WEB TECHNOLOGY

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Server-side Scripting & PHP

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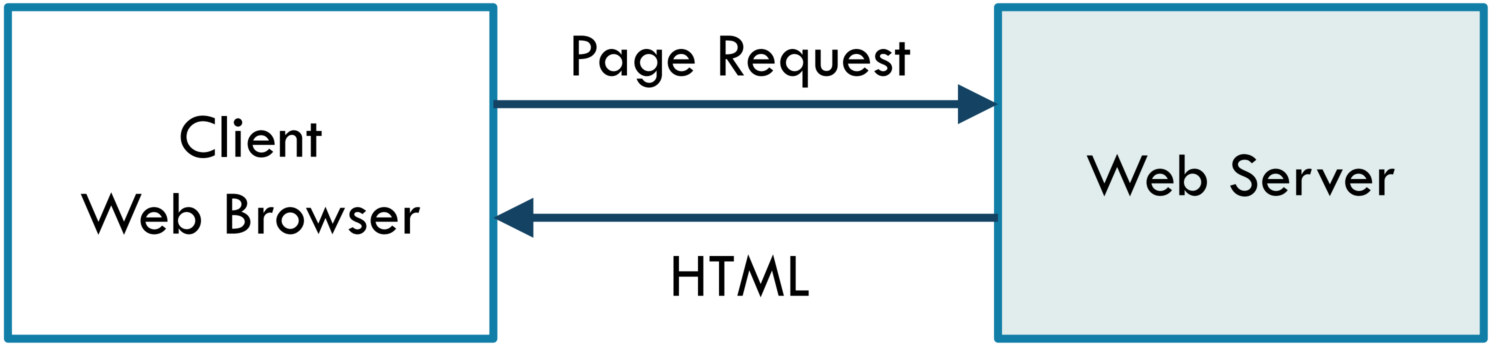
Outline

1. Server-side Scripting
2. Introduction to PHP
3. PHP Language basics
4. PHP and the client

Client/Server on the WWW

- ❑ Standard web sites operate on a request/response basis.
- ❑ A user requests a resource E.g. HTML document.
- ❑ Server responds by delivering the document to the client.
- ❑ The client processes the document and displays it to user.



Server-side Scripting

Server-side scripting is a technique used in web development which involves employing scripts on a web server which produce a response customized for each user's (client’s) request to the website.

❑ Scripts can be written in any of a number of server-side scripting languages that are available.

❑ Server-side scripting is distinguished from client-side scripting where embedded scripts, such as JavaScript, are run client-side in a web browser, but both techniques are often used together.

❑ Server-side scripting is often used to provide a customized interface for the user.

Server-side Scripting

- ❑ **Server-side scripting** tends to be used for allowing users to have individual accounts and providing data from databases. It allows a level of privacy, personalisation and provision of information that is very powerful.
- ❑ PHP and ASP.net are the two main technologies for server-side scripting.
- ❑ The script is interpreted by the server meaning that it will always work the same way.
- ❑ Server-side scripts are never seen by the user. They run on the server and generate results which are sent to the user. Running all these scripts puts a lot of load onto a server but none on the user's system.

Server-side Scripting Languages

There are a number of server-side scripting languages available, including:

- ASP (*.asp)
- ASP.NET (*.aspx)
- Google Apps Script (*.gs)
- Java (*.jsp) via JavaServer Pages
- JavaScript using Server-side JavaScript (*.ssjs, *.js) (example: Node.js)
- Perl via the CGI.pm module (*.cgi, *.ipl, *.pl)
- PHP (*.php)
- Ruby (*.rb, *.rbw) (example: Ruby on Rails)

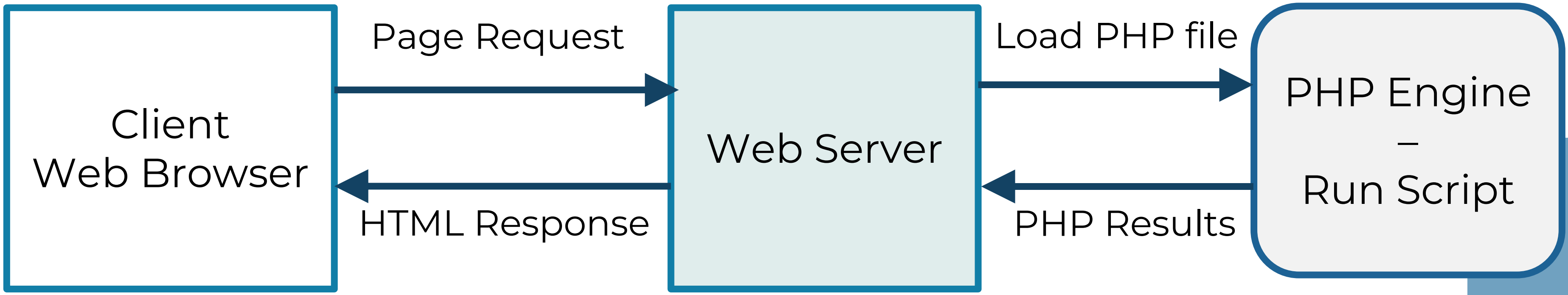
What is it / does it do?

PHP is a server-side scripting language designed specifically for the Web. Within an HTML page, you can embed PHP code that will be executed each time the page is visited.

- ❑PHP script is interpreted and executed on the server, and generates HTML or other output.
- ❑Multiple operating systems/web servers
- ❑Execution is done before delivering content to the client.
- ❑Contains a vast library of functionality that programmers can handle.
- ❑Executes entirely on the server, requiring no specific features from the client.

What is it / does it do?

- ❑Static resources such as regular HTML are simply output to the client from the server
- ❑Dynamic resources such as PHP scripts are processed on the server prior to being output to the client
- ❑PHP has the capability of connecting to many database systems making the entire process transparent to the client



PHP Language Basics

3

The building blocks of the PHP language

❑Syntax and structure

❑Variables, constants and operators

❑Data types and conversions

❑Decision making IF and switch

❑Interacting with the client application (HTML forms)

PHP - Syntax and Structure

- PHP is similar to C language
- All scripts start with **<?php** and with with **?>**
- Line separator: **;** (semi-colon)
- Code block: **{** ..code here.. **}** (brace brackets)
- White space is generally ignored (not in strings)
- Comments are created using:
  - // single line quote
  - /* Multiple line block quote */
- Precedence
  - Enforced using parentheses
  - E.g. $sum = 5 + 3 * 6; // would equal 23
  - $sum = (5 + 3) * 6;   // would equal 48

PHP - Variables

- ❑Prefixed with a **$**
- ❑Assign values with = operator
- ❑Example: $author = “Trevor Adams”;
- ❑No need to define type
- ❑Variable names are case sensitive
  - ▪$author and $Author are different

PHP - Example Script

PHP can be placed directly inside HTML E.g.

```
<html>
<head> <title>PHP Test</title> </head>
<body>
<?php
$author = “Trevor Adams”;
$msg = “Hello world!”;
echo $author . “ says ” . $msg;
?>
</body>
</html>
```

PHP - Constants

- Constants are special variables that cannot be changed
- Use them for named items that will not change
- Created using a define function
  - define(‘milestokm’, 1.6);
  - Used without $
  - $km = 5 * milestokm;

```
<?php
  define('MIN_VALUE', '0.0');
   define('DEBUG',false);
   if (DEBUG) {
       // your code
   }
 ?>
```

PHP - Operators

- ❑Standard mathematical operators
  - +, -, *, / and % (modulus)
- ❑ String concatenation with a period (.)
  - $car = “SEAT” . “ Altea”;
  - echo $car; would output “SEAT Altea”
- ❑ Basic Boolean comparison with “**==**”
  - Using only **=** will overwrite a variable value
  - Less than **<** and greater than **>**
  - **<=** and **>=** as above but include equality

PHP - Data Types

- ❑ PHP is **not** strictly typed
  - Different to C and JAVA where all variables are declared
- ❑ A data type is either text or numeric
  - PHP decides what type a variable is
  - PHP can use variables in an appropriate way automatically
- ❑ E.g.
  - $vat_rate = 0.175; // VAT Rate is numeric
  - echo $vat_rate * 100 . “%”; // outputs “17.5%”
  - $vat_rate is converted to a string for the purpose of the echo statement
- ❑ Object, Array and unknown also exist as types, Be aware of them but we shall not explore them today

Decision Making - Basics

- Decision making involves evaluating Boolean expressions (true / false)
- If($catishungry) {   /* feed your cat */ }
- “true” and “false” are reserved words
- Initialise as $valid = false;
- Compare with ==
- ‘and’, ‘&&’, ‘or’, ‘||’, ‘!’ (not) for combinations
  - E.g. if($catishungry && $havefood) {/* feed your cat*/}

PHP - IF statement

Used to perform a conditional branch

```
If (Boolean expression) {
 // one or more commands if true

} else {
 // one or more commands if false

}
```

PHP - Switch Statements

Useful when a Boolean expression may have many options E.g.

```
switch($choice) {
  case 0: {  /* do things if choice equal 0 */  } break;
  Case 1: {  /* do things if choice equal 1 */    } break;
  Case 2: { /* do things if choice equal 2 */   } break;
  Default: { /* do if choice is none of the above */ }
}
```

```
$favcolor = "red";
switch ($favcolor) {
    case "red":
        echo "Your favorite color is red!"; break;
    case "blue":
        echo "Your favorite color is blue!"; break;
    default:
        echo "Your favorite color is neither red, nor blue!";
}
```

PHP - Arrays

An array is a special variable, which can hold more than one value at a time.

```
$name = array();                // create
$name = array(value0, value1, ..., valueN);
$name[index]                    // get element value
$name[index] = value;           //  set element value
$name[] = value;                // append
```

```
$a = array();                       // empty array (length 0)
$a[0] = 23;                         // stores 23 at index 0 (length 1)
$a2 = array("some", "strings", "in", "an", "array");
$a2[] = "Ooh!";                     // add string to end (at index 5)
```

PHP - Associative Arrays

Associative arrays are arrays that use named keys that you assign to them. There are two ways to create an associative array:

```
$age = array("Peter"=>"35", "Ben"=>"37", "Joe"=>"43");
echo "Peter is " . $age['Peter'] . " years old.";
```

```
$age['Peter'] = "35";
$age['Ben'] = "37";
$age['Joe'] = "43";
```

Loop Through an Associative Array

```
foreach($age as $x => $x_value)  {
    echo "Key=" . $x . ", Value=" . $x_value . "<br>";
}
```

String compare functions

Name	Function
▪ strcmp	compareTo
▪ strstr, strchr	find string/char within a string
▪ strpos	find numerical position of string
▪ str_replace, substr_replace	replace string

❑ Comparison can be:

- Partial matches
- Others

❑ Variations with non case sensitive functions

- strcasecmp

String compare functions

String comparison examples

```
$offensive = array( offensive word1, offensive word2);
$feedback = str_replace($offcolor, “%!@*”, $feedback);
```

```
$test = “Hello World! \n”;
print strpos($test, “o”);
print strpos($test, “o”, 5);
```

```
$toaddress = “feedback@example.com”;
if(strstr($feedback, “shop”)
      $toaddress = “shop@example.com”;
else if(strstr($feedback, “delivery”)
      $toaddress = “fulfillment@example.com”;
```

PHP - Dealing with the Client

How is it useful in the web site?

❑PHP allows developer to use HTML forms

❑Forms require technology at the server to process them

❑PHP is a feasible and good choice for the processing of HTML forms

❑Quick re-cap on forms

❑Implemented with a <form> element in HTML

❑Contains other input, text area, list controls and options

❑Has some method of submitting

PHP - Dealing with the Client

- <form method=“post” action=“file.php” name=“frmid” >
  - Method specifies how the data will be sent
  - Action specifies the file to go to. E.g. file.php
  - id gives the form a unique name
- **Post** method sends all contents of a form with basically hidden headers (not easily visible to users)
- **Get** method sends all form input in the URL requested using name=value pairs separated by ampersands (&)
  - E.g. file.php?name=trevor&number=345
  - Is visible in the URL shown in the browser

PHP - Dealing with the client

All form values are placed into an array

file.php could access the form data using:

- $_POST[‘Name’]

If the form used the get method, the form data would be available as:

- $_GET[‘Name’]

PHP - Dealing with the client

For example, an HTML form:

```
<form id=“showmsg” action=“show.php” method=“post”>
  <input type=“text” id=“txtMsg” value=“Hello World” />
  <input type=“submit” id=“submit” value=“Submit”>
</form>
```

A file called show.php would receive the submitted data. It could output the message, for example:

```
<html>
 <head><title>Show Message</title></head>
 <body>
   <p> <?php echo $_POST[“txtMsg”]; ?> </p>
 </body>

</html>
```

PHP - Dealing with the client

- ❑ Summary
  - Form elements contain input elements
  - Each input element has an id
  - If a form is posted, the file stated as the action can use:

    $_POST[“inputid”]
  - If a form uses the get method:

    $_GET[“inputid”]
- ❑ Ensure you set all id attributes for form elements and their contents

Useful Links and Further Study

❑ W3 Schools - http://www.w3schools.com/php/

❑ PHP web site - http://www.php.net/

- Web site will be updated before accompanying tutorial session.
- Will contain a useful supplement to tutorial content.