Web Programming with PHP

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INTRODUCTION TO PHP

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  – Advantages
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Introduction

• PHP (PHP: *Hipertext Preprocessor*):
  - A widely-used Open Source general-purpose scripting language
  - It is especially suited for Web development and can be embedded into HTML
  - The main goal of the language is to allow web developers to write dynamically

• Based on C, C++, Java, Awk, Perl and Bash (*shell script* in Unix operating systems) → Easy to learn

• OO features: classes, objects, etc.

• Possible uses:
  - Web programming
  - Command line
  - Desktop applications with graphical interface (Qt or GTK+)
Introduction

- A little of history:
  - Start of the project: autumn 1994
  - PHP 1, 1995
    - Set of scripts written in Perl: PHP/FI.
  - PHP 2, 1995-1997
    - Scripts are rewritten in C
  - PHP 3, 1997-2000
    - Code is organized and Rewritten: PHP Hypertext Preprocessor
  - PHP 4, mayo 2000
    - Core is rewritten, development of Zend engine
    - Support for most of web servers
    - New language features
  - PHP 5, julio 2004
    - Performance and stability are improved
    - Zend engine is improved
    - Better support for OOP and MySQL
  - PHP 6, beta version
<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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<tr>
<td>2009-11-02</td>
<td>3.2.0 – checked the filter extension by default.</td>
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<td>2011-01-06</td>
<td>3.2.17 – Fix of critical vulnerability connected to floating point.</td>
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<td>2009-06-30</td>
<td>3.0.0 – phpMyAdmin as a replacement for myisam as underlying library for the extensions that work with MySQL.</td>
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<td>2009-11-10</td>
<td>3.1.1 – Over 100 bug fixes, some of which were security fixes.</td>
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<tr>
<td>2010-03-04</td>
<td>3.2.0 – Includes a large number of bug fixes.</td>
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<td>2010-07-22</td>
<td>Mainly bug and security fixes. FIM SAPI.</td>
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<tr>
<td>2010-12-09</td>
<td>Mainly bug and security fixes, improvements to FPM SAPI.</td>
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<td>2011-01-06</td>
<td>3.2.0 – Fix of critical vulnerability connected to floating point.</td>
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<td>2011-03-13</td>
<td>5.0.0 – Over 60 bug fixes were reported in the previous version.</td>
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<td>2011-09-09</td>
<td>This release focuses on improving the stability of the PHP 5.3.1 branch with over 90 bug fixes, some of which are security related.</td>
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<td>2011-09-25</td>
<td>This release fixes issues introduced in the PHP 5.3.7 release.</td>
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<td>2011-12-10</td>
<td>This release focuses on improving the stability of the PHP 5.3.1 branch with over 90 bug fixes, some of which are security related.</td>
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<td>2012-02-01</td>
<td>Fixed arbitrary remote code execution vulnerability reported in Stefan Esser. CVE-2012-0033.</td>
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<td>2012-03-01</td>
<td>Fixed Support, short array syntax support. Removed Items Register, global, safe mode, allow_url_fopen, mime_magic, session_register(), session_unregister() and session_start(). Built-in web server. General improvements to existing features, performance and reduced memory requirements.</td>
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The development of PHP 6 has been delayed because the developers have decided the current approach to handling instance of code is not a good one, and are considering alternate ways in the next version of PHP. The updates that were intended for PHP 6 were added to PHP 5.3.9 (namespace support, Late Static Binding, template functions, closures, and 4.4.0 (traits, closure, reusing) instead.
Advantages

- Support for different platforms
- Fast execution speed (the fastest?)
- Open source:
  - Free
  - Code is available
  - You can modify the code
- Big collection of extensions than improve functionality
- It is easy to learn, because it is based on very well known programming languages
- Extensive official documentation, as well as many web pages, books, etc.

Different platforms

- Works on different operating systems:
  - UNIX (Linux)
  - Win32 (NT/W95/W98/W2000/XP)
  - Mac, OS/2, BeOS
- Works on different web servers:
  - Apache (UNIX, Win32)
  - ISAPI (IIS, PWS)
  - NSAPI (Netscape iPlanet)
  - Java servlet
  - AOLServer
- Works on different DBMS:
  - Oracle, BD2, Informix, MySQL, PostgreSQL, Sybase, dBase
  - ODBC: MS-Access, SQL-Server, etc.
NetCOBOL, Free COBOL runtime free: Compiler for .NET, Windows, Linux: www.netcobol.com
Python Training Courses: Learn Python from a specialist. Public and online courses. www.pythonsquare.com

**TIODE Programming Community Index for April 2012**

**April Headline:** Java and C swap places at the top of the TIOBE index

The TIOBE Programming Community index is the popularities of programming languages. The index is updated once a month. The ratings are based on the number of indexed segments worldwide, courses and third-party vendors. The popular search engines Google, Bing, Yahoo, Wikipedia, Amazon, YouTube and others are used to calculate the ratings. Search the TIOBE index for the best programming language or the language in which you make a cross-platform application or best programming language should be adopted when starting to build a new software system. The definition of the TIOBE index can be found here.

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**Google Ranking**

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PHP files

- PHP files need one of these extensions:
  - .php3, version 3
  - .php4, version 4
  - .php, generic and most used extension
  - .phtml, less used
- PHP4 is compatible with PHP3 (except some special features)

How it works (1)

- Web programming, code is embedded in the HTML code:
  - In the same file we can write HTML, CSS, JavaScript and PHP
  - Web server executes PHP code before sending the web page to the client (browser)
  - Browser doesn’t get PHP code, only the result (normally HTML)
How it works (and 2)

- Different to other technologies:
  - Instead of writing a program with lots of commands to output HTML, you write an HTML script with some embedded code to do something.
  - The PHP code is enclosed in special start and end tags that allow you to jump into and out of "PHP mode".
Basic syntax (1)

- Opening and closing tags, which tell PHP to start and stop interpreting the code between them:
  
  ```<? ... ?>
  <?php ... ?>
  <script language="php">...</script>
  <% ... %>```

- `<?` and `<%` are not always available, it depends on the configuration of the server.

Basic syntax (2)

- Is there any problem with `<? ... ?>`?
- Where do you also use this syntax?
Basic syntax (3)

- XML processing instruction:
  ```xml
  <?xml version="1.0" encoding="utf-8"?>
  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
  <html xmlns="http://www.w3.org/1999/xhtml"
  xml:lang="en-US" lang="en-US">
  ```

(beginning of W3C web page)

- Originates a parse error:
  ```
  Parse error: syntax error, unexpected T_STRING
  in C:\Web\index.php on line 1
  ```

Basic syntax (4)

- Solution 1:
  Modify `php.ini` to deactivate the use of `<?` as open tag of PHP code:
  ```
  short_open_tag=off
  ```
  Then, you have to use `<?php ...?>`, `<script language="php">...</script> or `<? % ...%>

- Solution 2:
  ```
  <? echo '<?xml version="1.0" encoding="iso-8859-1"?>'; ?>
  ```
Basic syntax (5)

• End of instruction: semicolon (;) at the end of each sentence
• Comments:
  /* Multiline comment
     as C, C++, Java */
  // One line comment, as C, C++, Java
  # One line comment as Bash/Perl

Basic syntax (6)

• Upper and lower case:
  – Variable names are always prefixed by $
  – Variable names, case-sensitive:
    $MyNumber is different of $mynumber
  – Function names and keywords, no case-sensitive:
    PRINT() is the same as print()
Basic syntax (7)

- To print a string:
  
  ```
  echo "text string";
  print "text string";
  <?="text string"?>
  ```

  **If short open tag is on <?**

- **Differences between echo y print:**
  - Both of them are language construct, not functions, but `print` behaves as a function
  - `echo` may have more than one parameter, but `print` not
  - `print` returns a value (always 1), but `echo` not
  - `echo` is a little bit faster than `print`, but it is not significant

Basic syntax (and 8)

- **Basic example:**

  ```
  <?php
  $a = 10;
  $b = 20;
  $c = $a + $b;
  echo $c;
  ?>
  ```
**echo**

(php 4, php 5)

**echo** — Output one or more strings

**Description**

```php
void echo ( string str0 [, string $ ... ] )
```

Outputs all parameters.

**echo** is not actually a function (it is a language construct), so you are not required to use parentheses with it. **echo** (unlike some other language constructs) does not behave like a function, so it cannot always be used in the context of a function. Additionally, if you want to pass more than one parameter to **echo**, the parameters must not be enclosed within parentheses.

**echo** also has a shortcut syntax, where you can immediately follow the opening tag with an equals sign. This short syntax only works with the **short_open_tag** configuration setting enabled.

```html
<p> I have &lt;html&gt; Foo, </p>
```