COMP284 Scripting Languages
Lecture 12: PHP (Part 4)
Handouts

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Contents

Web applications using PHP

IBM: Build Ajax-based Web sites with PHP, 2 Sep 2008.
`https://www.ibm.com/developerworks/library/wa-aj-php/` [accessed 6 Mar 2013]

HTML forms

When considering Perl CGI programming we have used HTML forms that generated a client request that was handled by a Perl CGI program:

```
<form action=
 "http://cgi.csc.liv.ac.uk/cgi-bin/cgiwrap/ullrich/demo"
 method="post">
...
</form>
```


Now we w


```
<form action="http://cgi.csc.liv.ac.uk/~ullrich/demo.php"
 method="post">
...
</form>
```


- The PHP script file must be stored in a directory accessible by the web server, for example `$HOME/public_html`, and be readable by the web server
- The PHP script file name must have the extension `.php`, e.g. `demo.php`

Information available to PHP scripts

- Information about the PHP environment
- Information about the web server and client request
- Information stored in files and databases
- Form d
- Cooki
- Misce
  - `string date(format)`
    returns the current date/time presented accordin
    for example `date('H:i:j F Y')`
    results in `12:20 Thursday, 8 March 2012`
    (See `http://www.php.net/manual/en/function.date.php`)
  - `int time()`
    returns the current time measured in the number of seconds since January 1 1970 00:00:00 GMT

PHP environment

- `phpinfo()` displays information about the PHP installation and EGPCS data (Environment, GET, POST, Cookie, and Server data) for the current client request
- `phpinfo(`*part*`)` displays selected information


```
<html><he
<?php
  phpinf
  phpinf
?>
</body></html>
```


http://cgi.csc.liv.ac.uk/~ullrich/COMP28

`INFO_GENERAL`	The configuration, p web server
`INFO_CONFIGURATION`	Local and master values for PHP directives
`INFO_MODULES`	Loaded modules
`INFO_VARIABLES`	All EGPCS data

Manipulating the PHP configuration

The following functions can be used to access and change the configuation of PHP from within a PHP script:

- array ini_get_all()
  - returns all the registered configuration options

- stri
  - retu

- string ini_set(*option*, *value*)
  - sets the value of the given configuration option to a new v
  - the configuration option will keep this new value duri execution and will be restored afterwards

- void ini_restore(*option*)
  - restores a given configuration option to its original value

Server variables

The $_SERVER array stores information about the web server and the client request

- Similar to %ENV for Perl CGI programs


```
<html><head></head><body>
<?php
echo 'Server s
echo 'Remote a
echo 'Client b
echo 'Request method: ',$_SERVER['REQUEST_METHOD'];
?></body></html>
```


http://cgi.csc.liv.ac.uk/~ullrich/COMP28


```
Server software: Apache/2.2.22 (Fedora)
Remote address: 10.128.0.215
Client browser: Mozilla/5.0 ... Chrome/41.0.2272.53 ...
Request method:
```

See http://php.net/manual/en/reserved.variables.server.php for a list of keys

Form data

- Form data is passed to a PHP script via the three arrays:

`$_POST`	Data from POST client requests
`$_GET`	Data from GET client requests
`$_REQUEST`	Combined data from POST and GET client requests

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usi


```
<form action="process.php" method="post">
<label>Enter your user name:
        <input type="text" name="username"></label><br>
<label>Enter your full name:
        <input type="text" name="fullname"></label><br>
<input type="submit" value="Click␣for␣response"></form>
```


`$_REQUEST['username']`	Value entered into field with name 'username'
`$_REQUEST['fullname']`	Value entered into field with name 'fullname'

Forms in PHP: Example (1)

- Create a web-based system that asks the user to enter the URL of a file containing bibliographic information
- Bibliographic information will have the following form:

```
@entry{
 name=
 name=
 title
}
@entry{
 name={Andreas Schoknecht},
 name={Eva Eggeling},
 title={No End in Sight?}
}
```


- The system should extract the names, count them, and create a table of names and their frequency, ordered from most frequent to least frequent

Forms in PHP: Example (1)

extract_names.php

```
<!DOCTYPE html>
<html><head><title>Name Extraction</title></head><body>
<?php
require_once 'extraction.php';
 if (isset($_SERVER['REQUEST_METHOD']) &&
     $_SERVER['REQUEST_METHOD'] == 'POST' &&
     isse
   $extrac
   echo "<p>T

 } else {
   echo <<<FORM
   <form method="post">
     <label>Enter a URL:
       <input type="text" name="url" size="100"
        value="http://cgi.csc.liv.ac.uk/~ull
     </label><br><br>
     <input type="submit" value="Extract Names">
   </form>
FORM;
 }
?>
</body></html>
```

http://cgi.csc.liv.ac.uk/~ullrich/COMP284/examples/extract_names.php

Forms in PHP: Example (1)

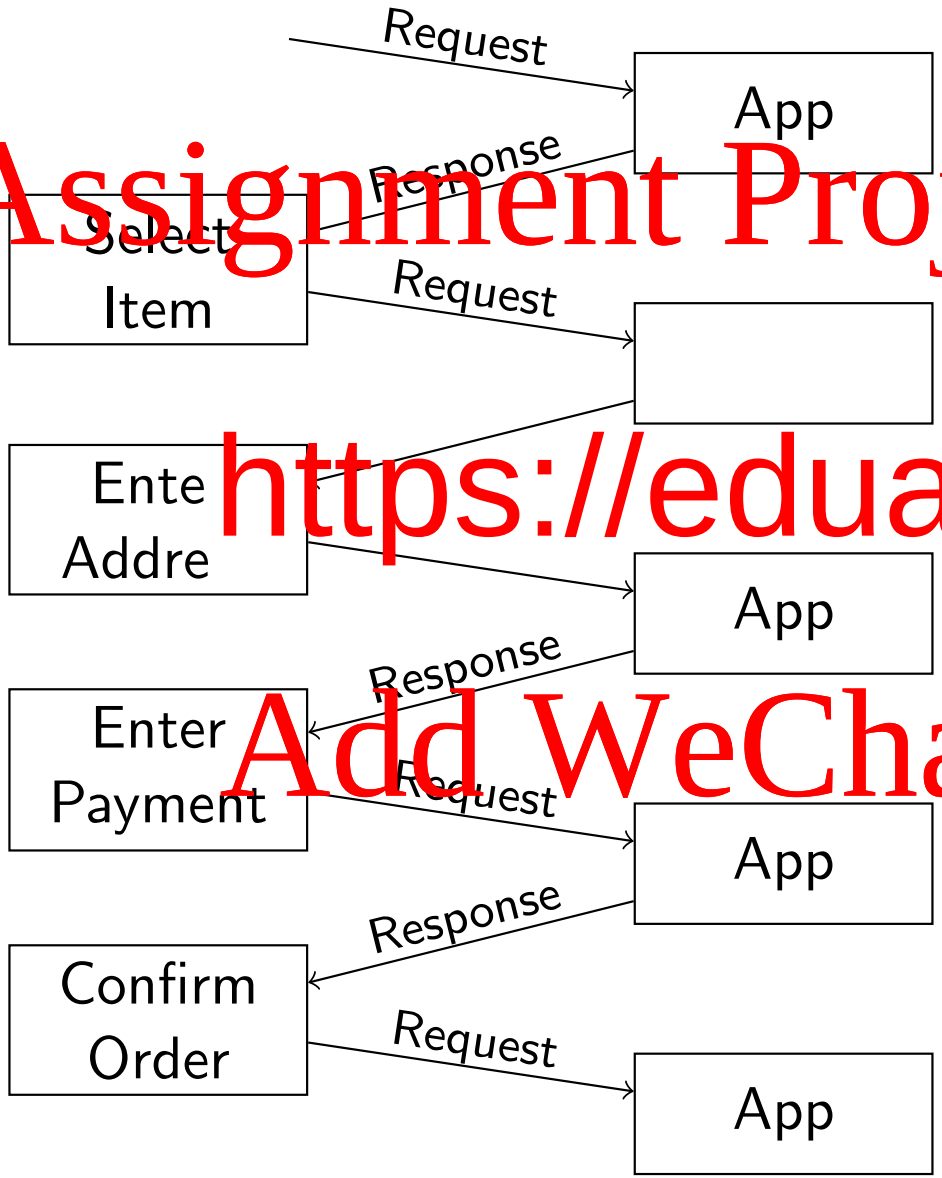
extraction.php

```
<?php
function extract_names($url) {
 $text = file_get_contents($url);
 if ($text === false)
   return "ERROR: INVALID URL!";
 else {
   $corr

   if ($cor
   $count = array_count_values($matches[1]);
   arsort($count);
   foreach ($count as $name => $number) {
     $table .= "<tr><td>$name</td><td>$number</td></tr>";
   }
   $table = "<table><thead><tr><th>Name</th><th>No of occur".
   "rences</th></tr></thead><tbody>".$table."</tbody></table>";
   return $table;
} }
?>
```

http://cgi.csc.liv.ac.uk/~ullrich/COMP284/examples/extraction.php

Web Applications Revisited



- An interaction between a user and a server-side web application often requires a sequence of requests and responses

ation

uests

-

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data needs to be transferred from one execution of the application to the next

Transfer of Data: Example

- Assume for a sequence of requests we do not care whether they come from the same user or different users
- Then hidden inputs can be used for the transfer of data from one request / page to the next

form1.php

```
<form action
  <label
</form>
```


form2.php

```
<form action="process.php" method="post">
  <label>Address: <input type="text" name="address"></lab
  <input type='hidden' name='name'
         value="<?php echo $_REQUEST['name'] ?>">
</form>
```


process.php

```
<?php
 echo $_REQUEST['name'];    echo $_REQUEST['address'];
?>
```

Sessions

- By default, HTML and web servers do not keep track whether several client requests come from the same user or different users
  Thus a process that spans several pages, for example placing an order, requires additional mechanisms
- Sessio
  specifi
- Sessions are often linked to user authentication but session can be used without user authentication, for example, eCom
  a 'shopping basket' without requiring user authe
  However, sessions are the mechanism that is typic
  deny access to web pages based on a user having been authenticated

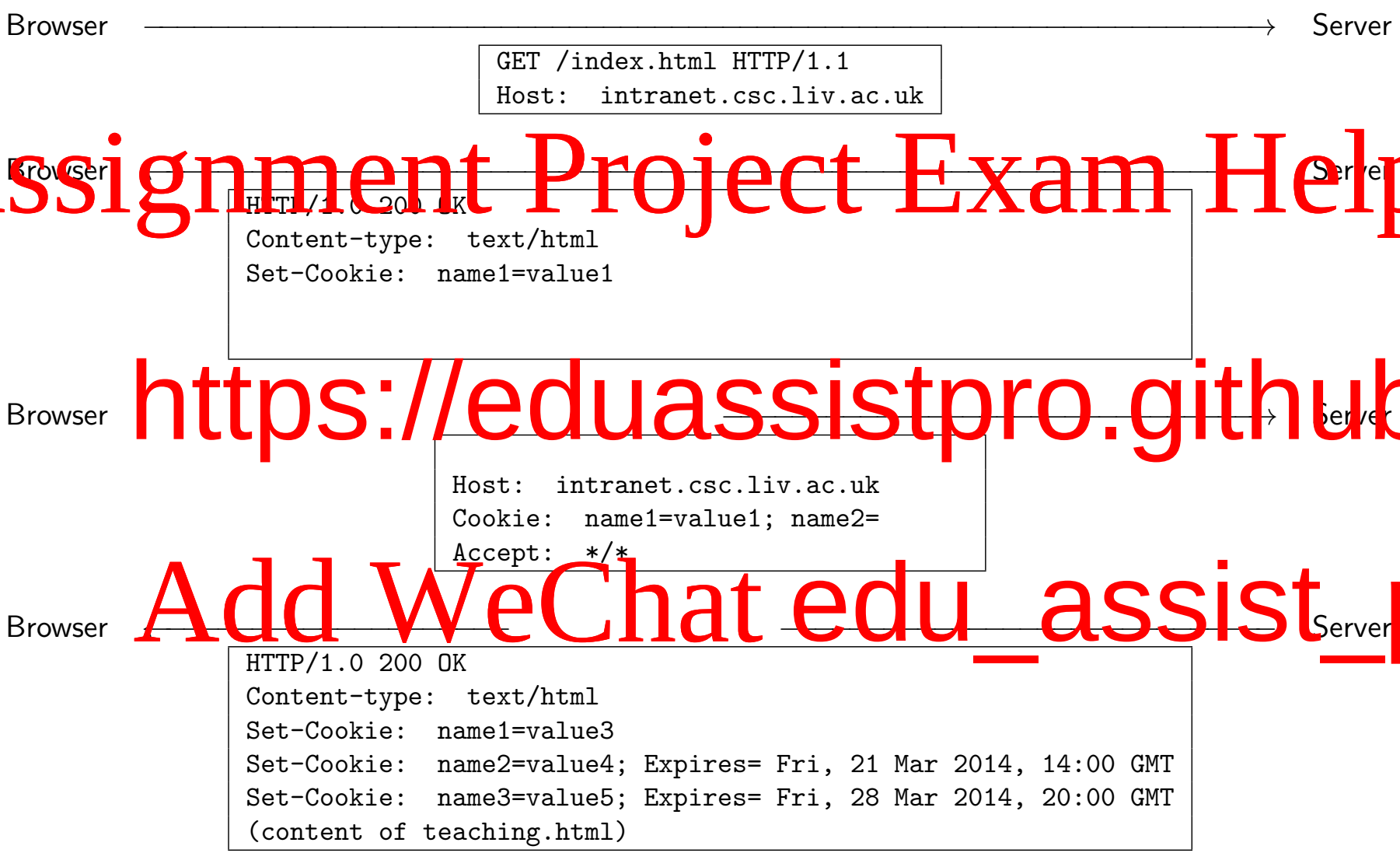
Sessions

- Servers keep track of a user's sessions by using a session identifier, which
  - is generated by the server when a session starts and
  - is then used by the browser when the user requests a page from the server

  The ses
  sessio
- In addit
  relate to a user and her session (session data), for exa
  the items of an order
- Sessions only store information temporarily

  If one needs to preserve information between visits by the same user, one needs to consider a method such as using a cookie or a database to store such information

Cookies



Wikipedia Contributors: HTTP Cookie. Wikipedia, The Free Encyclopedia, 5 March 2014 20:50. `http://en.wikipedia.org/wiki/HTTP_cookie` [accessed 6 Mar 2014]

PHP sessions

Sesssions proceed as follows

1. Start a PHP session
   - bool session_start()
   - string session_id([*id*])
   - bo
2. Mai
   - bo
   - $_SESSION array
   - bool isset($_SESSION[*key*])
   - (interacting with a database)
3. End a PHP session
   - bool session_destroy()
   - void session_unset()
   - bool setcookie(*name*, *value*, *expires*, *path*)

Start a session

- `bool session_start()`
  - creates a session
  - creates a session identifier (session id) when a session is created
  - sets up `$_SESSION` array that stores session variables and session data
  - the fu
    or ou
- `stri`
  - get or set the session id for the current session
  - the constant `SID` can also be used to retrieve the cu
    session id as a string suitable for adding to URLs
- `string session_name([name])`
  - returns the name of the current session
  - if a name is given, the current session name will be replaced with the given one and the old name returned

Start a PHP session

- bool session_regenerate_id([*delete_old*])
  - replaces the current session id with a new one
  - by default keeps the current session information stored in $_SESSION
  - if the optional boolean agument is TRUE, then the current session info

  ⇝ re
  bei


```
<?php
 session_start();
 echo "Session id: ",session_id(),"<br />";
 echo "Session name: ",session_name(),"<br />";

 session_regenerate_id();
 echo "Session id: ",session_id(),"<br />";      // changed
 echo "Session name: ",session_name(),"<br />"; // unchanged
?>
```

Maintain session data

- `bool session_start()`
  - resumes the current session based on a session identifier passed via a GET or POST request, or passed via a cookie
  - restores session variables and session data into `$_SESSION`
  - the fu
    or ou
- `$_SE`
  - an associative array containing session variables a
  - you are responsible for choosing keys (session varia and maintaining the associated values (session dat
- `bool isset($_SESSION[key])`
  returns TRUE iff `$_SESSION[key]` has already been assigned a value

Maintain session data

- bool session_start()
- $_SESSION array
- bool isset($_SESSION[key]);


```
<?php
// Counting th  n
// Each web page c
session_s
if (!isset($_SESSION['requests']))
    $_SESSION['requests'] = 1;
else
    $_SESSION['requests']++;
echo "#Requests in this session so far: ",
     $_SESSION['requests'],"<br />\n";
?>
```

End a PHP session

- `bool session_destroy()`
  - destroys all of the data associated with the current session
  - it does not unset any of the global variables associated with the session, or unset the session cookie
- `void`
  - free
- `bool`
  - defines a cookie to be sent along with the rest of the HTTP
  - must be sent before any output from the script
  - the first argument is the name of the cookie
  - the second argument is the value of the cookie
  - the third argument is time the cookie expires (as a Unix timestamp), and
  - the fourth argument is the parth on the server in which the cookie will be available

End a PHP session

- bool session_destroy()
  - destroys all of the data associated with the current session
- void session_unset()
  - frees all session variables currently registered
- bool
  - defi


```
<?php
session_start();
session_unset();
if (session_id() != "" || isset($_COOKIE[session_name()]))
  // force the cookie to expire
  setcookie(session_name(),session_id(),time()-2592000,'/');
session_destroy();
?>
```

Note: Closing your web browser will also end a session

More on session management

The following code tracks whether a session is active and ends the session if there has been no activity for more then 30 minutes

```
if (isset($_SESSION['LAST_ACTIVITY']) &&
    (time() - $_SESSION['LAST_ACTIVITY'] > 1800)) {
    // last request was more than 30 minutes ago
    session_destroy(); // destroy session data in storage
    session
    if (sessio
        set
} else {
    // update la
    $_SESSION['LAST_ACTIVITY'] = time();
}
```

The following code generates a new session identifier e

```
if (!isset($_SESSION['CREATED'])) {
    $_SESSION['CREATED'] = time();
} else if (time() - $_SESSION['CREATED'] > 1800) {
            // session started more than 30 minates ago
            session_regenerate_id(true);
            $_SESSION['CREATED'] = time();
}
```

http://stackoverflow.com/questions/520237/how-do-i-expire-a-php-session-after-30-minutes

PHP sessions: Example

mylibrary.php:

```
<?php
session_start();

function destroy_session_and_data() {
 session_
 if (sessio
   setco
 session_
}

function count_requests() {
 if (!isset($_SESSION['requests']))
     $_SESSION['requests'] = 1;
 else $_SESSION['requests']++;
 return $_SESSION['requests'];
}
?>
```

PHP sessions: Example

page1.php:

```
<?php
 require_once 'mylibrary.php';
 echo "<html><head></head><body>\n";
 echo "Hello visitor!<br />This is your page request no ";
 echo count_requests()." from this site.<br />\n";
 echo '<a href
?>
```

finish.php:

```
<?php
 require_once 'mylibrary.php';
 destroy_session_and_data();
 echo "<html><head></head><body>\n";
 echo "Goodbye visitor!<br />\n";
 echo '<a href="page1.php">Start again</a></body>';
?>
```

http://cgi.csc.liv.ac.uk/~ullrich/COMP284/examples/page1.php

PHP and Cookies

Cookies can survive a session and transfer information from one session to the next

cmvlibrary.php:


```
<?php
session_start();
function des

function cou
  if (!isse
    setcookie('requests', 1, time()+31536000, '/');
    return 1;
  } else {
    // $_COOKIE['requests']+=would not survive, instead us
    setcookie('requests', $_COOKIE['requests']+1,
              time()+31536000, '/'); // valid for 1 year
    return $_COOKIE['requests']+1;
} }
?>
```


http://cgi.csc.liv.ac.uk/~ullrich/COMP284/examples/cpage1.php

PHP Sessions and Authentication

- Sessions are the mechanism that is typically used to allow or deny access to web pages based on a user having been authenticated
- Outline solution
  - We want to protect a page content.php from unauthorised use
  - Bef
    the
  - The s
    and checks usernames and passwords entered by the user against that database
    If the check succeeds, a session variable is set
  - The page content.php checks whether this session v
    If the session variable is set, the user will see the content of the page
    If the session variable is not set, the user is redirected to login.php
  - The system also provides a logout.php page to allow the user to log out again

PHP Sessions and Authentication: Example

Second part of login.php:

```
<!DOCTYPE html>
<html>
<head><title>login</title></head>
<body>
 <h1>Login</h1>
 <form acti
  <label
  <input na
  </labe
  <label>
  Password:
  <input name="passwd" placeholder="**" type="password">
  </label>
  <input name="submit" type="submit" value="login ">
  <span><?php echo $error; ?></span>
 </form>
</body>
</html>
```

http://cgi.csc.liv.ac.uk/~ullrich/COMP284/examples/login.php

PHP Sessions and Authentication: Example

First part of login.php:

```
<?php
session_start();
function checkCredentials($user,$passwd) {
  // Check whether $user and $passwd are non-empty
  // and match an en
}

$error='';
if (isset($_POST['submit'])) {
   if (checkCredentials($_REQUEST['user'],$_REQUEST['passwd'
      $_SESSION['user']=$_REQUEST['user'];
      header("location:content.php"); // Re
   } else {
      $error = "Username or Password is invalid. Try Again";
   }
}
if (isset($_SESSION['user'])){
   header("location:content.php");
}
?>
```

PHP Sessions and Authentication: Example

content.php:

```
<?php
session_start();
if (!isset($_SESSION['user'])) {
    // User is not logged in, redirecting to login page
    heade
}
?>
<!DOCTYPE ht
<html>
<head><title>Content that requires login</title></head>
<body>
<h1>Protected Content</h1>
<b>Welcome <i><?php echo $_SESSION['user'] ?></i></b><br />
<b><a href="logout.php">Log Out</a></b>
</body>
</html>
```


http://cgi.csc.liv.ac.uk/~ullrich/COMP284/examples/content.php

PHP Sessions and Authentication: Example

logout.php:

```
<?php
session_start();
$user = $_SESSION['user'];
session_unset();
session_d
?>
<!DOCTYPE ht
<html>
<head>
<title>Logout</title>
</head>
<body>
<h1>Logout</h1>
<b>Goodbye <i><?php echo $user ?></i></b><br />
<b><a href="login.php">Login</a></b>
</form>
</body>
```


http://cgi.csc.liv.ac.uk/~ullrich/COMP284/examples/logout.php

Revision

Read

- Chapter 10: Accessing MySQL Using PHP
- Chap
- Chap

of

R. Nixon:
Learning PHP, MySQL, and JavaScript.
O'Reilly, 2009.