PHP Mastery

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http://about.me/agerst (http://about.me/agerst)
PHP Mastery (Source) (http://hnswave.co/mastery/php.html)

Preface

This is a book about the PHP programming language. It is intended for programmers transitioning from another language such as JavaScript as well as programmers who have been working with PHP at a novice level and are now ready for a more sophisticated relationship with the language.

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What is PHP?

PHP is an HTML-embedded server-side scripting language. Much of its syntax is borrowed from C, Java and Perl with a couple of unique PHP-specific features thrown in. The goal of the language is to allow web developers to write dynamically generated pages quickly.

Introduction & History

PHP: Hypertext Preprocessor (almost always abbreviated PHP) is a prototype-based scripting language that is dynamic, weakly typed and has first-class functions. It is a multi-paradigm language, supporting object-oriented, imperative, and functional programming styles.

Very Brief History

PHP/FI 2.0 is an early and no longer supported version of PHP. PHP 3 is the successor to PHP/FI 2.0 and is a lot

nicer. PHP 5 is the current generation of PHP, which uses the » Zend engine 2 which, among other things, offers many additional OOP features.

Differences between PHP 4 and PHP 5

While PHP 5 was purposely designed to be as compatible as possible with previous versions, there are some significant changes. Some of these changes include:

- A new OOP model based on the Zend Engine 2.0
- A new extension for improved MySQL support
- Built-in native support for SQLite
- A new error reporting constant, E_STRICT, for run-time code suggestions
- A host of new functions to simplify code authoring (and reduce the need to write your own functions for many common procedures)

Hello World

There is built-in I/O functionality in PHP. Here are a couple methods of producing output for the browser.

```
/**
* Hello World
*/

echo "Hello World!");
print "Hello World!";
dump_var();
print_r();
die();
exit();
```

Features

TODO

Trying Programs

Now that you've been introduced to the language I'd like to provide a couple methods so you can try PHP yourself.

http://jsfiddle.net/ (http://jsfiddle.net/)
http://livecoding.io/ (http://livecoding.io/)
https://compilr.com/ (https://compilr.com/)

Beautify PHP Code

http://beta.phpformatter.com/ (http://beta.phpformatter.com/)

Another approach is to simply create a PHP file containing the program and load it in your browser. For example, you could create a file called *test.php* with the following content:

```
<?php>

echo "Hello World";

?>
```

```
PHP Hosting Environments

XAMPP (http://www.apachefriends.org/en/xampp.html)
Heroku (https://www.heroku.com/)
000webhost (http://www.000webhost.com/)
```

Testing Script Performance

```
Sometimes after all day long coding your code becomes not so effective and your code (usually interface related) becomes slow. You have done so many changes and don't exactly know what is slowing it down. In cases like this (and of course, plenty other cases) you can test your PHP code performance.

A widely used threshold of time is 100 ms for when people start to notice latency in applications.

You can use this script to test your PHP code.
```

```
console.time('timerName');

// code goes here

console.timeEnd('timerName');
```

```
If subtracting microtimes gives you negative results, try using the function with the argument true (microtime(true)). With true, the function returns a float instead of a string (as it does if it is called without arguments).

http://www.phpbench.com/ (http://www.phpbench.com/)

PHPBench.com was constructed as a way to open people's eyes to the fact that not every PHP code snippet will run at the same speed.
```

```
Here are varous methods of making the Date.now() function available on all browsers since Date.now() is from JavaScript 1.5, and is not supported on IE 8.
```

```
var $time = Date.now || function(){
    return +new Date;
};

$time();

// OR

if (typeof Date.now == "undefined") {
    Date.now = function(){return new Date().getTime()};
```

```
}
```

```
The various methods used to get the current timestamp (number of milliseconds since the epoch) include:
```

```
myDate -> Array
(
    [Date.now()] => 1385881917917
    [+new Date()] => 1385881917917
    [new Date().getTime()] => 1385881917917
    [Number(new Date())] => 1385881917917
    [new Date().valueOf()] => 1385881917917
)
```

PHP performance tips

PHP is a very popular scripting language, used on many popular sites across the web. In this article, we hope to help you to improve the performance of your PHP scripts with some changes that you can make very quickly and painlessly. Please keep in mind that your own performance gains may vary greatly, depending on which version of PHP you are running, your web server environment, and the complexity of your code.

Profile your code to pinpoint bottlenecks

Hoare's dictum states that Premature optimization is the root of all evil, an important thing to keep in mind when trying to make your web sites faster. Before changing your code, you'll need to determine what is causing it to be slow. You may go through this guide, and many others on optimizing PHP, when the issue might instead be database-related or network-related. By profiling your PHP code, you can try to pinpoint bottlenecks.

Upgrade your version of PHP

The team of developers who maintain the PHP engine have made a number of significant performance improvements over the years. If your web server is still running an older version, such as PHP 3 or PHP 4, you may want to investigate upgrading before you try to optimize your code.

Use caching

Making use of a caching module, such as Memcache, or a templating system which supports caching, such as Smarty, can help to improve the performance of your website by caching database results and rendered pages.

Use output buffering

PHP uses a memory buffer to store all of the data that your script tries to print. This buffer can make your pages seem slow, because your users have to wait for the buffer to fill up before it sends them any data. Fortunately, you can make some changes that will force PHP to flush the output buffers sooner, and more often, making your site feel faster to your users.

Output Buffering Control
Avoid writing naive setters and getters

When writing classes in PHP, you can save time and speed up your scripts by working with object properties directly, rather than writing naive setters and getters. In the following example, the dog class uses the setName() and getName() methods for accessing the name property.

```
class dog {
```

```
  public $name = '';

  public function setName($name) {
    $this->name = $name;
  }

  public function getName() {
    return $this->name;
  }
}
```

Notice that setName() and getName() do nothing more than store and return the name property, respectively.

```
$rover = new dog();
$rover->setName('rover');
echo $rover->getName();
```

Setting and calling the name property directly can run up to 100% faster, as well as cutting down on development time.

```
$rover = new dog();
$rover->name = 'rover';
echo $rover->name;
```

Don't copy variables for no reason

Sometimes PHP novices attempt to make their code "cleaner" by copying predefined variables to variables with shorter names before working with them. What this actually results in is doubled memory consumption (when the variable is altered), and therefore, slow scripts. In the following example, if a user had inserted 512KB worth of characters into a textarea field. This implementation would result in nearly 1MB of memory being used.

```
$description = strip_tags($_POST['description']);
echo $description;
```

There's no reason to copy the variable above. You can simply do this operation inline and avoid the extra memory consumption:

```
echo strip_tags($_POST['description']);
```

Avoid doing SQL queries within a loop

A common mistake is placing a SQL query inside of a loop. This results in multiple round trips to the database, and significantly slower scripts. In the example below, you can change the loop to build a single SQL query and insert all of your users at once.

```
foreach ($userList as $user) {
  $query = 'INSERT INTO users (first_name,last_name) VALUES("' . $user['first_name'] . '", "' . $user['last_name']
. '")';
  mysql_query($query);
  }
```

Produces:

```
INSERT INTO users (first_name,last_name) VALUES("John", "Doe")
```

Instead of using a loop, you can combine the data into a single database query.

```
$userData = array();
foreach ($userList as $user) {
    $userData[] = '("' . $user['first_name'] . '", "' . $user['last_name'] . '")';
 }
$query = 'INSERT INTO users (first_name,last_name) VALUES' . implode(',', $userData);
mysql_query($query);
```

Produces:

```
INSERT INTO users (first_name,last_name) VALUES("John", "Doe"),("Jane", "Doe")...
```

Reserved Words

PHP has a number of "reserved words," or words that have special meaning in the language. You should avoid using these words in your code except when using them with their intended meaning.

So, you think you know PHP?

#. Topic

Question?

Quiz Answers

#.

FAQ

String Output
echo vs. print

Is a there a difference between what option you use to output your content?

In reality the echo and print functions serve the exact purpose and therefore in the backend the exact same code applies. The one small thing to notice is that when using a comma to separate items whilst using the echo function, items run slightly faster.

Variable Type Checking
isset() vs. empty() vs. is_array()

What is the performance of isset() and empty()?

isset() and empty() are identical. Always check if the value is set at all before using type-checking because it's twice as slow on a non set value. E.g. if (isset($foo) && is_array($foo))

Quote Types
double (") vs. single (') quotes

Is a there a difference in using double (") and single (') quotes for strings?

In today's versions of PHP it looks like this argument has been satisfied on both sides of the line.

Using the &-ref-operator
...as a so called "alias"

Is a good idea to use the &-ref-operator to substitute (or alias) a complex mutidim-array?

E.g. $person = &$aHach["country"]["zip"]["street"]["number"]["name"]

Whilst only using a one dimensional array, it's actually faster to use an alias, but anything larger will result in a performance drop.

Counting Loops
For vs. While

Is there an actual difference between counting up between the for loop and the while loop?

The while loop 90% of the time is indeed slightly faster.

Using the =&-ref-operator
$obj = $someClass->f() vs. $obj =& $someClass->f()

Is a good idea to use the =&-ref-operator when calling a function in an object?

Unless your extremely worried about how much RAM your using, leaving the &-ref-operator out seems like the slightly faster option.

Read Loop:
foreach() vs. for() vs. while(list() = each())

What is the best way to loop a hash array?

In all cases I've found that the foreach loop is substantially faster than both the while() and for() loop procedures. One thing to note is that when using an entire loop from the start it's extremely good to use the reset() function in all examples.

Given that the previous version of the tests have been very controvercial and incorrect, I must appologise for forgetting to implement the reset() function to allow the while() loops to start from the beginning instead of the end.

Using the =&-ref-operator
$obj = new SomeClass() vs. $obj =& new SomeClass()

Is a good idea to use the =&-ref-operator when creating a new object?

There seems to be no difference in performance.

Control Structures
switch/case/default vs. if/elseif/else

Is a there a difference between switch and if structures?

Using a switch/case or if/elseif is almost the same. Note: Using === (is exactly equal to) is slightly faster then using == (is equal to).

Counting Loops
For-loop test

Is it worth the effort to calculate the length of the loop in advance?
e.g. "for ($i=0; $i<$size; $i++)" instead of "for ($i=0; $i$val) $aHash[$key] .= "a";

BAD

```
while(list($key) = each($aHash)) $aHash[$key] .= "a";

GOOD

$key = array_keys($aHash);
$size = sizeOf($key);
for ($i=0; $i<$size; $i++) $aHash[$key[$i]] .= "a";
```

Proof in this example shows how functionally murderous the foreach() loop can be. If you are modifying your array don't use foreach.

Additional Reading / Watching

Here I provide additional references for you to continue your journey of mastering the best server-side programming language in the world!

Recommended YouTube Videos

Next Video ()

- Description

Thanks for reading my book, if you have any questions or suggestions feel free to email me at gerst20051@gmail.com