PHP: variables, conditionals forms, arrays

INFO/CS 2300:
Intermediate Web Design and Programming

Mini Crash Courses

MAMP/WAMP/XAMPP – setting up a web server on your local computer

CSS – style sheets

Debugging

(See Piazza for more details)

Two commercials

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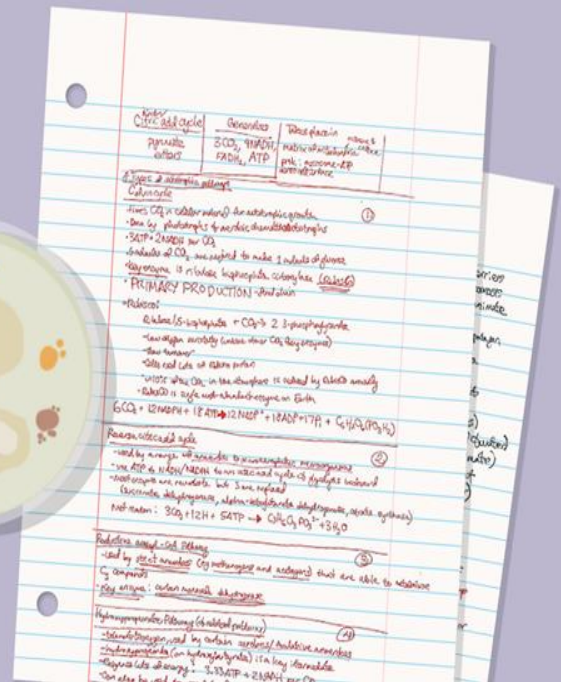

Accepting applications until
11:59PM on Feb 12 2017
Apply here: bit.ly/2ksNk3k

Information Session
4:45-5:45PM on Feb 1
Goldwin Smith G76

ScientistaCornellUniversity@gmail.com

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Course Enrollment

If not enrolled you can't go to section

But you can

- Come to lecture
- Use the course server - assignments
- Read / Post on Piazza
- Get help in office hours
- Turn in assignments on CMS
  For CMS problems, contact Hajin,
  HL934@cornell.edu

Project 1

- Assignment will be released by Tuesday night
- WOW – We're not specifying everything. We're leaving room for creativity
- Rationale – Tell us what you want us to notice
- Your upload to CMS tells us you are ready for grading. Server is backup.

Click In

Phone app REEF setup

http://pollinghelp.cit.cornell.edu/mobile-web/#students

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According to the syllabus, assignments

A. Lose 10% per day late

B. Have a 1 day grace period on due dates

C. Are due at the beginning of section

D. A and C

E. None of the above

Click In

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It is OK to use code I find on the web if

A. I understand how it works

B. I edit it so it meets course standards

C. I cite it in a comment or as instructed

D. All of the above

E. None of the above

Click In

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PHP variables

PHP Variables

Variables can contain different kinds of data

$a = 5;	integer
$b = 10;	integer
$c = "dog";	string
$d = ‘hot’;	string
$e = true;	boolean
$f = 3.14159;	float

Rules for variable names

Must start with $ followed by a letter or _

May contain only letters, numbers, or _

Which variable names are not legal?

$_number

$Alphabet3

$4coolcats

average

$_whoa!

$A4332S

Which variable names are not legal?

$_number	OK
$Alphabet3	OK
$4coolcats	Can’t start with number
average	Must start with $
$_whoa!	Can’t have !
$A4332S	OK

Best Practice

Does it take that much longer to type $movie_name than $mn?

Get in the habit of using meaningful variable names. Others reviewing your work and even your future self will thank you when reading through the code.

Arithmetic operations

PHP supports standard arithmetic operations, including:

$x1 = $a + $b;	addition
$x2 = $a - $b;	subtraction
$x3 = $a * $b;	multiplication
$x4 = $a / $b;	division
$x5 += 2;	(same as "$x5 = $x5 + 2;")
$x6++;	(same as "$x6 = $x6 + 1;")

More at www.tizag.com/phpT/operators.php

String operations

The “.” operator concatenates two strings.

```
$var2 = $d;
$var2 .= "_";
$var2 .= $d . $c;
$var2 = "one_" . $var2;
print("var2 is: $var2 <br>");
```

```
$c = 'dog';
$d = 'hot';
var2
hot
hot_
hot_hotdog
one_hot_hotdog
var2 is: one_hot_hotdog  <br>
```

Quotation characters

' is not the same as "

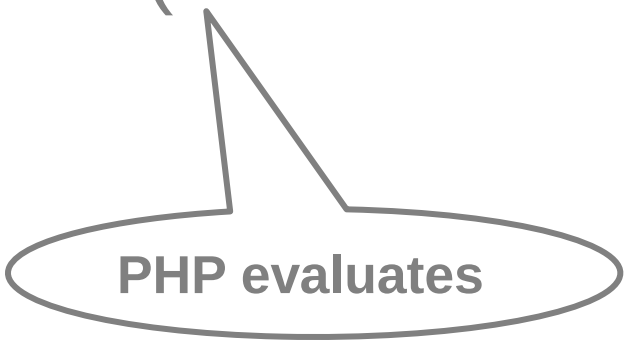
Printing variables

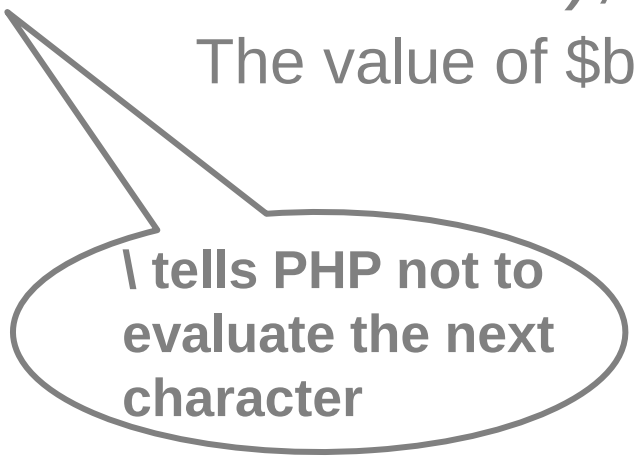

```
print( 'The value of $a is ' . $a . '<br>' );
```

The value of $a is 10

```
print( "The value of \$b is $b <br>" );
```

The value of $b is 5





Control Structures

Comparison

$var1 == $var2	(equality)
$var1 != $var2	(inequality)
$var1 < $var2	
$var1 > $var2	
$var1 <= $var2	
$var1 >= $var2	

if elseif else

```
if ( $score >= 90 ) {
    print( 'You got an A!!' );
} elseif ( $score >= 80 ) {
    print( 'You got a B!' );
} elseif ( $score >= 70 ) {
    print( 'You got a C.' );
} else {
    print( 'You didn’t pass.' );
}
```

switch

```
switch ( $i ) {
        case 0:
            echo "i equals 0";
            break;
        case 1:
            echo "i equals 1";
            break;
        case 2:
            echo "i equals 2";
            break;
}
```

The ternary operator

```
$action = ( $distance > 500 ) ? 'fly' : 'drive';
```


```
//Equivalent
if( $distance > 500 ) {
   $action =  'fly';
} else {
   $action =  'drive';
}
```

Click In

Comparison and Variable Type

$a = 'cat'; $b = 'Cat';

$a == $b	false
1 == TRUE	true
0 == FALSE	true
TRUE == 3	true
"1" == "01"	true
0 == "b"	true
1 === TRUE	false
0 === FALSE	false
"1" === "01"	false

Equal vs Identical

Type changing

0 == "b" 

"b" is changed to integer before comparing

3 == "3" 

"3" is changed to integer before comparing

3 === "3" 

No type changing is performed

3 == "3 b" 

Click In

```
$a = 'cat';

if ( $a = 'dog' ) {
    print 'dog';
} elseif ( $a = 'cat' ) {
    print 'cat';
} else {
    print 'fish';
}
```

Clickers

A: dog

B: cat

C: fish

Click In

```
$a = 'cat';

if ( $a = 'dog' ) {
   print 'dog';
} elseif ( $a = 'cat' ) {
   print 'cat';
} else {
   print 'fish';
}
```

Clickers

A: dog

B: cat

C: fish

Why is dog the correct answer?

PHP and forms

Forms = HTML

Forms are HTML.

PHP lets you process the result of forms.

A simple form

A very simple form

```
<!DOCTYPE html>
<html>
    <head>
        <title>A Very Simple Form</title>
    </head>
    <body>
        <form method="post">
            <input type="submit" name="repair" value="Repair">
        </form>
    </body>
</html>
```

How the data should be sent

I use a form like this on a site.

Responding to form input

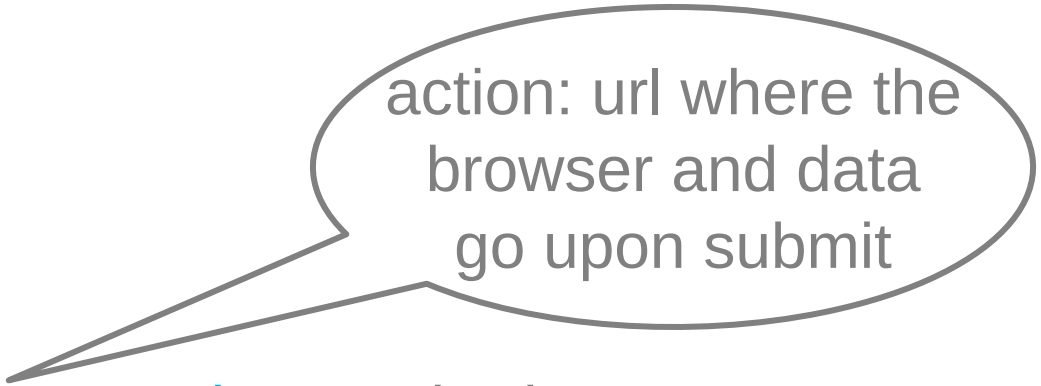
We'll deal with security later

Generates an 'index not found' error if $_POST data is not set

```
<?php
    $repair = $_POST[ 'repair' ] ;

    //Was the 'repair' button clicked?
    if( !empty( $repair ) && $repair = 'Repair' ) {
        //Code to repair the table goes here
    }
?>
```

Text input




```
<form action="showanswer.php" method="post">
    Please enter your name:
    <input type="text" name="username">
    <input type="submit" value="Click to submit">
</form>
```

Please enter your name: Click to submit

Forms connection

Forms set up a connection between a “name” and a “value” that is sent to the file given by the form action attribute.

```
<form method="post" action = "showanswer.php">
    <input type="text" name="username">
    <input type="submit" name="show" value="Click to submit">
</form>
```

showanswer.php

```
$user = $_POST[ 'username' ]
```

From HTML to PHP

```
<form action="showanswer.php" method="post">
    Please enter your name:
    <input type="text" name="username">
    <input type="submit" name="show" value="Click to submit">
</form>
```

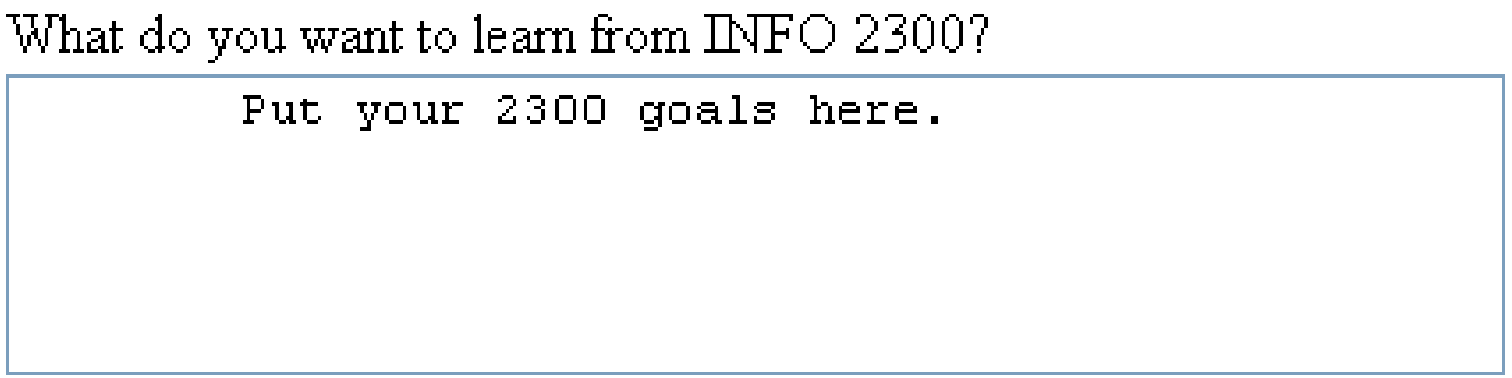
showanswer.php

username = 'steve'

```
<?php
        $user = $_POST[ "username" ];
        print( "Welcome, $user!" );
?>
```

textarea

```
<form action="showanswer.php" method="post">
    <textarea rows="4" cols="50" name="goal">
        Put your 2300 goals here.
    </textarea>
</form>
```



$_POST['goal'] has the value of the text that was entered

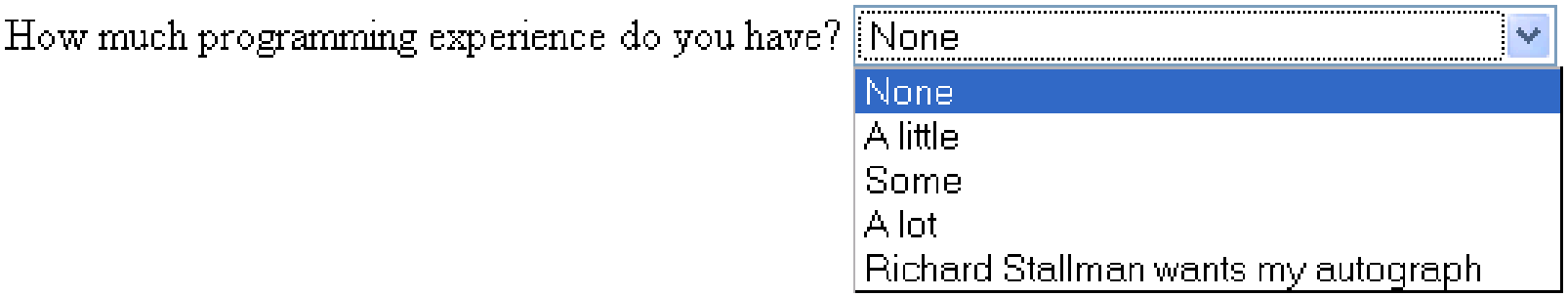
Radio buttons

```
<form action="showanswer.php" method="post">
   <input type=“radio” name="info1300" value="Yes"> Yes
   <input type=“radio” name="info1300" value="No"> No
   <input type="submit" value=“Submit" />
</form>
```

$_POST['info1300'] has the value 'Yes' or 'No'

Selection lists

```
<select name="programming_experience">
    <option value="0">None</option>
    <option value="1">A little</option>
    <option value="2">Some</option>
    <option value="3">A lot</option>
    <option value="4">Richard Stallman wants my autograph</option>
</select>
```



$_POST['programming_experience'] has the value "0"

POST vs GET – The URL

```
<form action="answer.php" method="???">
    username: <input type="text" name="user">
    color: <input type="text" name="color">
</form>
```

with method='post' the URL looks like this:

http://example.com/answer.php

with method='get' the URL looks like this:

http://example.com/answer.php/?user=steve&color=blue

When does it make sense to use post and when get?

POST vs GET – The PHP

Post

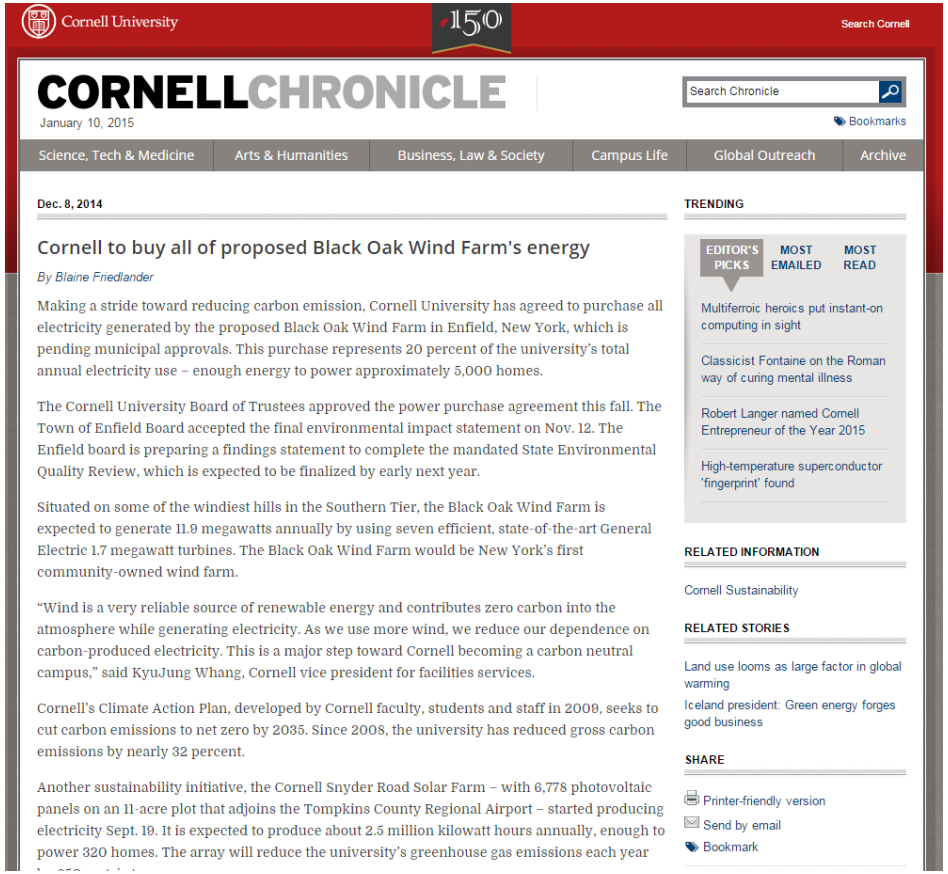
```
<?php
        $username = $_POST[“user”];
        print("Welcome, $username");
?>
```

Get

```
<?php
        $username = $_GET[“user”];
        print("Welcome, $username");
?>
```

Arrays

What elements are repeated?



Any article at news.cornell.edu

Dec. 8, 2014

Cornell to buy all of proposed Black Oak Wind Farm's energy

By Blaine Friedlander

Making a stride toward reducing carbon emission, Cornell University has agreed to purchase all electricity generated by the proposed Black Oak Wind Farm in Enfield, New York, which is pending municipal approvals. This purchase represents 20 percent of the university's total annual electricity use – enough energy to power approximately 5,000 homes.

The Cornell University Board of Trustees approved the power purchase agreement this fall. The Town of Enfield Board accepted the final environmental impact statement on Nov. 12. The Enfield board is preparing a findings statement to complete the mandated State Environmental Quality Review, which is expected to be finalized by early next year.

Situated on some of the windiest hills in the Southern Tier, the Black Oak Wind Farm is expected to generate 11.9 megawatts annually by using seven efficient, state-of-the-art General Electric 1.7 megawatt turbines. The Black Oak Wind Farm would be New York's first community-owned wind farm.

"Wind is a very reliable source of renewable energy and contributes zero carbon into the atmosphere while generating electricity. As we use more wind, we reduce our dependence on carbon-produced electricity. This is a major step toward Cornell becoming a carbon neutral campus," said KyuJung Whang, Cornell vice president for facilities services.

Cornell's Climate Action Plan, developed by Cornell faculty, students and staff in 2009, seeks to cut carbon emissions to net zero by 2035. Since 2008, the university has reduced gross carbon emissions by nearly 32 percent.

Another sustainability initiative, the Cornell Snyder Road Solar Farm – with 6,778 photovoltaic panels on an 11-acre plot that adjoins the Tompkins County Regional Airport – started producing electricity Sept. 19. It is expected to produce about 2.5 million kilowatt hours annually, enough to power 320 homes. The array will reduce the university's greenhouse gas emissions each year

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Arrays

Arrays let us keep track of *lists* of information.

E.g. Menu items:

- Science, Tech & Medicine
- Arts & Humanities
- Business, Law & Society
- Campus Life

Making an array

Write as

$menu = array('Science' , 'Arts', 'Business');

Items in array can be accessed by their *index.*

- $menu[0] is the first element in the array.
- $menu[1] is the second element.
- $menu[2] is the third element…

What happens?

```
print( "$menu[2], $menu[0], $menu[1]" );
```

Business, Science, Arts

Modifying arrays

To change a value of an element:

```
$menu[ 2 ] = 'Business, Law & Society';
```

To add a new element at the end of the array:

```
$menu[ ] = 'Campus Life';
```

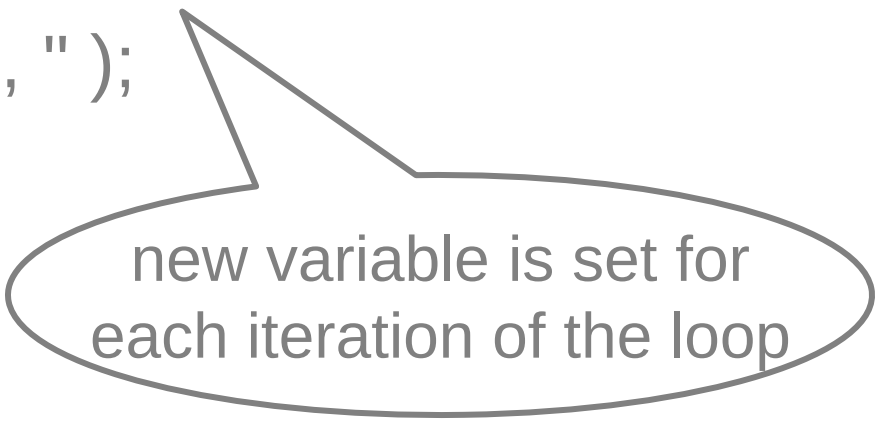
Result: $menu[3] = 'Campus Life'

Enumerating arrays

You can use "foreach" if you want to do something for each element in the array.

E.g.

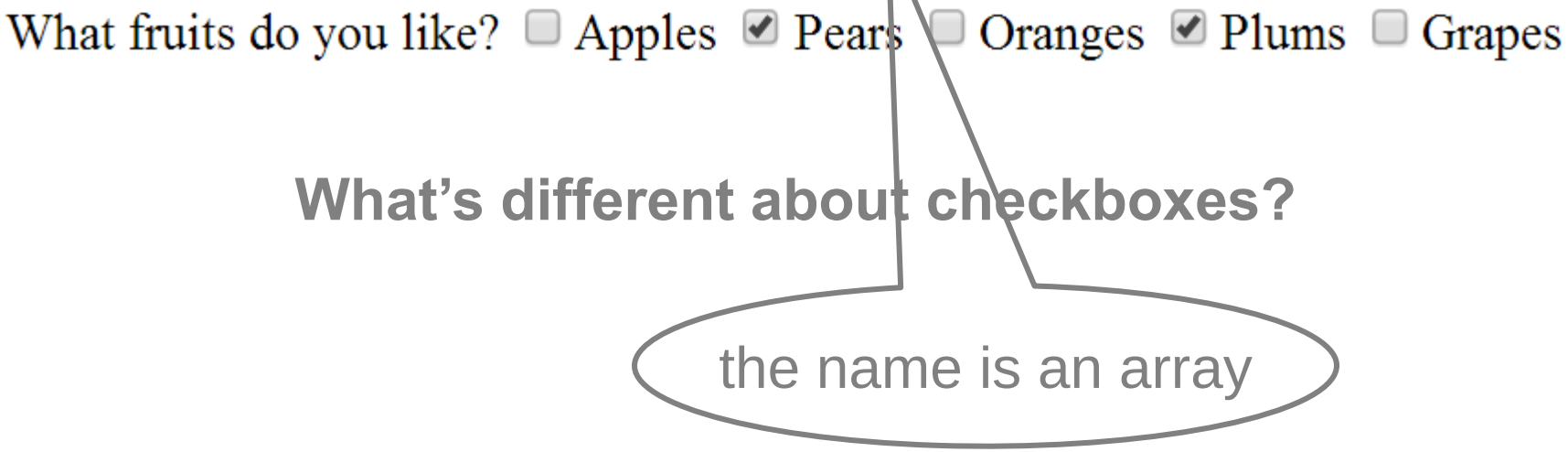
```
print( 'The menu items are: ' );
foreach ( $menu as $menu_item ) {
    print( "$menu_item, " );
}
```



Checkboxes

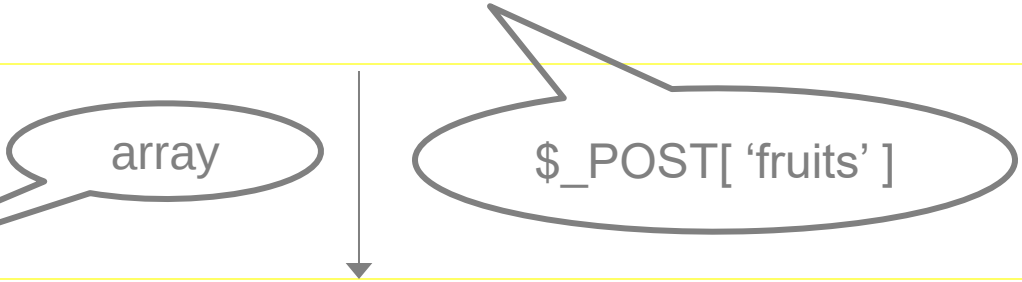
What fruits do you like?

```
<input type="checkbox" name="fruits[]" value="apples"> Apples
<input type="checkbox" name="fruits[]" value="pears"> Pears
<input type="checkbox" name="fruits[]" value="oranges">Oranges
<input type="checkbox" name="fruits[]" value="plums"> Plums
<input type="checkbox" name="fruits[]" value="grapes"> Grapes
```



Using checkboxes

```
<form action=“myaction.php” method=“post”>
What fruits do you like?
    <input type="checkbox" name="fruits[]" value=“apples">Apples
    <input type="checkbox" name="fruits[]" value=“pears">Pears
    <input type="checkbox" name="fruits[]" value=“oranges">Oranges
    <input type="checkbox" name="fruits[]" value=“plums">Plums
    <input type="checkbox" name="fruits[]" value=“grapes">Grapes
</form>
```



myaction.php

```
$fruits = $_POST["fruits"];
$fruit_count = count( $fruits );
print( “You like the following $fruit_count fruits: “ );
foreach($fruits as $fruit) {
    print("$fruit, ");
}
```

Review

- PHP has variables, arithmetic/string operations, conditionals similar to other programming languages
- Forms let you take user input from web pages; the input can then be processed using PHP
- Arrays let you manage lists