

Part 2: JavaScript, PHP, SQL, Advanced PHP

EE4717/IM4717 Web Application Design PHP

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PHP+MySQL

- Many websites on the internet are implemented using PHP and MySQL.
- Recommended Book:

Title : PHP and MySQL Web development – 4th ed.

Authors: Luke Welling, Laura Thomson.

ISBN 978-0-672-32916-6

QA76.73.P224W45 2008

Published by Addison Wesley.

What have you learned so far?

- HTML
- CSS
- Javascript

- What is coming up next?
 - Using PHP and SQL Database for Dynamic content.

What is PHP?

- PHP is **server-side** open source scripting language
- PHP script is **case-sensitive**
- PHP code is **interpreted at the web server** and dynamically generates HTML or other output that the visitor will see
- PHP can create, open, read, write, and close **files** on the server
- PHP can collect **form data**
- PHP supports a wide range of databases
- PHP originally stood for Personal Home Page, and now stands for PHP Hypertext Preprocessor.

What is MySQL?

- MySQL is a **fast robust** relational database management system (RDBMS) used on the web
- MySQL is a multiuser, multithreaded server using *Structured Query Language (SQL)*
- MySQL store data in tables.
- MySQL is ideal for both **small and large** applications
- MySQL compiles on a number of platforms

Why PHP+MySQL?

- PHP can add, delete, modify data in a **database**
- MySQL compiles on a number of platforms
- PHP works on major operating system and many minor ones
- **MySQL** is the most popular database system **used with PHP**
- PHP+MySQL are **cross-platform**

PHP Script and HTML

hello.php

- Embedding PHP in HTML.
 - PHP scripts are embedded between **PHP tags** in HTML
 - PHP code begins with “<?php” and ended with “?>”.
 - Any text between the tags is **interpreted by the web server** as PHP.
 - Any text outside these tags is treated as normal HTML
 - You can embed **JavaScript in PHP**

```
<!DOCTYPE html>
<html>
<body>
<?php
echo "Hello, my first PHP script!";
?>
</body>
</html>
```

File: hello.php

```
<?php
echo '<script type="text/javascript">
alert("Hello...from javascript");
</script>';
?>
```

File: js_hello.php

Bob's Auto Parts (1) – The Order Form

orderform.html

Item	Quantity
Tires	<input type="text"/>
Oil	<input type="text"/>
Spark Plugs	<input type="text"/>
How did you find Bob's? <input type="text" value="I'm a regular customer"/>	
<input type="button" value="Submit Order"/>	

- Form action is implemented using the `action` attribute of the form tag
- The `action` is handled by PHP script `processorder.php`
- Form inputs in html are passed into PHP script by sending through the current URL via the `post` method

```

<html>
<body>
<form action="processorder.php" method="post">
<table border="0">
<tr bgcolor="#cccccc">
  <td width="150">Item</td>
  <td width="15">Quantity</td>
</tr>
<tr>
  <td>Tires</td>
  <td align="center"><input type="text" name="tireqty" size="3"
    maxlength="3"></td>
</tr>
<tr>
  <td>Oil</td>
  <td align="center"><input type="text" name="oilqty" size="3" maxlength="3"></td>
</tr>
<tr>
  <td>Spark Plugs</td>
  <td align="center"><input type="text" name="sparkqty" size="3"
    maxlength="3"></td>
</tr>

```


Bob's Auto Parts (2) -- The Order Form

- The form `action` is registered through the `submit` attribute of the form
- On submission, the form event `action` attribute is activated and PHP code in `processor.php` run at the web server

Item	Quantity
Tires	<input type="text"/>
Oil	<input type="text"/>
Spark Plugs	<input type="text"/>
How did you find Bob's? <input type="text" value="I'm a regular customer"/>	
<input type="button" value="Submit Order"/>	

```

<tr>
  <td>How did you find Bob's?</td>
  <td><select name="find">
    <option value = "a">I'm a regular customer</option>
    <option value = "b">TV advertising</option>
    <option value = "c">Phone directory</option>
    <option value = "d">Word of mouth</option>
  </select>
</td>
</tr>
<tr>
  <td colspan="2" align="center"><input type="submit" value="Submit Order"></td>
</tr>
</table>
</form>
</body>
</html>

```

Bob's Auto Parts (3) – Processing the Form

processorder.php

- Form inputs are passed into script via a `post` method and declared as local variables
- The form input name attributes `tireqty`, `oilqty`, and `sparkqty` are used to get the form inputs
- Output is generated in HTML

Bob's Auto Parts

Order Results

Order processed at 03:02, 16th September 2014

Your order is as follows:

Items ordered: 6

1 tires

2 bottles of oil

3 spark plugs

Subtotal: \$132.00

Total including tax: \$145.20

Regular customer.

```
<?php
// create short variable names
$tireqty = $_POST['tireqty'];
$oilqty = $_POST['oilqty'];
$sparkqty = $_POST['sparkqty'];
$find = $_POST['find'];
?>

<html>
<head>
<title>Bob's Auto Parts - Order Results</title>
</head>
<body>
<h1>Bob's Auto Parts</h1>
<h2>Order Results</h2>
```

Bob's Auto Parts (4) – processorder.php

- The `date()` function is called in the script to produce the date and time content
- `echo` is a PHP function to output onto the web page
- PHP codes embedded in HTML tags will not be visible as PHP script, as it is interpreted and replaced it with **output from the script in clean HTML**

```
Order processed at 03:02, 16th September 2014

Your order is as follows:

Items ordered: 6
1 tires
2 bottles of oil
3 spark plugs
Subtotal: $132.00
Total including tax: $145.20

Regular customer.
```

```
<?php

echo "<p>Order processed at ".date('H:i, jS F Y')."</p>";

echo "<p>Your order is as follows: </p>";

$totalqty = 0;
$totalqty = $tireqty + $oilqty + $sparkqty;
echo "Items ordered: ".$totalqty."<br />";

if ($totalqty == 0) {

    echo "You did not order anything on the previous page!<br />";

} else {

    if ($tireqty > 0) {
        echo $tireqty." tires<br />";
    }

    if ($oilqty > 0) {
        echo $oilqty." bottles of oil<br />";
    }

    if ($sparkqty > 0) {
        echo $sparkqty." spark plugs<br />";
    }

}
```

Bob's Auto Parts (5) – processorder.php

Bob's Auto Parts

Order Results

Order processed at 03:02, 16th September 2014

Your order is as follows:

Items ordered: 6

1 tires

2 bottles of oil

3 spark plugs

Subtotal: \$132.00

Total including tax: \$145.20

Regular customer.

```
$totalamount = 0.00;

define('TIREPRICE', 100);
define('OILPRICE', 10);
define('SPARKPRICE', 4);

$totalamount = $tireqty * TIREPRICE
               + $oilqty * OILPRICE
               + $sparkqty * SPARKPRICE;

echo "Subtotal: $".number_format($totalamount,2)."<br />";

$taxrate = 0.10; // local sales tax is 10%
$totalamount = $totalamount * (1 + $taxrate);
echo "Total including tax: $".number_format($totalamount,2)."<br />";

if($find == "a") {
    echo "<p>Regular customer.</p>";
} elseif($find == "b") {
    echo "<p>Customer referred by TV advert.</p>";
} elseif($find == "c") {
    echo "<p>Customer referred by phone directory.</p>";
} elseif($find == "d") {
    echo "<p>Customer referred by word of mouth.</p>";
} else {
    echo "<p>We do not know how this customer found us.</p>";
}

?>
</body>
</html>
```

PHP Tags

quotation_marks.php

➤ Four styles of PHP tags.

1. XML style

```
<?php echo '<p>Order processed.</p>'; ?>
```

– used here

2. Short style

```
<? echo '<p>Order processed.</p>'; ?>
```

– need to enable short_open_tag setting

3. Script style

```
<script language='php'> echo '<p>Order processed.  
</p>'; </script>
```

4. ASP style

```
<% echo '<p>Order processed.</p>'; %>
```

– need to enable asp_tags setting

Note: string quotation marks are in single (') or double prime (").

These are not the same as open and close quotation marks (' ' " ").

Character codes:

Prime: 2032,

Double prime: 0022

Quotes: 2018, 2019,

Double quotes: 2016, 201D

Basic PHP Syntax

- PHP Statements are terminated by semicolon (;).
`echo ' <p>Order processed. </p>' ;`
 - It prints (or echoes) the string passed to it to the browser.
- Whitespace
 - Spacing characters such as newline (carriage returns), spaces, and tabs **are ignored** by browser and PHP engine.
- Comments
 - PHP supports C, C++, and shell script-style comments.
`/* Author: Bob Smith
This script processes the customer orders.
*/`
 - Single-line comments, in the C++ style:
`echo ' <p>Order processed.</p>' ; // Start printing order`
 - or in the shell script style:
`echo ' <p>Order processed. </p>' ; # Start printing order`

Adding Dynamic Content

date.php

- Use PHP's built-in date() function to tell date and time when an order was processed

```
<?php
echo "<p>Order processed at";
echo date('H:i, jS F Y');
echo "</p>";
?>
```

- Using the concatenation operator (.)

```
<?php
echo "<p>Order processed at". date('H:i, jS F Y'). "</p>";
?>
```

- H is in 24-hour format, i is minutes, j is day of month, S represents the ordinal suffix (in this case th), F is the full name of the month, Y is the year.

Accessing Form Variables

- Variable name in PHP start with a dollar sign (\$).
- Three ways of accessing form data via variables
 - `$tireqty` // short style
 - `$_post['tireqty']` //medium style
 - `$HTTP_POST_VARS['tireqty']` //long style
- Short style is convenient but requires the `register_globals` configuration setting be turned on.
 - for security reasons, this setting is turned off by default.
- Medium style is the recommended approach
 - Medium style involves retrieving form variables from one of the arrays `$_POST`, `$_GET`, or `$_REQUEST`.
- Long style is most verbose and can be turned off by the `register_long_arrays` configuration directive.

Creating (Declaring) PHP Variables(1)

- PHP script is **loosely typed**
 - A variable is created the moment you first assign a value to it
e.g. `$tireqty = $_POST['tireqty'];`
- Variables are **passed into script** via the respective methods
 - Data in the tireqty box will be stored in `$_POST['tireqty']` and `$_GET['tireqty']` when the form is submitted via the POST and GET method, respectively
 - **POST** method **hides** data from URL, while **GET displays** it on URL
 - In either case, the data will also be available in `$_REQUEST['tireqty']`
- New variables are generally created in a block of code at the start of the processing script

Creating (Declaring) PHP Variables(2)

- Example, this code creates variables via the POST method

```
<?php
    // create short variable names
    $tireqty = $_POST['tireqty'];
    $oilqty = $_POST['oilqty'];
    $sparkqty = $_POST['sparkqty'];
?>
```

Generating PHP Output

processorder.php

- PHP has a build-in function `echo` to output text onto a web page
 - the text can contain HTML markup
- To make the script in Bob's Auto Parts start doing something visible, add the following lines

```
echo '<p> Your order is as follows: </p>';
```

```
echo $tireqty. ' tires<br />';
```

```
echo $oilqty. 'bottles of oil<br />';
```

```
echo $sparkqty. 'spark plugs<br />';
```

Bob's Auto Parts

Order Results

Order processed at 03:02, 16th September 2014

Your order is as follows:

Items ordered: 6

1 tires

2 bottles of oil

3 spark plugs

Subtotal: \$132.00

Total including tax: \$145.20

Regular customer.

String Concatenation

string_interpolation.php

- String concatenation operator is a period (.)
`echo $tireqty . 'tires
';`
- This is equivalent to the above statement
`echo "$tireqty . tires
";`
 - Replacing a variable with its contents within a string, is known as interpolation.
- You cannot place variable name inside a single-quoted string.
`echo '$tireqty. tires
';`
 - This simply sends “\$tireqty. tires
” to the browser
 - **Single quoted strings are** treated as true **string literals**

PHP's Data Types

- PHP supports the following basic data types:
 - Integer—Used for whole numbers
 - Float (also called a double)—Used for real numbers
 - String—Used for strings of characters
 - Boolean—Used for true or false values
 - Array—Used to store multiple data items
 - Object—Used for storing instances of classes
- Two special types are also available: NULL and resource.
 - Resource is external variable (e.g. a database connection) and not directly manipulated
 - They are mostly returned by functions and must be passed as parameters to other functions
- PHP variables are loosely typed or dynamically typed language.
 - a variable is determined by the value assigned to it.

Type Casting

[typecasting.php](#)

➤ Standard type casting

```
$totalqty = 0
```

```
$totalamount = (float) $totalqty;
```

- After type casting, \$totalamount stores the float value of \$totalqty, while \$totalqty remains of type integer.

➤ Variable variables

```
$varname = 'tireqty';
```

```
$$varname = 5;
```

- This is exactly equivalent to

```
$tireqty = 5;
```

- Variable variables enable you to change the name of a variable dynamically.

Declaring and Using Constants

constants.php

- Constants are defined using the define function

```
Define ('TIREPRICE', 100);  
Define ('OILPRICE', 10);  
Define ('SPARKPRICE', 4);
```

- Constants are in uppercase simple for convention and easier reference
- Constant need not have \$ prefix

```
echo TIREPRICE;
```

Variable Scope

- The six basic scope rules in PHP are as follows:
 1. Built-in **superglobal** variables are visible everywhere within a script
 2. **Constants**, once declared, are always visible **globally**; that is, they can be used inside and outside function.
 3. **Global variables** declared (**outside a function**) in a script are visible throughout that script, but **not inside functions**.
 4. Variables **inside functions** that are declared as global refer to the **global variables of the same name**.
 5. Variables created inside functions and declared as **static** are **invisible from the outside** the function but keep their value in between one execution of the function and the next.
 6. Variables created **inside functions are local** to the function and cease to exist when the function terminates.

Superglobals

superglobal.php

- The arrays `$_GET` and `$_POST` and some other special variables have their own scope rules.
 - They are known as superglobals or autoglobals and can be seen everywhere, both inside and outside functions.
- The complete list of superglobals is as follows:
 - `$GLOBAL`—An array of all global variables (Like the `global` keyword, this allows you to access global variables **inside a function**—for example, as `$GLOBALS['myvariable']`.)
 - `$_SERVER`—An array of server environment variables
 - `$_GET`—An array of variables passed to the script via the **GET** method
 - `$_POST`—An array of variables passed to the script via the POST method
 - `$_COOKIES`—An array of cookie variables
 - `$_FILES`—An array of variables related to file uploads
 - `$_ENV`—An array of environment variables
 - `$_REQUEST`—An array of all user input including the contents of input including `$_GET`, `$_POST`, and `$_COOKIE` (but not including `$_FILES`)
 - `$_SESSION`—An array of session variables

PHP's Operators(1)

➤ Arithmetic Operators

Operator	Name	Example
+	Addition	$\$a + \b
-	Subtraction	$\$a - \b
*	Multiplication	$\$a * \b
/	Division	$\$a / \b
%	modulus	$\$a \% \b

➤ String Operator

`$a = "Bob's";`

`$b = "Auto Parts";`

`$result = $a.$b;`

- The `$result` variable now contains the string "Bob's Auto Parts".

PHP's Operators(2)

[reference.php](#)

➤ Combined Assigned Operators

Operator	Use	Equivalent to
+=	<code>\$a += \$b</code>	<code>\$a = \$a + \$b</code>
-=	<code>\$a -= \$b</code>	<code>\$a = \$a - \$b</code>
*=	<code>\$a *= \$b</code>	<code>\$a = \$a * \$b</code>
/=	<code>\$a /= \$b</code>	<code>\$a = \$a / \$b</code>
%=	<code>\$a %=\$b</code>	<code>\$a = \$a % \$b</code>
.=	<code>\$a .= \$b</code>	<code>\$a = \$a . \$b</code>

➤ Reference Operator

```
$a =5;
```

```
$b =&$a;
```

```
$a =7; // $a and $b are now both 7
```

- A reference is like an alias rather than like a pointer.

PHP's Operators(3)

➤ Comparison Operators

Operator	Name	Use
<code>==</code>	<i>Equals</i>	<i>$\\$a == \\b</i>
<code>===</code>	<i>Identical</i>	<i>$\\$a === \\b</i>
<code>!=</code>	<i>Not equal</i>	<i>$\\$a != \\b</i>
<code>!==</code>	<i>Not identical</i>	<i>$\\$a !== \\b</i>
<code><></code>	<i>Not equal (comparison operator)</i>	<i>$\\$a <> \\b</i>
<code><</code>	<i>Less than</i>	<i>$\\$a < \\b</i>
<code>></code>	<i>Greater than (comparison operator)</i>	<i>$\\$a > \\b</i>
<code><=</code>	<i>Less than or equal to</i>	<i>$\\$a <= \\b</i>
<code>>=</code>	<i>Greater than or equal to</i>	<i>$\\$a >= \\b</i>

➤ Logical Operators

Operator	Name	Use	Result
<code>!</code>	<i>NOT</i>	<i>$!\\$b$</i>	<i>Returns true if $\\$b$ is false and vice versa.</i>
<code>&&</code>	<i>AND</i>	<i>$\\$a \&\& \\b</i>	<i>Returns true if both $\\$a$ and $\\$b$ are true; otherwise false.</i>
<code> </code>	<i>OR</i>	<i>$\\$a \\b</i>	<i>Returns true if either $\\$a$ or $\\$b$ or both are true; otherwise false.</i>
<i>and</i>	<i>AND</i>	<i>$\\$a$ and $\\$b$</i>	<i>Same as <code>&&</code>, but with lower precedence.</i>
<i>or</i>	<i>OR</i>	<i>$\\$a$ or $\\$b$</i>	<i>Same as <code> </code>, but with lower precedence.</i>
<i>xor</i>	<i>XOR</i>	<i>$\\$a$ xor $\\$b$</i>	<i>Returns true if either $\\$a$ or $\\$b$ is true, and false if they are both true or both false.</i>

PHP's Operators(4)

errorsuppress.php

- The Ternary Operator
 - The ternary operator (**?** **:**) takes the following form:
Condition? value if true : value if false
e.g. (\$grade >= 50 ? 'passed' : 'failed')

- The Error Suppression Operator
 - The error suppression operator (**@**) can be used in front of any equation,
e.g. \$a = @(57/0)
 - Without the **@** operator, this line generates a divide-by-zero warning.
 - Error suppression used on any function that returns a value,
e.g. \$dbcnx=@mysql_connect('localhost','root','');

PHP's Operators(5)

dir.php

➤ The Execution Operator

- Is a pair of backticks (``).
- PHP attempts to execute whatever is contained between the backticks as a command at the server's command line.

```
$out = `dir c`;
```

```
echo '<pre>'. $out. '</pre>';
```

- It means obtain a directory listing and stores it in \$out. It can then be echoed to the browser or dealt with in any other way.

➤ Other Operators

- The comma operator (,) separates function arguments and other lists of items.
- Two special operators, new and -> are used to instantiate a class and access class members.

Array Operators

[array_op.php](#)

➤ Array Operators

<i>Operator</i>	<i>Name</i>	<i>Use</i>	<i>Result</i>
<code>+</code>	<i>Union</i>	<code>\$a + \$b</code>	Returns an array containing everything in <code>\$a</code> and <code>\$b</code>
<code>==</code>	<i>Equality</i>	<code>\$a == \$b</code>	Returns true if <code>\$a</code> and <code>\$b</code> have the same key and pairs
<code>===</code>	<i>Identity</i>	<code>\$a === \$b</code>	Returns true if <code>\$a</code> and <code>\$b</code> have the same key and value pairs the same order
<code>!=</code>	<i>Inequality</i>	<code>\$a != \$b</code>	Returns true if <code>\$a</code> and <code>\$b</code> are not equal
<code><></code>	<i>Inequality</i>	<code>\$a <> \$b</code>	Returns true if <code>\$a</code> and <code>\$b</code> are not equal
<code>!==</code>	<i>Non-identity</i>	<code>\$a !== \$b</code>	Returns true if <code>\$a</code> and <code>\$b</code> are not identical

- All array operators have equivalent operators that work on scalar variables.

Control Statements

➤ *if, else, elseif* Statements

e.g. `if ($totalqty == 0)`

`echo 'You did not order anything on the previous page!
';`

– A Code Block

`if ($totalqty == 0) {`

`echo '<p style="color:red">';`

`echo 'You did not order anything on the previous page!';`

`echo '</p>';`

`}`

➤ *switch* Statements

– allow the control condition to take more than two values.

e.g. `switch ($find) {`

`case "a":`

`echo "<p>Regular customer.<p/>";`

`break;`

`case "b":`

.....

Control Statements(2)

➤ Loops

```
while (control_expression)
    statement or compound;
    increment/decrement counter;
```

```
for (init; control; increment/decrement)
    statement or compound;
```

```
do
    statement or compound;
while (control_expression)
```

Numerically Indexed Arrays

- Initializing Numerically Indexed Arrays

e.g. `$products = array('Tires', 'Oil', 'Spark Plugs');`

- This code creates an array called `$products` containing the three values given: 'Tires', 'Oil' and 'Spark Plugs'.

- The following code creates the same `$products` array :

`$products [0] = 'Tires'`

`$products [1] = 'Oil'`

`$products [2] = 'Spark Plugs'`

Numerically Indexed Arrays(2)

array1.php

- Using *for* loop to access the Array

```
for ($i = 0; $i<3; $i++) {  
    echo $products[$i].” ”;  
}
```

- You can also use the *foreach* loop, specially designed for use with arrays.

```
foreach ($products as $current) {  
    echo $current.” ”;  
}
```

- This code assigns the value of each element in \$product[] to \$current and the array pointer is moved by one till the end of the array.

Associative Arrays with Named Keys

- Initializing an Associative Array
 - The following code creates an array with product names as keys and prices as values:
e.g. `$prices = array('Tires' =>100, 'Oil' =>10, 'Spark Plugs'=>4);`
- The following code creates the same `$prices` array with one element and adds two more:

```
$prices = array('Tires' =>100 );  
$prices ['Oil'] =10;  
$prices['Spark Plugs'] =4;
```
- The array is created when the first element is added to it:

```
$prices['Tires'] =100;  
$prices ['Oil'] =10;  
$prices['Spark Plugs'] =4;
```

Associative Arrays with Named Keys(2)

[array2.php](#)

- Accessing the Array Elements using keys
 - Keys are used to access an array when the indices are not numbers hence cannot use a simple counter in a for loop
 - Can use foreach loop and each() construct

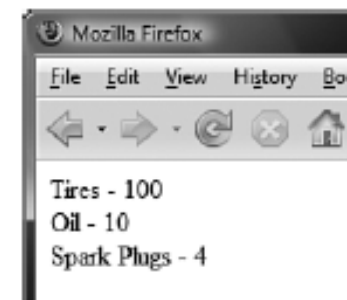
- Using *foreach* loop to access *keys* in an array

```
e.g. foreach ($prices as $key => $value) {  
    echo $key." - ".$value."<br />";  
}
```

- The following code lists the contents of the \$prices array using *each()* construct:

```
while ($element = each($prices)) {  
    echo $element['key'];  
    echo " - ";  
    echo $element['value'];  
    echo "<br />"; }  

```



Multidimensional Arrays

- Each location in an array can hold another array, creating a two-dimensional array.

- Using PHP, you would write the following code to set up the data in the array:

```
$products = array( array('TIR', 'Tires', 100),  
                  array('OIL', 'Oil', 10),  
                  array('SPK', 'Spark Plugs', 4));
```

- To display the contents of this array, you could manually access each element in order like this:

```
echo'|'.$products[0][0].'|'.$products[0][1].'|'.$products[0][2].'|<br/>';  
echo'|'.$products[1][0].'|'.$products[1][1].'|'.$products[1][2].'|<br/>';  
echo'|'.$products[2][0].'|'.$products[2][1].'|'.$products[2][2].'|<br/>';
```

Code	Description	Price
TIR	Tires	100
OIL	Oil	10
SPK	Spark Plugs	4

Multidimensional Arrays(2)

[multiarray.php](#)

- Alternatively, you could place a for loop inside another for loop to achieve the same result:

```
for ($row = 0; $row < 3; $row++) {  
    for ($column = 0; $column < 3; $column++){  
        echo '|'.$products[$row][$column];  
    }  
    echo '<br/>';  
}
```

Code	Description	Price
TIR	Tires	100
OIL	Oil	10
SPK	Spark Plugs	4

- Both version produces the same output in the browser, but code in second method is shorter:

```
|TIR|Tires|100|  
|OIL|Oil|10|  
|SPK|Spark Plugs|4|
```

Sorting Arrays

➤ Using `sort()`

- The following code showing the `sort()` function results in the array being sorted into ascending alphabetical order:

```
e.g. $products = array('Tires', 'Oil', 'Spark Plugs');  
      sort($products)
```

- The array elements will now appear in the order Oil, Spark Plugs, Tires.
- You can sort values by numerical order, too.
e.g. `$prices = array(100, 10, 4)`
 `sort($prices);`
- The prices will now appear in the order 4, 10, 100.

Using Functions in PHP

- Calling Functions

```
function_name();
```

- Passing data and name of variable to functions

```
function_name('parameters');
```

```
function_name(2);
```

```
function_name(7.993);
```

```
function_name($variables);
```

- In the last line, \$variable might be any type of PHP variable, including an array or object.

- Here is the declaration of a trivial function:

```
function my_function() {  
    echo 'My function was called';  
}
```

Using Parameters

function.php

- A sample function that takes a one-dimensional array and displays it as a table

```
function create_table($data) {  
    echo "<table border=\"1\">";  
    reset($data); // Remember this points to the beginning  
    $value=current($data); // current element of array  
    while ($value) {  
        echo "<tr><td>".$value."</td></tr>\n";  
        $value = next($data);  
    }  
    echo"</table>";  
}
```



- Figure shows output of calling the create_table() function:

```
$my_array = array('Line one.', 'Line two.', 'Line three.');
```

```
create_table($my_array)
```

Passing by Reference vs. Passing by Value

[passbyval.php](#)

➤ Passing by value

```
function increment($value, $amount = 1) {  
    $value = $value + $amount;  
}
```

- This code is of no use. The output from the following test code will be 10:

```
$value = 10;  
increment ($value);  
echo $value;
```

- The contents of `$value` have not changed because of the scope rules.

Passing by Reference vs. Passing by Value(2)

passbyref.php

➤ Passing by reference

- You can modify the preceding increment() example to have one parameter passed by reference and it will work correctly:

```
function increment(&$value, $amount = 1) {  
    $value = $value + $amount;  
}
```

- You now have a working function and are free to name the variable to increment anything you like. The following test code now echoes 10 before the call to increment() and 11 after:

```
$a = 10;  
echo $a.'<br/>';  
increment ($a);  
echo $a. ' <br/>';
```

Returning Values from Functions

[return.php](#)

- You can write the larger() function as follows:

```
function larger ($x, $y) {  
    if ((!isset($x) || (!isset($y))) {  
        return false;  
    } else if ($x>$y) {  
        return $x;  
    } else {  
        return $y;  
    } }  
}
```

- The built-in function isset() tells if a variable is created and given a value.

- The code

```
$a = 1; $b= 2.5; $c = 1.9;  
echo larger($a, $b).'<br/>;  
echo larger($c, $a).'<br/>;  
echo larger($d, $a).'<br/>;
```

- produces this output because \$d does not exist and false is not visible:

```
2.5  
1.9
```

Multipurpose Pages

Multipurpose_page.php

```
<html>
<head><title>Multipurpose Page Outline </title>
</head>
<body>
<?php if (condition) { ?>
```

Use isset() function for condition testing and \$_SERVER['PHP_SELF'] to reload the current page

```
<!-- HTML content to display if condition is true -->
```

```
<?php } else { ?>
```

```
<!-- HTML content to display if condition is false -->
```

```
<?php } ?>
```

```
</body>
```

```
</html>
```

Exercise: Bob's Auto Parts

- Study the Bob's Auto Parts script files in orderform.html and processorder.php
- Write a set of functions to compute the following:
 - subtotal of each item purchased using the cost and quantity purchased for each item
 - Total cost of all item purchased by summing the subtotals
- Generate a table output to show the following details:

Item	Item Cost	Quantity	Subtotal
Tires			
Oil			
Spark Plugs			
Total Cost (\$):			