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Basic PHP Syntax

Arrays

Strings and regular expressions

Announcements

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- Demo Tomorrow: Assignment 2 and 3
- I will be out of town next week. February 14 – February 22.
 - Tim Kopp manage lecture Tuesday and Thursday.
 - The Undergraduate Lab TAs will be in the lab classes.
- Start Assignments 2, 3, and 4 now, so we can work out problems.

Due Dates

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- Assignments 0, 1, 2, 3, and 4 will be due February 24.
 - ▣ The assignments must be checked in to the master branch on your team's Git repo on Betaweb.
 - ▣ They will be uploaded to a server to be graded by the me and the TAs.
- This is more work than one person can do—you will need to use your team to get it done.
 - ▣ You know each other's strengths and weaknesses now—use this knowledge.

Don't Panic

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- In Web Programming you need to learn everything all at once.
 - ▣ Rely on your team
 - ▣ No one know everything (yet); everyone knows something.
- Work on the computer outside lab.

Status Check

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- Does everyone on the team have an AWS web server (or equivalent)?
- Has everyone logged into betaweb and changed their username?
- Has everyone cloned the team's git repository to their AWS server?
 - ▣ Is it in `/home/ec2-user`?
- Does everyone have a branch on their team's git server?

Status check

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- Has everyone copied their files from their working directory (which is stored in `/home/ec2-user`) to `/var/html`?
 - ▣ Does it show up properly in the browser?

Moving Forward

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- You now have more work than one person can do
- How do you effectively use the team?
 1. Create a backlog
 - What needs to be done to get the assignment finished
 2. Assign team members to the items on the backlog
 3. During Standup, you mention items

Quiz

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1. If this code (which is in a file name “f”) is added to a PHP page, what appears? Why?

```
<?php if( 50 < 60) { ?>
    
    <?php }
```

2. What does `strlen("Hello")` return?
3. Does `"32" == 32` ?
4. If `$a = array(1, 2, 3); $[a] = 0;` what is `count($a);`?
5. What does `file(f)` return?

Quiz (Answers)

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1. Nothing appears—the page is blank. Because the code is missing a final `?>`

```
<?php if( 50 < 60) { ?>
    
    <?php }
```

2. `strlen("Hello")` returns 5
3. Does `"32" == 32`? (Surprisingly, yes)
4. If `$a = array(1, 2, 3); $[a] = 0;` what is `count($a);`? (Surprisingly 4)
5. `file(f)` returns An array of the lines in the files

Quiz Answers

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- `$a = file(f)`
- `a[1] = "<?php if(50 < 60) { ?>"`
- `a[2] = " "`
- `a[3] = " <?php }"`

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Basic PHP Syntax

Arrays

Strings and regular expressions

Arrays

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```
$name = array();           # create
$name = array(value0, value1, ..., valueN);
$name[index]              # get element value
$name[index] = value;     # set element value
$name[] = value;          # append
```

PHP

```
$a = array();             # empty array (length 0)
$a[0] = 23;               # stores 23 at index 0 (length 1)
$a2 = array("some", "strings", "in", "an", "array");
$a2[] = "Ooh!";          # add string to end (at index 5)
```

PHP

- Append: use bracket notation without specifying an index
- Element type is not specified; can mix types

Array functions

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function name(s)	description
<u>count</u>	number of elements in the array
<u>print_r</u>	print array's contents
<u>array_pop</u> , <u>array_push</u> , <u>array_shift</u> , <u>array_unshift</u>	using array as a stack/queue
<u>in_array</u> , <u>array_search</u> , <u>array_reverse</u> , <u>sort</u> , <u>rsort</u> , <u>shuffle</u>	searching and reordering
<u>array_fill</u> , <u>array_merge</u> , <u>array_intersect</u> , <u>array_diff</u> , <u>array_slice</u> , <u>range</u>	creating, filling, filtering
<u>array_sum</u> , <u>array_product</u> , <u>array_unique</u> , <u>array_filter</u> , <u>array_reduce</u>	processing elements

Array function example

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```
$tas = array("MD", "BH", "KK", "HM", "JP");  
for ($i = 0; $i < count($tas); $i++) {  
    $tas[$i] = strtolower($tas[$i]);  
}  
$morgan = array_shift($tas);  
array_pop($tas);  
array_push($tas, "ms");  
array_reverse($tas);  
sort($tas);  
$best = array_slice($tas, 1, 2);
```

PHP

- the array in PHP replaces many other collections in Java
 - ▣ list, stack, queue, set, map, ...

foreach loop

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```
foreach ($array as $variableName) {  
    ...  
}
```

PHP

```
$fellowship = array("Frodo", "Sam", "Gandalf",  
"Strider", "Gimli", "Legolas", "Boromir");  
print "The fellowship of the ring members are: \n";  
for ($i = 0; $i < count($fellowship); $i++) {  
    print "{$fellowship[$i]}\n";  
}  
print "The fellowship of the ring members are: \n";  
  
foreach ($fellowship as $fellow) {  
    print "$fellow\n";  
}
```

PHP

Multidimensional Arrays

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```
<?php $AmazonProducts = array( array("BOOK",  
"Books", 50),  
                                array("DVDs",  
"Movies", 15),  
                                array("CDs", "Music", 20)  
                                );  
for ($row = 0; $row < 3; $row++) {  
    for ($column = 0; $column < 3; $column++) { ?>  
        <p> | <?= $AmazonProducts[$row]  
[$column] ?>  
        <?php } ?>  
    </p>  
<?php } ?>
```

PHP

Multidimensional Arrays (cont.)

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```
<?php $AmazonProducts = array( array("Code" =>"BOOK",  
"Description" => "Books", "Price" => 50),  
                                array("Code" => "DVDs",  
"Description" => "Movies", "Price" => 15),  
                                array("Code" => "CDs",  
"Description" => "Music", "Price" => 20)  
                                );  
for ($row = 0; $row < 3; $row++) { ?>  
    <p> | <?=$AmazonProducts[$row]["Code"] ?> | <?=  
$AmazonProducts[$row]["Description"] ?> | <?=  
$AmazonProducts[$row]["Price"] ?>  
    </p>  
<?php } ?>
```

PHP

String compare functions

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Name	Function
<u>strcmp</u>	compareTo
<u>strstr</u> , <u>strchr</u>	find string/char within a string
<u>strpos</u>	find numerical position of string
<u>str_replace</u> , <u>substr_replace</u>	replace string

- Comparison can be:
 - ▣ Partial matches
 - ▣ Others
- Variations with non case sensitive functions

csc 110 [strcasecmp](#)

String compare functions

examples

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```
$offensive = array( offensive word1, offensive  
word2);  
$feedback = str_replace($offcolor, "%!*",  
$feedback);
```

PHP

```
$test = "Hello World! \n";  
print strpos($test, "o");  
print strpos($test, "o", 5);
```

PHP

```
$toaddress = "feedback@example.com";  
if(strstr($feedback, "shop")  
    $toaddress = "shop@example.com";  
else if(strstr($feedback, "delivery")  
    $toaddress = "fulfillment@example.com";
```

PHP

Regular expressions

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```
[a-z]at           #cat, rat, bat...
[aeiou]
[a-zA-Z]
[^a-z]           #not a-z
[[:alnum:]]+     #at least one alphanumeric char
(very) *large    #large, very very very large...
(very){1, 3}     #counting "very" up to 3
^bob             #bob at the beginning
com$            #com at the end
```

PHPRegExp

- Regular expression: a pattern in a piece of text
- PHP has:
 - ▣ POSIX
 - ▣ **Perl regular expressions**

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Embedded PHP

Printing HTML tags in PHP = bad style

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```
<?php
print "<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN
\" \n";
print " \"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd\">
\n";
print "<html xmlns=\"http://www.w3.org/1999/xhtml\">\n";
print " <head>\n";
print " <title>Geneva's web page</title>\n";
...
for ($i = 1; $i <= 10; $i++) {
print "<p> I can count to $i! </p>\n";
}
?>
```

HTML

- best PHP style is to minimize print/echo statements in embedded PHP code
- but without print, how do we insert dynamic content into the page?

ESC 210

PHP expression blocks

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```
<?= expression ?>
```

PHP

```
<h2> The answer is <?= 6 * 7 ?> </h2>
```

PHP

The answer is 42

output

- PHP expression block: a small piece of PHP that evaluates and embeds an expression's value into HTML
 - `<?= expression ?>` is equivalent to:

```
<?php print expression; ?>
```

PHP

Expression block example

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```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head><title>CSE 190 M: Embedded PHP</title></head>
<body>
<?php
for ($i = 99; $i >= 1; $i--) {
?>
<p> <?= $i ?> bottles of beer on the wall, <br />
<?= $i ?> bottles of beer. <br />
Take one down, pass it around, <br />
<?= $i - 1 ?> bottles of beer on the wall. </p>
<?php
}
?>
</body>
</html>
```


Common errors: unclosed braces, missing = sign

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```
...
<body>
<p>Watch how high I can count:
<?php
for ($i = 1; $i <= 10; $i++) {
    <? $i ?>
</p>
</body>
</html>
```

PHP

- ❑ if you forget to close your braces, you'll see an error about 'unexpected \$end'
- ❑ if you forget = in <?=?, the expression does not produce any output

Complex expression blocks

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```
...
<body>
<?php
for ($i = 1; $i <= 3; $i++) {
    ?>
    <h<?= $i ?>>This is a level <?= $i ?>
heading.</h<?= $i ?>>
    <?php
}
?>
</body>
```

PHP

This is a level 1 heading.

This is a level 2 heading.

This is a level 3 heading.

output

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Advanced PHP Syntax

Functions

Functions

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```
function name(parameterName, ..., parameterName) {  
    statements;  
}
```

PHP

```
function quadratic($a, $b, $c) {  
    return -$b + sqrt($b * $b - 4 * $a * $c) / (2  
* $a);  
}
```

PHP

- ❑ parameter types and return types are not written
- ❑ a function with no return statements implicitly returns NULL

Default Parameter Values

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```
function print_separated($str, $separator = ", ") {  
    if (strlen($str) > 0) {  
        print $str[0];  
        for ($i = 1; $i < strlen($str); $i++) {  
            print $separator . $str[$i];  
        }  
    }  
}
```

PHP

```
print_separated("hello"); # h, e, l, l, o  
print_separated("hello", "-"); # h-e-l-l-o
```

PHP

- if no value is passed, the default will be used

PHP Arrays Ex. 1

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- *Arrays allow you to assign multiple values to one variable. For this PHP exercise, write an array variable of weather conditions with the following values: rain, sunshine, clouds, hail, sleet, snow, wind. Using the array variable for all the weather conditions, echo the following statement to the browser:*

We've seen all kinds of weather this month. At the beginning of the month, we had snow and wind. Then came sunshine with a few clouds and some rain. At least we didn't get any hail or sleet.

- *Don't forget to include a title for your page, both in the header and on the page itself.*

PHP Arrays Ex. 2

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- *For this exercise, you will use a list of ten of the largest cities in the world. (Please note, these are not the ten largest, just a selection of ten from the largest cities.) Create an array with the following values: Tokyo, Mexico City, New York City, Mumbai, Seoul, Shanghai, Lagos, Buenos Aires, Cairo, London.*
- *Print these values to the browser separated by commas, using a loop to iterate over the array. Sort the array, then print the values to the browser in an unordered list, again using a loop.*
- *Add the following cities to the array: Los Angeles, Calcutta, Osaka, Beijing. Sort the array again, and print it once more to the browser in an unordered list.*