PHP: Hypertext Preprocessor

Course: CS4918 Software Design Lab
Professor: Chengyu Sun
Student: Ya-Chi Liu
Date: 11/12/2004

Introduction to PHP

- HTML-embedded scripting language
- Syntax: is borrowed from C, Java and Perl with PHP-specific features thrown in.
- Goal: to allow web developers to write dynamically generated pages quickly.
- Website: http://www.php.net

Overview of PHP

- Getting Started:
  1. What is PHP?
  2. What can PHP do?
- Installation and Configuration
  Example: php.ini
  - Language Reference
    1. Basic Syntax
    2. Data Types
    3. Constants and Expression
    4. Assignment and Comparison
    5. Array Operators
    6. Control Structures
    7. Functions
    8. Classes and Objects (PHP 5)
- A Login Example: Login, Database, Session
- Reference

What is PHP?

PHP is a widely-used Open Source general-purpose scripting language that is especially suited for Web development and can be embedded into HTML.

Example: hi.php
```html
<?php
  echo "Hi, I'm a PHP script!";
?>
```

Try it: http://www.monkeyfingers.org/~yuc6t/h.php

What can PHP do?

- Server-side scripting, Command line scripting, Client-side GUI applications
- O/S:
  - Linux, many Unix variants (including HP-UX, Solaris and OpenBSD), Microsoft Windows, Mac OS X, RISC OS, etc.
- Web servers:
  - Apache, IIS, Personal Web Server, Netscape and Planet servers, Onetly Website Pro server, Caudium, Xinami, OmniHTTPd... etc.
- Databases:
  - Adabas D, InterBase, PostgreSQL, dBase, FrontBase, SQLite, Empress, msSQL, Solid, FilePro(read-only), Direct MS SQL, Sybase, Hypernews, MySQL, Velocis, IBM DB2, ODBC, Unix dbm, Informix/Oracle (OCI7 and OCI8), Ingres, Ovrimos
- Protocols:
  - LDAP, WAP, SNMP, NNTP, POP3, HTTP, COM (on Windows) etc.

Installation and Configuration

- Windows Installer:
  http://us2.php.net/downloads.php
- php.ini:
  The configuration file is read when PHP starts up.
- Example: php.ini
**Array Operators**

- Array Operators
  ```php
  $a = array("a" => "1", "b" => "2");
  $b = array("a" => "3", "b" => "4", "c" => "5");
  $a = $a + $b; // Union of $a and $b
  var_dump($a);
  $a = $a + $b; // Union of $a and $b
  var_dump($a);
  $a = array("cherie", "ty");
  $b = array("liu", "0" => "cherie");
  var_dump($a == $b); // bool(true)
  var_dump($a == $b); // bool(false)
  ```


**Control Structures**

- Control Structures
  ```php
  if, elseif, while, do-while, for, foreach, break, continue,
  switch, return, require, include, require_once, include_once.
  ```

**Example:**

```php
<?php
$a = array(1, 2, 3, 4);
foreach ($a as $b) {
    //... $a is now array(2, 4, 6, 8)
}
?>
```

**Example:**

```php
<?php
require 'prepend.php';         // results in a fatal error
include 'vars.php';               // produces a warning
require_once ("a.php");
include_once ("a.php");
?>
```

**Functions**

- Functions
  ```php
  function foo() {
    echo "In foo() <br/>
  }
  
  function bar($arg = '') {
    echo "In bar() argument was " . $arg . " <br/>
  }
  
  // This is a wrapper function around echo
  function echoIt($string) {
    echo $string;
  }
  
  function test() {
    echo "This calls test()";
    echoIt("test parameter argument");
  }
  ```


**Classes and Objects (PHP 5)**

- Classes and Objects (PHP 5)
  ```php
  class Foo {
    public $a = 'cherie';
    function aFunc() { print 'ya'; }
  }
  $foo = new Foo;
  
  $element = 'a';
  print $foo->{$element};
  
  function getVarName() { return 'a'; };
  print $foo->{getVarName()}(); // prints 'Inside aMemberFunc'
  ```

Try it: [http://www.monkeyfingers.org/~yliu/class.php](http://www.monkeyfingers.org/~yliu/class.php)

**A Login Example**

- A Login Example
  ```php
  <form name="myForm" action="validate.php" method="POST">
    <input type="submit" name="mSubmit" value="Submit">
    <input type="reset" name="mReset" value="Clear">
  </form>
  ```

```php
<?php
  require_once( 'config.php' );

  $myUsername = trim( $$_POST['myUsername'] );
  $myPassword = trim( $$_POST['myPassword'] );

  $query = "SELECT * FROM User WHERE username = '" . $myUsername . "' AND password = '" . $myPassword . "';"

  $db = mysql_connect( $dbHost, $dbUser, $dbPass ) or die( 'DB Error - Could not connect: ' . mysql_error() ) ;
  mysql_select_db( $dbName ) or die( 'DB Error - Could not select database' ) ;
  $result = mysql_query( $query ) or die( 'DB Error - Query failed: ' . mysql_error() ) ;

  while( $row = mysql_fetch_array( $result ) ) {
    if( $row['username'] == $myUsername && $row['password'] == $myPassword ) {
      $myUserName = $row['username'];
      $myPassword = $row['password'];
      $myType = $row['type'] ;
      $myComp = $row['comp'];
      session_start();
      $_SESSION['myUsername'] = $myUsername;
      $_SESSION['myPassword'] = $myPassword;
      $_SESSION['myType'] = $myType;
      $_SESSION['myComp'] = $myComp;

      header( "Location: tntsys.php" );
      exit();
    }
  }
?>

<?php
  session_start();
  $myUsername = $_SESSION['myUsername'];
  $myPassword = $_SESSION['myPassword'];
  $myType = $_SESSION['myType'];

  ?><html><body>
  <p color=blue>Hello, <?php echo $myUsername; ?></p>
  </body></html>
  </html>
```

### Summary

- Getting Start:
  - HTML-embedded scripting language
  - What is PHP
  - What can PHP do?
  - Server-side scripting; Command-line scripting; Client-side GUI applications
- Language Reference:
  - Basic Syntax: Ex: "<?php echo "Hello world." ; ?>"
  - Data Types: Ex: string, boolean, integer, float, array, object...
  - Constants and Expressions: Ex: define("CONSTANT", "Hello world.");
  - Assignment and Comparison: Ex: $a = "Hello" ; "There!" ; $b = $a ; $c = $a ++ ;
  - Array Operations: Ex: $arr[0] = "a" ; "b" ;
  - Control Structures: Ex: if, else, for, foreach, require, include, require_once, include_once
  - Functions: Ex: function foo() {
  - Classes and Objects (PHP 5)
  - Ex: class new Foo
- A login example: Database, Session

### Reference

- PHP website:

- ACM: [http://acm.ca.statala.edu/](http://acm.ca.statala.edu/)