

PHP: variables, conditionals
forms, arrays

INFO/CS 2300:
Intermediate Web Design and
Programming

Mini Crash Courses

localhost (setup server on your computer)

- Wed 2/3 7PM
- Fri 2/5 4PM

CSS

- Mon 2/8 5PM
- Wed 2/10 7PM

(See Piazza for more details)

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

Contact Xiying, xw282@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

PHP variables

PHP Variables

Variables can contain different kinds of data

<code>\$a = 5;</code>	integer
<code>\$b = 10;</code>	integer
<code>\$c = "dog";</code>	string
<code>\$d = 'hot';</code>	string
<code>\$e = true;</code>	boolean
<code>\$f = 3.14159;</code>	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`

Can't start with number

`average`

`$_whoa!`

! not supported

`$A4332S`

Best Practice

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

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

Arithmetic operations

PHP supports standard arithmetic operations, including:

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

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 "

single quotes: PHP will not evaluate contents
double: evaluates contents

Printing variables

PHP does not evaluate contents

```
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

PHP evaluates

\ tells PHP not to
evaluate the next
character

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';`

if then else

//Equivalent

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

Comparison and Variable Type

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

```
$a == $b      F
```

```
1 == TRUE    T
```

```
0 == FALSE   T
```

```
TRUE == 3    T
```

```
"1" == "01"  T
```

```
0 == "b"     T
```

1 === TRUE // evaluate to same thing and type
0 == "b" will try to change type to match sides

Click In

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



Responding to form input



We'll deal with security later

```
<?php
    $repair = $_POST[ 'repair' ] );
    if( !empty( $repair ) && $repair = 'Repair' ) {
        //Code to repair the table goes here
    }
?>
```

Text input

action: url where the browser and data go upon submit

be in same folder

```
<form action="showanswer.php" method="post">
```

Please enter your name:

```
<input type="text" name="username">
```

```
<input type="submit" value="Click to submit">
```

```
</form>
```

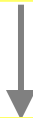
Please enter your name:

Click to submit

Forms defined

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" value="Click to submit">  
</form>
```



showanswer.php

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

From HTML to PHP

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

What do you want to learn from INFO 2300?

Put your 2300 goals here.

`$_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>
```

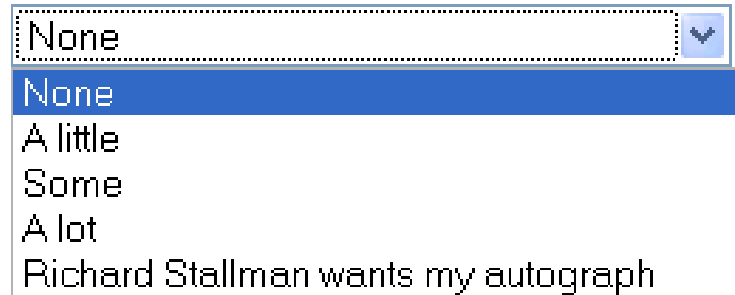
Did you take INFO 1300: ☐ Yes ☐ No

`$_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>
```

How much programming experience do you have?



`$_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?

Not changing data with 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?

The screenshot shows the Cornell Chronicle website interface. At the top, there is a red header bar with the Cornell University logo on the left, a '150' anniversary banner in the center, and a 'Search Cornell' link on the right. Below the header, the main content area has a white background. The 'CORNELLCHRONICLE' logo is prominently displayed in large, bold, black letters. To the right of the logo is a search bar labeled 'Search Chronicle' and a 'Bookmarks' link. Below the logo, the date 'January 10, 2015' is shown. A horizontal navigation bar contains several categories: 'Science, Tech & Medicine', 'Arts & Humanities', 'Business, Law & Society', 'Campus Life', 'Global Outreach', and 'Archive'. The main article is dated 'Dec. 8, 2014' and is titled 'Cornell to buy all of proposed Black Oak Wind Farm's energy' by Blaine Friedlander. The article text discusses the university's agreement to purchase electricity from the Black Oak Wind Farm, its environmental impact, and the university's broader sustainability goals. To the right of the article, there is a 'TRENDING' section with three items: 'Multiferroic heroics put instant-on computing in sight', 'Classicist Fontaine on the Roman way of curing mental illness', and 'Robert Langer named Cornell Entrepreneur of the Year 2015'. Below this is a 'RELATED INFORMATION' section with a link to 'Cornell Sustainability'. Further down is a 'RELATED STORIES' section with two links: 'Land use looms as large factor in global warming' and 'Iceland president: Green energy forges good business'. At the bottom right, there is a 'SHARE' section with links for 'Printer-friendly version', 'Send by email', and 'Bookmark'.

Cornell University

150

Search Cornell

CORNELLCHRONICLE

January 10, 2015

Search Chronicle

Bookmarks

Science, Tech & Medicine | Arts & Humanities | Business, Law & Society | Campus Life | Global Outreach | Archive

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

TRENDING

EDITOR'S PICK'S **MOST EMAILED** **MOST READ**

Multiferroic heroics put instant-on computing in sight

Classicist Fontaine on the Roman way of curing mental illness

Robert Langer named Cornell Entrepreneur of the Year 2015

High-temperature superconductor 'fingerprint' found

RELATED INFORMATION

Cornell Sustainability

RELATED STORIES

Land use looms as large factor in global warming

Iceland president: Green energy forges good business

SHARE

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Any article at news.cornell.edu

CORNELLCHRONICLE

January 10, 2015

Search Chronicle



 Bookmarks

Science, Tech & Medicine

Arts & Humanities

Business, Law & Society

Campus Life

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TRENDING

EDITOR'S
PICKS

MOST
EMAILED

MOST
READ

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RELATED INFORMATION

[Cornell Sustainability](#)

RELATED STORIES


[Land use looms as large factor in global warming](#)

[Iceland president: Green energy forges good business](#)

SHARE

 [Printer-friendly version](#)

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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, " );  
}
```



new variable is set for
each iteration of the loop

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
```

What fruits do you like? ☐ Apples ☒ Pears ☐ Oranges ☒ Plums ☐ Grapes

What's different about checkboxes?

name is an array
can select multiple

the name is an array

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

array

`$_POST['fruits']`

```
$fruits = $_POST["fruits"];
```

```
$fruit_count = count( $fruits ); length of array
```

```
print( "You like the following $fruit_count fruits: " );
```

```
foreach($fruits as $fruit) {
```

```
    print("$fruit, ");    run through fruit array with each element held by fruit
```

```
}
```

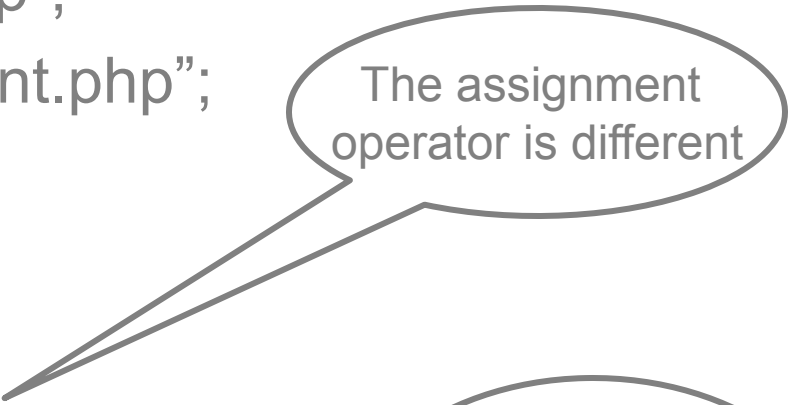
Associative arrays

Can instead use *strings* as the index to arrays

```
$url["Course Information"] = "info.php";
```

```
$url["Forums"] = "forums.php";
```

```
$url["My Account"] = "account.php";
```



The assignment operator is different

Alternative syntax

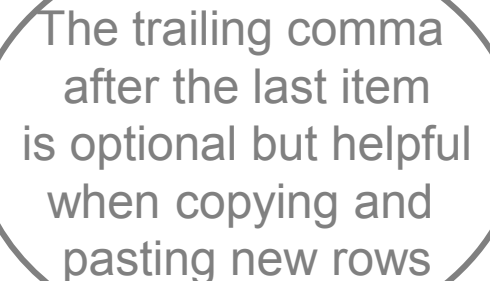
```
$url = array(
```

```
    "Course Information" => "info.php",
```

```
    "Forums" => "forums.php",
```

```
    "My Account" => "account.php",
```

```
);
```



The trailing comma after the last item is optional but helpful when copying and pasting new rows

Enumerating associative arrays

```
$menu_items = array(  
    'Science' => 'science.php',  
    'Arts' => 'arts.php',  
    'Business' => 'business.php',  
);  
generate all menu values  
foreach ( $menu_items as $title => $link ) {  
    print( "<li><a href='$link' >$title</a></li>" );  
}
```

A closer look

Both \$title and \$link are assigned each time through the loop.

?

```
foreach ( $menu_items as $title => $link ) {  
    print( "<li><a href='$link' >$title</a></li>" );  
}
```

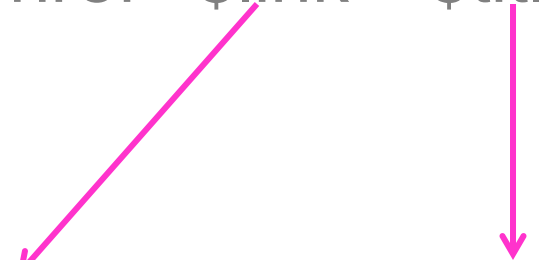
What the PHP processor 'sees' inside the " "

```
print( "<li><a href='$link' >$title</a></li>" );
```

PHP sees the single quote as part of the string to output. HTML doesn't care if it is a single or double quote around the href value

The HTML

```
foreach ($menu_items as $title => $link) {  
    print( "<li><a href='$link' >$title</a></li>" );  
}
```



The diagram consists of two magenta arrows. The first arrow originates from the `$link` variable in the `href` attribute of the first line of the code block above and points to the `science.php` string in the first line of the output block below. The second arrow originates from the `$title` variable in the same line of the code block and points to the `Science` text in the same line of the output block.

```
<li><a href='science.php'>Science</a></li>  
<li><a href='arts.php'>Arts</a></li>  
<li><a href='business.php'>Business</a></li>
```

Why do a menu / list this way?

- Simplifies updates to HTML in the loop
- Easier to find / read / edit the values
- Separates content from HTML markup
- Prepares us for getting content from a database
- Division of responsibility in larger projects

Value increases with complexity

COMPUTING & INFORMATION SCIENCES



Using Facebook when you can't see the faces

Jan. 28, 2016 - Bill Steele - Bookmark

Visual content on social media sites present challenges to blind users. Cornell researchers suggest that the technology used on Facebook and other social media sites should be adapted to improve accessibility.



Cornell-led team creates gallium nitride power diode

Jan. 19, 2016 - Tom Fleischman - Bookmark

A team led by Cornell professor Grace Xing has created gallium nitride power diodes capable of serving as building blocks for GaN switches, with many possible power and electronics applications.



Cornell boasts leading cybersecurity research group

Jan. 13, 2016 - - Bookmark

Four Cornell computer scientists - Ari Juels, Rafael Pass, Thomas Ristenpart and Vitaly Shmatikov - are members of a new cybersecurity, privacy and cryptography reach group at Cornell Tech.



Computing and Information Science receives \$10M grant

Jan. 7, 2016 - - Bookmark

The National Science Foundation Jan. 7 announced a new \$10 million award to Computer Science Professor Carla Gomes to support transformative computing and technology research.



Robots learn by watching how-to videos

Dec. 18, 2015 - Bill Steele - Bookmark

Cornell researchers are teaching robots to watch instructional videos and derive a series of step-by-step instructions to perform a task.

A complex form

```
<?php get_header(); ?>
<div id="primary">
  <div id="content" role="main">
    <form method="post" action="#thank-you" data-ajax="false">
      <?php
        include('sub-pages/home.php');
        include('sub-pages/practices.php');
        include('sub-pages/fryers.php');
        include('sub-pages/results.php');
        include('sub-pages/contact.php');
        include('sub-pages/assumptions.php');
        include('sub-pages/thank-you.php');
      ?>
    </form>
  </div><!-- #content -->
</div><!-- #primary -->
<?php get_footer(); ?>
```



The fryers page

```
<div data-role="page" id="fryers" class="nav-page">
  <?php include( 'header.php' ); ?>
  <div data-role="header">
    <h1>Savings Calculator</h1>
  </div><!-- /header -->

  <div data-role="content">
    <label for="small-fryers"># of small fryers (45 lbs. or less)</label>
    <input type="range" name="small-fryers" id="small-fryers" min="0" max="6">

    <label for="medium-fryers"># of medium fryers (45-65 lbs. or less)</label>
    <input type="range" name="medium-fryers" id="medium-fryers" min="0" max="6">

    <label for="large-fryers"># of large fryers (65 lbs. or more)</label>
    <input type="range" name="large-fryers" id="large-fryers" min="0" max="6">

    <a href="#results" data-role="button" data-mini="true" ... >Next</a>
  </div><!-- /content -->
</div><!-- /page -->
```

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