

CS 312

Internet Concepts

Web Programming/Scripting: PHP and AJAX

Dr. Michele Weigle

Department of Computer Science

Old Dominion University

mweigle@cs.odu.edu

<http://www.cs.odu.edu/~mweigle/CS312-F08/>

1

PHP and AJAX

- ◆ What is PHP?
 - » Getting Started With Simple Examples
 - » PHP Syntax

- ◆ What is AJAX?
 - » Recalling XMLHttpRequest
 - » AJAX Examples



2

What is PHP?



- ◆ PHP: Hypertext Preprocessor
- ◆ Server-side scripting language
 - » different from Javascript (a client-side scripting language)
- ◆ Free alternative to Microsoft's Active Server Pages (ASP)
- ◆ Can be directly embedded into HTML
- ◆ Syntax is similar to Perl and C
- ◆ PHP is often combined with a MySQL database (which we won't cover)

<http://www.w3schools.com/php/default.asp>

3

PHP and AJAX

- ◆ What is PHP?
 - » Getting Started With Simple Examples
 - » PHP Syntax
- ◆ What is AJAX?
 - » Recalling XMLHttpRequest
 - » AJAX Examples



4

Getting Started

- ◆ Let's start out with a couple of very simple examples

```
<html>
<head><title>PHP Test</title></head>
<body>
  <?php echo '<p>Hello World</p>'; ?>
</body>
</html>
```

extension must be php

<http://www.cs.odu.edu/~mweigle/cs312/php/hello.php>

<http://us.php.net/tut.php>

5

Getting Started

- ◆ Here's another example
 - » `phpinfo()` displays useful information about your system setup (loaded PHP modules, predefined variables, configuration settings)

```
<html>
<head><title>PHP Info</title></head>
<body>
  <?php phpinfo(); ?>
</body>
</html>
```

<http://www.cs.odu.edu/~mweigle/cs312/php/info.php>

<http://us.php.net/tut.php>

6

Getting Started

- ◆ Let's check what browser the user is using
 - » look at the “User-Agent:” option that is sent in the HTTP request header

```
<html>
<head><title>PHP Browser Check</title></head>
<body>
  <?php
    echo $_SERVER['HTTP_USER_AGENT'];
  ?>
</body>
</html>
```

<http://www.cs.odu.edu/~mweigle/cs312/php/browser.php>

<http://us.php.net/tut.php>

7

Now With Conditionals...

- ◆ strpos()
 - » searches a string for another string
 - » returns the position if found, FALSE if not

*<html>, <head>,
<body> tags removed
in remaining examples
to save space*

```
<?php
if (strpos($_SERVER['HTTP_USER_AGENT'], 'MSIE') !== FALSE) {
    echo "You are using Internet Explorer.<br />";
} else {
    echo "You aren't using Internet Explorer.<br />";
}
?>
```

<http://www.cs.odu.edu/~mweigle/cs312/php/browser2.php>

<http://us.php.net/tut.php>

8

Mixing PHP and HTML

- ◆ Logical flow of the script remains intact even if broken up with HTML statements.

```
<?php
if (strpos($_SERVER['HTTP_USER_AGENT'], 'MSIE') !== FALSE) {
?>
<h3>strpos() must have returned non-false</h3>
<p>You are using Internet Explorer</p>
<?php
} else {
?>
<h3>strpos() must have returned false</h3>
<p>You are not using Internet Explorer</p>
<?php
}
?>
```

<http://us.php.net/tut.php> <http://www.cs.odu.edu/~mweigle/cs312/php/html-php.php> 9

PHP and Forms

- ◆ Use a separate PHP file (not embedded in HTML)

```
<form action="action.php" method="post">
  <p>Your name: <input type="text" name="name" /> </p>
  <p>Your age: <input type="text" name="age" /> </p>
  <p><input type="submit" /> </p>
</form>
```

```
Hi <?php echo htmlspecialchars($_POST['name']); ?>.
You are <?php echo (int)$_POST['age']; ?> years old.
```

htmlspecialchars() ensures that any special HTML characters are properly encoded so people can't inject HTML tags or Javascript into your page.

<http://us.php.net/tut.php> <http://www.cs.odu.edu/~mweigle/cs312/php/php-form.html>
<http://www.cs.odu.edu/~mweigle/cs312/php/action.php>

PHP and AJAX

◆ What is PHP?

- » Getting Started With Simple Examples
- » PHP Syntax



◆ What is AJAX?

- » Recalling XMLHttpRequest
- » AJAX Examples



11

Basic Syntax

- ◆ Start with **<?php**
- ◆ End with **?>**
- ◆ Each code line must end with a semicolon
- ◆ Comments
 - » one-line //
 - » multi-line /* ... */
- ◆ All variables start with **\$**
 - » data type does not need to be set before declaring variable

```
$text = "Hello World";  
$num = 16;
```

Strings in PHP

◆ Concatenation operator .

```
$txt1 = "Hello World";  
$txt2 = "1234";  
echo $txt1 . " " . $txt2;
```

Hello World 1234

http://www.w3schools.com/PHP/php_string.asp

13

Useful String Functions

◆ strlen(*String*)

- » returns the *length* of the string
- » number of characters, including spaces

◆ strpos(*String*, *SearchString*)

- » returns the starting position of *SearchString* if found inside *String*
 - ❖ position starts from 0 (i.e., 0 is the first character)
- » returns FALSE if *SearchString* is not found in *String*

http://www.w3schools.com/PHP/php_string.asp

14

More PHP Syntax

◆ Familiar C++/Java/Perl operators

- » comparison: ==, !=, >, >=, <, <=
- » assignment: =, +=, *=, ...
- » logical: &&, ||, !

◆ Familiar C++/Java/Perl conditionals syntax

```
if (condition) {  
    statements;  
} elseif {  
    statements;  
} else {  
    statements;  
}
```

http://www.w3schools.com/PHP/php_if_else.asp

15

PHP Arrays

◆ Three types

- » **numeric**
 - ❖ array with numeric ID key
- » **associative**
 - ❖ array where each ID key is associated with a value
- » **multidimensional**
 - ❖ array containing one or more arrays

http://www.w3schools.com/PHP/php_arrays.asp

16

PHP Numeric Arrays

◆ Creation

```
$names = array("Peter", "Quagmire", "Joe");
```

OR

```
$names[0] = "Peter";
```

```
$names[1] = "Quagmire";
```

```
$names[2] = "Joe";
```

◆ Usage

```
$names[1]      Quagmire
```

http://www.w3schools.com/PHP/php_arrays.asp

17

PHP Associative Arrays

◆ Creation

```
$ages = array("Peter"=>"32", "Quagmire"=>"30", "Joe"=>"34");
```

OR

```
$ages['Peter'] = "32";
```

```
$ages['Quagmire'] = "30";
```

```
$ages['Joe'] = "34";
```

◆ Usage

```
$ages['Peter']      32
```

http://www.w3schools.com/PHP/php_arrays.asp

18

PHP Multidimensional Arrays

◆ Creation

```
$families = array (  
    "Griffin"=>array ("Peter", "Lois", "Megan"),  
    "Quagmire"=>array ("Glenn"),  
    "Brown"=>array ("Cleveland", "Loretta", "Junior")  
);
```

◆ Usage

```
$families['Griffin'][2]      Megan
```

http://www.w3schools.com/PHP/php_arrays.asp

19

PHP Loops

◆ Familiar C++/Java syntax

```
while (condition) {  
    statements;  
}  
  
do {  
    statements;  
} while (condition);  
  
for (init; condition; increment)  
{  
    statements;  
}
```

◆ Includes Perl-like *foreach* statement

```
foreach (array as value) {  
    statements;  
}  
  
$arr=array ("one", "two");  
foreach ($arr as $value) {  
    echo $value . "<br />";  
}  
  
» Perl syntax is slightly  
different
```

http://www.w3schools.com/PHP/php_looping.asp

20

PHP Functions

- ◆ There are over 700 built-in functions available

- » <http://www.w3schools.com/PHP/default.asp>

- ◆ Writing your own functions

- » begin with the word **function**

- » syntax similar to Javascript

```
function functionName () {  
    statements;  
}
```

http://www.w3schools.com/PHP/php_functions.asp

21

PHP Functions

- ◆ Functions with parameters

```
function functionName (parameters) {  
    statements;  
}
```

- ◆ Functions with return values

```
function functionName (parameters) {  
    statements;  
    return value;  
}
```

http://www.w3schools.com/PHP/php_functions.asp

22

PHP Function Example

```
function add ($x, $y)
{
    $total = $x + $y;
    return $total;
}

echo "1 + 16 = " . add (1,16);
```

1 + 16 = 17

http://www.w3schools.com/PHP/php_functions.asp

23

PHP and Forms

```
<form action="action.php" method="post">
  <p>Your name: <input type="text" name="name" /> </p>
  <p>Your age: <input type="text" name="age" /> </p>
  <p><input type="submit" /> </p>
</form>
```

```
Hi <?php echo htmlspecialchars($_POST['name']); ?>.
You are <?php echo (int)$_POST['age']; ?> years old.
```

◆ \$_POST

» when “post” method is used

◆ \$_GET

» when “get” method is used

◆ \$_REQUEST

◆ when either “get” or “post”
is used

http://www.w3schools.com/PHP/php_get.asp

24

PHP and AJAX

- ◆ What is PHP?

- » Getting Started With Simple Examples
- » PHP Syntax



- ◆ What is AJAX?

- » Recalling XMLHttpRequest
- » AJAX Examples



25

What is AJAX?

- ◆ Asynchronous Javascript And XML
- ◆ Uses Javascript to send and receive data between a web browser and web server
- ◆ Based on
 - » Javascript
 - » XML
 - » HTML
 - » CSS
- ◆ *There's nothing new for us to learn!*

26

AJAX

- ◆ Made popular in 2005 by Google
 - » Google Suggest – as you type in words in the search box, suggestions for what you might be looking for appear
- ◆ Uses XMLHttpRequest
 - » which we've already discussed

http://www.w3schools.com/ajax/ajax_httprequest.asp

27

PHP and AJAX

- ◆ What is PHP?
 - » Getting Started With Simple Examples
 - » PHP Syntax
- ◆ What is AJAX?
 - » Recalling XMLHttpRequest
 - » AJAX Examples



28

AJAX

More about XMLHttpRequest

```
var xmlhttp;
function loadXMLDoc(url)
{
    xmlhttp=null;
    if (window.XMLHttpRequest)
    { // code for all new browsers
        xmlhttp=new XMLHttpRequest();
    }
    if (xmlhttp!=null)
    {
        xmlhttp.onreadystatechange=state_Change;
        xmlhttp.open("GET",url,true);
        xmlhttp.send(null);
    }
    else
    {
        alert("Your browser does not support XMLHTTP.");
    }
}
```

Remember?

<http://www.w3schools.com/xml/default.asp>

29

AJAX

More about XMLHttpRequest

```
function state_Change()
{
    if (xmlhttp.readyState==4)
    { // 4 = "loaded"
        if (xmlhttp.status==200)
        { // 200 = OK
            // ...our code here...
        }
        else
        {
            alert("Problem retrieving XML data");
        }
    }
}
```

Remember?

<http://www.w3schools.com/xml/default.asp>

30

AJAX

More about XMLHttpRequest

◆ readyState

- » 0 request is not initialized
- » 1 request has been set up
- » 2 request has been sent
- » 3 request is in process
- » 4 request is complete

http://www.w3schools.com/ajax/ajax_xmlhttprequest.asp

31

PHP and AJAX

◆ What is PHP?

- » Getting Started With Simple Examples
- » PHP Syntax



◆ What is AJAX?

- » Recalling XMLHttpRequest
- » AJAX Examples



32

AJAX Suggest Example

◆ Components

- » HTML form
- » Javascript (client-side operations)
- » PHP script (server-side operations)

Type a Name in the Box Below

First Name:

Suggestions:

<http://www.cs.odu.edu/~mweigle/cs312/php/suggest.html>

http://www.w3schools.com/php/php_ajax_suggest.asp

33

AJAX Suggest Example

HTML Form

Type a Name in the Box Below

First Name:

Suggestions:

```
<html>
<head>
<script src="clienthint.js"></script>
</head>

<body>

<form>
First Name:
<input type="text" id="txt1" onkeyup="showHint(this.value)">
</form>

<p>Suggestions: <span id="txtHint"></span></p>

</body>
</html>
```

this.value is the text currently in the box

http://www.w3schools.com/php/php_ajax_suggest.asp

34

AJAX Suggest Example

Javascript (clienthint.js)

Type a Name in the Box Below

First Name:

Suggestions:

```
var xmlhttp;  
  
function showHint(str)  
{  
    if (str.length==0) {  
        document.getElementById("txtHint").innerHTML="";  
        return;  
    }  
    xmlhttp=GetXmlHttpRequest();  
    if (xmlhttp==null) {  
        alert ("Browser does not support HTTP Request");  
        return;  
    }  
    var url = "gethint.php";  
    url = url + "?q=" + str; adds parameter 'q' to URL  
    url = url + "&sid=" + Math.random(); adds random number to prevent using cached file  
    xmlhttp.onreadystatechange = stateChanged;  
    xmlhttp.open ("GET", url, true);  
    xmlhttp.send (null);  
}
```

http://www.w3schools.com/php/php_ajax_suggest.asp

35

AJAX Suggest Example

Javascript (clienthint.js)

Type a Name in the Box Below

First Name:

Suggestions:

```
function GetXmlHttpRequest()  
{  
    var xmlhttp=null;  
    try {  
        // Firefox, Opera 8.0+, Safari  
        xmlhttp=new XMLHttpRequest();  
    }  
    catch (e) {  
        // Internet Explorer  
        try {  
            xmlhttp=new  
                ActiveXObject("Msxml2.XMLHTTP");  
        }  
        catch (e) {  
            xmlhttp=new  
                ActiveXObject("Microsoft.XMLHTTP");  
        }  
    }  
    return xmlhttp; part of loadXMLDoc() from XML lecture  
}  
  
function stateChanged()  
{  
    if (xmlhttp.readyState==4) {  
        document.getElementById("txtHint").innerHTML =  
            xmlhttp.responseText;  
    }  
}
```

http://www.w3schools.com/php/php_ajax_suggest.asp

36

AJAX Suggest Example

PHP (gethint.php)

Type a Name in the Box Below

First Name:

Suggestions:

```
<?php
// Fill up array with names
$names = array ("Anna", "Brittany", "Diana", ...); rest of names omitted for space

// get the q parameter from the URL
$q = $_GET["q"];

// lookup all hints from array if length of q > 0
if (strlen ($q) > 0) {
    $hint = "";
    for ($i=0; $i<count($names); $i++) {
        if (strtolower($q) == strtolower(substr($names[$i], 0, strlen($q)))) {
            if ($hint == "") {
                $hint = $names[$i];
            } else {
                $hint = $hint . " , " . $names[$i];
            }
        }
    }
}
```

- `count($arr)` returns number of elements in \$arr
- `strtolower($str)` returns the lowercase version of \$str
- `substr($str, $start, $end)` returns characters in positions \$start to \$end from \$str

http://www.w3schools.com/php/php_ajax_suggest.asp

37

AJAX Suggest Example

PHP (gethint.php continued)

Type a Name in the Box Below

First Name:

Suggestions:

```
// Set output to "no suggestion" if no hint was found
// or to correct value
if ($hint == "") {
    $response = "no suggestion";
} else {
    $response = $hint;
}

// output the response
echo $response;

?>
```

<http://www.cs.odu.edu/~mweigle/cs312/php/suggest.html>

http://www.w3schools.com/php/php_ajax_suggest.asp

38

PHP and AJAX

◆ What is PHP?

- » Getting Started With Simple Examples
- » PHP Syntax



◆ What is AJAX?

- » Recalling XMLHttpRequest
- » AJAX Examples



More AJAX Examples next week!