

CS 547

Week 2 Day 1 PHP Language: Arrays Bootstrap

Agenda

- Announcements
- Brief Review
- PHP Arrays
- Bootstrap

Announcements

- First project end of class

Review

-

-

-

-

-

From previous lecture

Variables

Operators

Control Statements

IDEs

PHP Language

Today:

Arrays in PHP

The Bootstrap framework

-
-

PHP Variables: Arrays

- An array stores multiple values in one single variable.

- ```
<?php
$fruits = array("Apple","Banana","Kiwi");
var_dump($fruits);
?>
```

- ```
array(3) { [0]=> string(5) "Apple" [1]=> string(6) "Banana" [2]=> string(4) "Kiwi" }
```

PHP Variables: Arrays

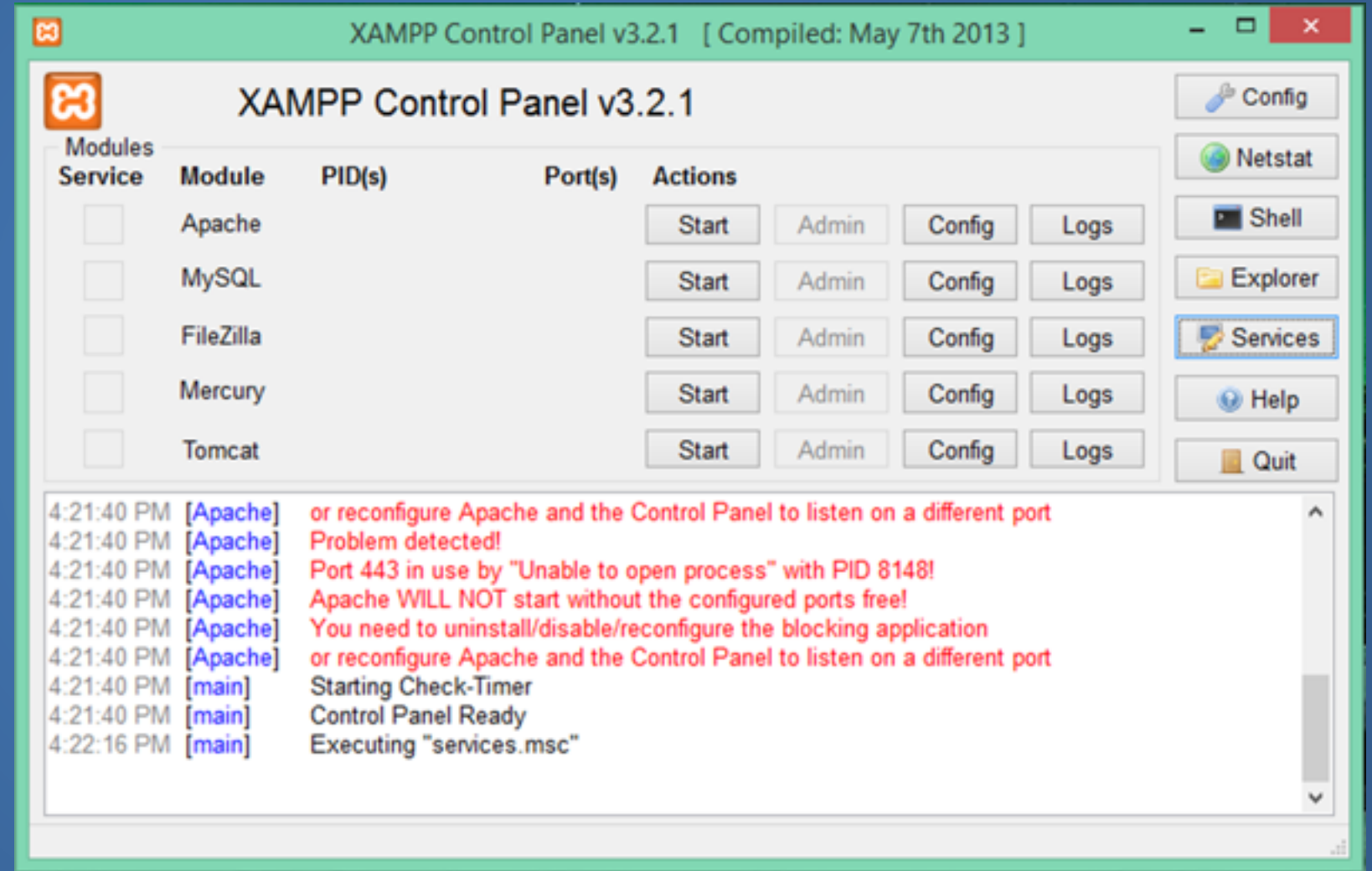
- We will examine arrays in greater depth...

Now!

PHP Variables: Arrays

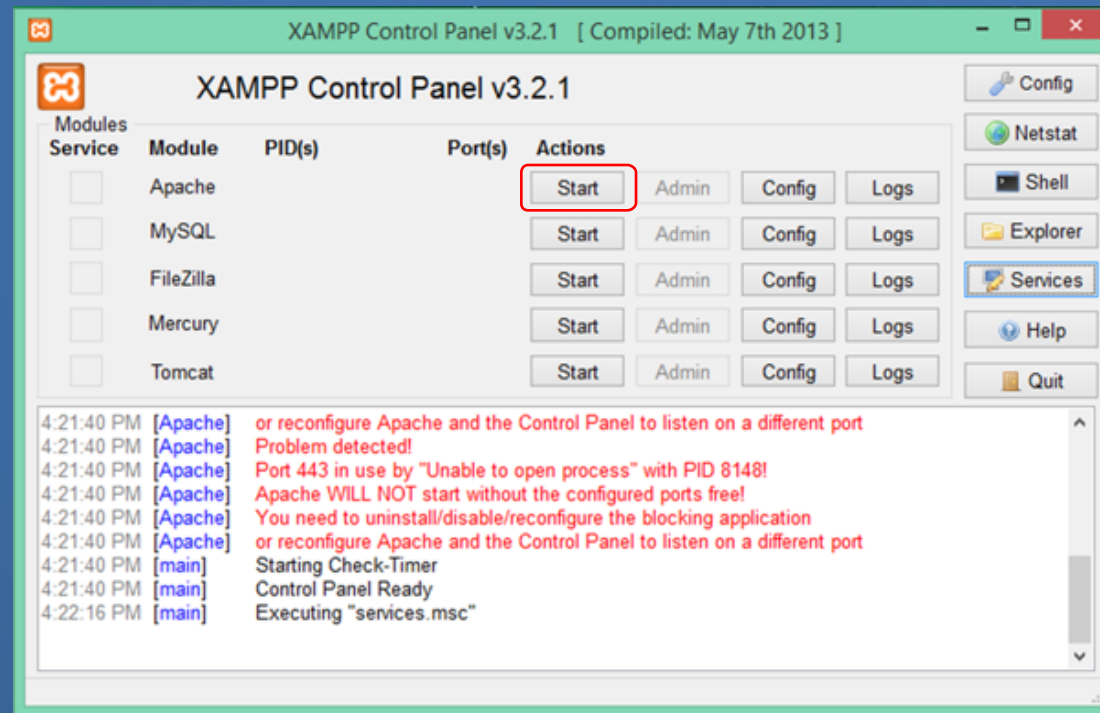
-
-

XAMP



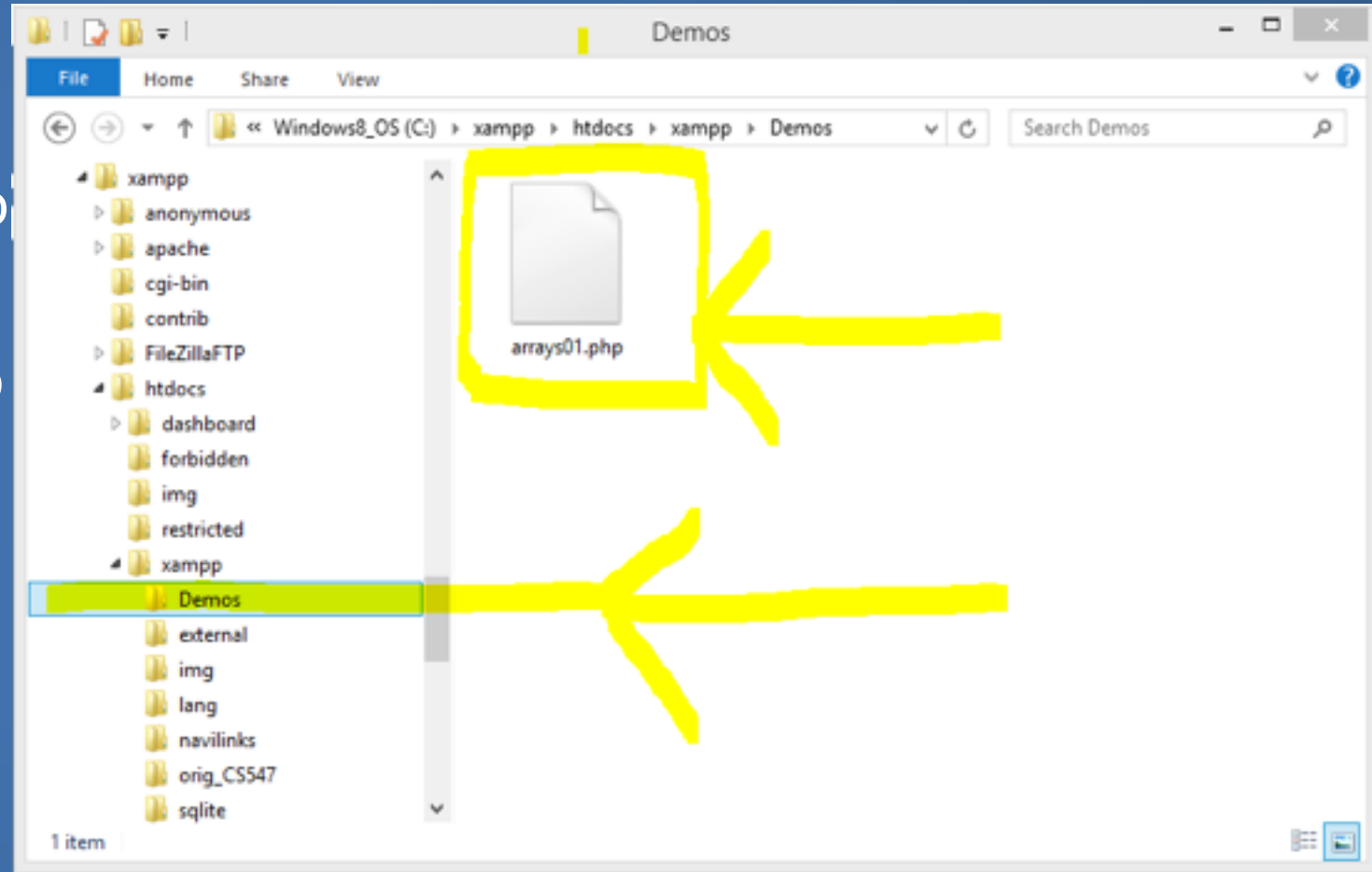
Start using the tools

1. Start the xamp control panel
2. Start the apache web service



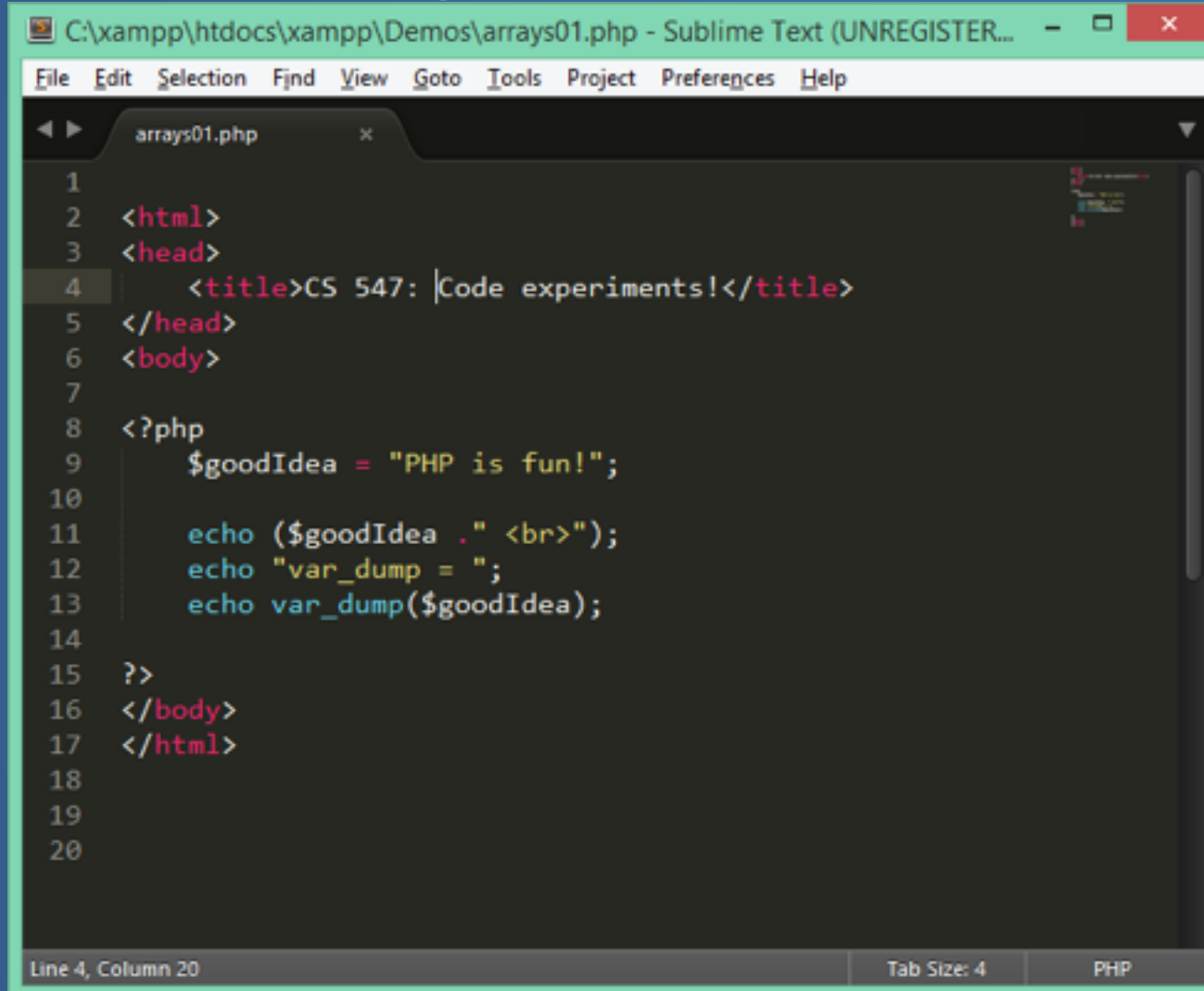
Start using the tools

4. Navigate to your install directory, mine is at
• C:\xampp\htdocs\xampp
5. Create a new directory to experiment in
6. Create a new php file



Start using the tools

5. Open up your favorite editor
6. Enter some code...
7. Save the file



```
C:\xampp\htdocs\xampp\Demos\arrays01.php - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help

arrays01.php
1
2 <html>
3 <head>
4     <title>CS 547: Code experiments!</title>
5 </head>
6 <body>
7
8 <?php
9     $goodIdea = "PHP is fun!";
10
11     echo ($goodIdea . " <br>");
12     echo "var_dump = ";
13     echo var_dump($goodIdea);
14
15 ?>
16 </body>
17 </html>
18
19
20

Line 4, Column 20 Tab Size: 4 PHP
```

Start using the tools

8. View in your browser!



PHP Arrays:

- In PHP there are three types of arrays
 - Indexed
 - Associative
 - Multidimensional

Arrays: Indexed

- Indexed arrays are 'regular' arrays.
- Two ways to create an indexed array
 - Automatically
 - Manually

Arrays:

- Recall: we can create the following
 - `$fruit1= "Apple";`
 - `$fruit2= "Banana";`
 - `$fruit3= "Strawberry";`
- But this is ***not efficient***.

Arrays: Indexed

- We can create our array ***Automatically***
- `$fruits= array("Apple", "Banana", "Strawberry");`

Arrays: Indexed

```
C:\xampp\htdocs\xampp\Demos\arrays01.php - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
arrays01.php
1
2 <html>
3 <head>
4   <title>CS 547:Code experiments!</title>
5 </head>
6 <body>
7
8 <?php
9   $fruits= array("Apple", "Banana", "Strawberry");
10
11   echo (" <br>");
12   echo "var_dump = ";
13   echo var_dump($fruits);
14
15 ?>
16 </body>
17 </html>
18
19
20
Line 13, Column 28 Tab Size: 4 PHP
```

```
CS 547:Code experiments!
localhost/xampp/Demos/arrays01.php
var_dump = array(3) { [0]=> string(5) "Apple" [1]=> string(6)
"Banana" [2]=> string(10) "Strawberry" }
```

Arrays: Indexed

- We can create our array ***Manually***
- `$fruits[0] = "Apple";`
- `$fruits[1] = "Banana";`
- `$fruits[2] = "Strawberry";`

Arrays: Indexed

```
C:\xampp\htdocs\xampp\Demos\arrays01.php - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help

arrays01.php
7
8 <?php
9     $fruits[0] = "Apple";
10    $fruits[1] = "Banana";
11    $fruits[5] = "Strawberry";
12
13
14    echo (" <br>");
15    echo "var_dump = ";
16    echo var_dump($fruits);
17
18 ?>
19 </body>
20 </html>
21
22
23

Line 12, Column 1 Tab Size: 4 PHP
```

```
CS 547: Code experiments!
localhost/xampp/Demos/arrays01.php

var_dump = array(3) { [0]=> string(5) "Apple" [1]=> string(6)
"Banana" [5]=> string(10) "Strawberry" }
```

Arrays: Indexed

- Note you can assign the index with any value using....
- `$fruits= array(0 => "Apple", 1 =>"Banana", 5 =>"Strawberry");`

Arrays: Indexed

```
C:\xampp\htdocs\xampp\Demos\arrays01.php - Sublime Text (UNREGISTE...
File Edit Selection Find View Goto Tools Project Preferences Help
arrays01.php
7
8 <?php
9 $fruits= array(0 => "Apple", 1 =>"Banana"
    , 5 =>"Strawberry");
10
11
12
13 echo (" <br>");
14 echo "var_dump = ";
15 echo var_dump($fruits);
16
17 ?>
18 </body>
19 </html>
20
21
22
Line 9, Column 49 Tab Size: 4 PHP
```

```
CS 547: Code experiments! x
localhost/xampp/Demos/arrays01.php
var_dump = array(3) { [0]=> string(5) "Apple" [1]=> string(6)
"Banana" [5]=> string(10) "Strawberry" }
```

Arrays: Indexed

- What if we wanted to print the fruit array?
- We would need loop over the length of the array and print.
- `$fruitLength = count($fruits);`
- `for ($i=0; $i < $fruitLength; $i++) {`
- `echo ("Fruit[$i] = $fruits[$i]
");`
- `}`

Arrays: Indexed

```
C:\xampp\htdocs\xampp\Demos\arrays01.php - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
arrays01.php
7
8 <?php
9 $fruits= array(0 => "Apple", 1 =>"Banana", 5 =>"
    Strawberry");
10
11 $fruitLength = count($fruits);
12
13 for ($i=0; $i < $fruitLength; $i++) {
14     echo ("Fruit[$i] = $fruits[$i]<br>");
15 }
16 echo (" <br>");
17 echo "var_dump = ";
18 echo var_dump($fruits);
19
20 ?>
21 </body>
22 </html>
23
24
25
5 lines, 115 characters selected Tab Size: 4 PHP
```

```
CS 547: Code experiments! x
localhost/xampp/Demos/arrays01.php
Fruit[0] = Apple
Fruit[1] = Banana

Notice: Undefined offset: 2 in
C:\xampp\htdocs\xampp\Demos\arrays01.php on line 14
Fruit[2] =

var_dump = array(3) { [0]=> string(5) "Apple" [1]=> string(6)
"Banana" [5]=> string(10) "Strawberry" }
```

Arrays: Indexed

- We can fix this by iterating over the keys and values in the array.

- Use the foreach loop like...

- ```
foreach ($fruits as $key => $value) {
```
- ```
    echo ("Fruit[$key] = $value <br>");
```
- ```
}
```



# Arrays: Indexed

```
C:\xampp\htdocs\xampp\Demos\arrays01.php - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help

arrays01.php
7
8 <?php
9 $fruits= array(0 => "Apple", 1 =>"Banana", 5 =>"
 Strawberry");
10
11 foreach ($fruits as $key => $value) {
12 echo ("Fruit[$key] = $value
");
13 }
14
15
16
17 echo (" <hr>");
18 echo "var_dump = ";
19 echo var_dump($fruits);
20
21 ?>
22 </body>
23 </html>
24
25
26
3 lines, 79 characters selected Tab Size: 4 PHP
```

```
CS 547:Code experiments! x
localhost/xampp/Demos/arrays01.php
Fruit[0] = Apple
Fruit[1] = Banana
Fruit[5] = Strawberry

var_dump = array(3) { [0]=> string(5) "Apple" [1]=> string(6)
"Banana" [5]=> string(10) "Strawberry" }
```

# Arrays: Indexed => Associative

- This introduces the concept of associative arrays
- What if,
- instead of using an integer value for the key, we used something else,
- 
- like a string?
- This is the basis for associative arrays in PHP

# Arrays: Associative

- Associative arrays are indexed arrays that use a ***string*** for the index.
- ```
foreach ($fruits as $key => $value) {
```
- ```
 echo ("Fruit[$key] = $value
");
```
- ```
}
```

Arrays: Associative

- Associative arrays are indexed arrays that use a ***string*** for the index.
- There are two ways to create them

Manually

```
$fruits["Monday"] = "Apple";  
$fruits["Tuesday"] = "Banana";  
$fruits["Friday"] = "Strawberry";
```

Automatically

```
$fruits= array( "Monday" => "Apple",  
               "Tuesday" => "Banana",  
               "Friday" =>  "Strawberry");
```

Associative Arrays

Associative arrays are a very powerful feature of PHP.

They are used in many applications
There is a rich set of functions to work with arrays.

Arrays: Multidimensional

- In PHP arrays can contain any valid variable *including other arrays*.
- So a multi-dimensional array is an array of arrays.

Arrays: Multidimensional

- Consider the following:
- `$fruits= array("Apple", "Banana", "Strawberry");`
- `$meats= array("Antelope", "Beef", "Chicken");`

Arrays: Multidimensional

- We can create an array of arrays as follows:
- `$fruits= array("Apple", "Banana", "Strawberry");`
- `$meats= array("Antelope", "Beef", "Chicken");`
- `$groceries = array ("fruits" => $fruits,`
- `"meats" => $meats);`

Arrays: Multidimensional

- Let's print our array of arrays.

```
C:\xampp\htdocs\xampp\Demos\arrays02.php - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
arrays02.php
7
8 <?php
9 $fruits= array("Apple", "Banana", "Strawberry");
10
11 $meats= array("Antelope", "Beef", "Chicken");
12
13 $groceries = array("fruits" => $fruits,
14                   "meats" => $meats);
15
16 foreach ($groceries as $key => $value) {
17     echo ("Fruit[$key] = $value <br>");
18 }
19
20
21
22 echo (" <hr>");
23 echo "var_dump = ";
24 echo var_dump($groceries);
25
26 ?>
27 </body>
28 </html>
2 lines, 66 characters selected  Tab Size: 4  PHP
```

```
CS 547:Code experiments! x
localhost/xampp/Demos/arrays02.php
Notice: Array to string conversion in
C:\xampp\htdocs\xampp\Demos\arrays02.php on line 17
Fruit[fruits] = Array

Notice: Array to string conversion in
C:\xampp\htdocs\xampp\Demos\arrays02.php on line 17
Fruit[meats] = Array

var_dump = array(2) { ["fruits"]=> array(3) { [0]=> string(5) "Apple"
[1]=> string(6) "Banana" [2]=> string(10) "Strawberry" } ["meats"]=>
array(3) { [0]=> string(8) "Antelope" [1]=> string(4) "Beef" [2]=>
string(7) "Chicken" } }
```

Arrays: Multidimensional

- We need to access the array index properly
- There are several ways of doing this...
-
- reference the internal array using
 - the index as a string
 - or
 - the index as a key

Arrays: Multidimensional

- Let's print our array of arrays.

```
C:\xampp\htdocs\xampp\Demos\arrays02.php - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help

arrays02.php
7
8 <?php
9 $fruits= array("Apple", "Banana", "Strawberry");
10
11 $meats= array("Antelope", "Beef", "Chicken");
12
13 $groceries = array ("fruits" => $fruits,
14                    "meats" => $meats);
15
16     echo ("Fruit[fruits] = ");
17     echo ($groceries["fruits"][0]);
18     echo ($groceries["fruits"][1]);
19     echo ($groceries["fruits"][2]);
20     echo ("<br>");
21     echo ("Fruit[meats] = ");
22     echo ($groceries["meats"][0]);
23     echo ($groceries["meats"][1]);
24     echo ($groceries["meats"][2]);
25     echo ("<br>");
26
27
28
Line 24, Column 37 Tab Size: 4 PHP
```

```
CS 547: Code experiments! x
localhost/xampp/Demos/arrays02.php

Fruit[fruits] = AppleBananaStrawberry
Fruit[meats] = AntelopeBeefChicken

var_dump = array(2) { ["fruits"]=> array(3) { [0]=> string(5) "Apple"
[1]=> string(6) "Banana" [2]=> string(10) "Strawberry" } ["meats"]=>
array(3) { [0]=> string(8) "Antelope" [1]=> string(4) "Beef" [2]=>
string(7) "Chicken" } }
```

Arrays: Multidimensional

- Let's print our array of arrays.

```
C:\xampp\htdocs\xampp\Demos\arrays02.php - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help

arrays02.php
7
8 <?php
9 $fruits= array("Apple", "Banana", "Strawberry");
10
11 $meats= array("Antelope", "Beef", "Chicken");
12
13 $groceries = array ("fruits" => $fruits,
14                    "meats" => $meats);
15
16 foreach ($groceries as $key => $value) {
17     echo ("Fruit[$key] = ");
18     for ($i=0; $i < count($groceries[$key]); $i++) {
19         echo ($groceries[$key][$i]);
20     }
21     echo ("<br>");
22 }
23
24
25
26 echo (" <hr>");
27 echo "var_dump = ";
```

```
CS 547: Code experiments! x
localhost/xampp/Demos/arrays02.php

Fruit[fruits] = AppleBananaStrawberry
Fruit[meats] = AntelopeBeefChicken

var_dump = array(2) { ["fruits"]=> array(3) { [0]=> string(5) "Apple"
[1]=> string(6) "Banana" [2]=> string(10) "Strawberry" } ["meats"]=>
array(3) { [0]=> string(8) "Antelope" [1]=> string(4) "Beef" [2]=>
string(7) "Chicken" } }
```

Arrays: Multidimensional

- Let's print our array of arrays.

```
C:\xampp\htdocs\xampp\Demos\arrays02.php - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help

arrays02.php
7
8 <?php
9 $fruits= array("Apple", "Banana", "Strawberry");
10
11 $meats= array("Antelope", "Beef", "Chicken");
12
13 $groceries = array ("fruits" => $fruits,
14                    "meats" => $meats);
15
16 foreach ($groceries as $key => $value) {
17     echo ("Fruit[$key] = ");
18     foreach ($groceries[$key] as $key2 => $value) {
19         echo ($groceries[$key][$key2]);
20     }
21
22     echo ("<br>");
23 }
24
25
26
27 echo (" <hr>");

Line 19, Column 41    Tab Size: 4    PHP
```

```
CS 547: Code experiments! x
localhost/xampp/Demos/arrays02.php

Fruit[fruits] = AppleBananaStrawberry
Fruit[meats] = AntelopeBeefChicken

var_dump = array(2) { ["fruits"]=> array(3) { [0]=> string(5) "Apple"
[1]=> string(6) "Banana" [2]=> string(10) "Strawberry" } ["meats"]=>
array(3) { [0]=> string(8) "Antelope" [1]=> string(4) "Beef" [2]=>
string(7) "Chicken" } }
```


Arrays: Built in Functions

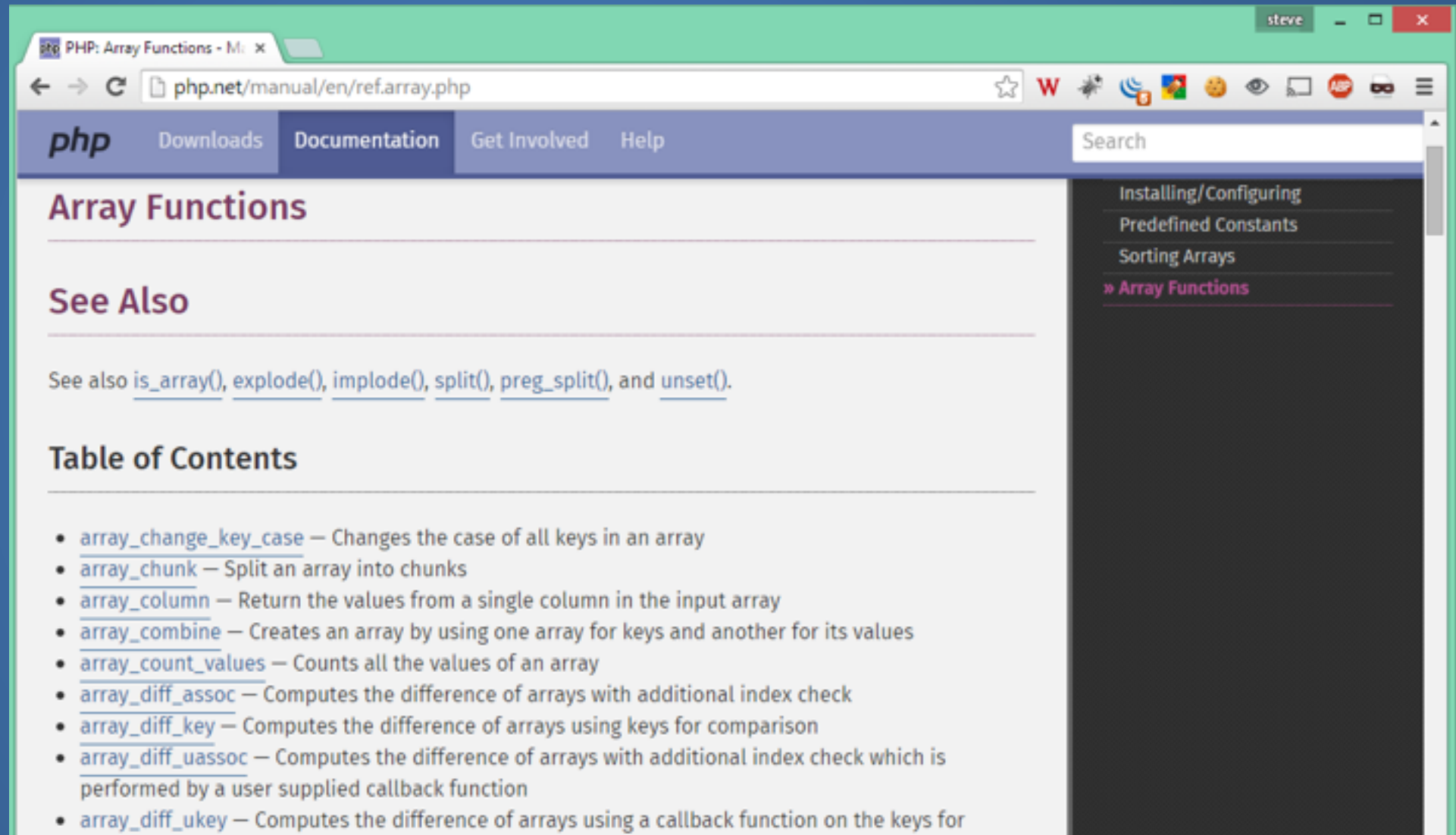
There is a rich body of built in array functions in PHP. The following slides present the full list of array functions taken from the PHP Manual Website.

Homework

Follow [this link to the php.net website](#) and familiarize yourself with the array functions.

Array Functions Homework

Familiarize yourself with the functions on the php.net manual website.



The screenshot shows a web browser window with the URL `php.net/manual/en/ref.array.php`. The page title is "PHP: Array Functions - Manual". The navigation bar includes links for "php", "Downloads", "Documentation", "Get Involved", and "Help", along with a search bar. The main content area is titled "Array Functions" and includes a "See Also" section with links to `is_array()`, `explode()`, `implode()`, `split()`, `preg_split()`, and `unset()`. Below this is a "Table of Contents" section listing various array functions with brief descriptions:

- [array_change_key_case](#) — Changes the case of all keys in an array
- [array_chunk](#) — Split an array into chunks
- [array_column](#) — Return the values from a single column in the input array
- [array_combine](#) — Creates an array by using one array for keys and another for its values
- [array_count_values](#) — Counts all the values of an array
- [array_diff_assoc](#) — Computes the difference of arrays with additional index check
- [array_diff_key](#) — Computes the difference of arrays using keys for comparison
- [array_diff_uassoc](#) — Computes the difference of arrays with additional index check which is performed by a user supplied callback function
- [array_diff_ukey](#) — Computes the difference of arrays using a callback function on the keys for

A sidebar on the right contains a list of navigation links: "Installing/Configuring", "Predefined Constants", "Sorting Arrays", and "» Array Functions" (which is highlighted).

Next topic:

B Bootstrap



Bootstrap

What is Bootstrap?

Bootstrap is a free front-end framework for faster and easier web development

Bootstrap includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins

Bootstrap also gives you the ability to easily create responsive designs

Bootstrap: History

Bootstrap was developed by Mark Otto and Jacob Thornton at Twitter, and released as an open source product in August 2011 on GitHub.

Was the No.1 project on GitHub back in June 2014

Bootstrap: Justification

- I think it is **cool** and *useful*
- Easy to use: Anybody with just basic knowledge of HTML and CSS can start using Bootstrap
- Responsive features: Bootstrap's responsive CSS adjusts to phones, tablets, and desktops
- Mobile-first approach: In Bootstrap 3, mobile-first styles are part of the core framework
- Browser compatibility: Bootstrap is compatible with all modern browsers (Chrome, Firefox, Internet Explorer, Safari, and Opera)

Bootstrap: Downloading

- Download Bootstrap from getbootstrap.com
- Include Bootstrap from a CDN (recommended)

Learning to use Bootstrap

We will be using bootstrap to make our websites look and respond better. There is an extensive set of instructions on how to use the various features of the Bootstrap Framework. Rather than reiterating that material, it is expected that you dedicate one to two hours per week learning Bootstrap by example.

The starting place is the [getting started section](#) of the bootstrap website. We will cover some basics in class. You can use any of the features you want on your websites.

Bootstrap: Simple example

- Copy the following code into an html file in your xamp directory.

```
File Edit Selection Find View Goto Tools Project Preferences Help
arrays02.php bootstrapDemo.html
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <title>Bootstrap Example</title>
5   <meta charset="utf-8">
6   <meta name="viewport" content="width=device-width, initial-scale=1">
7   <link rel="stylesheet" href="http://maxcdn.bootstrapcdn.com/bootstrap/3.2.0/css/bootstrap.min.css">
8   <script src="https://ajax.googleapis.com/ajax/libs/jquery/1.11.1/jquery.min.js"></script>
9   <script src="http://maxcdn.bootstrapcdn.com/bootstrap/3.2.0/js/bootstrap.min.js"></script>
10 </head>
11 <body>
12
13 <div class="container">
14   <h1>My First Bootstrap Page</h1>
15   <p>This is some text.</p>
16 </div>
17
```

Bootstrap from GitHub

Code demo.