CSE 154

LECTURE 15: INTRO TO PHP

URLs and web servers

```
http://server/path/file
```

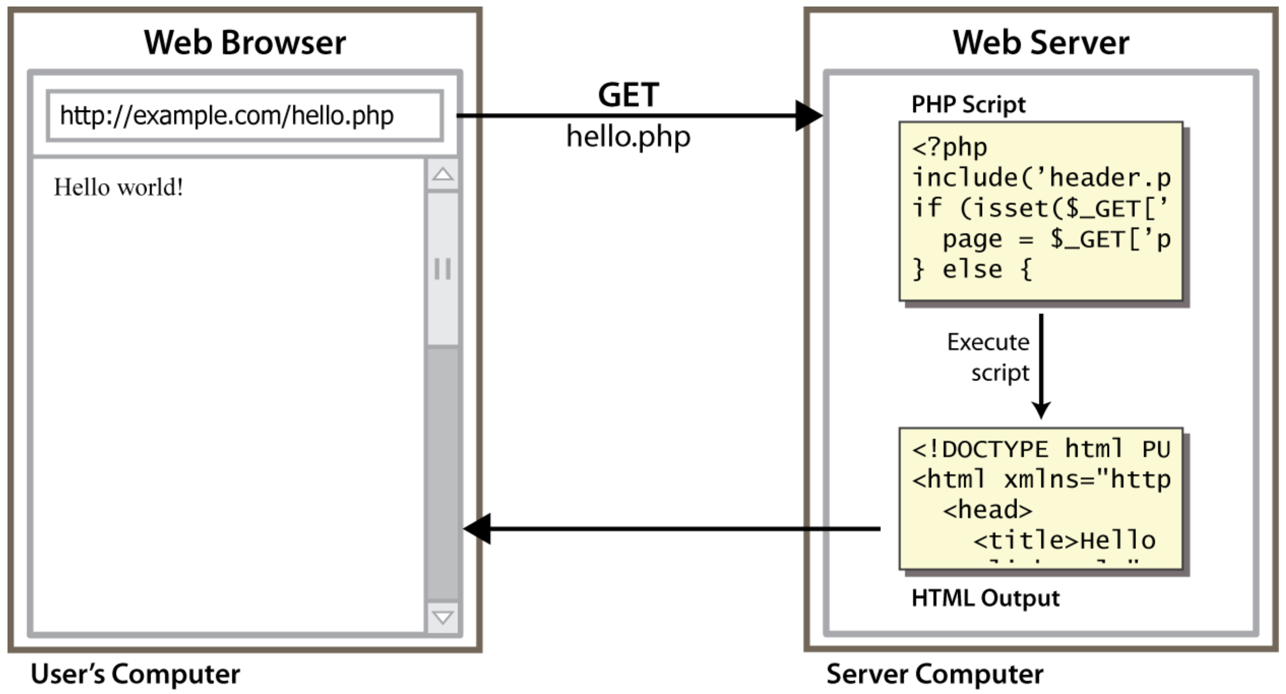
- usually when you type a URL in your browser:
  - your computer looks up the server's IP address using DNS
  - your browser connects to that IP address and requests the given file
  - the web server software (e.g. Apache) grabs that file from the server's local file system, and sends back its contents to you

- some URLs actually specify *programs* that the web server should run, and then send their output back to you as the result:
  `https://webster.cs.washington.edu/cse190m/quote.php`
  - the above URL tells the server `webster.cs.washington.edu` to run the program `quote2.php` and send back its output

Server-Side web programming

- server-side pages are programs written using one of many web programming languages/frameworks
  - examples: PHP, Java/JSP, Ruby on Rails, ASP.NET, Python, Perl
- the web server contains software that allows it to run those programs and send back their output
- each language/framework has its pros and cons
  - we will use PHP for server-side programming

Lifecycle of a PHP web request



```
<?php
include('header.p
if (isset($_GET['
  page = $_GET['p
} else {
```

```
<!DOCTYPE html PU
<html xmlns="http
  <head>
    <title>Hello
```

- browser requests a `.html` file (**static content**): server just sends that file
- browser requests a `.php` file (**dynamic content**): server reads it, runs any script code inside it, then

Console output: print

```
print "text";                                                PHP
```

```
print "Hello, World!\n";
print "Escape \"chars\" are the SAME as in Java!\n";

print "You can have
line breaks in a string.";

print 'A string can use "single-quotes".  It\'s cool!';      PHP
```

```
Hello, World! Escape "chars" are the SAME as in Java! You can have line breaks in a
string. A string can use "single-quotes". It's cool!                          output
```

- some PHP programmers use the equivalent `echo` instead of `print`

Arithmetic Operations

- `+ - * / %`
  `. ++ --`
  `= += -= *= /= %= .=`

- many operators auto-convert types: `5 + "7"` is `12`

Variables

```
$name = expression;                                          PHP
```

```
$user_name = "PinkHeartLuvr78";
$age = 16;
$drinking_age = $age + 5;
$this_class_rocks = TRUE;                                    PHP
```

- names are case sensitive; separate multiple words with _
- names always begin with $, on both declaration and usage
- implicitly declared by assignment (type is not written; a "loosely typed" language)

Types

- basic types: `int`, `float`, `boolean`, `string`, `array`, `object`, `NULL`
  - test what type a variable is with `is_`*type* functions, e.g. `is_string`
  - `gettype` function returns a variable's type as a string (not often needed)
- PHP converts between types automatically in many cases:
  - `string` → `int` auto-conversion on `+` (`"1" + 1 == 2`)
  - `int` → `float` auto-conversion on `/` (`3 / 2 == 1.5`)
- type-cast with `(`*type*`)`:
  - `$age = (int) "21";`

String type

```
$favorite_food = "Ethiopian";
    print $favorite_food[2];            # h                    PHP
```

- zero-based indexing using bracket notation

- string concatenation operator is . (period), not +
  - 5 + "2 turtle doves" produces 7
  - 5 . "2 turtle doves" produces "52 turtle doves“

- can be specified with "" or ' '

String functions

```
# index  0123456789012345
$name = "Austin Weale";
$length = strlen($name);                     # 16
$cmp = strcmp($name, "Linda Guo");           # > 0
$index = strpos($name, "s");                 # 2
$first = substr($name, 7, 4);                # "Weal"
$name = strtoupper($name);                   # "AUSTIN WEALE"        PHP
```

Name	Java Equivalent
strlen	length
strpos	indexOf
substr	substring
strtolower, strtoupper	toLowerCase, toUpperCase
trim	trim
explode, implode	split, join

Interpreted strings

```
$age = 16;
~~print "You are " . $age . " years old.\n";~~
print "You are $age years old.\n";      # You are 16 years old.  PHP
```

- strings inside " " are interpreted
  - variables that appear inside them will have their values inserted into the string
- strings inside ' ' are not interpreted:

```
print 'You are $age years old.\n';    # You are $age years old.\n PHP
```

- if necessary to avoid ambiguity, can enclose variable in {}:

```
~~print "Today is your $ageth birthday.\n";~~     # $ageth not found
print "Today is your {$age}th birthday.\n";                 PHP
```

bool (Boolean) type

```php
$feels_like_summer = FALSE;
$php_is_rad = TRUE;

$student_count = 217;
$nonzero = (bool) $student_count;      # TRUE                PHP
```

- the following values are considered to be FALSE (all others are TRUE):
    - 0 and 0.0
    - "", "0", and NULL (includes unset variables)
    - arrays with 0 elements
- can cast to boolean using (bool)
- FALSE prints as an empty string (no output); TRUE prints as a 1

for loop

```
for (initialization; condition; update) {
    statements;
}                                                        PHP
```

```
for ($i = 0; $i < 10; $i++) {
  print "$i squared is " . $i * $i . ".\n";
}                                                        PHP
```

if/else statement

```php
if (condition) {
  statements;
} else if (condition) {
  statements;
} else {
  statements;
}
```
PHP

- can also say `elseif` instead of `else if`

while loop (same as Java)

```
while (condition) {
  statements;
}                                                          PHP
```

```
do {
  statements;
} while (condition);                                       PHP
```

- break and continue keywords also behave as in Java

Comments

```
# single-line comment

// single-line comment

/*
multi-line comment
*/                                                              PHP
```

- like Java, but # is also allowed
  - a lot of PHP code uses # comments instead of //
  - we recommend # and will use it in our examples