CNT 4714: Enterprise Computing Spring 2014

PHP – Database Connectivity

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Form Processing and Business Logic

- HTML 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 HTML 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 3 validates the data entered by the user through the form and "registers" them in the mailing list database.

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

php.ini   homework.html   zipcode.py   project6.html   form.html

```
 1  <!DOCTYPE html>
 2  <!-- form.html                        -->
 3  <!-- Form for use with the form.php program -->
 4  <html lang="en">
 5     <head>
 6        <title>Sample form to take user input in XHTML</title>
 7     </head>
 8  <body style = "font-family: arial, sans-serif;
 9        background-color: #856363   background=image1.jpg>
10     <h1>This is a sample registration form.</h1>
11     Please fill in all fields and click Register.
12     <!-- post form data to form.php -->
13     <form method = "post" action = "form.php">
14        <img src = "images/user.gif" alt = "User" /><br />
15        <span style = "color: blue">
16           Please fill out the fields below.<br />
17        </span>
18        <!-- create four text boxes for user input -->
19        <img src = "images/fname.gif" alt = "First Name" />
20        <input type = "text" name = "fname" /><br />
21        <img src = "images/lname.gif" alt = "Last Name" />
22        <input type = "text" name = "lname" /><br />
23        <img src = "images/email.gif" alt = "Email" />
24        <input type = "text" name = "email" /><br />
25        <img src = "images/phone.gif" alt = "Phone" />
```

form.html

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

Hyper Text Markup Language   length : 2690   lines : 67   Ln : 4   Col : 16   Sel : 0 | 0   Macintosh   ANSI as UTF-8   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

php.ini   homework.html   zipcode.py   project6.html   form.html

form.html

```
25      <img src = "images/phone.gif" alt = "Phone" />
26      <input type = "text" name = "phone" /><br />
27      <span style = "font-size: 10pt">
28          Must be in the form (555)555-5555</span>
29      <br /><br />
30      <img src = "images/downloads.gif" alt = "Products" /><br />
31      <span style = "color: blue">
32          Which publication would you like information about?
33      </span><br />
34      <!-- create drop-down list containing magazine names -->
35      <select name = "magazine">
36          <option>Velo-News</option>
37          <option>Cycling Weekly</option>
38          <option>Pro Cycling</option>
39          <option>Cycle Sport</option>
40          <option>RadSport</option>
41          <option>Mirror du Cyclisme</option>
42      </select>
43      <br /><br />
44      <img src = "images/os.gif" alt = "Operating System" />
45      <br /><span style = "color: blue">
46          Which operating system are you currently using?
47      <br /></span>
48      <!-- create five radio buttons -->
49      <input type = "radio" name = "os" value = "Windows Vista" checked = "checked" />
```

Hyper Text Markup Language | length : 2690   lines : 67 | Ln : 25   Col : 21   Sel : 0 | 0 | Macintosh | ANSI as UTF-8 | INS

File Edit Search View Encoding Language Settings Macro Run Plugins Window ?   X

php.ini homework.html zipcode.py project6.html form.html

form.html

```
42              </select>
43              <br /><br />
44              <img src = "images/os.gif" alt = "Operating System" />
45              <br /><span style = "color: blue">
46                  Which operating system are you currently using?
47              <br /></span>
48              <!-- create five radio buttons -->
49              <input type = "radio" name = "os" value = "Windows Vista" checked = "checked" />
50                  Windows Vista
51              <input type = "radio" name = "os" value = "Windows 7" />
52                  Windows 7
53              <input type = "radio" name = "os" value = "Windows 8" />
54                  Windows 8
55              <input type = "radio" name = "os" value = "Linux" />
56                  Linux
57              <input type = "radio" name = "os" value = "Other" />
58                  Other<br />
59          <!-- create a submit button -->
60              <br /><input type = "submit" value = "Register" />
61          </form>
62      </body>
63  </html>
64
65
66
```

Hyper Text Markup Language | length : 2685 lines : 67 | Ln : 53 Col : 61 Sel : 0 | 0 | Macintosh | ANSI as UTF-8 | INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

php.ini | homework.html | zipcode.py | project6.html | form.html | form.php

form.php

```php
1  <!DOCTYPE html>
2  <!-- form.php       -->
3  <!-- Read information sent from form.html -->
4  <html lang="en">
5     <head>
6        <title>Form Validation</title>
7     </head>
8     <body style = "font-family: arial, sans-serif;
9        background-color: #856363"  background=image1.jpg>
10       <?php
11          extract($_POST);
12          // determine whether phone number is valid and print
13          // an error message if not
14          if ( !eregi( "^\([0-9]{3}\)[0-9]{3}-[0-9]{4}$",
15             $phone ) ){
16             print( "<p><span style = \"color: red;
17                font-size: 2em\">
18                INVALID PHONE NUMBER:</span><br />
19                A valid phone number must be in the form
20                <strong>(555)555-5555</strong><br />
21                <span style = \"color: blue\">
22                Click the Back button, enter a valid phone
23                number and resubmit.<br /><br />
24                Thank You.</span></p></body></html>" );
25             die(); // terminate script execution
26          }
```

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

See page 17 for explanation of regular expressions.

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

PHP Hypertext Preprocessor fi   length : 2366   lines : 74   Ln : 4   Col : 16   Sel : 0 | 0   Dos\Windows   ANSI   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

php.ini ✕   homework.html ✕   zipcode.py ✕   project6.html ✕   form.html ✕   form.php ✕

form.php

```php
27              ?>
28          <p>Hi
29              <span style = "color: blue">
30                  <strong>
31                      <?php print( "$fname" ); ?>
32                  </strong>
33              </span>.
34              Thank you for completing the survey.<br />
35              You have been added to the
36              <span style = "color: blue">
37                  <strong>
38                      <?php print( "$magazine " ); ?>
39                  </strong>
40              </span>
41              mailing list.
42          </p>
43          <strong>The following information has been saved
44              in our database:</strong><br />
45
46          <table border = "0" cellpadding = "0" cellspacing = "10">
47              <tr>
48                  <td bgcolor = "#ffffaa">Name </td>
49                  <td bgcolor = "#ffffbb">Email</td>
50                  <td bgcolor = "#ffffcc">Phone</td>
51                  <td bgcolor = "#ffffdd">OS</td>
52              </tr>
53
54              <tr>
```

PHP Hypertext Preprocessor fi   length : 2366   lines : 74   Ln : 53   Col : 1   Sel : 0 | 0   Dos\Windows   ANSI   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

php.ini   homework.html   zipcode.py   project6.html   form.html   form.php

form.php

```
45
46          <table border = "0" cellpadding = "0" cellspacing = "10">
47            <tr>
48               <td bgcolor = "#ffffaa">Name </td>
49               <td bgcolor = "#ffffbb">Email</td>
50               <td bgcolor = "#ffffcc">Phone</td>
51               <td bgcolor = "#ffffdd">OS</td>
52            </tr>
53
54            <tr>
55               <?php
56
57                   // print each form field's value
58                   print( "<td>$fname $lname</td>
59                       <td>$email</td>
60                       <td>$phone</td>
61                       <td>$os</td>" );
62               ?>
63            </tr>
64         </table>
65
66         <br /><br /><br />
67         <div style = "font-size: 10pt; text-align: center">
68            This is only a sample form.
69            You have not been added to a mailing list.
70         </div>
71      </body>
72  </html>
```

PHP Hypertext Preprocessor fi   length : 2366   lines : 74   Ln : 50   Col : 4   Sel : 1 | 0   Dos\Windows   ANSI   INS

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 [   ]
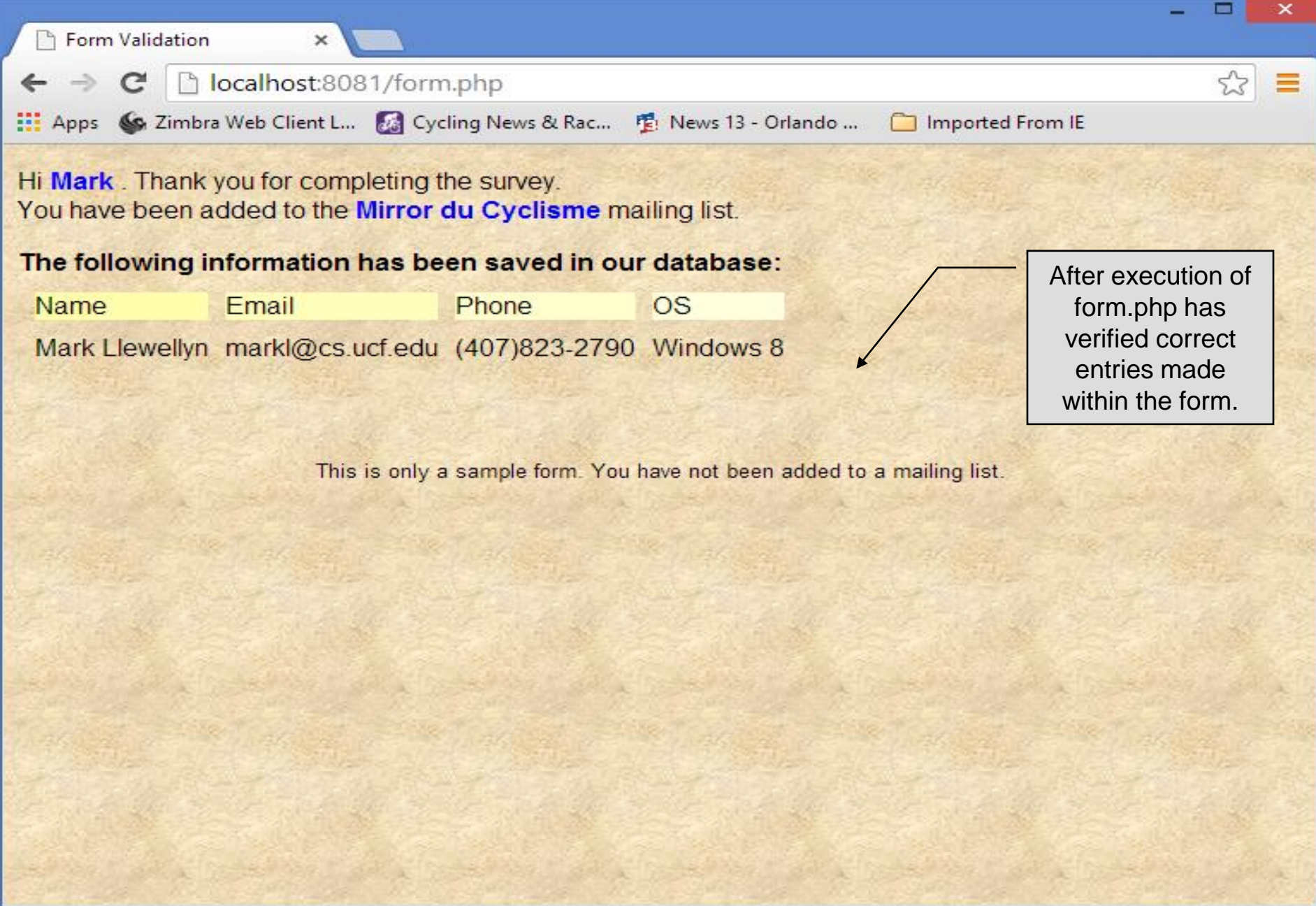
Must be in the form (555)555-5555

Publications ▽
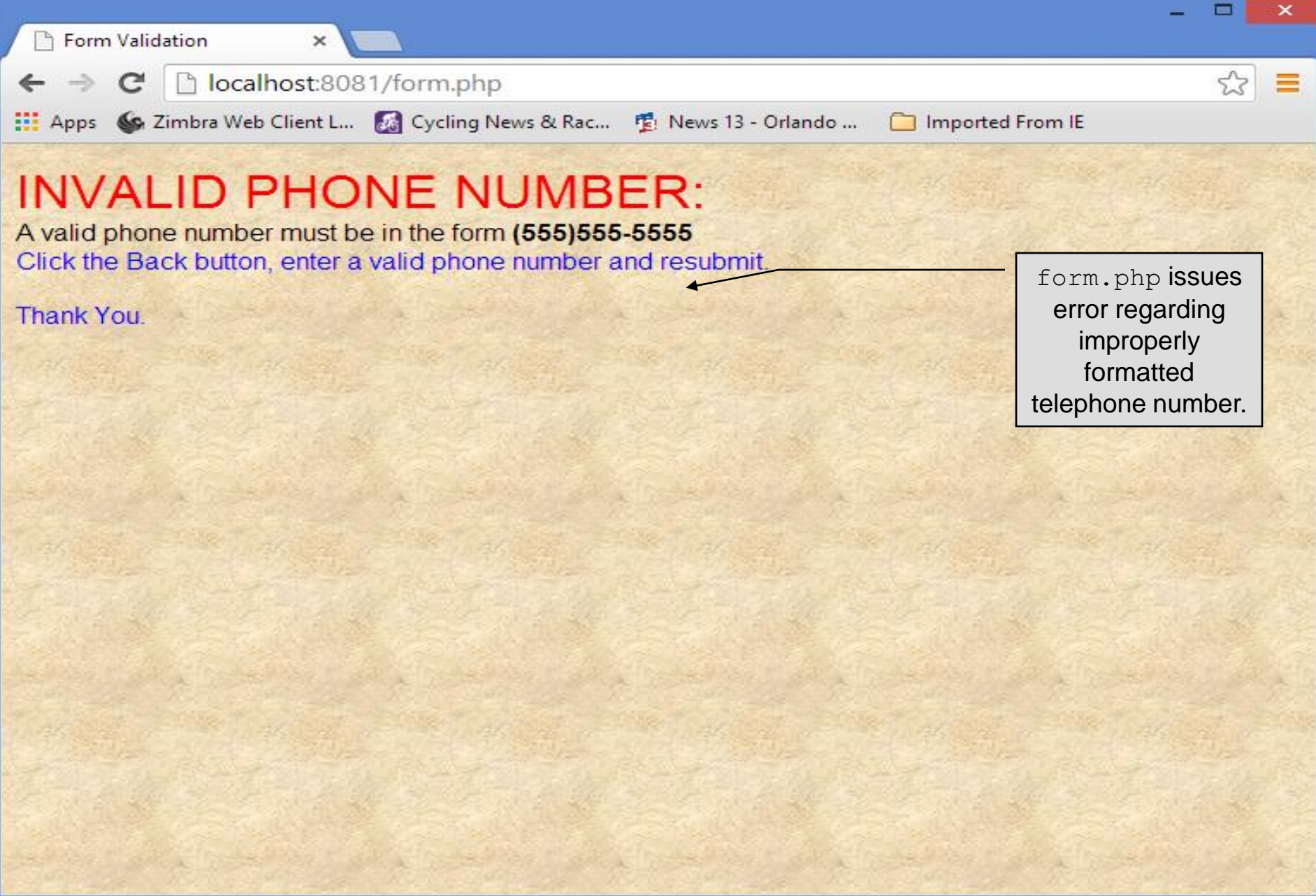
Which publication would you like information about?

[Velo-News   ▾]

Operating System ▽

Which operating system are you currently using?

◉ Windows Vista ○ Windows 7 ○ Windows 8 ○ Linux ○ Other

[Register]

Execution of `form.html` within a web browser

Hi **Mark** . Thank you for completing the survey.
You have been added to the **Mirror du Cyclisme** mailing list.

The following information has been saved in our database:

Name	Email	Phone	OS
Mark Llewellyn	markl@cs.ucf.edu	(407)823-2790	Windows 8

This is only a sample form. You have not been added to a mailing list.

After execution of form.php has verified correct entries made within the form.

INVALID PHONE NUMBER:

A valid phone number must be in the form **(555)555-5555**
Click the Back button, enter a valid phone number and resubmit.

Thank You.

`form.php` issues error regarding improperly formatted telephone number.

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 HTML object names meaningful so that the PHP script that retrieves the data is easier to understand.

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 that POSIX regular expressions. PHP's support for Perl-compatible regular expressions eases migration from Perl to PHP. The following examples illustrates these concepts.

C:\Apache24\htdocs\expression.php - Notepad++

File Edit Search View Encoding Language Settings Macro Run Plugins Window ?   X

expression.php

```php
 1   <!DOCTYPE html">
 2   <!-- expression.php -->
 3   <!-- Using regular expressions -->
 4   <html lang="en">
 5      <head>
 6         <title>Regular expressions</title>
 7      </head>
 8      <body style = "font-family: arial, sans-serif;
 9         background-color: #856363"  background=image1.jpg>
10
11         <?php
12            $search = "Now is the time";
13            print( "Test string is: '$search'<br /><br />" );
14
15            // call function ereg to search for pattern 'Now'
16            // in variable search
17            if ( ereg( "Now", $search ) )
18               print( "String 'Now' was found.<br />" );
19
20            // search for pattern 'Now' in the beginning of
21            // the string
22            if ( ereg( "^Now", $search ) )
23               print( "String 'Now' found at beginning
24                  of the line.<br />" );
25
26
```

^ matches at beginning
of a string

PHP Hypertext Preprocessor fi | length : 1784   lines : 53   Ln : 20   Col : 3   Sel : 0 | 0   Dos\Windows   ANSI   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

php.ini ☒ | homework.html ☒ | zipcode.py ☒ | project6.html ☒ | form.html ☒ | form.php ☒ | expression.php ☒

```php
28      if ( ereg( "Now$", $search ) )
29         print( "String 'Now' was found at the end
30            of the line.<br />" );
31
32      // search for any word ending in 'ow'
33      if ( ereg( "[[:<:]]([a-zA-Z]*ow)[[:>:]]", $search,
34         $match ) )
35         print( "Word found ending in 'ow': " .
36            $match[ 1 ] . "<br />" );
37
38      // search for any words beginning with 't'
39      print( "Words beginning with 't' found: ");
40
41      while ( eregi( "[[:<:]](t[[:alpha:]]+)[[:>:]]",
42         $search, $match ) ) {
43         print( $match[ 1 ] . " " );
44
45         // remove the first occurrence of a word beginning
46         // with 't' to find other instances in the string
47         $search = ereg_replace( $match[ 1 ], "", $search );
48      }
49
50      print( "<br />" );
51   ?>
52   </body>
53   </html>
```
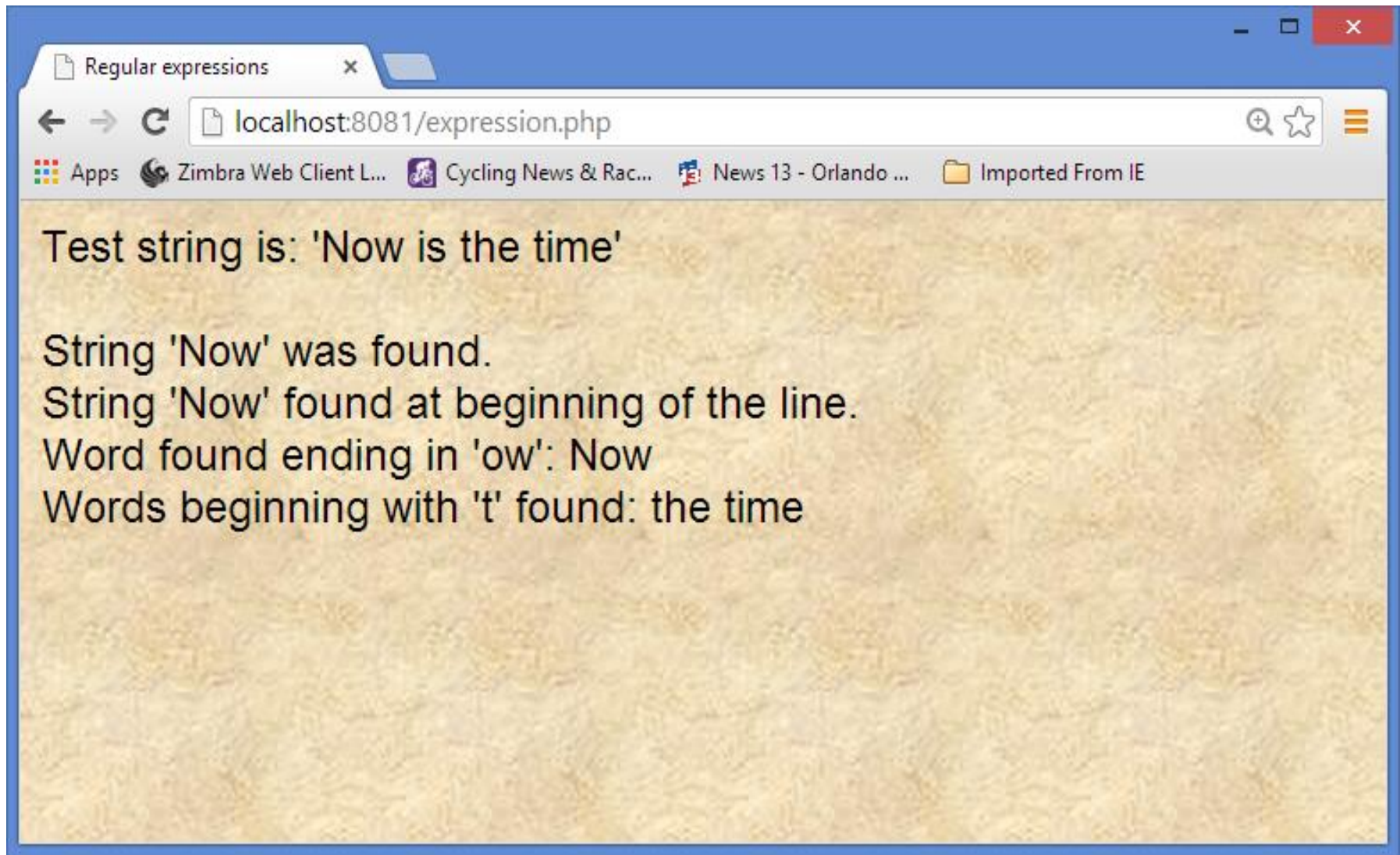
expression.php

$ matches at end of a string

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

PHP Hypertext Preprocessor fi | length : 1784   lines : 53 | Ln : 15   Col : 3   Sel : 0 | 0 | Dos\Windows | ANSI | INS

Output From `expression.php` - Example

Test string is: 'Now is the time'

String 'Now' was found.
String 'Now' found at beginning of the line.
Word found ending in 'ow': Now
Words beginning with 't' found: the time

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 HTML form that queries a user for a username and password. The fields USERNAME and PASSWORD are posted to the PHP script `password.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.

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

php.ini   homework.html   zipcode.py   project6.html   form.html   form.php   expression.php   password.html

password.html – page 1

```html
1   <!DOCTYPE html>
2   <!-- password.html                                    -->
3   <!-- HTML form sent to password.php for verification -->
4   <html lang="en">
5      <head>
6         <title>Verifying a username and a password.</title>
7         <style type = "text/css">
8            td { background-color: #DDDDDD }
9         </style>
10     </head>
11  <body style = "font-family: arial", "font-size: 2em",
12          background-color: #856363"  background=image1.jpg>
13          <p style = "font-size: 18pt">
14          <font color=red><B>
15          Welcome to the CNT 4714 High Security WebPage
16          </B></font>
17          <HR>
18          <p style = "font-size: 13pt">
19             Type in your username and password below.
20             <br />
21             <span style = "color: #0000FF; font-size: 10pt;
22                font-weight: bold">
23                Note that password will be sent as plain text - encryption not used in this ap
24             </span>
25          </p>
```

Hyper Text Markup Language   length : 2255   lines : 65   Ln : 4   Col : 16   Sel : 0 | 0   Macintosh   ANSI as UTF-8   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

php.ini | homework.html | zipcode.py | project6.html | form.html | form.php | expression.php | password.html

password.html – page 2

```html
26          <!-- post form data to password.php -->
27          <form action = "password.php" method = "post">
28              <br />
29              <table border = "3" cellspacing = "3" style = "height: 90px; width: 150px;
30                  font-size: 10pt" cellpadding = "1">
31                  <tr>
32                      <td colspan = "3">
33                          <strong>Username:</strong>
34                      </td>
35                  </tr>
36                  <tr>
37                      <td colspan = "3">
38                          <input size = "40" name = "USERNAME" style = "height: 22px; width: 115px
39                      </td>
40                  </tr>
41                  <tr>
42                      <td colspan = "3">
43                          <strong>Password:</strong>
44                      </td>
45                  </tr>
46                  <tr>
47                      <td colspan = "3">
48                          <input size = "40" name = "PASSWORD" style = "height: 22px; width: 115px
49                              type = "password" />
50                      <br/></td>
```

Hyper Text Markup Language   length : 2255   lines : 65   Ln : 22   Col : 4   Sel : 0 | 0   Macintosh   ANSI as UTF-8   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

php.ini   homework.html   zipcode.py   project6.html   form.html   form.php   expression.php   password.html

```
41              <tr>
42                  <td colspan = "3">
43                      <strong>Password:</strong>
44                  </td>
45              </tr>
46              <tr>
47                  <td colspan = "3">
48                      <input size = "40" name = "PASSWORD" style = "height: 22px; width: 115px
49                          type = "password" />
50                  <br/></td>
51              </tr>
52              <tr>
53                  <td colspan = "1">
54                      <input type = "submit" name = "Enter" value = "Enter" style = "height: 2
55                          width: 47px" />
56                  </td>
57                  <td colspan = "2">
58                      <input type = "submit" name = "NewUser" value = "New User" style = "heig
59                  </td>
60              </tr>
61          </table>
62      </form>
63      <HR>
64  </body>
65 </html>
```

Hyper Text Markup Language   length : 2255   lines : 65   Ln : 50   Col : 24   Sel : 0 | 0   Macintosh   ANSI as UTF-8   INS

```php
<!DOCTYPE html>
<!-- password.php        -->
<!-- Searching a database for usernames and passwords. -->

<html lang="en">
   <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
```

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

php.ini   homework.html   zipcode.py   project6.html   form.html   form.php   expression.php   password.html   password.php

```php
26          // write username and password to file and call function userAdded
27                  fputs( $file, "$USERNAME,$PASSWORD\n" );
28                  userAdded( $USERNAME );
29              }
30          else {
31
32              // if a new user is not being added, open file
33              // for reading
34              if ( !( $file = fopen( "password.txt", "r" ) ) ) {
35                  print( "<title>Error</title></head>
36                      <body >Could not open password file
37                      </body></html>" );
38                  die();
39              }
40
41              $userVerified = 0;
42
43              // read each line in file and check username and password
44              while ( !feof( $file ) && !$userVerified ) {
45
46                  // read line from file
47                  $line = fgets( $file, 255 );
48
49                  // remove newline character from end of line
50                  $line = chop( $line );
51
```

PHP Hypertext Preprocessor fi length : 4722   lines : 124   Ln : 26   Col : 25   Sel : 0 | 0   Dos\Windows   ANSI   INS
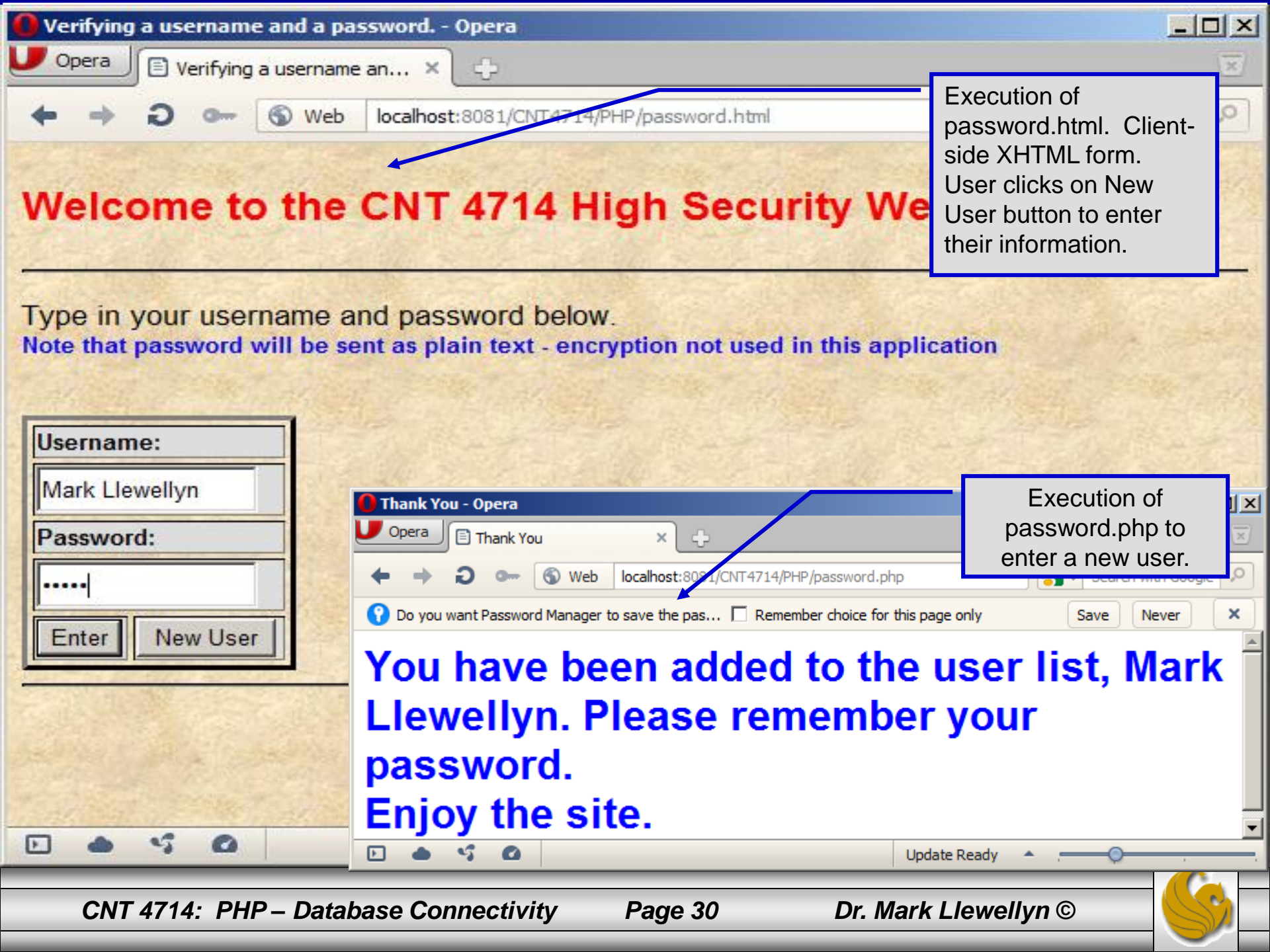
File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

php.ini | homework.html | zipcode.py | project6.html | form.html | form.php | expression.php | password.html | password.php

```php
52              // split username and password using comma delimited string
53              $field = split( ",", $line, 2 );
54          // verify username
55              if ( $USERNAME == $field[ 0 ] ) {
56                  $userVerified = 1;
57
58                  // call function checkPassword to verify user's password
59                  if ( checkPassword( $PASSWORD, $field ) == true )
60                      accessGranted( $USERNAME );
61                  else
62                      wrongPassword();
63              }
64          }
65          // close text file
66          fclose( $file );
67
68          // call function accessDenied if username has not been verified
69          if ( !$userVerified )
70              accessDenied();
71      }
72
73       // verify user password and return a boolean
74      function checkPassword( $userpassword, $filedata )
75      {
76          if ( $userpassword == $filedata[ 1 ] )
77              return true;
```

PHP Hypertext Preprocessor fi length : 4722   lines : 124   Ln : 51   Col : 1   Sel : 0 | 0   Dos\Windows   ANSI   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

php.ini   homework.html   zipcode.py   project6.html   form.html   form.php   expression.php   password.html   password.php

password.php – page 4

```
 80                 }
 81                // print a message indicating the user has been added
 82                function userAdded( $name )   {
 83                   print( "<title>Thank You</title></head>
 84                      <body style = \"font-family: arial; font-size: 2em; color: blue;\">
 85                      <strong>You have been added
 86                      to the user list, $name.  Please remember your password.
 87                      <br />Enjoy the site.</strong>" );
 88                }

 90                // print a message indicating permission has been granted
 91                function accessGranted( $name )   {
 92                   print( "<title>Thank You</title></head>
 93                      <body style = \"font-family: arial; font-size: 2em; color: blue\">
 94                      <strong>Permission has been
 95                      granted, $name. <br />
 96                      Enjoy the site.</strong>" );
 97                }
 98             // print a message indicating password is invalid
 99             function wrongPassword()    {
100                print( "<title>Access Denied</title></head>
101                   <body style = \"font-family: arial; font-size: 2em; color: red\">
102                   <strong>You entered an invalid password.<br />Access has been denied.</stro
103                }
104          // print a message indicating access has been denied
```

PHP Hypertext Preprocessor fi   length : 4722   lines : 124   Ln : 77   Col : 28   Sel : 0 | 0   Dos\Windows   ANSI   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

password.php – page 5

php.ini | homework.html | zipcode.py | project6.html | form.html | form.php | expression.php | password.html | password.php

```
100                  print( "<title>Access Denied</title></head>
101                      <body style = \"font-family: arial; font-size: 2em; color: red\">
102                      <strong>You entered an invalid password.<br />Access has been denied.</stro
103                  }
104      // print a message indicating access has been denied
105      function accessDenied()    {
106          print( "<title>Access Denied</title></head>
107              <body style = \"font-family: arial; font-size: 2em; color: red\">
108              <strong>You were denied access to this server.
109              <br /></strong>" );
110          }
111
112           // print a message indicating that fields
113           // have been left blank
114      function fieldsBlank()    {
115          print( "<title>Access Denied</title></head>
116              <body style = \"font-family: arial; font-size: 2em; color: red\">
117              <strong>Please fill in all form fields.<br /></strong>" );
118          }
119      ?>
120      </body>
121  </html>
122
123
124
```

PHP Hypertext Preprocessor fi length : 4722 lines : 124   Ln : 104   Col : 33   Sel : 0 | 0   Dos\Windows   ANSI   INS

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

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.

Welcome to the CNT 4714 High Secu

Type in your username and password below.

Note that password will be sent as plain text - encryption not used in this application

Username:

MarkLlewellyn

Password:

●●●●●

Enter | New User

Access Denied

localhost:8081/password.php

Apps | Zimbra Web Client L... | Cycling News & Rac... | News 13 - Orlando ... | Imported From IE

You entered an invalid password. Access has been denied.

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.

The password.txt "database"

- 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.
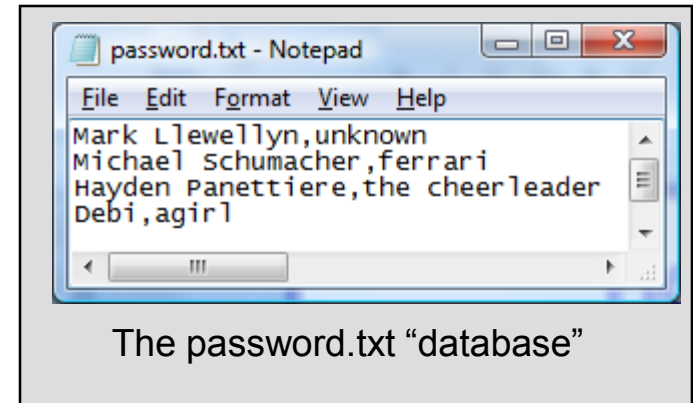
PHP and Database Connectivity

- 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.

- Since we installed PHP 5.5.5 with only basic extensions loaded, you'll need to edit your `php.ini` file to enable the MySQL dynamic extensions. The following pages illustrate the changes you need to make to your `php.ini` file.

  – Versions of MySQL greater than 4.1.0 use MySQLi extensions.

  – Versions of MySQL less than 4.1.0 use MySQL extensions.

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

php.ini | homework.html | zipcode.py | project6.html | form.html | form.php | expression.php | password.html | password.php

```
606    ; PHP's default setting is "&".
607    ; NOTE: Every character in this directive is considered as separator!
608    ; http://php.net/arg-separator.input
609    ; Example:
610    ;arg_separator.input = ";&"
611
612    ; This directive determines which super global arrays are registered when PHP
613    ; starts up. G,P,C,E & S are abbreviations for the following respective super
614    ; globals: GET, POST, COOKIE, ENV and SERVER. There is a performance penalty
615    ; paid for the registration of these arrays and because ENV is not as commonly
616    ; used as the others, ENV is not recommended on productions servers. You
617    ; can still get access to the environment variables through getenv() should you
618    ; need to.
619    ; Default Value: "EGPCS"
620    ; Development Value: "GPCS"
621    ; Production Value: "GPCS";
622    ; http://php.net/variables-order
623    variables_order = "GPCS"
624
625    ; This directive determines which super global data (G,P,C,E & S) should
626    ; be registered into the super global array REQUEST. If so, it also determines
627    ; the order in which that data is registered. The values for this directive are
628    ; specified in the same manner as the variables_order directive, EXCEPT one.
629    ; Leaving this value empty will cause PHP to use the value set in the
630    ; variables_order directive. It does not mean it will leave the super globals
```

> If it is not already here, add this line in your php.ini file. This line determines which super_global arrays are registered when PHP starts,

MS ini file   length : 73057   lines : 1977   Ln : 470   Col : 36   Sel : 0 | 0   Dos\Windows   ANSI as UTF-8   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

php.ini ☒ homework.html ☒ zipcode.py ☒ project6.html ☒ form.html ☒ form.php ☒ expression.php ☒ password.html ☒ password.php ☒

```
720    ; http://php.net/doc-root
721    doc_root =c:\apache24\htdocs
722
723    ; The directory under which PHP opens the script using /~username used only
724    ; if nonempty.
725    ; http://php.net/user-dir
726    user_dir =
727
728    ; Directory in which the loadable extensions (modules) reside.
729    ; http://php.net/extension-dir
730    ; extension_dir = "./"
731    ; On windows:
732    ; extension_dir = "ext"
733    extension_dir = "c:/php/ext"
734
735    ; Directory where the temporary files should be placed.
736    ; Defaults to the system default (see sys_get_temp_dir)
737    ; sys_temp_dir = "/tmp"
738
739    ; Whether or not to enable the dl() function.  The dl() function does NOT work
740    ; properly in multithreaded servers, such as IIS or Zeus, and is automatically
741    ; disabled on them.
742    ; http://php.net/enable-dl
743    enable_dl = Off
744
```

> Set the path to the loadable extensions directory.

MS ini file   length : 73057   lines : 1977   Ln : 732   Col : 24   Sel : 0 | 0   Dos\Windows   ANSI as UTF-8   INS

C:\php\php.ini - Notepad++

File Edit Search View Encoding Language Settings Macro Run Plugins Window ?   X

php.ini | homework.html | zipcode.py | project6.html | form.html | form.php | expression.php | password.html | password.php

```
873      ; Be sure to appropriately set the extension_dir directive.
874      ;
875      ;extension=php_bz2.dll
876      ;extension=php_curl.dll
877      ;extension=php_fileinfo.dll
878      ;extension=php_gd2.dll
879      ;extension=php_gettext.dll
880      ;extension=php_gmp.dll
881      ;extension=php_intl.dll
882      ;extension=php_imap.dll
883      ;extension=php_interbase.dll
884      ;extension=php_ldap.dll
885      ;extension=php_mbstring.dll
886      ;extension=php_exif.dll          ; Must be after mbstring as it
887      extension=php_mysql.dll
888      extension=php_mysqli.dll
889      ;extension=php_oci8.dll          ; Use with Oracle 10gR2 Instant Client
890      ;extension=php_oci8_11g.dll      ; Use with Oracle 11gR2 Instant Client
891      ;extension=php_openssl.dll
892      ;extension=php_pdo_firebird.dll
893      ;extension=php_pdo_mysql.dll
894      ;extension=php_pdo_oci.dll
895      ;extension=php_pdo_odbc.dll
896      ;extension=php_pdo_pgsql.dll
897      ;extension=php_pdo_sqlite.dll
```

Turn on both the mysql and mysqli extensions by uncommenting these two lines.

MS ini file   length : 73057   lines : 1977   Ln : 734   Col : 1   Sel : 0 | 0   Dos\Windows   ANSI as UTF-8   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

php.ini | homework.html | zipcode.py | project6.html | form.html | form.php | expression.php | password.html | password.php

```
1122
1123   ; Maximum number of persistent links.   -1 means no limit.
1124   ; http://php.net/mysql.max-persistent
1125   mysql.max_persistent = -1
1126
1127   ; Maximum number of links (persistent + non-persistent).   -1 means no limit.
1128   ; http://php.net/mysql.max-links
1129   mysql.max_links = -1
1130
1131   ; Default port number for mysql_connect().  If unset, mysql_connect() will use
1132   ; the $MYSQL_TCP_PORT or the mysql-tcp entry in /etc/services or the
1133   ; compile-time value defined MYSQL_PORT (in that order).   Win32 will only look
1134   ; at MYSQL_PORT.
1135   ; http://php.net/mysql.default-port
1136   mysql.default_port = 3310
1137
1138   ; Default socket name for local MySQL connects.   If empty, uses the built-in
1139   ; MySQL defaults.
1140   ; http://php.net/mysql.default-socket
1141   mysql.default_socket =
1142
1143   ; Default host for mysql_connect() (doesn't apply in safe mode).
1144   ; http://php.net/mysql.default-host
1145   mysql.default_host =
1146
```

Specify the default port on which the MySQL Server is listening for the mysql extensions.

MS ini file   length : 73057   lines : 1977   Ln : 734   Col : 1   Sel : 0 | 0   Dos\Windows   ANSI as UTF-8   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

php.ini | homework.html | zipcode.py | project6.html | form.html | form.php | expression.php | password.html | password.php

```
1182   ; Maximum number of links.  -1 means no limit.
1183   ; http://php.net/mysqli.max-links
1184   mysqli.max_links = -1
1185
1186   ; If mysqlnd is used: Number of cache slots for the internal result set cache
1187   ; http://php.net/mysqli.cache_size
1188   mysqli.cache_size = 2000
1189
1190   ; Default port number for mysqli_connect().  If unset, mysqli_connect() will use
1191   ; the $MYSQL_TCP_PORT or the mysql-tcp entry in /etc/services or the
1192   ; compile-time value defined MYSQL_PORT (in that order).  Win32 will only look
1193   ; at MYSQL_PORT.
1194   ; http://php.net/mysqli.default-port
1195   mysqli.default_port = 3310
1196
1197   ; Default socket name for local MySQL connects.  If empty, uses the built-in
1198   ; MySQL defaults.
1199   ; http://php.net/mysqli.default-socket
1200   mysqli.default_socket =
1201
1202   ; Default host for mysql_connect() (doesn't apply in safe mode).
1203   ; http://php.net/mysqli.default-host
1204   mysqli.default_host =
1205
1206   ; Default user for mysql_connect() (doesn't apply in safe mode).
```

> Specify the default port on which the MySQL Server is listening for the mysqli extensions.

MS ini file   length : 73057   lines : 1977   Ln : 1138   Col : 1   Sel : 2 | 2   Dos\Windows   ANSI as UTF-8   INS

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 `hello.php` script and looking for these entries.

mysql

MySQL Support	enabled
Active Persistent Links	0
Active Links	0
Client API version	mysqlnd 5.0.11-dev - 20120503 - $Id: 40933630edef551dfaca71298a83fad8d03d62d4 $

Directive	Local Value	Master Value
mysql.allow_local_infile	On	On
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	3310	3310
mysql.default_socket	no value	no value
mysql.default_user	no value	no value
mysql.max_links	Unlimited	Unlimited

localhost:8081/hello.php

Apps   Zimbra Web Client L...   Cycling News & Rac...   News 13 - Orlando ...   Imported From IE

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 `hello.php` script and looking for these entries.

mysqli

Mysqli Support	enabled
Client API library version	mysqlnd 5.0.11-dev - 20120503 - $Id: 40933630edef551dfaca71298a83fad8d03d62d4 $
Active Persistent Links	0
Inactive Persistent Links	0
Active Links	0

Directive	Local Value	Master Value
mysqli.allow_local_infile	On	On
mysqli.allow_persistent	On	On
mysqli.default_host	no value	no value
mysqli.default_port	3310	3310
mysqli.default_pw	no value	no value
mysqli.default_socket	no value	no value
mysqli.default_user	no value	no value
mysqli.max_links	Unlimited	Unlimited

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:
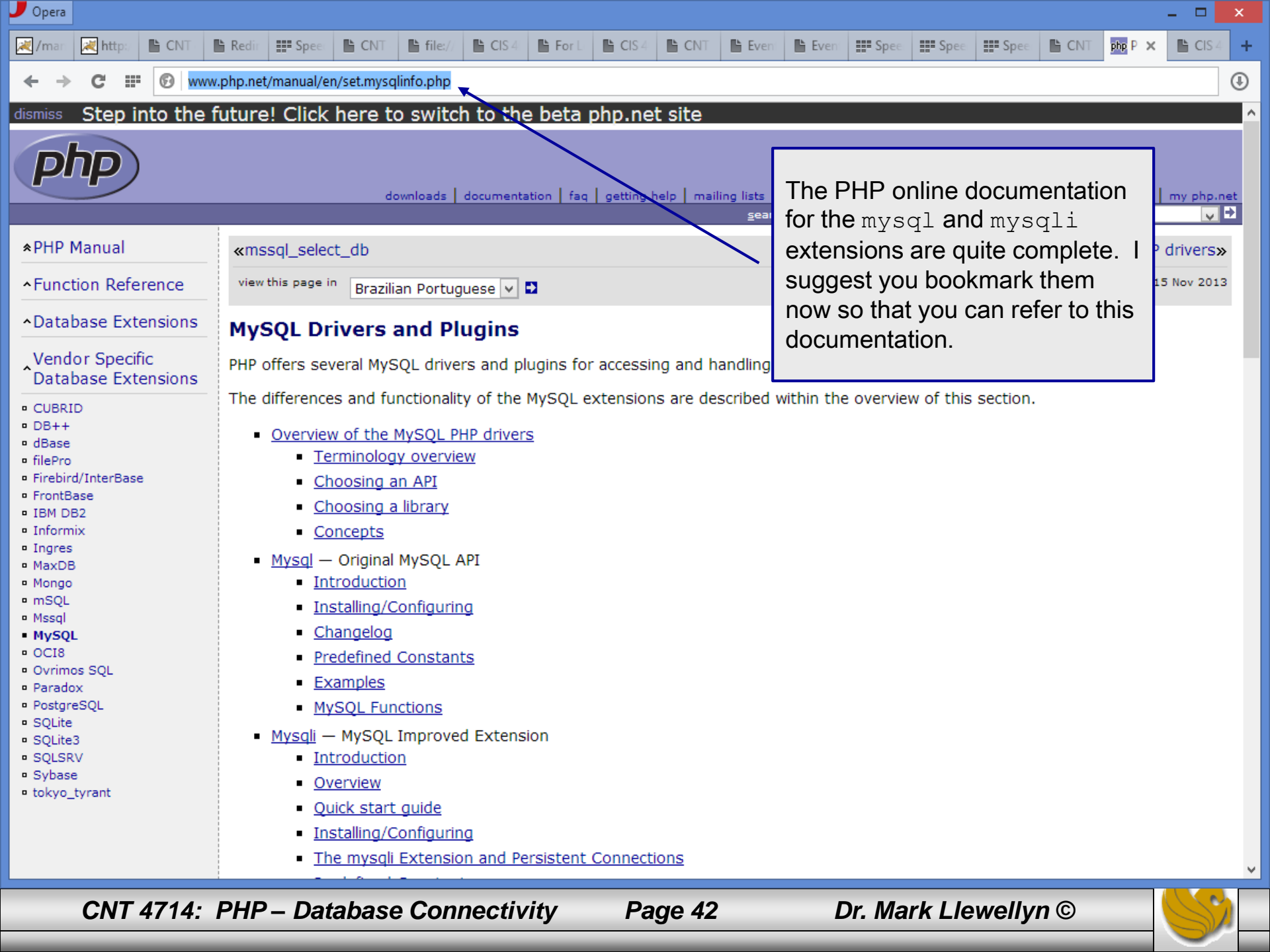
  http://www.php.net/manual/en/set.mysqlinfo.php

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 HTML 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.

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

zipcode.py | project6.html | form.html | form.php | expression.php | password.html | password.php

data.html

Client side

```html
1  <!DOCTYPE html>
2  <!-- data.html        -->
3  <!-- Querying a MySQL Database From a PHP Script -->
4  <html lang="en">
5      <head>
6          <title>Sample Database Query From PHP</title>
7      </head>
8      <body style = "background-color: #545454" background=image1.jpg > <!--F0E68C   -->
9          <h2 style = "font-family: arial color: blue">
10             Querying a MySQL database from a PHP Script.
11         </h2>
12         <form method = "post" action = "database.php">
13             <p>Select a field to display:
14                 <!-- add a select box containing options -->
15                 <!-- for SELECT query                   -->
16                 <select name = "select">
17                     <option selected = "selected">*</option>
18                     <option>bikename</option>
19                     <option>size</option>
20                     <option>color</option>
21                     <option>cost</option>
22                     <option>purchased</option>
23                     <option>mileage</option>
24                 </select>
25             </p>
26             <input type = "submit" value = "Send Query" style = "background-color: blue;
27                 color: yellow; font-weight: bold" />
28         </form>
29     </body>
```

Hyper Text Markup Language | length : 1129   lines : 34 | Ln : 4   Col : 16   Sel : 0 | 0 | Macintosh | ANSI as UTF-8 | INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

project6.html   form.html   form.php   expression.php   password.html   password.php   data.html

database.php

Server side

Page 1

```php
1   <!DOCTYPE html>
2   <!-- database.php          -->
3   <!-- Program to query a database and send results to the client.
4
5   <html lang="en">
6      <head>
7         <title>Database Search Results</title>
8      </head>
9      <body style = "font-family: arial, sans-ser
10        style = "background-color: #4A766E" back
11        <?php
12           extract( $_POST );
13           // build SELECT query
14           $query = "SELECT " . $select . " FROM bikes";
15           // Connect to MySQL
16           if ( !( $database = mysqli_connect( "localhost:3310",
17              "root", "root", "bikedb" ) ) )
18              die( "Could not connect to database" );
19           // query bikedb database
20           if ( !( $result = mysqli_query( $database, $query ) ) ) {
21              print( "Could not execute query! <br />" );
22              die( mysqli_error() );
23           }
24        ?>
25        <h3 style = "color: blue">
26        Database Search Results</h3>
27        <table border = "1" cellpadding = "3" cellspacing =
28           style = "background-color: #00FFFF">  <!-- ADD8E
29
```

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.

PHP Hypertext Preprocessor fi   length : 2079   lines : 67   Ln : 4   Col : 1   Sel : 0 | 0   Dos\Windows   ANSI as UTF-8   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

database.php

Server side

Page 2

```php
            <?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>");

                // 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>
        <br />Your search yielded <strong>
```

Get metadata for the query

Display metadata in the top row of the table

PHP Hypertext Preprocessor fi | length : 2079   lines : 67   Ln : 29   Col : 3   Sel : 0 | 0   Dos\Windows   ANSI as UTF-8   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

| project6.html | form.html | form.php | expression.php | password.html | password.php | data.html |

database.php

Server side

Page 3

```php
40
41              // fetch each record in result set
42             for ( $counter = 0;
43                 $row = mysqli_fetch_row( $result );
44                 $counter++ ){
45
46                 // build table to display results
47                 print( "<tr>" );
48
49                 foreach ( $row as $key => $value )
50                     print( "<td>$value</td>" );
51
52                 print( "</tr>" );
53             }
54             mysqli_close( $database );
55          ?>
56         </table>
57         <br />Your search yielded <strong>
58         <?php print( "$counter" ) ?> results.<br /><br /></strong>
59         <h5>Please email comments to
60             <a href = "mailto:markl@cs.ucf.edu">
61           markl@cs.ucf.edu
62             </a>
63         </h5>
64     </body>
65 </html>
66
67
```

PHP Hypertext Preprocessor fi | length : 2079   lines : 67 | Ln : 41   Col : 9   Sel : 0 | 0 | Dos\Windows | ANSI as UTF-8 | INS

Execution of data.html – Client side

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.

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
Bianchi Infinito	58	celeste	8900	2011-07-14	0
BMC SLC01 - Swiss	58	red/black/white	8000	2010-06-23	0
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
Ridley Damocles	58	blue/black	7500	2008-06-27	0
Ridley X-Fire	58	red/white	7500	2011-09-01	0
Schwinn Paramount P14	60	blue	1800	1992-03-01	200

Your search yielded **14 results.**

Please email comments to markl@cs.ucf.edu

Results of query **SELECT * FROM bikes**. Display indicates that 14 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 HTML output that reflects the preferences or information that is stored in the cookie.

- The location of the cookie file varies from browser to browser. In Opera you can get to your cookies via the settings/privacy & security settings.

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.
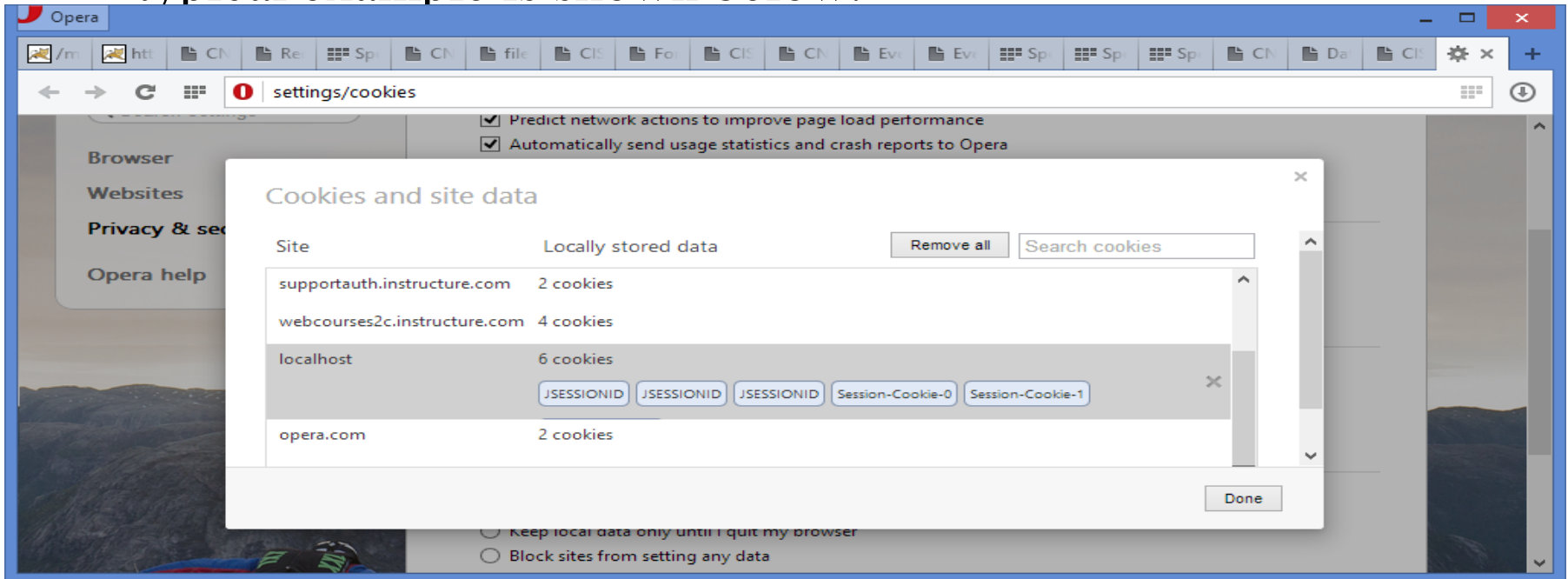
- The contents of a cookie are shown on page 63.

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 HTML document and the PHP script are shown on the next pages. The HTML document `cookies.html` is on page 55 and the PHP script `cookies.php` appears on page 56.

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

cookies.html

| form.php | expression.php | password.html | password.php | data.html | database.php | cookies.html | cookies.php |

```html
 1  <!DOCTYPE html>
 2  <!-- cookies.html -->
 3  <!-- Writing a Cookie          -->
 4
 5  <html lang="en">
 6      <head>
 7          <title>Writing a cookie to the client computer</title>
 8      </head>
 9  <body style = "font-family: arial, sans-serif;
10          background-color: #856363"  background=image1.jpg>
11          <h2>Click Write Cookie to save your cookie data.</h2>
12          <form method = "post" action = "cookies.php"
13                  style = "font-size: 10pt" background-color: #856363">
14              <strong>Name:</strong><br />
15              <input type = "text" name = "NAME" /><br />
16              <strong>Height:</strong><br />
17              <input type = "text" name = "HEIGHT" /><br />
18              <strong>Favorite Color:</strong><br />
19              <input type = "text" name = "COLOR" /><br />
20      <p>
21              <input type = "submit" value = "Write Cookie"
22                  style = "background-color: #0000FF; color: yellow; font-weight: bold" />
23      </p>
24      </form>
25  </body>
26  </html>
27
28
29
```

Hyper Text Markup Language | length : 928   lines : 30 | Ln : 5   Col : 16   Sel : 0 | 0 | Macintosh | ANSI as UTF-8 | INS

File   Edit   Search   View   Encoding   Language   Se...   X

cookies.php – page 1

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

form.php   expression.php   password.html   password.php   data.html   database.php

```php
 1  <?php
 2      // cookies.php
 3      // Program to write a cookie to a client's machine
 4
 5      extract( $_POST );
 6      // write each form field's value to a cookie and set t
 7      // cookie's expiration date
 8      setcookie( "Name", $NAME, time() + 60 * 60 * 24 * 5 );
 9      setcookie( "Height", $HEIGHT, time() + 60 * 60 * 24 * 5 );
10      setcookie( "Color", $COLOR, time() + 60 * 60 * 24 * 5 );
11  ?>
12
13  <!DOCTYPE html>
14  <html lang="en">
15      <head>
16          <title>Cookie Saved</title>
17      </head>
18  <body style = "font-family: arial, sans-serif", background=i
19          <p><b>The cookie has been set with the following data:
20          <!-- print each form field's value -->
21          <br /><span style = "color: blue">Name:</span>
22              <?php print( $NAME ) ?><br />
23          <span style = "color: blue">Height:</span>
24              <?php print( $HEIGHT ) ?><br />
25          <span style = "color: blue">Favorite Color:</span>
26          <span style = "color: <?php print( "$COLOR\">$COLOR" )
27          </span><br />
28          <p>Click <a href = "readCookies.php">here</a>
29              to read the saved cookie.</p>
```
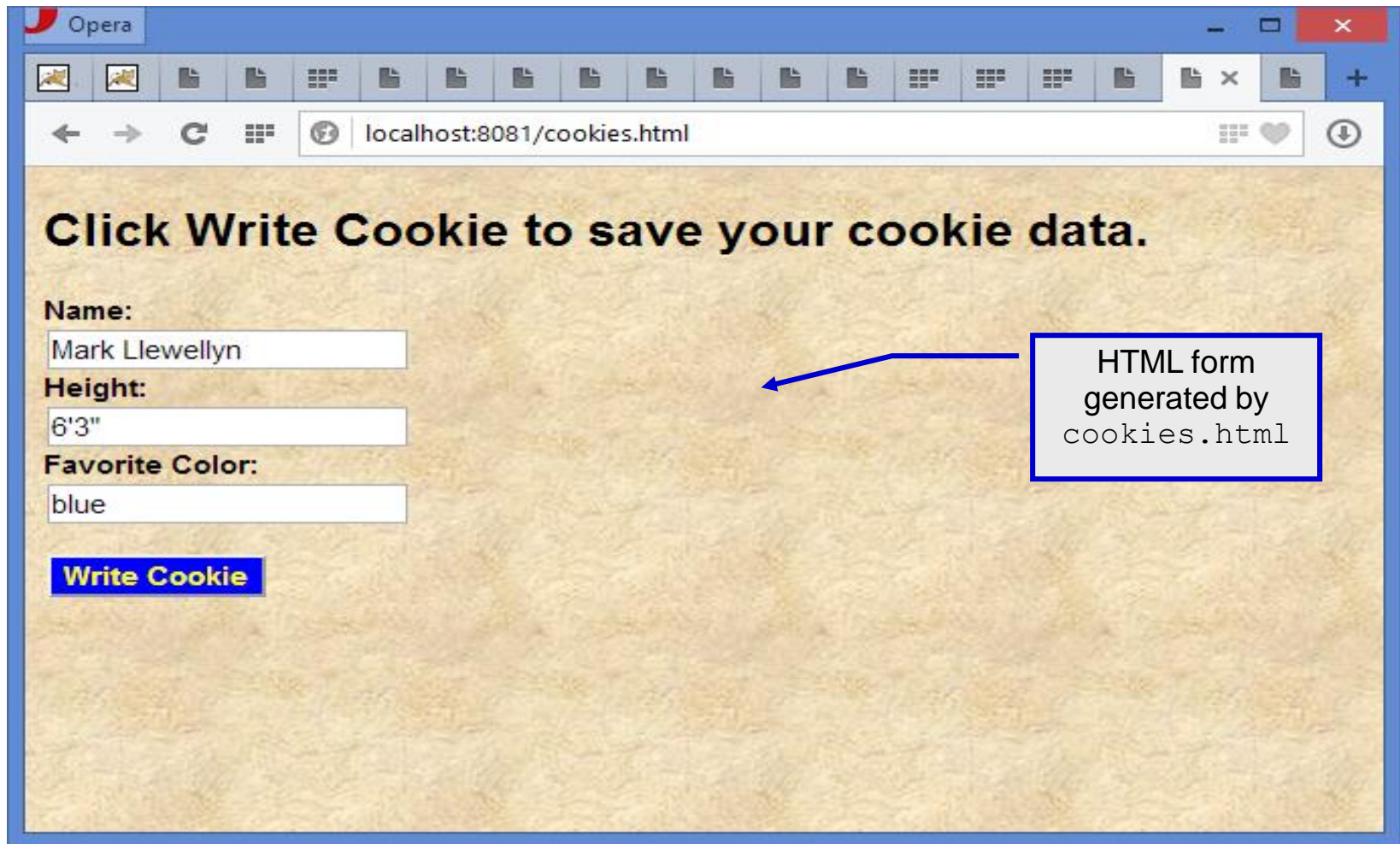
The third argument to `setcookie` is optional and indicates the expiration date of the cookie. In this case it is set to expire 5 days from the current time. Function `time` returns the current time and then we add to this the number of seconds after which the cookie is to expire.

PHP Hypertext Preprocessor fi   length : 1122   lines : 33   Ln : 14   Col : 15   Sel : 0 | 0   Dos\Windows   ANSI   INS

Cookies (cont.)

HTML form generated by `cookies.html`

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.

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

readCookies.php

expression.php | password.html | password.php | data.html | database.php | cookies.html | cookies.php | readCookies.php

```php
 1  <!DOCTYPE html>
 2  <!-- readCookies.php                        -->
 3  <!-- Program to read cookies from the client's computer -->
 4  <html lang="en">
 5      <head><title>Read Cookies</title></head>
 6  <body style = "font-family: arial, sans-serif" background=image1.jpg>
 7      <p>
 8          <strong>
 9              The following data is saved in a cookie on your computer.
10          </strong>
11      </p>
12      <table border = "5" cellspacing = "0" cellpadding = "10">
13          <?php
14              // iterate through array $_COOKIE and print
15              // name and value of each cookie
16              foreach ( $_COOKIE as $key => $value )
17                  print( "<tr>
18                      <td bgcolor=\"#F0F68C\">$key</td>
19                      <td bgcolor=\"#FFA500\">$value</td>
20                  </tr>" );
21          ?>
22      </table>
23  </body>
24  </html>
25
26
```

Superglobal array holding cookie.

PHP Hypertext Preprocessor fi   length : 849   lines : 26   Ln : 4   Col : 15   Sel : 0 | 0   Dos\Windows   ANSI as UTF-8   INS

Cookies (cont.)

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.

last_modified	0	0
xbithack	0	0

Contents of the cookie stored on the client machine.

Apache Environment

Variable	Value
HTTP_HOST	localhost:8081
HTTP_CONNECTION	keep-alive
HTTP_ACCEPT	text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
HTTP_USER_AGENT	Mozilla/5.0 (Windows NT 6.2; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/33.0.1750.154 Safa OPR/20.0.1387.91
HTTP_ACCEPT_ENCODING	gzip,deflate,lzma,sdch
HTTP_ACCEPT_LANGUAGE	en-US,en;q=0.8
HTTP_COOKIE	Name=Mark+Llewellyn; Height=6%27+3%22; Color=blue
PATH	c:\Program Files (x86)\AMD APP\bin\x86_64;c:\Program Files (x86)\AMD APP\bin\x86;C:\Program Files (x86)\ Client\;C:\Program Files\Intel\iCLS Client\;C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;C:\Windows\System32\WindowsPow Files\Intel\Intel(R) Management Engine Components\DAL;C:\Program Files\Intel\Intel(R) Management Engine Components\IPT;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\DAL;C:\Program Files (Management Engine Components\IPT;c:\Program Files (x86)\ATI Technologies\ATI.ACE\Core-Static;C:\Progran Protection\Access\Advanced\Wave\Gemalto\Access Client\w5\;C:\Program Files (x86)\Security Innovation\SI TS (x86)\Windows Live\Shared;C:\Users\Mark Llewellyn\AppData\Local\Smartbar\Application\;C:\Users\Mark Llewellyn\AppData\Local\Smartbar\Application\;C:\Program Files (x86)\MySQL\MySQL Utilities 1.3.6\;C:\Progra Communications Security\SSH Secure Shell
SystemRoot	C:\Windows
COMSPEC	C:\Windows\system32\cmd.exe

Cookies (cont.)

Cookie data as stored/viewed in Opera 20.0

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 HTML 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.

Hi **Mark**. Thank you for completing the survey.
You have been added to the **Mirror du Cyclisme** mailing list.

The following information has been saved in our database:

Name	Email	Phone	OS
Mark Llewellyn	markl@cs.ucf.edu	(407)823-2790	Windows 8

Click here to view entire database.

Screen the user sees after clicking the **Register** button.

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 [i-forgot   ]

Email [dead-letter   ]

Phone [(235)987-2344   ]

Must be in the form (555)555-5555

Publications ▽

Which magazine would you like information about?
[Cycling Weekly ▽]

Operating System ▽

Which operating system are you currently using?
○ Windows Vista ○ Windows 7 ● Windows 8
○ Linux ○ Other

[Register]

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.

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

```
 1   <!DOCTYPE html>
 2
 3   <!-- dynamicForm2.php              -->
 4
 5   <html lang="en">
 6      <head>
 7         <title>Sample form to take user input in HTML</title>
 8   </head>
 9   <body style = "font-family: arial, sans-serif;  background-color: #856363"  background=ima
10      <?php
11         extract ( $_POST );
12         $iserror = false;
13         // array of magazine titles
14         $maglist = array( "Velo-News",
15             "Cycling Weekly",
16             "Pro Cycling",
17             "Cycle Sport",
18          "RadSport",
19          "Mirror du Cyclisme" );
20         // array of possible operating systems
21         $systemlist = array( "Windows Vista",
22             "Windows 7",
23             "Windows 8",
24             "Linux",
25             "Other");
26   // array of name and alt values for the text input fields
27         $inputlist = array( "fname" => "First Name",
28             "lname" => "Last Name",
```

PHP Hypertext Preprocessor fi | length : 6317   lines : 166 | Ln : 7   Col : 48   Sel : 0 | 0 | Dos\Windows | ANSI | INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

dynamicForm2.php – page 2

cookies.html | cookies.php | readCookies.php | dynamicForm2.php | formDatabase2.php | php.ini | dynamicForm2.php

```php
28              "lname" => "Last Name",
29              "email" => "Email",
30              "phone" => "Phone" );
31          if ( isset ( $submit ) ) {
32              if ( $fname == "" ) {
33                  $formerrors[ "fnameerror" ] = true;
34                  $iserror = true;
35              }
36              if ( $lname == "" ) {
37                  $formerrors[ "lnameerror" ] = true;
38                  $iserror = true;
39              }
40              if ( $email == "" ) {
41                  $formerrors[ "emailerror" ] = true;
42                  $iserror = true;
43              }
44              if ( !ereg( "^\([0-9]{3}\)[0-9]{3}-[0-9]{4}$", $phone ) ) {
45                  $formerrors[ "phoneerror" ] = true;
46                  $iserror = true;
47              }
48              if ( !$iserror ) {
49                  // build INSERT query
50                  $query = "INSERT INTO contacts " .
51                      "(ID, LastName, FirstName, Email, Phone, Magazine, OS ) " .
52                      "VALUES (null, '$lname', '$fname', '$email', " .  "'" . quotemeta( $phone )
53  // Connect to MySQL
54                  if ( !( $database = mysql_connect( "localhost",
55                      "root", "root" ) ) )
```

PHP Hypertext Preprocessor fi | length : 6317   lines : 166   Ln : 28   Col : 33   Sel : 0 | 0   Dos\Windows   ANSI   INS

dynamicForm2.php – page 3

```
56              die( "Could not connect to database" );
57
58              // open MailingList database
59              if ( !mysql_select_db( "mailinglist", $database ) )
60                  die( "Could not open MailingList database" );
61
62              // execute query in MailingList database
63              if ( !( $result = mysql_query( $query, $database ) ) ) {
64                  print( "Could not execute query! <br />" );
65                  die( mysql_error() );
66              }
67              print( "<p>Hi
68                  <span style = 'color: blue'> <strong>$fname</strong></span>.
69                  Thank you for completing the survey.<br />
70                  You have been added to the <span style = 'color: blue'>
71                  <strong>$mag</strong></span> mailing list.              </p>
72                  <strong>The following information has been saved in our database:</strong><
73
74                  <table border = '0' cellpadding = '0' cellspacing = '10'>
75                  <tr>
76                  <td bgcolor = '#ffffaa'>Name </td>
77                  <td bgcolor = '#ffffbb'>Email</td>
78                  <td bgcolor = '#ffffcc'>Phone</td>
79                  <td bgcolor = '#ffffdd'>OS</td>
80                  </tr>
81                  <tr>
82  <!-- print each form field's value -->
83                  <td>$fname $lname</td>
```

PHP Hypertext Preprocessor fi length : 6317   lines : 166   Ln : 55 Col : 36 Sel : 0 | 0   Dos\Windows   ANSI   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

dynamicForm2.php – page 4

| cookies.html | cookies.php | readCookies.php | dynamicForm2.php | formDatabase2.php | php.ini | dynamicForm2.php |

```
89              <div style = 'font-size : 10pt; text-align: center'>
90              <div style = 'font-size : 18pt'>
91              <a href = 'formDatabase2.php'>
92              Click here to view entire database.</a>
93              </div>
94     </div></body></html>" );
95              die();
96              }
97         }
98      print( "<h1>This is a sample registration form.</h1>
99          Please fill in all fields and click Register." );
100     if ( $iserror ) {
101        print( "<br /><span style = 'color : red'>
102          Fields with * need to be filled in properly.</span>
103        }
104     print( "<!-- post form data to dynamicForm2.php -->
105        <form method = 'post' action = 'dynamicForm2.php'>
106        <img src = 'images/user.gif' alt = 'User' /><br />
107        <span style = 'color: blue'>
108        Please fill out the fields below.<br />
109        </span>
110     <!-- create four text boxes for user input -->" );
111        foreach ( $inputlist as $inputname => $inputalt ) {
112           $inputtext = $inputalt[ $inputname ];
113
114           print( "<img src = 'images/$inputname.gif'
115             alt = '$inputalt' /><input type = 'text'  name = '$inputname' value = '" . $$i
116        if ( $formerrors[ ( $inputname )."error" ] == true )
```

Invoke PHP script to see contents of entire database if user clicks this link. Code begins on page 75 .

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

PHP Hypertext Preprocessor fi   length : 6317   lines : 166   Ln : 75   Col : 8   Sel : 0 | 0   Dos\Windows   ANSI   INS

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

cookies.html   cookies.php   readCookies.php   dynamicForm2.php   formDatabase2.php   php.ini   dynamicForm2.php

```php
106            <img src = 'images/user.gif' alt = 'User' /><br />
107            <span style = 'color: blue'>
108            Please fill out the fields below.<br />
109            </span>
110     <!-- create four text boxes for user input -->" );
111     foreach ( $inputlist as $inputname => $inputalt ) {
112            $inputtext = $inputalt[ $inputname ];
113
114            print( "<img src = 'images/$inputname.gif'
115               alt = '$inputalt' /><input type = 'text'  name = '$inputname' value = '" . $$inputname . "' />" );
116            if ( $formerrors[ ( $inputname )."error" ] == true )
117               print( "<span style = 'color : red'>*</span>" );
118            print( "<br />" );
119        }
120     print( "<span style = 'font-size : 10pt" );
121     if ( $formerrors[ "phoneerror" ] )  print( "; color : red" );
122     print( "'>Must be in the form (555)555-5555
123            </span><br /><br />
124            <img src = 'images/downloads.gif'
125            alt = 'Publications' /><br />
126            <span style = 'color: blue'>
127            Which magazine would you like information about
128            </span><br />
129            <!-- create drop-down list containing magazine
130            <select name = 'mag'>" );
131     foreach ( $maglist as $currmag ) {
132            print( "<option" );
133            if ( ( $currmag == $mag ) )
```

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.

PHP Hypertext Preprocessor file   length : 6317   lines : 166   Ln : 120   Col : 3   Sel : 0 | 0   Dos\Windows   ANSI   INS

formDatabase2.php – page 1

```php
<!DOCTYPE html>

<!- formDatabase2.php        -->
<!-- Program to query a database and send results to the client. -->

<html lang="en">
    <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:3310",  "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>
```

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?

cookies.html   cookies.php   readCookies.php   dynamicForm2.php   formDatabase2.php   php.ini   dynamicForm2.php

```php
23          <h3 style = "color: blue">
24          Mailing List Contacts</h3>
25          <table border = "1" cellpadding = "3" cellspacing = "2"
26              style = "background-color: #ADD8E6">
27              <tr>
28                  <td>ID</td>
29                  <td>Last Name</td>
30                  <td>First Name</td>
31                  <td>E-mail Address</td>
32                  <td>Phone Number</td>
33                  <td>Magazine</td>
34                  <td>Operating System</td>
35              </tr>
36              <?php
37                  // fetch each record in result set
38                  for ( $counter = 0;
39                      $row = mysqli_fetch_row( $result );
40                      $counter++ ){
41                      // build table to display results
42                      print( "<tr>" );
43                      foreach ( $row as $key => $value )
44                          print( "<td>$value</td>" );
45                      print( "</tr>" );
46                  }
47                  mysqli_close( $database );
48              ?>
49          </table>
50      </body>
51  </html>
```

PHP Hypertext Preprocessor file   length : 1812   lines : 52   Ln : 2   Col : 1   Sel : 0 | 0   Dos\Windows   ANSI   INS

Screenshot of MySQL Workbench showing:

Title bar: MySQL Workbench

Tab: Local instance MySQL56

Menu: File Edit View Query Database Server Tools Scripting Help

ORACLE

Tabs: Query 1   hw3dbscript-V2   SQL File 2*

SCHEMAS navigator with Filter objects:
- bikedb
- colorsurvey
- guestbook
  - Tables
  - Views
  - Stored Procedur
  - Functions
- largeco
- mailinglist
  - Tables
    - contacts
  - Views
  - Stored Procedur

Management Schemas

Information
Schema: mailinglist

SQL editor line 1:
```
describe contacts
```

Result Set Filter: Export: Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
ID	int(10) unsigned zerofill	NO	PRI	NULL	auto_increment
LastName	varchar(30)	YES		NULL	
FirstName	varchar(30)	YES		NULL	
Email	varchar(30)	YES		NULL	
Phone	varchar(14)	YES		NULL	
Magazine	varchar(60)	YES		NULL	
OS	varchar(30)	YES		NULL	

Result 2

Output   Action Output

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

File   Edit   Search   View   Encoding   Language   Settings   Macro   Run   Plugins   Window   ?   X

bubbling.js ☒ │ demo_bubble.htm ☒ │ homework.html ☒ │ index.html ☒ │ mailing list script.sql ☒

```sql
 1    # SQL commands to create and populate the MySQL database for
 2    # PHP mailing list database application
 3    # CNT 4714 - Spring 2014
 4    #
 5    # delete the database if it already exists
 6    drop database if exists mailinglist;
 7
 8    #create a new database named mailinglist
 9    create database mailinglist;
10
11    #switch to the new database
12    use mailinglist;
13
14    #create the schemas for the four relations in this database
15    create table contacts (
16        ID integer unsigned zerofill auto_increment not null,
17        LastName varchar(30),
18        FirstName varchar(30),
19        Email varchar(30),
20        Phone varchar(14),
21        Magazine varchar(60),
22        OS varchar(30),
23        primary key (ID)
24    );
25
```

The script to generate/populate the MailingList database table contacts required for the PHP database example to work. Script is available on the course code page.

Structured Query   length : 665   lines : 27   Ln : 16   Col : 58   Sel : 0 | 0   Dos\Windows   ANSI as UTF-8   INS