Basic PHP Syntax

Arrays

Strings and regular expressions
Announcements

- 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

- 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

- 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

- 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?
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

- 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

1. If this code (which is in a file name “f”) is added to a PHP page, what appears? Why?
   ```php
   <?php if( 50 < 60) { ?>
   <img src="pic.png" alt="pic" />
   <?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)

1. Nothing appears—the page is blank. Because the code is missing a final `?>`
   ```php
   <?php if( 50 < 60) { ?>
   <img src="pic.png" alt="pic" />
   <?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

- $a = file(f)$
- $a[1] = "<?php if( 50 < 60) { ?>""
- $a[2] = "<img src="pic.png" alt="pic" />"
Basic PHP Syntax

Arrays

Strings and regular expressions
Arrays

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

$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)

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

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

```php
$tas = array("MD", "BH", "KK", "HM", "JP");
for ($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);
```

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

CSC 210
foreach ($array as $variableName) {
    ...
}

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";
}
Multidimensional Arrays

```php
<?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] ?></p>
    <?php } ?>
</p>
<?php } ?>
```
Multidimensional Arrays (cont.)

```php
<?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
# String compare functions

<table>
<thead>
<tr>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>strcmp</code></td>
<td>compareTo</td>
</tr>
<tr>
<td><code>strstr, strchr</code></td>
<td>find string/char within a string</td>
</tr>
<tr>
<td><code>strpos</code></td>
<td>find numerical position of string</td>
</tr>
<tr>
<td><code>str_replace, substr_replace</code></td>
<td>replace string</td>
</tr>
</tbody>
</table>

- Comparison can be:
  - Partial matches
  - Others

- Variations with non case sensitive functions: `strcasecmp`
### String compare functions examples

```php
$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";
```
### Regular expressions

<table>
<thead>
<tr>
<th>Regular expression</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>[a-z]at</code></td>
<td>#cat, rat, bat...</td>
</tr>
<tr>
<td><code>[aeiou]</code></td>
<td>#not a-z</td>
</tr>
<tr>
<td><code>[a-zA-Z]</code></td>
<td>#at least one alphanumeric char</td>
</tr>
<tr>
<td><code>[^a-z]</code></td>
<td>#large, very very large...</td>
</tr>
<tr>
<td><code>([^alnum:]+)</code></td>
<td>#counting “very” up to 3</td>
</tr>
<tr>
<td><code>(very)*large</code></td>
<td>#large, very very very large...</td>
</tr>
<tr>
<td><code>(very){1,3}</code></td>
<td>#counting “very” up to 3</td>
</tr>
<tr>
<td><code>^bob</code></td>
<td>#bob at the beginning</td>
</tr>
<tr>
<td><code>com$</code></td>
<td>#com at the end</td>
</tr>
</tbody>
</table>

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

CSC 210
Embedded PHP
Printing HTML tags in PHP = bad style

```php
<?php
print "<!DOCTYPE html PUBLIC \"-//W3C//DTD XHTML 1.1//EN \"\n";
print " \"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">\n\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";
}
?>
```

- 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?
PHP expression blocks

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

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

The answer is 42

```
```
Expression block example

<?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

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

- 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
This is a level 1 heading.
This is a level 2 heading.
This is a level 3 heading.
Advanced PHP Syntax

Functions
Functions

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

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

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

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

```php
class CSC 210

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

□ if no value is passed, the default will be used
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.
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.