Intro to PHP 101

PHP LESSON: http://devzone.zend.com/4/php-101-part-1-down-the-rabbit-hole/

(ALL PHP LESSONS: http://devzone.zend.com/6/php-101--php-for-the-absolute-beginner/)

The Only Acronym You'll Ever Need

If you're new to Web development, you could be forgiven for thinking that it consists of no more than a mass of acronyms, each one more indecipherable than the last. ASP, CGI, SOAP, XML, HTTP – the list seems never-ending, and the sheer volume of information on each of these can discourage the most avid programmer. But before you put on your running shoes and flee, there's a little secret you should know. To put together a cutting-edge Web site, chock full of all the latest bells and whistles, there's only one acronym you *really* need to know:

PHP

Now, while you have almost certainly *heard* of PHP, you may not be aware of just how powerful the language is, and how much it can do for you. Today, PHP has the enviable position of being the only open-source server-side scripting language that's both fun and easy to learn. This is not just advertising: recent surveys show that more than 16,000,000 Web sites use PHP as a server side scripting language, and the language also tops the list of most popular Apache modules.

Why, you ask? The short answer: it's powerful, it's easy to use, and it's free. Extremely robust and scalable, PHP can be used for the most demanding of applications, and delivers excellent performance even at high loads. Built-in database support means that you can begin creating data-driven applications immediately, XML support makes it suitable for the new generation of XML-enabled applications, and the extensible architecture makes it easy for developers to use it as a framework to build their own custom modules. Toss in a great manual, a knowledgeable developer community and a really low price (can you spell f-r-e-e?) and you've got the makings of a winner!

My goal in this series of tutorials is very simple: I'll be teaching you the basics of using PHP, and showing you why I think it's the best possible tool for Web application development today. I'll be making *no* assumptions about your level of knowledge, other than that you can understand basic HTML and have a sense of humor. And before you ask… Yes, this series covers both PHP 4 and PHP 5, with new PHP 5 features flagged for easy reference.

Let’s get going!

The Right Environment

PHP is typically used in combination with a Web server like Apache. Requests for PHP scripts are received by the Web server, and are handled by the PHP interpreter. The results obtained after execution are returned to the Web server, which takes care of transmitting them to the client browser. Within the PHP script itself, the sky’s the limit – your script can perform calculations, process user input, interact with a database, read and write files… Basically, anything you can do with a regular programming language, you can do inside your PHP scripts.

From the above, it is clear that in order to begin using PHP, you need to have a proper development environment set up.

This series will focus on using PHP with the Apache Web server on Linux, but you can just as easily use PHP with Apache on Windows, UNIX and Mac OS. Detailed instructions on how to set up this development environment on each platform are available in the online manual, at http://www.php.net/manual/en/installation.php – or you can just download a copy of PHP 5 from http://www.php.net and read the installation instructions.

Go do that now, and come back when you’ve successfully installed and tested PHP.

Start Me Up

There’s one essential concept that you need to get your mind around before we proceed further. Unlike CGI scripts, which require you to write code to output HTML, PHP lets you embed PHP code in regular HTML pages, and execute the embedded PHP code when the page is requested.

These embedded PHP commands are enclosed within special start and end tags, like this:

```
<?php

... PHP code ...

?>
```

Here’s a simple example that demonstrates how PHP and HTML can be combined:

```
<html>

<head></head>
```

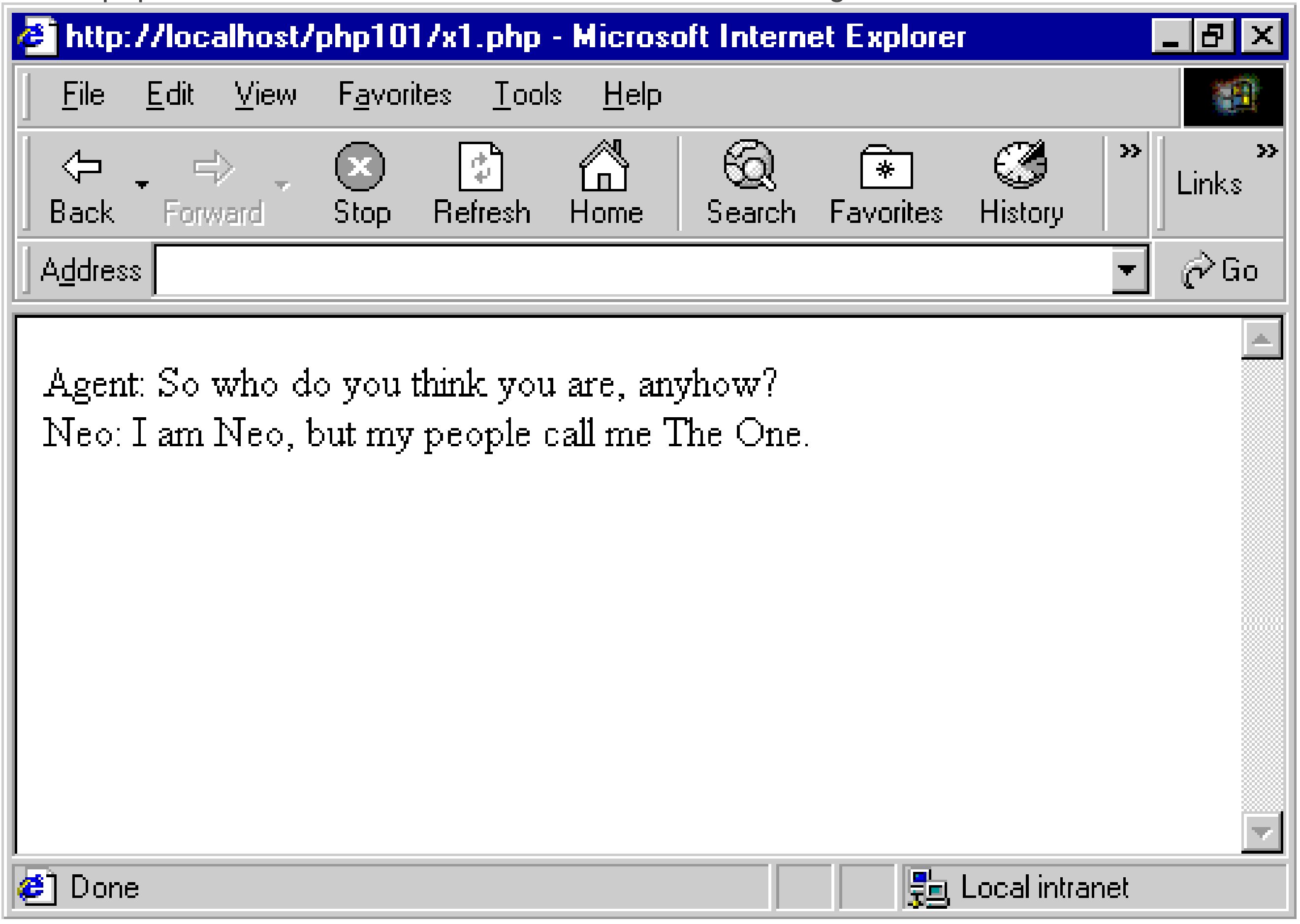
```
<body>
```

Agent: So who do you think you are, anyhow?

```
<br />

<?php

// print output

echo 'Neo: I am Neo, but my people call me The One.';

?>


</body>

</html>
```

Not quite your traditional “Hello, World” program… but then again, I always thought tradition was over-rated.

Save the above script to a location under your Web server document root, with a .php extension, and browse to it. You’ll see something like this:


http://localhost/php101/x1.php - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History
Links
Address
Go
Done
Local intranet

```
Agent: So who do you think you are, anyhow?
Neo: I am Neo, but my people call me The One.
```

Look at the HTML source:

```
<html>

<head></head>

<body>

Agent: So who do you think you are, anyhow?

<br />

Neo: I am Neo, but my people call me The One.

</body>

</html>
```

What just happened? When you requested the script above, Apache intercepted
your request and handed it off to PHP. PHP then parsed the script, executing the code between the `<?php...?>` marks and
replacing it with the output of the code run. The result was then handed back to the server and transmitted to the client. Since the output contained valid HTML, the browser was able to render it for display to the user.

A close look at the script will reveal the basic syntactical rules of PHP. Every PHP statement ends in a semi-colon. This convention is identical to that used in Perl, and omitting the semi-colon is one of the most common mistakes newbies make. That said, it is interesting to note that a semi-colon is *not* needed to terminate the *last* line of a PHP block. The
PHP closing tag includes a semi-colon, therefore the following is perfectly valid PHP code:

```
<?php

// print output

echo 'Neo: I am Neo, but my people call me The One.'

?>
```

It's also possible to add comments to your PHP code, as I've done in the example above. PHP supports both single-line and multi-line comment blocks:

```
<?php

// this is a single-line comment

/* and this is a
```

```
multi-line

comment */

?>
```

Blank lines within the PHP tags are ignored by the parser. Everything outside the tags is also ignored by the parser, and returned as-is. Only the code between the tags is read and executed.

A Case of Identity

Variables are the bread and butter of every programming language… and PHP has them too. A variable can be thought of as a programming construct used to store both numeric and non-numeric data; the contents of a variable can be altered during program execution. Finally, variables can be compared with each other, and you – the programmer – can write code that performs specific actions on the basis of this comparison.

PHP supports a number of different variable types: integers, floating point numbers, strings and arrays. In many languages, it's essential to specify the variable type before using it: for example, a variable may need to be specified as type `integer` or type `array`. Give PHP credit for a little intelligence, though: it automagically determines variable type by the context in which it is being used!

Every variable has a name. In PHP, a variable name is preceded by a dollar ($) symbol and must begin with a letter or underscore, optionally followed by more letters, numbers and/or underscores. For example, `$popeye`, `$one` and `$INCOME` are all valid PHP variable names, while `$123` and `$48hrs` are invalid.

Note that variable names in PHP are case sensitive, so `$me` is different from `$Me` or `$ME`.

Here's a simple example that demonstrates PHP's variables:

```
<html>

<head></head>

<body>
```

Agent: So who do you think you are, anyhow?

```
<br />
```

```
<?php

// define variables

$name = 'Neo';

$rank = 'Anomaly';

$serialNumber = 1;

// print output

echo "Neo: I am <b>$name</b>, the <b>$rank</b>. You can call me by my
serial number, <b>$serialNumber</b>.";

?>


</body>

</html>
```

Here, the variables `$name`, `$rank` and `$serialNumber` are first defined with string and numeric values, and then substituted in the `echo()` function call. The `echo()` function, along with the `print()` function, is commonly used to print data to the standard output device (here, the browser). Notice that I've included HTML tags within the call to echo(), and those have been rendered by the browser in its output. You can do this too.

An Equal Music

To assign a value to a variable, you use the assignment operator: the = symbol. This is used to assign a value (the right side of the equation) to a variable (the left side). The value being assigned need not always be fixed; it could also be another variable, an expression, or even an expression involving other variables, as below:

```
<?php

$age = $dob + 15;

?>
```

Interestingly, you can also perform more than one assignment at a time. Consider the following example, which assigns three variables the same value simultaneously:

```
<?php

$angle1 = $angle2 = $angle3 = 60;
```

```
?>
```

Not My Type

Every language has different types of variable – and PHP is no exception. The language supports a wide variety of data types, including simple numeric, character, string and Boolean types, and more complex arrays and objects. Here's a quick list of the basic ones, with examples:

Boolean: The simplest variable type in PHP, a Boolean variable, simply specifies a true or false value.

```
<?php

$auth = true;

?>
```

Integer: An integer is a plain-vanilla whole number like 75, -95, 2000 or 1.

```
<?php

$age = 99;

?>
```

Floating-point: A floating-point number is typically a fractional number such as 12.5 or 3.141592653589. Floating point numbers may be specified using either decimal or scientific notation.

```
<?php

$temperature = 56.89;

?>
```

String: A string is a sequence of characters, like "hello" or "abracadabra". String values may be enclosed in either double quotes ("") or single quotes(''). (Quotation marks within the string itself can be "escaped" with a backslash (\) character.) String values enclosed in double quotes are automatically parsed for special characters and variable names; if these are found, they are replaced with the appropriate value.
Here's an example:

```
<?php

$identity = 'James Bond';

$car = 'BMW';

// this would contain the string "James Bond drives a BMW"
```

```
$sentence = "$identity drives a $car";

echo $sentence;

?>
```

Market Value

If variables are the building blocks of a programming language, operators are the glue that let you build something useful with them. You've already seen one example of an operator – the assignment operator -, which lets you assign a value to a variable. Since PHP believes in spoiling you, it also comes with operators for arithmetic, string, comparison and logical operations.

A good way to get familiar with operators is to use them to perform arithmetic operations on variables, as in the following example:

```
<html>

<head>

</head>

<body>

<?php

// set quantity

$quantity = 1000;

// set original and current unit price

$origPrice = 100;

$currPrice = 25;

// calculate difference in price

$diffPrice = $currPrice - $origPrice;

// calculate percentage change in price

$diffPricePercent = (($currPrice - $origPrice) * 100)/$origPrice

?>


<table border="1" cellpadding="5" cellspacing="0">
```

```
<tr>

<td>Quantity</td>

<td>Cost price</td>

<td>Current price</td>

<td>Absolute change in price</td>

<td>Percent change in price</td>

</tr>

<tr>

<td><?php echo $quantity ?></td>

<td><?php echo $origPrice ?></td>

<td><?php echo $currPrice ?></td>

<td><?php echo $diffPrice ?></td>

<td><?php echo $diffPricePercent ?>%</td>

</tr>

</table>

</body>

</html>
```

Looks complex? Don't be afraid – it's actually pretty simple. The meat of the script is at the top, where I've set up variables for the unit cost and the quantity. Next, I've performed a bunch of calculations using PHP's various mathematical operators, and stored the results of those calculations in different variables. The rest of the script is related to the display of the resulting calculations in a neat table.

If you'd like, you can even perform an arithmetic operation simultaneously with an assignment, by using the two operators together. The two code snippets below are equivalent:

```
<?php

// this...

$a = 5;

$a = $a + 10;

// ... is the same as this
```

```php
$a = 5;

$a += 10;

?>
```

If you don't believe me, try echoing them both.

Stringing Things Along

Why stop with numbers? PHP also allows you to add strings with the string concatenation operator, represented by a period (.). Take a look:

```php
<?php

// set up some string variables

$a = 'the';

$b = 'games';

$c = 'begin';

$d = 'now';

// combine them using the concatenation operator

// this returns 'the games begin now<br />'

$statement = $a.' '.$b.' '.$c.' '.$d.'<br />';

print $statement;

// and this returns 'begin the games now!'

$command = $c.' '.$a.' '.$b.' '.$d.'!';

print $command;

?>
```

As before, you can concatenate and assign simultaneously, as below:

```php
<?php

// define string

$str = 'the';

// add and assign

$str .= 'n';
```

```
// str now contains "then"

echo $str;

?>
```

To learn more about PHP’s arithmetic and string operators, visit http://www.php.net/manual/en/language.operators.arithmetic.php and http://www.php.net/manual/en/language.operators.string.php.

That’s about it for this tutorial. You now know all about the basic building blocks and glue of PHP – its variables and operators. In Part Two of this series, I’ll be using these fundamental concepts to demonstrate PHP’s powerful form processing capabilities.