from Unix DBM through relational systems such as MySQL to full size commercial systems like Oracle.
- We'll continue to use MySQL as the underlying database system so that you can easily compare the work we've done with MySQL using Java servlets and JSPs.
- Before you go any further in these notes you must configure PHP to access MySQL databases. Beginning with PHP 5, MySQL is not enabled by default in PHP, nor is the MySQL library bundled with PHP.
  - Versions of MySQL greater than 4.1.0 use MySQLi extensions.
  - Versions of MySQL less than 4.1.0 use MySQL extensions.



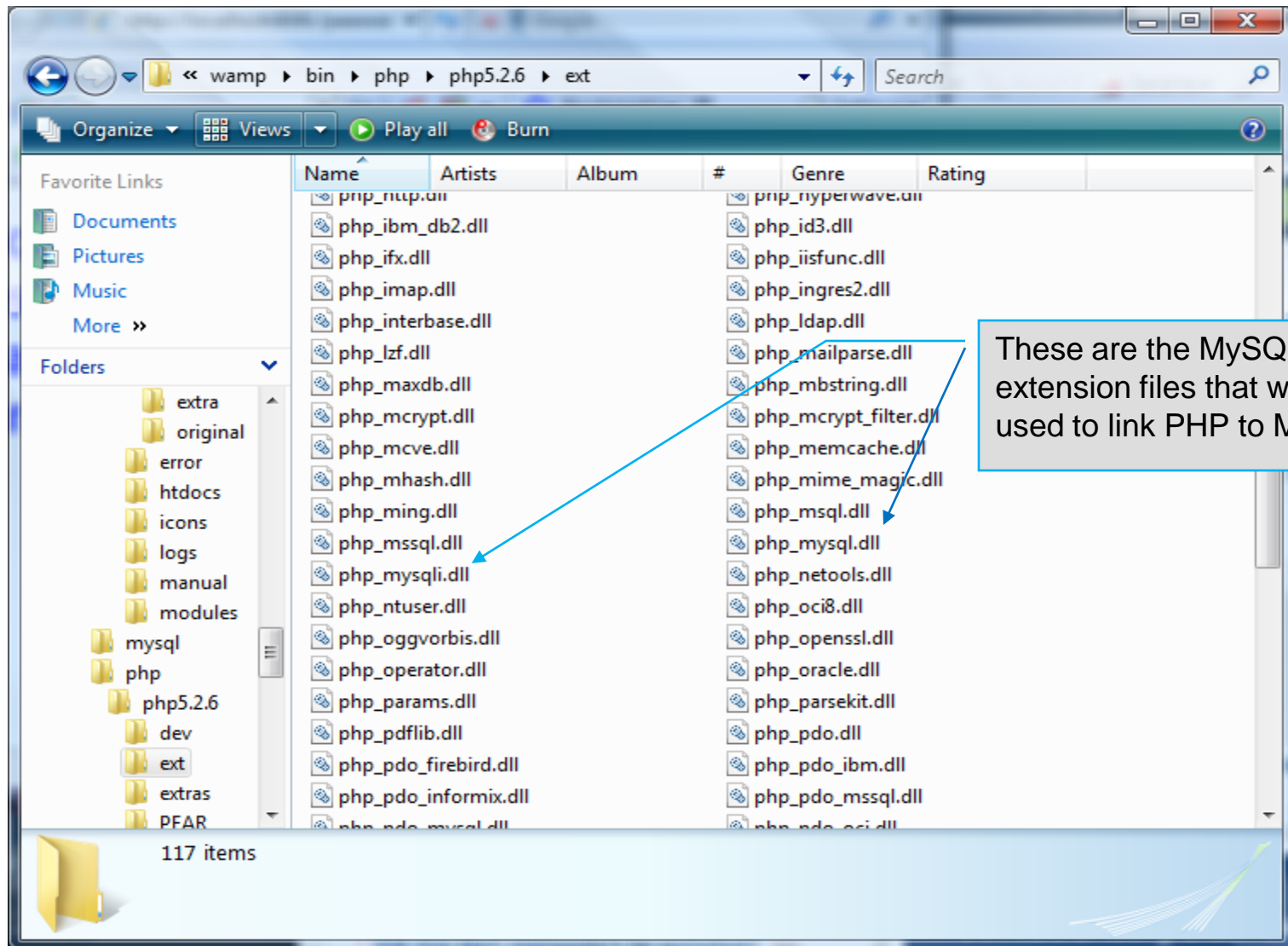
# PHP and Database Connectivity (cont.)



This is the MySQL library that both mysql and mysqli extensions require.



# PHP and Database Connectivity (cont.)



# PHP and Database Connectivity (cont.)

```
File Edit Format View Help
;extension=php_ldap.dll
;extension=php_mcrypt.dll
;extension=php_mhash.dll
;extension=php_mime_magic.dll
;extension=php_ming.dll
;extension=php_mssql.dll
;extension=php_mysql.dll
extension=php_mysql.dll
extension=php_mysqli.dll
;extension=php_oci8.dll
;extension=php_openssl.dll
;extension=php_oracle.dll
;extension=php_pdf.dll
;extension=php_pgsq1.dll
;extension=php_sfmop.dll
;extension=php_snmp.dll
;extension=php_sockets.dll
;extension=php_sybase_ct.dll
;extension=php_tidy.dll
;extension=php_xmlrpc.dll
;extension=php_xsl.dll
;extension=php_zip.dll
extension=php_pdo.dll
extension=php_pdo_sqlite.dll
;extension=php_pdo_firebird.dll
;extension=php_pdo_mssql.dll
;extension=php_pdo_mysql.dll
;extension=php_pdo_oci.dll
;extension=php_pdo_oci8.dll
;extension=php_pdo_odbc.dll
;extension=php_pdo_pgsq1.dll
```

These two extensions will not be commented out. At loadtime, these extensions will now be included in the PHP environment, provided that the file php.ini is set..



http://localhost:8081/info.php

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A Simple PHP Document

PHP should be configured for MySQL. You can verify that the php.ini file was properly read and the MySQL extensions are loaded by running the info.php script and looking for these entries.

**mysql**

MySQL Support	enabled
Active Persistent Links	0
Active Links	0
Client API version	5.0.51a

Directive	Local Value	Master Value
mysql.allow_persistent	On	On
mysql.connect_timeout	60	60
mysql.default_host	no value	no value
mysql.default_password	no value	no value
mysql.default_port	no value	no value
mysql.default_socket	no value	no value
mysql.default_user	no value	no value
mysql.max_links	Unlimited	Unlimited
mysql.max_persistent	Unlimited	Unlimited
mysql.trace_mode	Off	Off

**mysqli**

Mysqli Support	enabled
Client API library version	5.0.51a



# PHP and Database Connectivity (cont.)

- PHP contains a fairly extensive set of commands that can be used to access and manipulate MySQL databases.
- A very brief listing of some of these commands appears on the next page.
- For a complete listing see:

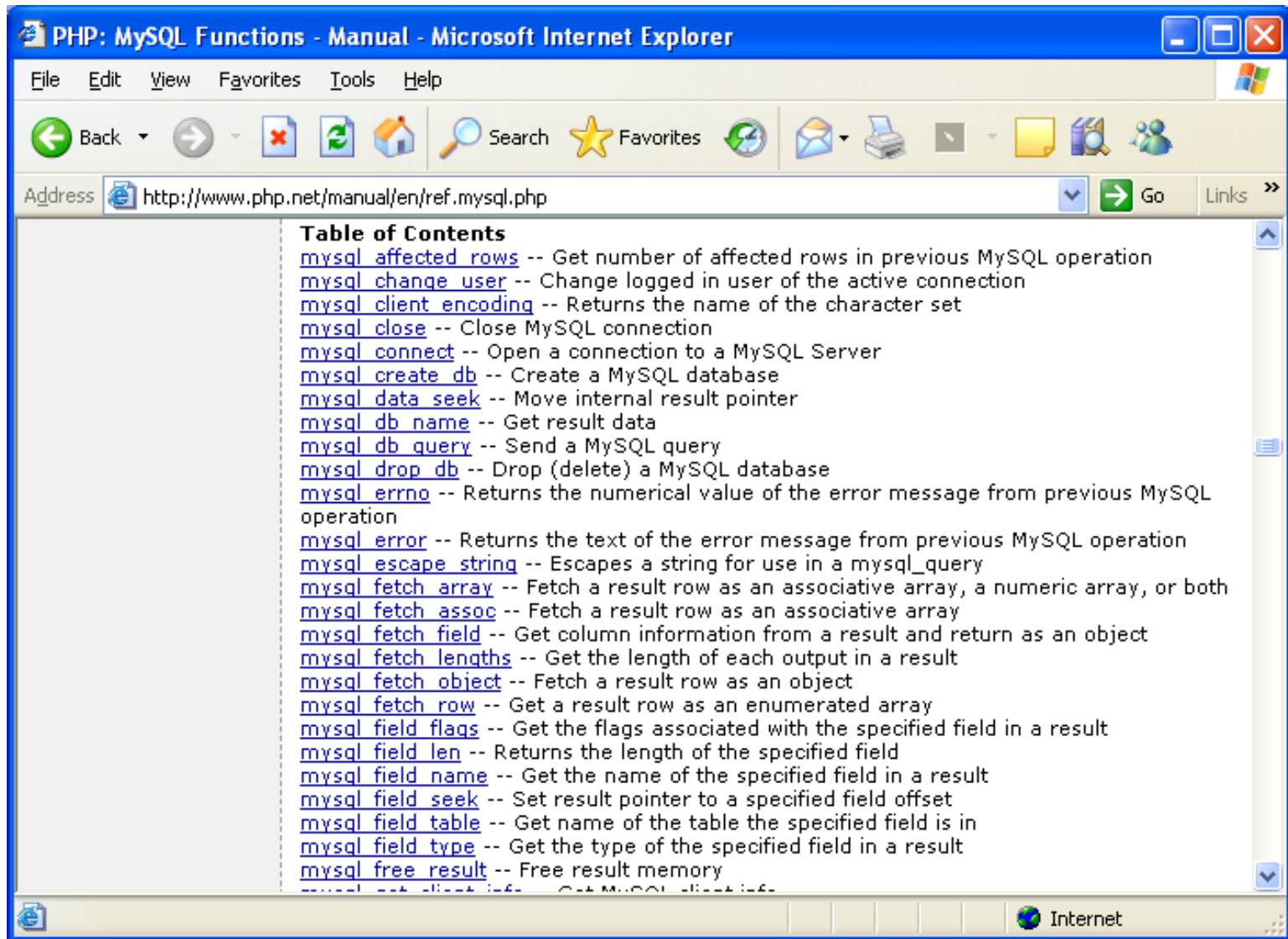
<http://us2.php.net/manual/en/print/ref.mysql.php>.

<http://us2.php.net/manual/en/print/ref.mysql.php>.





# Portion of `mysql.dll` Extension



PHP: MySQL Functions - Manual - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Recycle Bin Mail Print Folder Favorites People

Address <http://www.php.net/manual/en/ref.mysql.php> Go Links >>

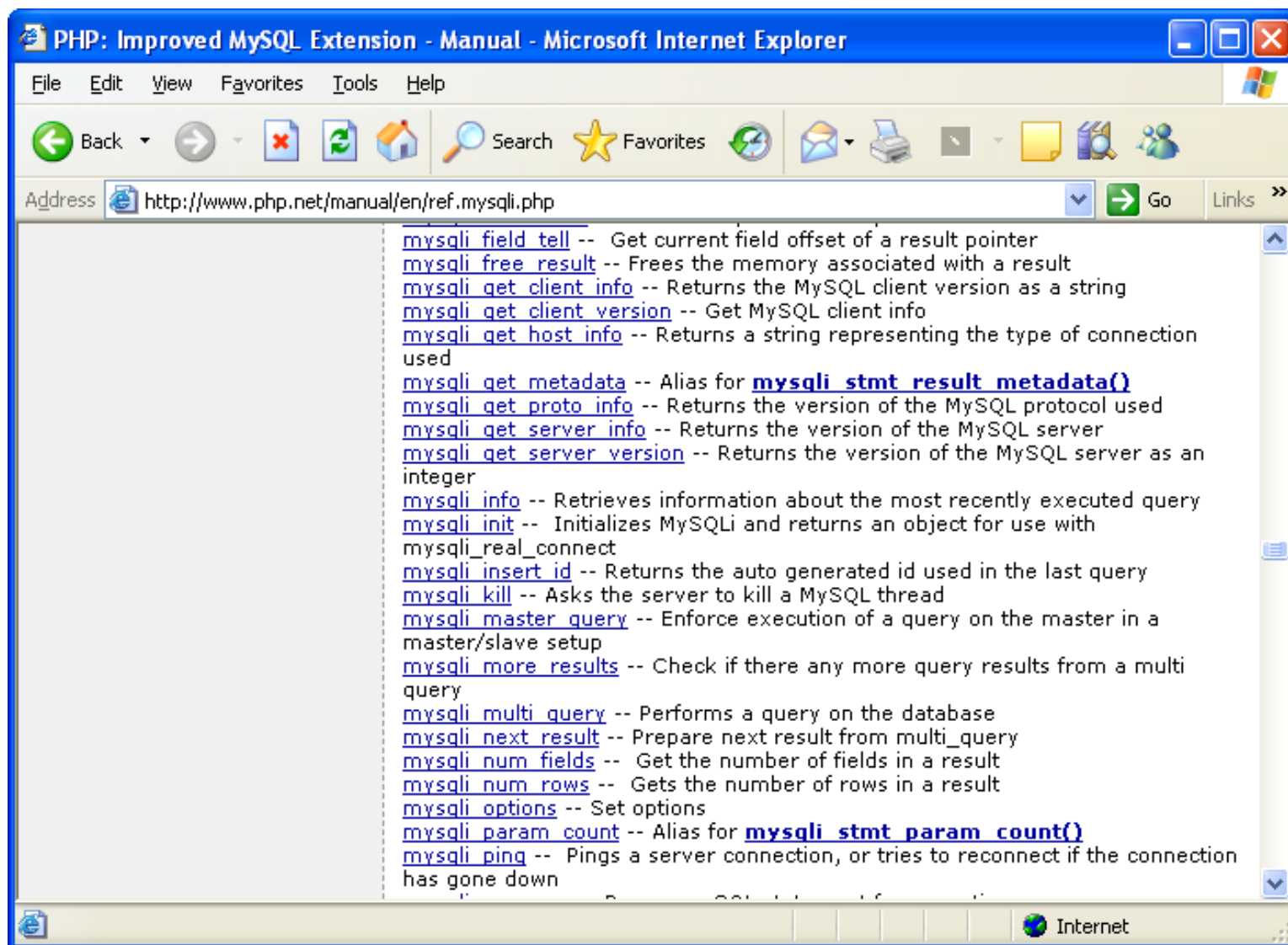
### Table of Contents

- [mysql\\_affected\\_rows](#) -- Get number of affected rows in previous MySQL operation
- [mysql\\_change\\_user](#) -- Change logged in user of the active connection
- [mysql\\_client\\_encoding](#) -- Returns the name of the character set
- [mysql\\_close](#) -- Close MySQL connection
- [mysql\\_connect](#) -- Open a connection to a MySQL Server
- [mysql\\_create\\_db](#) -- Create a MySQL database
- [mysql\\_data\\_seek](#) -- Move internal result pointer
- [mysql\\_db\\_name](#) -- Get result data
- [mysql\\_db\\_query](#) -- Send a MySQL query
- [mysql\\_drop\\_db](#) -- Drop (delete) a MySQL database
- [mysql\\_errno](#) -- Returns the numerical value of the error message from previous MySQL operation
- [mysql\\_error](#) -- Returns the text of the error message from previous MySQL operation
- [mysql\\_escape\\_string](#) -- Escapes a string for use in a mysql\_query
- [mysql\\_fetch\\_array](#) -- Fetch a result row as an associative array, a numeric array, or both
- [mysql\\_fetch\\_assoc](#) -- Fetch a result row as an associative array
- [mysql\\_fetch\\_field](#) -- Get column information from a result and return as an object
- [mysql\\_fetch\\_lengths](#) -- Get the length of each output in a result
- [mysql\\_fetch\\_object](#) -- Fetch a result row as an object
- [mysql\\_fetch\\_row](#) -- Get a result row as an enumerated array
- [mysql\\_field\\_flags](#) -- Get the flags associated with the specified field in a result
- [mysql\\_field\\_len](#) -- Returns the length of the specified field
- [mysql\\_field\\_name](#) -- Get the name of the specified field in a result
- [mysql\\_field\\_seek](#) -- Set result pointer to a specified field offset
- [mysql\\_field\\_table](#) -- Get name of the table the specified field is in
- [mysql\\_field\\_type](#) -- Get the type of the specified field in a result
- [mysql\\_free\\_result](#) -- Free result memory
- [mysql\\_get\\_client\\_info](#) -- Get MySQL client info

Internet



# Portion of `mysqli.dll` Extension



The screenshot shows a Microsoft Internet Explorer browser window with the title "PHP: Improved MySQL Extension - Manual - Microsoft Internet Explorer". The address bar displays "http://www.php.net/manual/en/ref.mysqli.php". The main content area lists various `mysqli` functions and their descriptions:

- [mysqli\\_field\\_tell](#) -- Get current field offset of a result pointer
- [mysqli\\_free\\_result](#) -- Frees the memory associated with a result
- [mysqli\\_get\\_client\\_info](#) -- Returns the MySQL client version as a string
- [mysqli\\_get\\_client\\_version](#) -- Get MySQL client info
- [mysqli\\_get\\_host\\_info](#) -- Returns a string representing the type of connection used
- [mysqli\\_get\\_metadata](#) -- Alias for [mysqli\\_stmt\\_result\\_metadata\(\)](#)
- [mysqli\\_get\\_proto\\_info](#) -- Returns the version of the MySQL protocol used
- [mysqli\\_get\\_server\\_info](#) -- Returns the version of the MySQL server
- [mysqli\\_get\\_server\\_version](#) -- Returns the version of the MySQL server as an integer
- [mysqli\\_info](#) -- Retrieves information about the most recently executed query
- [mysqli\\_init](#) -- Initializes MySQLi and returns an object for use with `mysqli_real_connect`
- [mysqli\\_insert\\_id](#) -- Returns the auto generated id used in the last query
- [mysqli\\_kill](#) -- Asks the server to kill a MySQL thread
- [mysqli\\_master\\_query](#) -- Enforce execution of a query on the master in a master/slave setup
- [mysqli\\_more\\_results](#) -- Check if there any more query results from a multi query
- [mysqli\\_multi\\_query](#) -- Performs a query on the database
- [mysqli\\_next\\_result](#) -- Prepare next result from `multi_query`
- [mysqli\\_num\\_fields](#) -- Get the number of fields in a result
- [mysqli\\_num\\_rows](#) -- Gets the number of rows in a result
- [mysqli\\_options](#) -- Set options
- [mysqli\\_param\\_count](#) -- Alias for [mysqli\\_stmt\\_param\\_count\(\)](#)
- [mysqli\\_ping](#) -- Pings a server connection, or tries to reconnect if the connection has gone down



# PHP and Database Connectivity (cont.)

- Now that you have PHP set to accept MySQL extensions, let's connect to the bike database that we used for examples with Java servlets and JSPs.
- The following example is a simple database connection process in PHP where the client interacts with the database from an XHTML form that simply asks them to select which attributes from the bikes table that they would like to display. This is done through the `data.html` file.
- When the client clicks the submit query button, the `database.php` script executes by connecting to the database, posting the query, retrieving the results, and displaying them to the client.



```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<!-- data.html -->
<!-- Querying a MySQL Database From a PHP Script -->

<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>    <title>Sample Database Query From PHP</title>  </head>
  <body style = "background-color: #545454" background=image1.jpg >
    <h2 style = "font-family: arial color: blue"> Querying a MySQL database from a PHP Script. </h2>
    <form method = "post" action = "database.php">
      <p>Select a field to display:
        <!-- add a select box containing options for SELECT query -->
        <select name = "select">
          <option selected = "selected">*</option>
          <option>bikename</option>
          <option>size</option>
          <option>color</option>
          <option>cost</option>
          <option>purchased</option>
          <option>mileage</option>
        </select>
      </p>
      <input type = "submit" value = "Send Query" style = "background-color: blue;
        color: yellow; font-weight: bold" />
    </form>
  </body> </html>
```



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

```
<!-- database.php -->
```

```
<!-- Program to query a database and send results to the client. -->
```

```
<html xmlns = "http://www.w3.org/1999/xhtml">
```

```
<head> <title>Database Search Results</title> </head>
```

```
<body style = "font-family: arial, sans-serif"
```

```
style = "background-color: #4A766E" background=image1.jpg link=blue vlink=blue>
```

```
<?php
```

```
extract( $_POST );
```

```
// build SELECT query
```

```
$query = "SELECT " . $select . " FROM bikes";
```

```
// Connect to MySQL
```

```
if ( !( $database = mysqli_connect( "localhost",
"root", "root", bikedb ) ) )
```

```
die( "Could not connect to database" );
```

Default query is to select the attributes chosen by the client for use in a SELECT query.

Connect to MySQL database. URL, username, password, and database all specified.



```
// query bikedb database
if ( !( $result = mysql_query( $database, $query ) ) ) {
    print( "Could not execute query! <br />" );
    die( mysql_error() );
}
?>
```

```
<h3 style = "color: blue">
Database Search Results</h3>
<table border = "1" cellpadding = "3" cellspacing = "3"
style = "background-color: #00FFFF"> <!-- ADD8E6 -->
```

```
<?php
    // fetch meta-data
    $metadata = mysqli_fetch_fields( $result);
    print("<tr>");
    for ($i=0; $i<count($metadata); $i++){
        print("<td>");
        printf("%s", $metadata[$i]->name);
        print("</td>");
    }
    print("</tr>");
```

Get metadata for  
the query

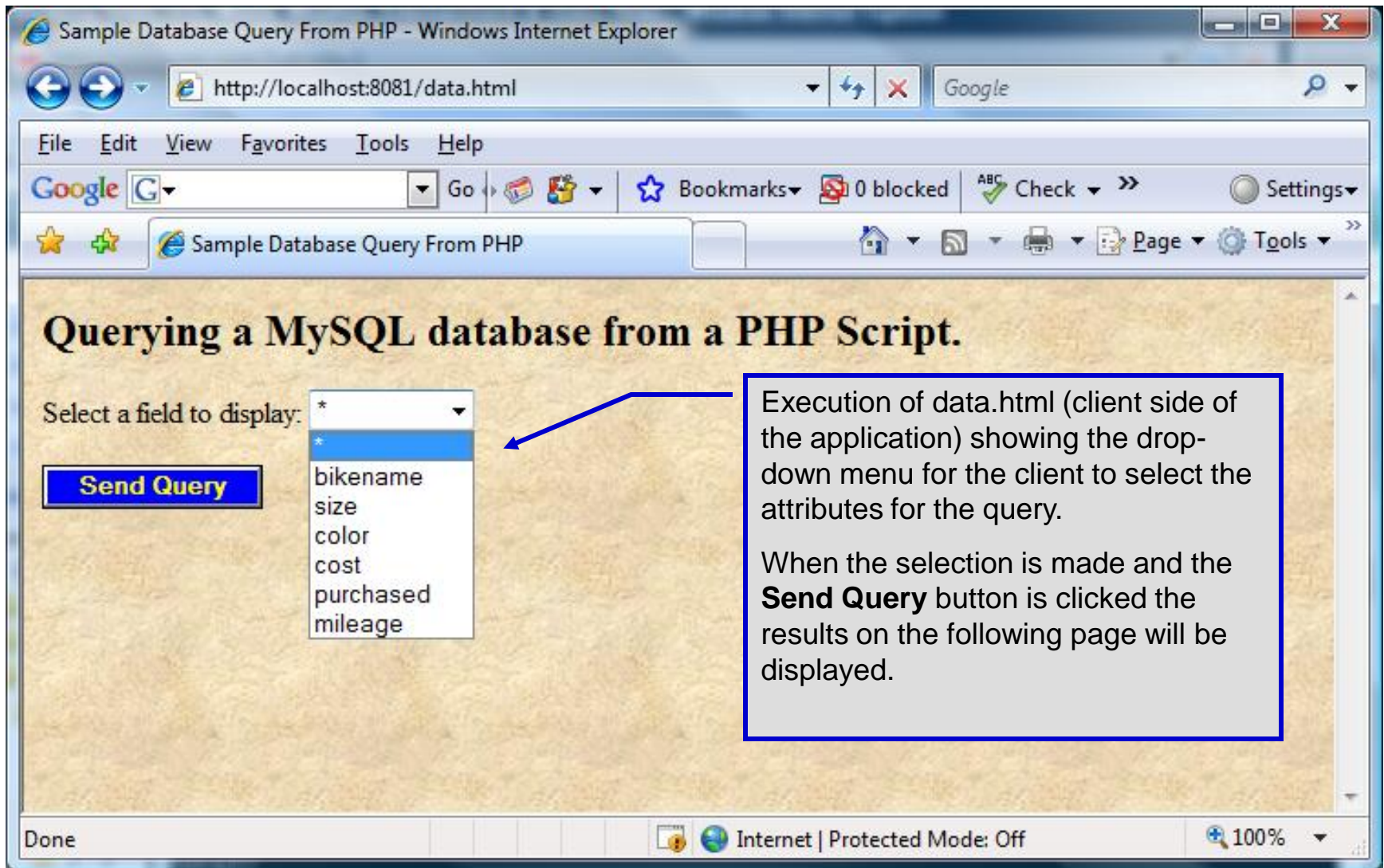
Display metadata in the  
top row of the table



```
// fetch each record in result set
for ( $counter = 0;
    $row = mysql_fetch_row( $result );
    $counter++){
    // build table to display results
    print( "<tr>" );
    foreach ( $row as $key => $value )
        print( "<td>$value</td>" );
    print( "</tr>" );
}
mysql_close( $database );
?>
</table>
<br />Your search yielded <strong>
    <?php print( "$counter" ) ?> results.<br /><br /></strong>
<h5>Please email comments to
    <a href = "mailto:markl@cs.ucf.edu">
        markl@cs.ucf.edu
    </a>
</h5>
</body></html>
```



# Execution of data.html – Client side



Sample Database Query From PHP - Windows Internet Explorer

http://localhost:8081/data.html

File Edit View Favorites Tools Help

Google G Go Bookmarks 0 blocked Check Settings

Sample Database Query From PHP

## Querying a MySQL database from a PHP Script.

Select a field to display:

- \*
- bikename
- size
- color
- cost
- purchased
- mileage

**Send Query**

Execution of data.html (client side of the application) showing the drop-down menu for the client to select the attributes for the query.

When the selection is made and the **Send Query** button is clicked the results on the following page will be displayed.

Done Internet | Protected Mode: Off 100%





Database Search Results - Windows Internet Explorer

http://localhost:8081/database.php

File Edit View Favorites Tools Help

Google G Go Bookmarks 0 blocked Check Settings

Database Search Results

### Database Search Results

bikename	size	color	cost	purchased	mileage
Battaglin Carrera	60	red/white	4000	2001-03-10	11200
Bianchi Corse Evo 4	58	celeste	5700	2004-12-02	300
Bianchi Evolution 3	58	celeste	4800	2003-11-12	2000
Colnago Dream Rabobank	60	blue/orange	5500	2002-07-07	4300
Colnago Superissimo	59	red	3800	1996-03-01	13000
Eddy Merckx Domo	58	blue/black	5300	2004-02-02	0
Eddy Merckx Molteni	58	orange	5100	2004-08-12	0
Gianni Motta Personal	59	red/green	4400	2000-05-01	8700
Gios Torino Super	60	blue	2000	1998-11-08	9000
Schwinn Paramount P14	60	blue	1800	1992-03-01	200

Your search yielded **10 results**.

Please email comments to [markl@cs.ucf.edu](mailto:markl@cs.ucf.edu)

Done Internet | Protected Mode: Off 100%

Results of query **SELECT \* FROM bikes**. Display indicates that 10 rows were included in the result.



# Cookies

- A **cookie** is a text file that a Web site stores on a client's computer to maintain information about the client during and between browsing sessions.
- A Web site can store a cookie on a client's computer to record user preferences and other information that the Web site can retrieve during the client's subsequent visits. For example, many Web sites use cookies to store client's zipcodes. The Web site can retrieve the zipcode from the cookie and provide weather reports and news updates tailored to the user's region.
- Web sites also use cookies to track information about client activity. Analysis of information collected via cookies can reveal the popularity of Web sites or products.



# Cookies (cont.)

- Marketers use cookies to determine the effectiveness of advertising campaigns.
- Web sites store cookies on users' hard drives, which raises issues regarding security and privacy. Web sites should not store critical information, such as credit-card numbers or passwords, in cookies, because cookies are just text files that anyone can read.
- Several cookie features address security and privacy concerns. A server can access only the cookies that it has placed on the client.
- A cookies has an expiration date, after which the Web browser deletes it.



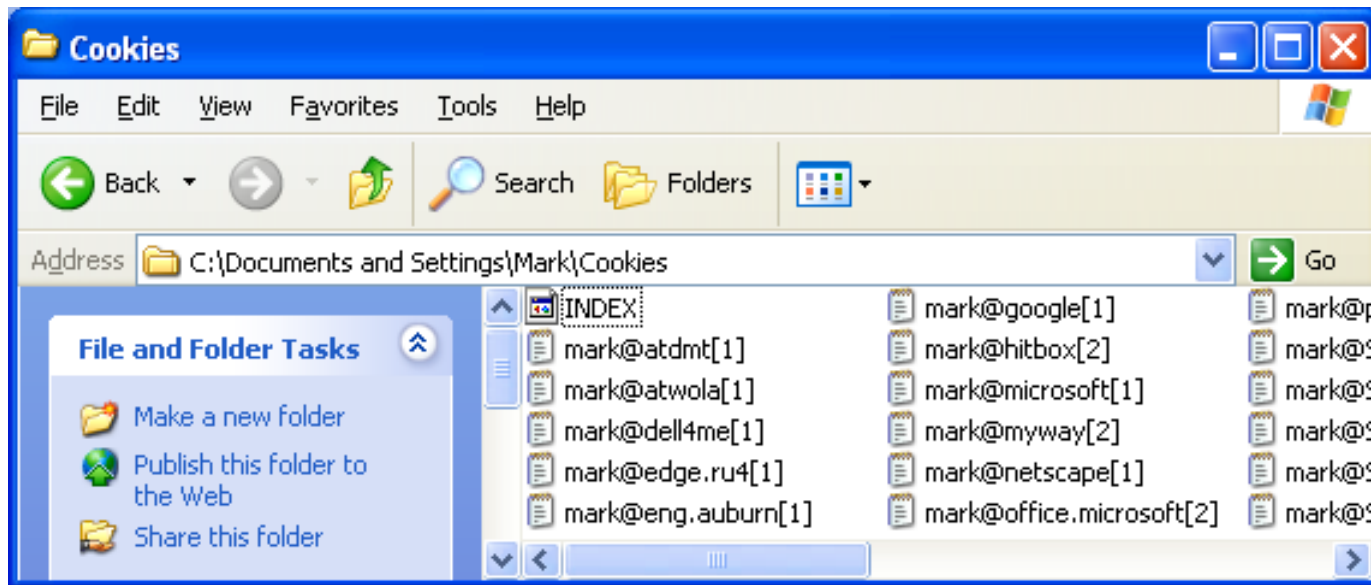
# Cookies (cont.)

- Users who are concerned about the privacy and security implications of cookies can disable them in their Web browsers. However, the disabling of cookies can make it impossible for the user to interact with Web sites that rely on cookies to function properly.
- Information stored in the cookie is sent to the Web server from which it originated whenever the user requests a Web page from that particular server. The Web server can send the client XHTML output that reflects the preferences or information that is stored in the cookie.
- The location of the cookie file varies from browser to browser. Internet Explorer places cookies in the Cookies directory located at `C:\Documents and Settings\...\Cookies`



# Cookies (cont.)

- After a cookie is created, a text file is added to this directory. While the name of the file will vary from user to user a typical example is shown below.



- The contents of a cookie are shown on page 74.



# Cookies (cont.)

- Now let's create the code necessary to create our own cookie.
- In this example, a PHP script is invoked from a client-side HTML document. The HTML document creates a form for the user to enter the information that will be stored in the cookie. (Often the information that is stored in a cookie will be extracted from several different areas and may involved tracking the client's actions at the Web site.)
- Once the user has entered their information, when they click the Write Cookie button, the `cookies.php` script executes.
- The XHTML document and the PHP script are shown on the next pages. The XHTML document `cookies.html` is on page 36 and the PHP script `cookies.php` appears on page 37.



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

```
<!-- cookies.html -->
```

```
<!-- Writing a Cookie -->
```

```
<html xmlns = "http://www.w3.org/1999/xhtml">
  <head> <title>Writing a cookie to the client computer</title> </head>
```

```
  <body style = "font-family: arial, sans-serif;
  background-color: #856363" background=image1.jpg>
  <h2>Click Write Cookie to save your cookie data.</h2>
```

```
  <form method = "post" action = "cookies.php" style = "font-size: 10pt"
  background-color: #856363">
```

```
    <strong>Name:</strong><br />
```

```
    <input type = "text" name = "NAME" /><br />
```

```
    <strong>Height:</strong><br />
```

```
    <input type = "text" name = "HEIGHT" /><br />
```

```
    <strong>Favorite Color:</strong><br />
```

```
    <input type = "text" name = "COLOR" /><br />
```

```
    <p>
```

```
      <input type = "submit" value = "Write Cookie" style = "background-color: #0000FF;
      color: yellow; font-weight: bold" /></p>
```

```
  </form>
```

```
</body> </html>
```



```

<?php
// cookies.php
// Program to write a cookie to a client's machine
extract( $_POST );
// write each form field's value to a cookie and set the
// cookie's expiration date
setcookie( "Name", $NAME, time() + 60 * 60 * 24 * 5 );
setcookie( "Height", $HEIGHT, time() + 60 * 60 * 24 * 5 );
setcookie( "Color", $COLOR, time() + 60 * 60 * 24 * 5 );
?>

```

Function setcookie sets the cookies to the values passed from the cookies.html form. Function setcookie prints XHTML header information and therefore it needs to be called before any other XHTML (including comments) is printed.

```

<!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">
<head> <title>Cookie Saved</title> </head>
<body style = "font-family: arial, sans-serif", background=image1.jpg>
<p><b>The cookie has been set with the following data:</b></p>
<!-- print each form field's value -->
<br /><span style = "color: blue">Name:</span>
<?php print( $NAME ) ?><br />
<span style = "color: blue">Height:</span>
<?php print( $HEIGHT ) ?><br />
<span style = "color: blue">Favorite Color:</span>
<span style = "color: <?php print( "$COLOR\">$COLOR" ) ?>
</span><br />
<p>Click <a href = "readCookies.php">here</a> to read the saved cookie.</p>
</body> </html>

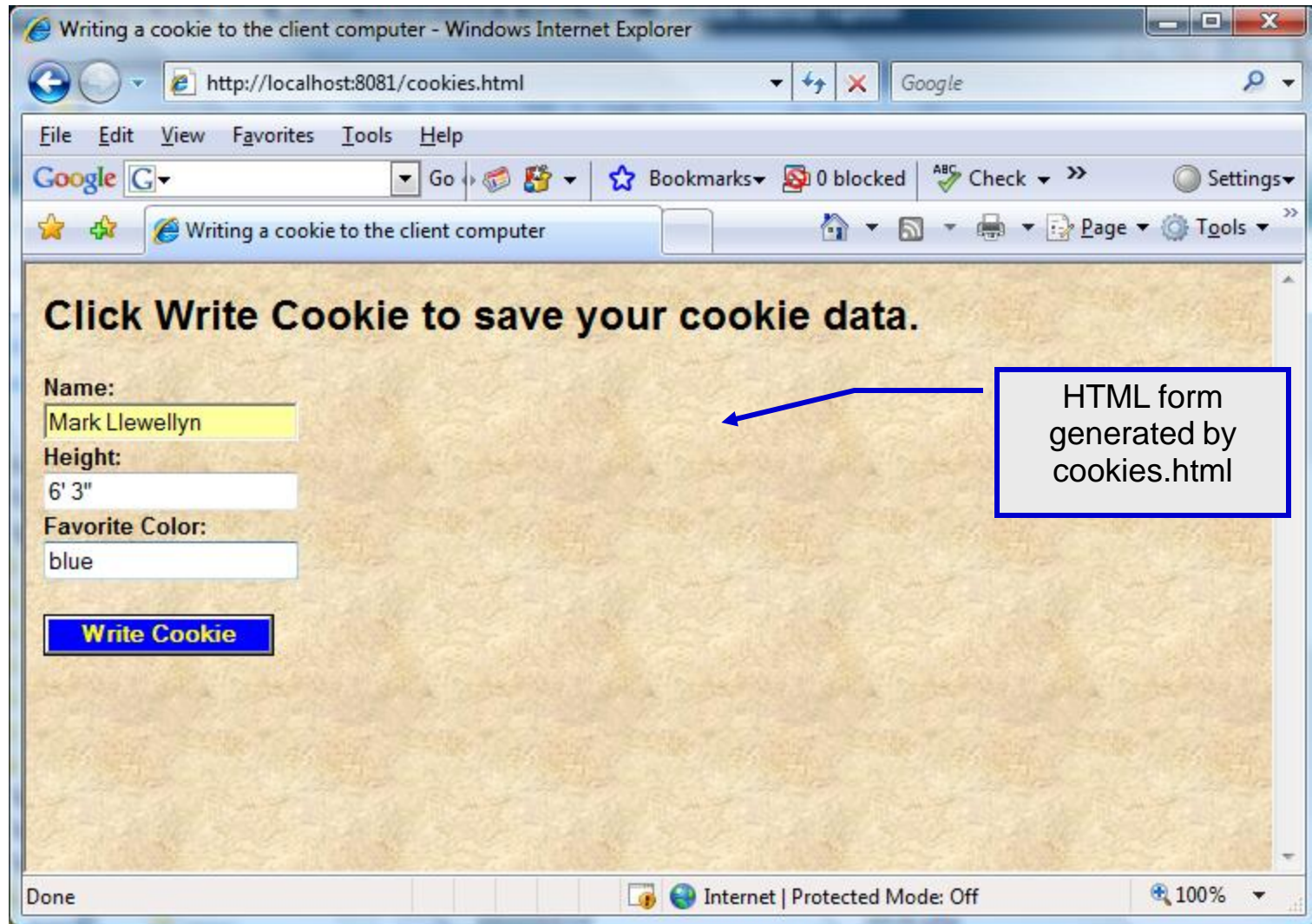
```

The third argument to setcookie is optional and indicates the expiration date of the cookie. In this case it is set to expire 5 days from the current time. Function time returns the current time and then we add to this the number of seconds after which the cookie is to expire.

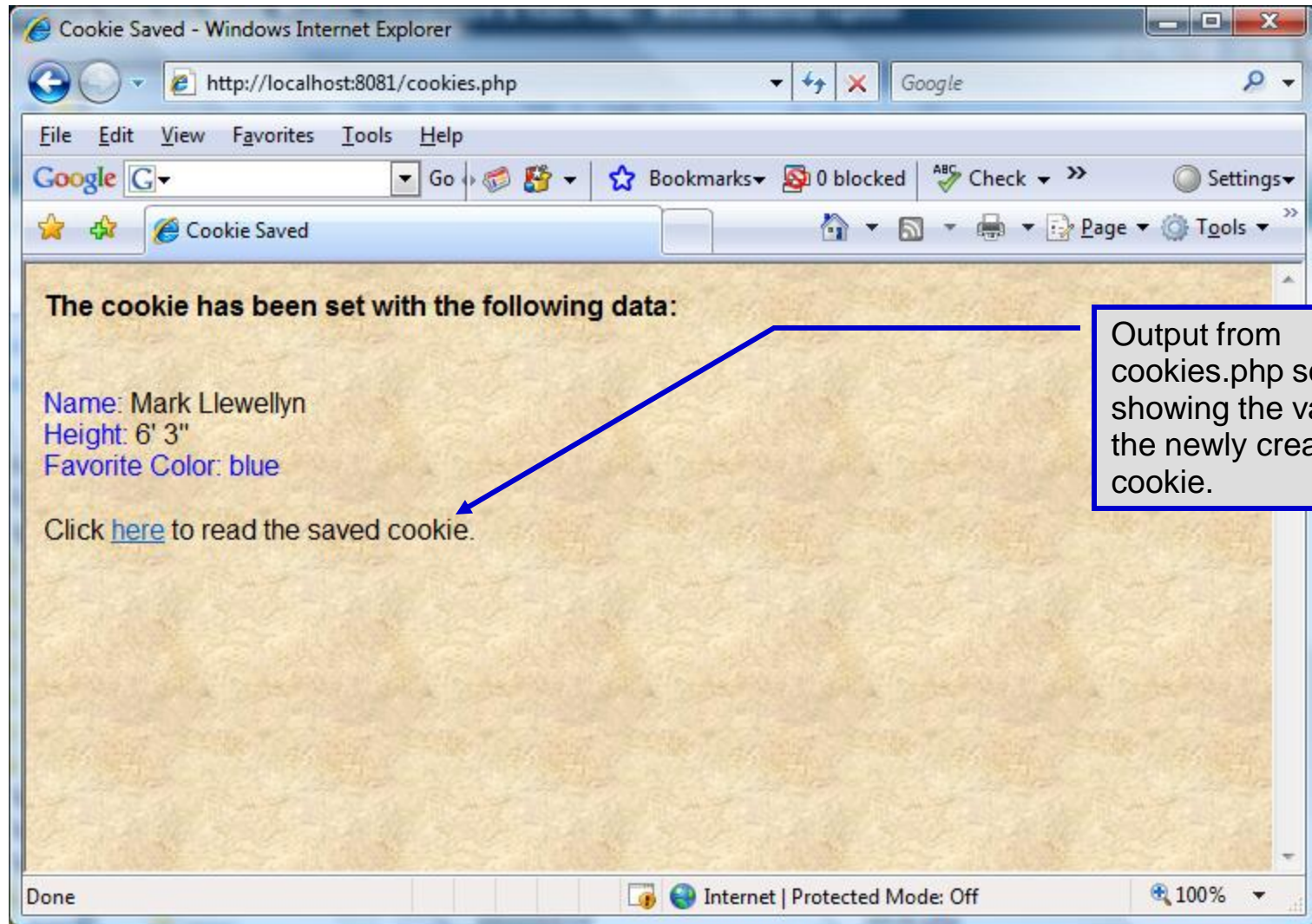




# Cookies (cont.)



# Cookies (cont.)



Output from cookies.php script showing the values in the newly created cookie.



# Cookies (cont.)

- Once the cookie has been created, the cookies.php script gives the user the chance to view the newly created cookie by invoking the readCookies.php script from within the cookies.php script by clicking on the link.
- The readCookies.php script code is illustrated on the next page followed by the output from the execution of this PHP script.



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

```
<!-- readCookies.php -->
<!-- Program to read cookies from the client's computer -->
```

```
<html xmlns = "http://www.w3.org/1999/xhtml">
<head><title>Read Cookies</title></head>
```

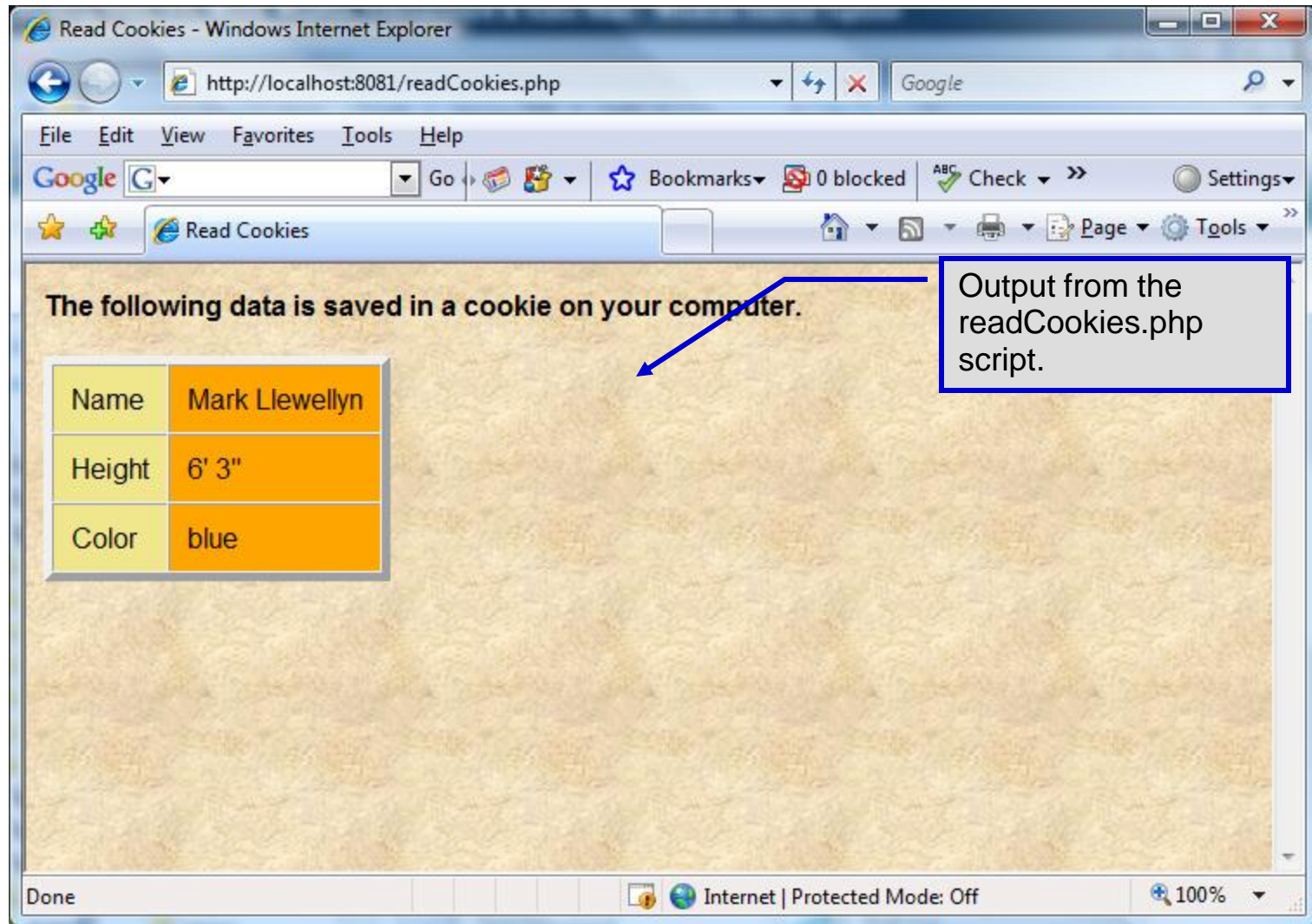
```
<body style = "font-family: arial, sans-serif" background=image1.jpg>
<p>
<strong> The following data is saved in a cookie on your computer.
</strong>
</p>
<table border = "5" cellspacing = "0" cellpadding = "10">
```

```
<?php
// iterate through array $_COOKIE and print
// name and value of each cookie
foreach ( $_COOKIE as $key => $value )
print( "<tr>
<td bgcolor=#F0E68C>$key</td>
<td bgcolor=#FFA500>$value</td>
</tr>" );
?>
</table>
</body> </html>
```

Superglobal array  
holding cookie.



# Cookies (cont.)



The screenshot shows a Windows Internet Explorer browser window titled "Read Cookies - Windows Internet Explorer". The address bar displays "http://localhost:8081/readCookies.php". The browser's menu bar includes "File", "Edit", "View", "Favorites", "Tools", and "Help". The toolbar shows the Google search engine, a "Go" button, "Bookmarks", "0 blocked", "Check", and "Settings". The page content features a heading "The following data is saved in a cookie on your computer." followed by a table with three rows of data. A blue arrow points from a text box on the right to the table. The status bar at the bottom indicates "Done", "Internet | Protected Mode: Off", and "100%" zoom.

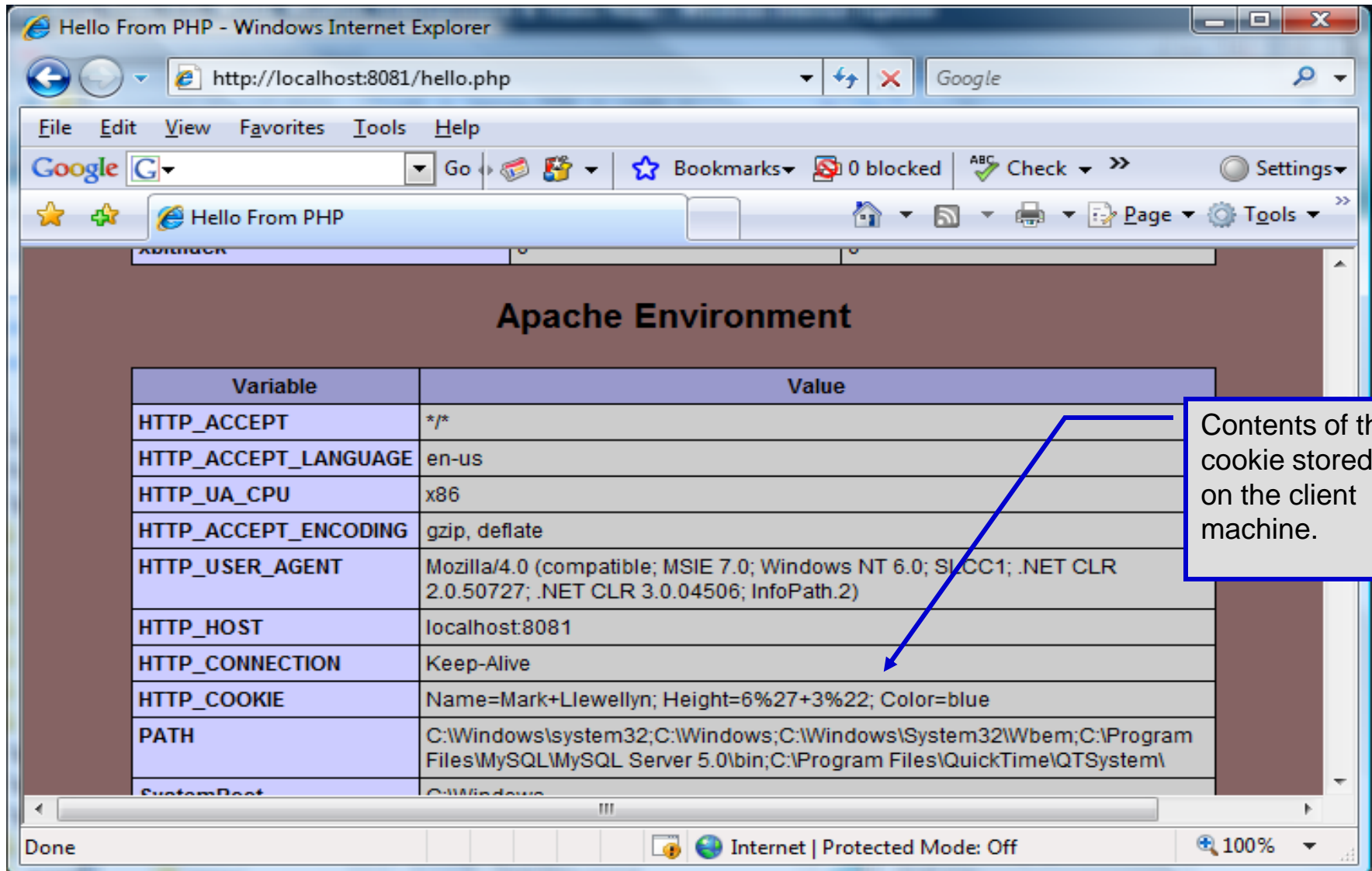
The following data is saved in a cookie on your computer.

Name	Mark Llewellyn
Height	6' 3"
Color	blue

Output from the readCookies.php script.



# Cookies (cont.)

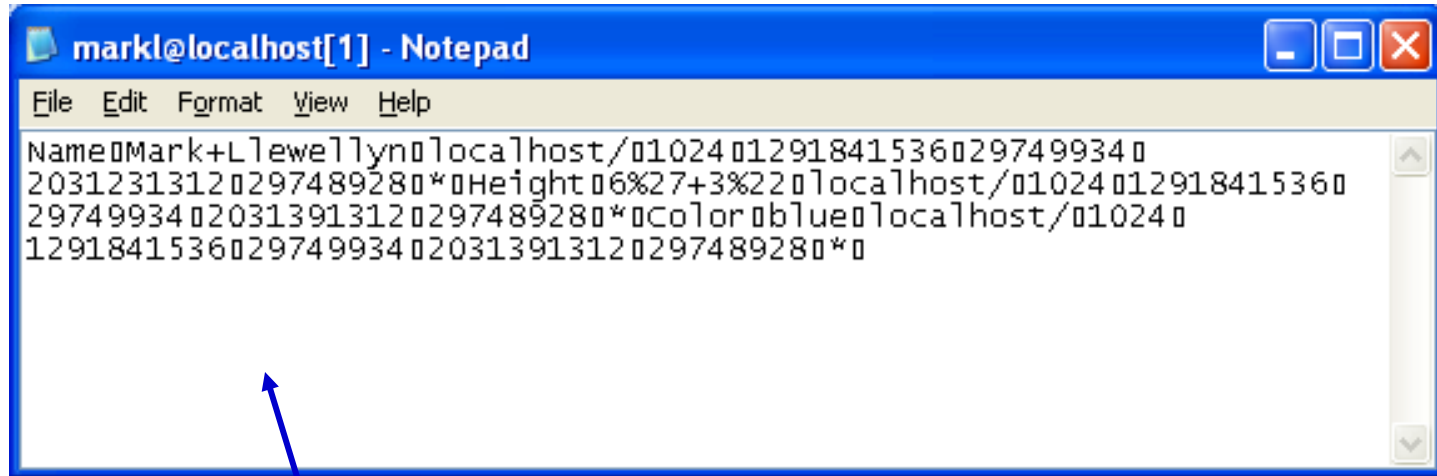


The screenshot shows a Windows Internet Explorer browser window displaying the Apache Environment table. The table lists various HTTP headers and their values. A callout box with a blue arrow points to the 'HTTP\_COOKIE' row, which contains the text 'Name=Mark+Llewellyn; Height=6%27+3%22; Color=blue'. The callout box contains the text: 'Contents of the cookie stored on the client machine.'

Variable	Value
HTTP_ACCEPT	*/*
HTTP_ACCEPT_LANGUAGE	en-us
HTTP_UA_CPU	x86
HTTP_ACCEPT_ENCODING	gzip, deflate
HTTP_USER_AGENT	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 6.0; SLCC1; .NET CLR 2.0.50727; .NET CLR 3.0.04506; InfoPath.2)
HTTP_HOST	localhost:8081
HTTP_CONNECTION	Keep-Alive
HTTP_COOKIE	Name=Mark+Llewellyn; Height=6%27+3%22; Color=blue
PATH	C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;C:\Program Files\MySQL\MySQL Server 5.0\bin;C:\Program Files\QuickTime\QTSystem\
SystemRoot	C:\Windows



# Cookies (cont.)

A screenshot of a Notepad window titled "markl@localhost[1] - Notepad". The window has a menu bar with "File", "Edit", "Format", "View", and "Help". The text area contains the following text:

```
Name=Mark+Llewellyn;localhost/;1024;1291841536;29749934;2031231312;297489280*;Height=6%27+3%22;localhost/;1024;1291841536;29749934;2031391312;297489280*;Color=blue;localhost/;1024;1291841536;29749934;2031391312;297489280*;
```

Actual text file holding cookie data for the cookie that was created in this example.



# Dynamic Content in PHP

- Of all the strengths PHP exhibits as a server-side scripting language, perhaps its greatest strength lies in its ability to dynamically change XHTML output based on user input.
- In this final section of notes, we'll build on the examples we've constructed in the previous two sets of notes by combining `form.html` and `form.php` into one dynamic PHP document named `dynamicForm2.php`.
- We'll add error checking to the user input fields and inform the user of invalid entries on the form itself, rather than on an error page. If an error exists, the script maintains the previously submitted values in each form element.
- Finally, after the form has been successfully completed, we'll store the input from the user in a MySQL database.





Sample form to take user input in XHTML - Windows Internet Explorer

http://localhost:8081/dynamicform2.php

File Edit View Favorites Tools Help

Google G Go Bookmarks 0 blocked Check Settings

Sample form to take user input in XHTML

# This is a sample registration form.

Please fill in all fields and click Register.

**User Information**

Please fill out the fields below.

First Name

Last Name

Email

Phone

Must be in the form (555)555-5555

**Publications**

Which magazine would you like information about?

RadSport

**Operating System**

Which operating system are you currently using?

Windows Vista  Windows 2000  Windows XP

Linux  Other

Basically, the same registration form that was used in a previous example.

Done Internet | Protected Mode: Off 100%



Sample form to take user input in XHTML - Windows Internet Explorer

http://localhost:8081/dynamicform2.php

File Edit View Favorites Tools Help

Google G Go Bookmarks 0 blocked Check Settings

Sample form to take user input in XHTML

# This is a sample registration form.

Please fill in all fields and click Register.

**User Information**

Please fill out the fields below.

First Name

Last Name

Email

Phone

Must be in the form (555)555-5555

**Publications**

Which magazine would you like information about?

RadSport

**Operating System**

Which operating system are you currently using?

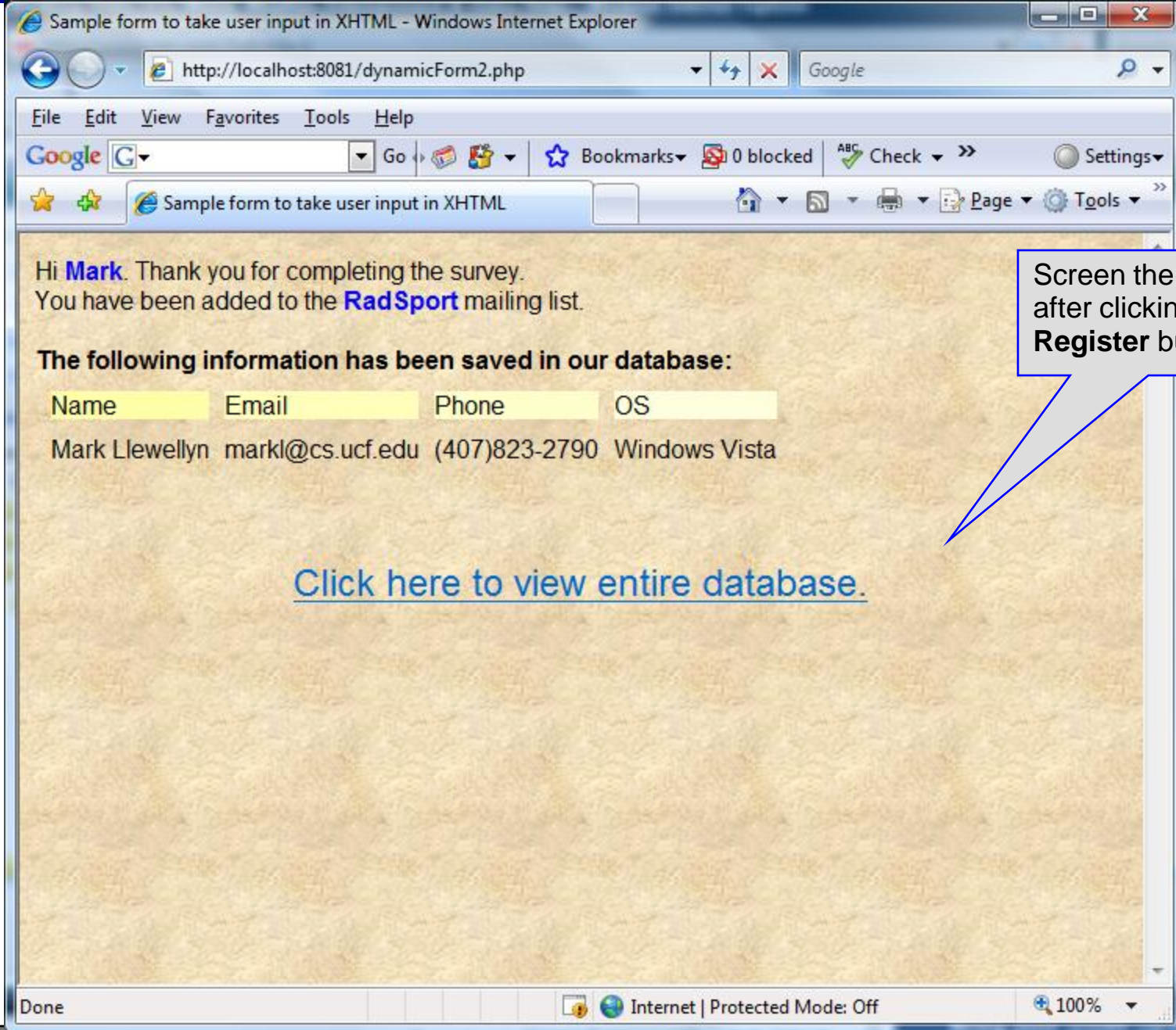
Windows Vista  Windows 2000  Windows XP

Linux  Other

Done Internet | Protected Mode: Off 100%

User fills in the form and clicks the Register button.





Database Search Results - Windows Internet Explorer

http://localhost:8081/formDatabase2.php

File Edit View Favorites Tools Help

Google G Go Bookmarks 0 blocked Check

Database Search Results

### Mailing List Contacts

ID	Last Name	First Name	E-mail Address	Phone Number	Magazine	Operating System
0000000001	Llewellyn	Mark	markl@cs.ucf.edu	(407)823-2790	RadSport	Windows Vista
0000000003	Schumacher	Michael	michael@ferrari.it	(123)222-3333	Cycling Weekly	Windows 2000
0000000004	Panettiere	Hayden	savethe@cheeleader	(444)555-9999	Cycle Sport	Windows Vista
0000000005	Einstein	Albert	its_relative.com	(111)111-1111	Mirror du Cyclisme	Other
0000000006	Campbell	Kristi	im_not_sure	(333)321-9876	Pro Cycling	Linux

Done Internet | Protected Mode: Off 100%

Screen the user sees after clicking to see the entire database.



Sample form to take user input in XHTML - Windows Internet Explorer

http://localhost:8081/dynamicForm2.php

File Edit View Favorites Tools Help

Google G Go Bookmarks 0 blocked Check Settings

Sample form to take user input in XHTML

# This is a sample registration form.

Please fill in all fields and click Register.  
Fields with \* need to be filled in properly.

**User Information**  
Please fill out the fields below.

First Name  \*  
Last Name   
Email   
Phone   
Must be in the form (555)555-5555

**Publications**  
Which magazine would you like information about?  
Velo-News

**Operating System**  
Which operating system are you currently using?  
 Windows Vista  Windows 2000  Windows XP  
 Linux  Other

Register

Done Internet | Protected Mode: Off 100%

Dynamic nature of the PHP form is illustrated when the user fails to enter proper information into the form. In this case, the user forgot to enter their first name. Error checking is in place on each user input location and the page is dynamically updated to reflect the error processing and correction capabilities. The database will not be updated until the user has correctly filled in all required fields.



MySQL Query Browser - Connection: root@localhost:3306 / mailinglist

File Edit View Query Script Tools Window MySQL Enterprise Help

Go back Next Refresh `SELECT * FROM contacts c;` Execute Stop

Resultset 1

ID	LastName	FirstName	Email	Phone	Magazine	OS
0000000001	Llewellyn	Mark	markl@cs.ucf.edu	(407)823-2790	RadSport	Windows Vista
0000000003	Schumacher	Michael	michael@ferrari.it	(123)222-3333	Cycling Weekly	Windows 2000
0000000004	Panettiere	Hayden	savethe@cheeleader	(444)555-9999	Cycle Sport	Windows Vista
0000000005	Einstein	Albert	its_relative.com	(111)111-1111	Mirror du Cyclisme	Other
0000000006	Campbell	Kristi	im_not_sure	(333)321-9876	Pro Cycling	Linux

5 rows fetched in 0.0046s (0.0004s)

1: 1

Screen shot from MySQL of the contacts relation after the inclusion of several users. Note that the values in the table are the same as those returned to the PHP document in the previous slide.



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

```
<!-- dynamicForm2.php -->
```

```
<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <title>Sample form to take user input in XHTML</title>
  </head>
  <body style = "font-family: arial, sans-serif; background-color: #856363"
background=background.jpg>
  <?php
    extract ( $_POST );
    $iserror = false;
    // array of magazine titles
    $maglist = array( "Velo-News",
      "Cycling Weekly",
      "Pro Cycling",
      "Cycle Sport",
      "RadSport",
      "Mirror du Cyclisme" );
    // array of possible operating systems
    $systemlist = array( "Windows XP",
      "Windows 2000",
      "Windows 98",
      "Linux",
      "Other");
```



```

// array of name and alt values for the text input fields
$inputlist = array( "fname" => "First Name",
    "lname" => "Last Name",
    "email" => "Email",
    "phone" => "Phone" );
if ( isset ( $submit ) ) {
    if ( $fname == "" ) {
        $formerrors[ "fnameerror" ] = true;
        $iserror = true;
    }
    if ( $lname == "" ) {
        $formerrors[ "lnameerror" ] = true;
        $iserror = true;
    }
    if ( $email == "" ) {
        $formerrors[ "emailerror" ] = true;
        $iserror = true;
    }
    if ( !ereg( "^\([0-9]{3}\)[0-9]{3}-[0-9]{4}$", $phone ) ) {
        $formerrors[ "phoneerror" ] = true;
        $iserror = true;
    }
    if ( !$iserror ) {
        // build INSERT query
        $query = "INSERT INTO contacts " .
            "(ID, LastName, FirstName, Email, Phone, Magazine, OS ) " .
            "VALUES (null, '$lname', '$fname', '$email', " . "" . quotemeta( $phone ) . ", '$mag', '$os' )";
    }
}

```





```
// Connect to MySQL
if ( !( $database = mysql_connect( "localhost",
    "root", "root" ) ) )
    die( "Could not connect to database" );

// open MailingList database
if ( !mysql_select_db( "MailingList", $database ) )
    die( "Could not open MailingList database" );

// execute query in MailingList database
if ( !( $result = mysql_query( $query, $database ) ) ) {
    print( "Could not execute query! <br />" );
    die( mysql_error() );
}
print( "<p>Hi
    <span style = 'color: blue'> <strong>$fname</strong></span>.
    Thank you for completing the survey.<br />
    You have been added to the <span style = 'color: blue'>
    <strong>$mag</strong></span> mailing list.          </p>
    <strong>The following information has been saved in our database:</strong><br />

    <table border = '0' cellpadding = '0' cellspacing = '10'>
    <tr>
    <td bgcolor = '#ffffaa'>Name </td>
    <td bgcolor = '#ffffbb'>Email</td>
    <td bgcolor = '#ffffcc'>Phone</td>
    <td bgcolor = '#ffffdd'>OS</td>
    </tr>
    <tr>
```



```

<!-- print each form field's value -->
<td>$fname $lname</td>
<td>$email</td>
<td>$phone</td>
<td>$os</td>
</tr></table>
<br /><br /><br />
<div style = 'font-size : 10pt; text-align: center'>
    <div style = 'font-size : 18pt'>
        <a href = 'formDatabase2.php'>
            Click here to view entire database.</a>
        </div>
    </div></body></html>" );
die();
}
}
print( "<h1>This is a sample registration form.</h1>
Please fill in all fields and click Register." );
if ( $iserror ) {
    print( "<br /><span style = 'color : red'>
        Fields with * need to be filled in properly.</span>" );
}
print( "<!-- post form data to dynamicForm2.php -->
<form method = 'post' action = 'dynamicForm2.php'>
<img src = 'images/user.gif' alt = 'User' /><br />
<span style = 'color: blue'>
Please fill out the fields below.<br />
</span>

```

Invoke PHP script to see contents of entire database if user clicks this link. Code begins on page 14.

The form created is self-submitting (i.e., it posts to itself). This is done by setting the action to dynamicForm2.php



```

<!-- create four text boxes for user input -->" );
foreach ( $inputlist as $inputname => $inputalt ) {
    $inputtext = $inputvalues[ $inputname ];

    print( "<img src = 'images/$inputname.gif'
        alt = '$inputalt' /><input type = 'text' name = '$inputname' value = '' . $$inputname . '' />" );
    if ( $formerrors[ ( $inputname )."error" ] == true )
        print( "<span style = 'color : red'>*</span>" );
    print( "<br />" );
}
print( "<span style = 'font-size : 10pt" );
if ( $formerrors[ "phoneerror" ] ) print( "; color : red" );
print( "">Must be in the form (555)555-5555
    </span><br /><br />
    <img src = 'images/downloads.gif'
    alt = 'Publications' /><br />
    <span style = 'color: blue'>
    Which magazine would you like information about?
    </span><br />
    <!-- create drop-down list containing magazine names -->
    <select name = 'mag'>" );
foreach ( $maglist as $currmag ) {
    print( "<option" );
    if ( ( $currmag == $mag ) )
        print( " selected = 'true'" );
    print( ">$currmag</option>" );
}

```

The \$\$variable notation specifies variable variables. PHP permits the use of variable variables to allow developers to reference variables dynamically. The expression \$\$variable could also be written as \${\$variable} for added clarity.



```
print( "</select><br /><br />
<img src = 'images/os.gif' alt = 'Operating System' />
<br /><span style = 'color: blue'>
Which operating system are you currently using?
<br /></span>

<!-- create five radio buttons -->" );

$counter = 0;

foreach ( $systemlist as $currssystem ) {
    print( "<input type = 'radio' name = 'os'
        value = '$currssystem'" );

    if ( $currssystem == $os ) print( "checked = 'checked'" );
    if ( iserror && $counter == 0 ) print( "checked = 'checked'" );

    print( " />$currssystem" );

    if ( $counter == 2 ) print( "<br />" );
    $counter++;
}

print( "<!-- create a submit button -->
<br />
<input type = 'submit' name = 'submit' value = 'Register' />
</form></body></html>" );
?>
```



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

```
<!-- formDatabase2.php -->
```

```
<!-- Program to query a database and send results to the client. -->
```

```
<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>   <title>Database Search Results</title>  </head>
  <body style = "font-family: arial, sans-serif"
    style = "background-color: #F0E68C" background=image1.jpg>
    <?php
      extract( $_POST );
      // build SELECT query
      $query = "SELECT * FROM contacts";
      // Connect to MySQL
      if ( !( $database = mysqli_connect( "localhost", "root", "root", MailingList ) ) )
        die( "Could not connect to database" );
      // query MailingList database
      if ( !( $result = mysqli_query( $database, $query ) ) ) {
        print( "Could not execute query! <br />" );
        die( mysqli_error() );
      }
    ?>
    <h3 style = "color: blue">
    Mailing List Contacts</h3>
```



```
<table border = "1" cellpadding = "3" cellspacing = "2"
style = "background-color: #ADD8E6">
<tr>
  <td>ID</td>
  <td>Last Name</td>
  <td>First Name</td>
  <td>E-mail Address</td>
  <td>Phone Number</td>
  <td>Magazine</td>
  <td>Operating System</td>
</tr>
<?php
// fetch each record in result set
for ( $counter = 0;
    $row = mysqli_fetch_row( $result );
    $counter++ ){
// build table to display results
print( "<tr>" );
foreach ( $row as $key => $value )
    print( "<td>$value</td>" );
print( "</tr>" );
}
mysqli_close( $database );
?>

</table>
</body>
</html>
```



MySQL Table Editor

Table Name:  Database:  Comment:

Columns and Indices | Table Options | Advanced Options

Column Name	Datatype	NOT NULL	AUTO INC	Flags	Default Value	Comment
ID	INTEGER	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> UNSIGNED <input checked="" type="checkbox"/> ZEROFILL	<input type="text" value="NULL"/>	
LastName	VARCHAR(30)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY	<input type="text" value="NULL"/>	
FirstName	VARCHAR(30)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY	<input type="text" value="NULL"/>	
Email	VARCHAR(30)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY	<input type="text" value="NULL"/>	
Phone	VARCHAR(14)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY	<input type="text" value="NULL"/>	
Magazine	VARCHAR(60)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY	<input type="text" value="NULL"/>	
OS	VARCHAR(30)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY	<input type="text" value="NULL"/>	

Indices | Foreign Keys | Column Details

PRIMARY

Index Settings

Index Name:

Index Kind:

Index Type:

Index Columns (Use Dr)

ID

Close

Schema of the MailingList database table contacts required for the PHP database example to work. Script is available on the code page and shown on the next page.



```
C:\Program Files\wamp\www\mailing list script.sql - Notepad++
File Edit Search View Format Language Settings Macro Run TextFX Plugins Window ?
underconstruction.html practice problem 26.html slide show 1.html mailing list script.sql
1 # SQL commands to create and populate the MySQL database for
2 # CNT 4714 - Fall 2008
3 #
4 # delete the database if it already exists
5 drop database if exists mailinglist;
6
7 #create a new database named mailinglist
8 create database mailinglist;
9
10 #switch to the new database
11 use mailinglist;
12
13 #create the schemas for the four relations in this database
14 create table contacts (
15     ID integer unsigned zerofill auto_increment not null,
16     LastName varchar(30),
17     FirstName varchar(30),
18     Email varchar(30),
19     Phone varchar(14),
20     Magazine varchar(60),
21     OS varchar(30),
22     primary key (ID)
23 );
24
25
26
Structured Query Language file  nb char : 622  Ln : 1  Col : 1  Sel : 0  Dos\Windows ANSI  INS
```

