PHP Introduction

System and Web Development Workshop

Spring 2025

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XAMPP Server

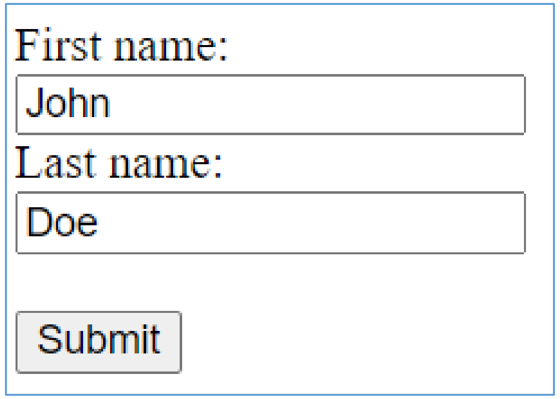
- During the **lab**,
  - Help you to install the XAMPP server to your own computer.
    - The XAMPP software is in iSpace.
    - Follow the instruction in XAMPP_installation_v1.docx.
    - Try to install XAMPP before the lab. If you get stuck, we can help you during the lab.
  - Run some very basic PHP code.

- We will explain more on XAMPP in a later lecture.
  - PHP runs in XAMPP.
  - Later you will need XAMPP for MySQL, Assignment 3, and group projects.

- Bring your lab top to this week's lab.

In this lecture, let’s focus on PHP

- Recall 1C_HtmlForms.pptx
- When submit button is clicked, action_page.php is executed.



First name:
John
Last name:
Doe

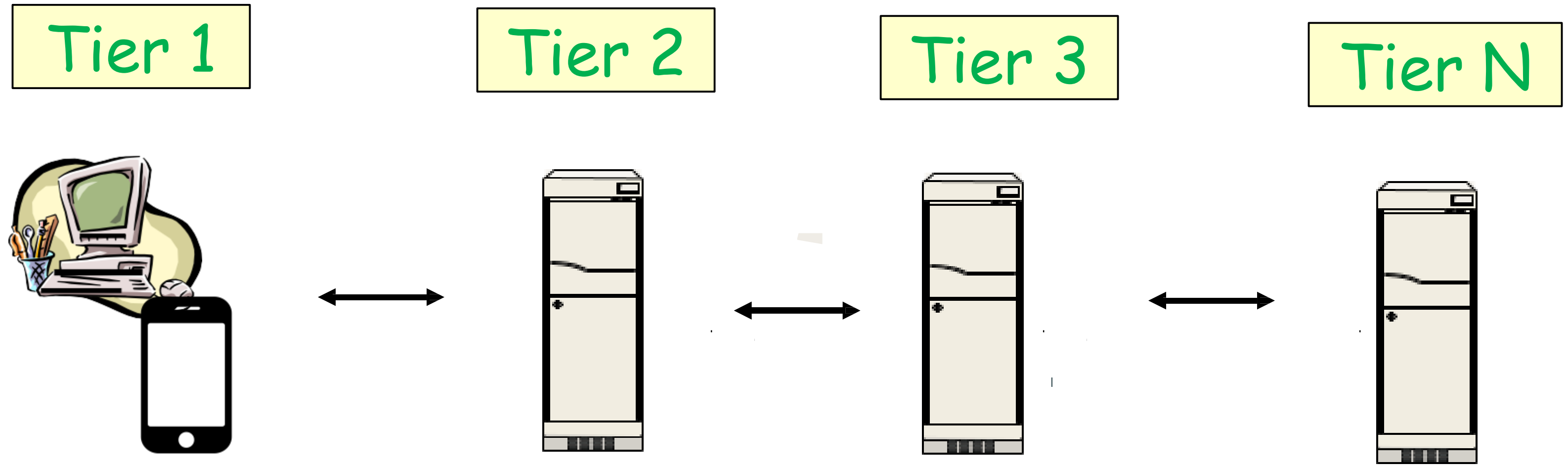
```
<form action="/action_page.php">
  First name:<br>
  <input type="text" name="firstname" value="Mickey"><br>
  Last name:<br>
  <input type="text" name="lastname" value="Mouse"><br><br>
  <input type="submit" value="Submit">
</form>
```

- Now let’s see what this PHP file can do.

What is PHP?

- PHP is an acronym for "PHP: Hypertext Preprocessor“
  - Originally PHP stands for “Personal Home Page”, used mostly for personal blogging (personal web pages).
- PHP is a widely-used, open source scripting language
  - Is free to download and use
  - Is simple enough to be a programmer’s first server side language.
- PHP code is executed on the server.
  - HTML and JavaScript code are executed at the browser.

Typical N-tier client / servers architecture of e-commerce



Tier 1

Tier 2

Tier 3

Tier N

Client

Shopping mall server

web pages

HTML/CSS/ JavaScript

Application server

transaction modules

PHP

Database server

trade records

SQL

We study these:

What Can PHP Do?

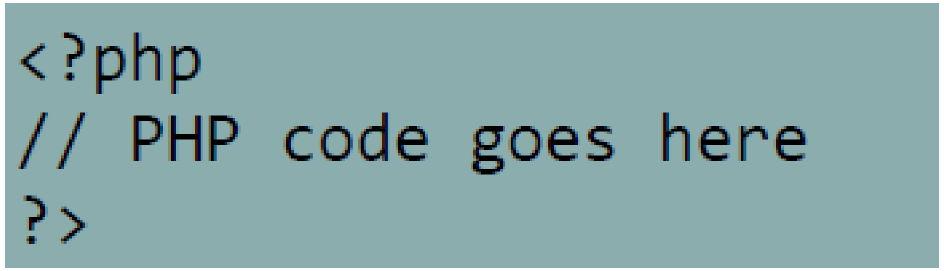
- PHP can create, open, read, write, delete, and close files on the server by
  - Collecting and processing form data
  - Sending commands to retrieve or modify data in the database
  - Using to control user-access, e.g. in login page

Why Use PHP?

- PHP runs on various platforms (Windows, Linux, Unix, Mac OS X, etc.)
- PHP is compatible with almost all servers used today (Apache, IIS, etc.)
- PHP supports a wide range of databases
- PHP is free. Download it from the official PHP resource: www.php.net
- PHP is easy to learn and runs efficiently on the server side

Basic PHP Syntax

- A PHP script can be placed anywhere in the document.
- A PHP script starts with <?php and ends with ?>:



```
<?php
// PHP code goes here
?>
```

- The default file extension for PHP files is ".php".
- We’ll be using PHP statements inside HTML files as well
- PHP syntax is based on C and Perl.
  - Perl is a scripting language, similar to Python.
  - Perl came first, but Python became more popular because it’s object oriented and has many useful libraries.

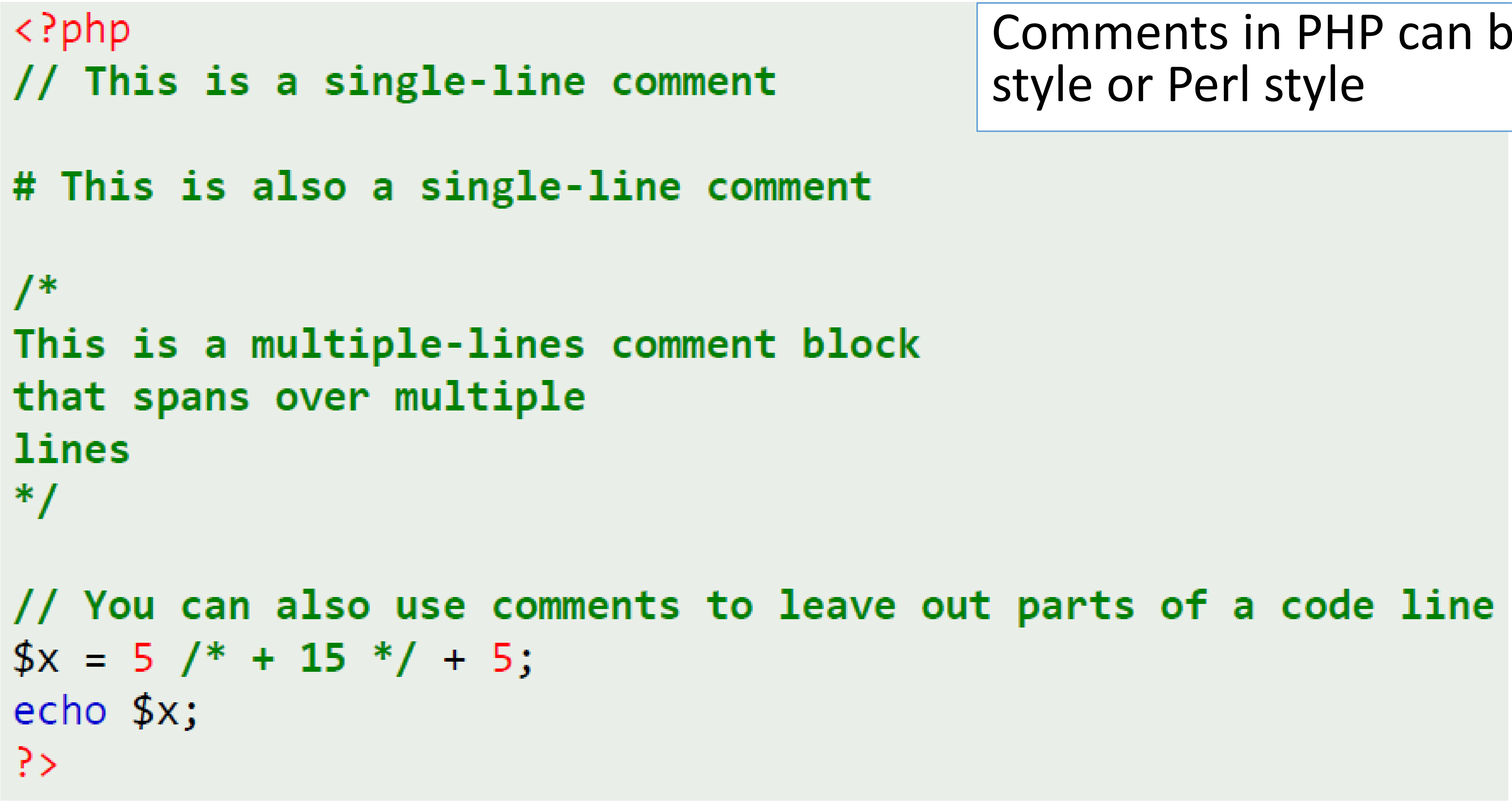
What Do I Need?

- To run PHP, you can:
  - Use XAMPP, installed on your computer or a server.

- To learn PHP syntax, you can use
  - https://www.json.cn/runcode/run_php/

  - The Reference slide at the end of this PPT contains other websites that used to allow PHP codes to run, but need a VPN now.
  - Search online; maybe you can find some other sites, especially Chinese sites.

Basic PHP Syntax

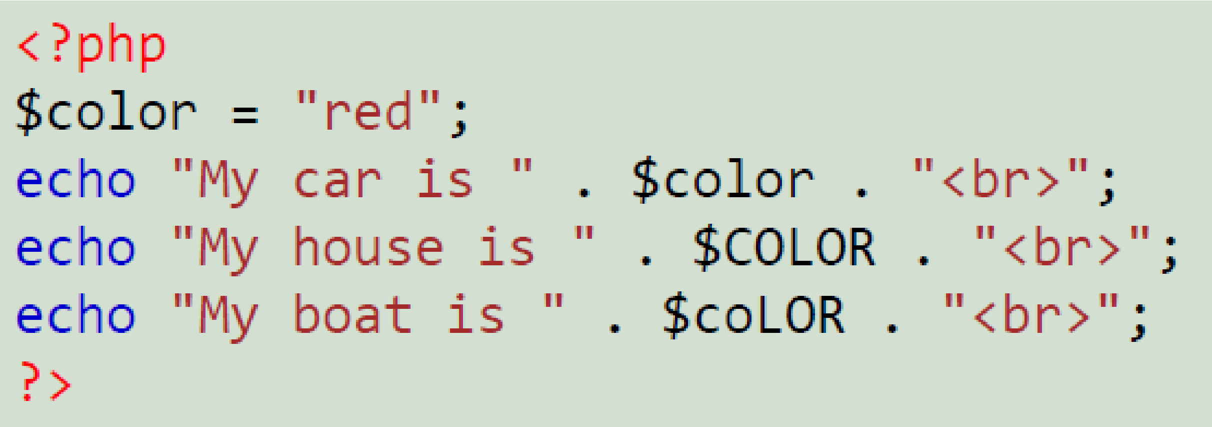


```php
<?php
// This is a single-line comment

# This is also a single-line comment

/*
This is a multiple-lines comment block
that spans over multiple
lines
*/

// You can also use comments to leave out parts of a code line
$x = 5 /* + 15 */ + 5;
echo $x;
?>
```

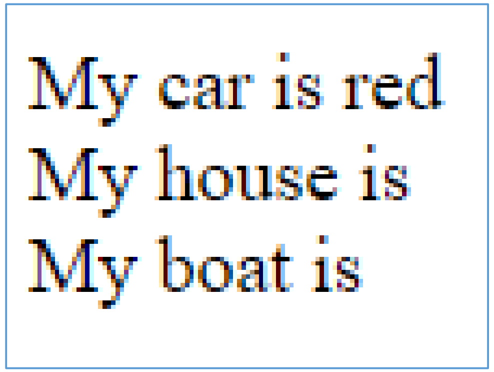
Comments in PHP can be C style or Perl style

Basic PHP Syntax

- PHP case sensitivity to variables

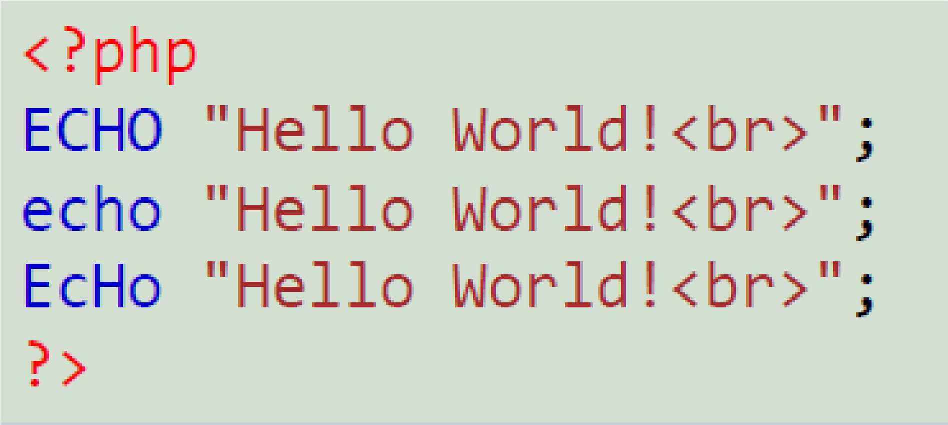


```php
<?php
$color = "red";
echo "My car is " . $color . "<br>";
echo "My house is " . $COLOR . "<br>";
echo "My boat is " . $coLOR . "<br>";
?>
```

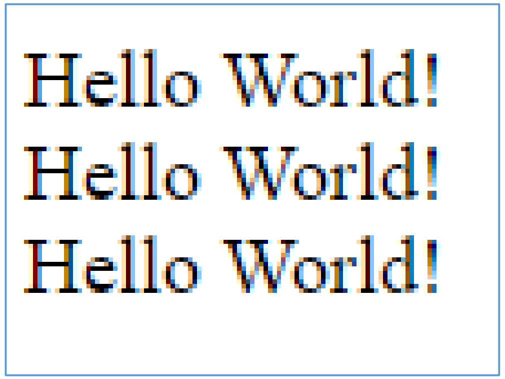


```
My car is red
My house is
My boat is
```

- PHP not case sensitivity to keywords



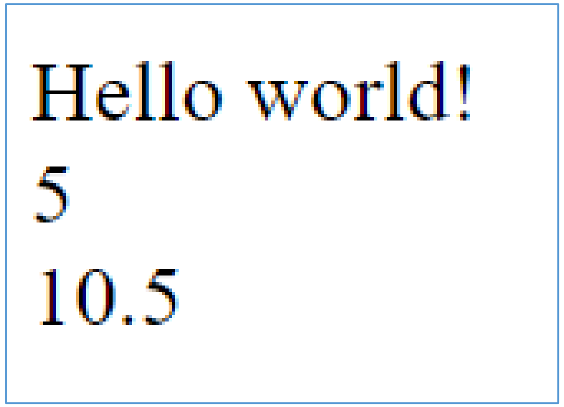
```php
<?php
ECHO "Hello World!<br>";
echo "Hello World!<br>";
EcHo "Hello World!<br>";
?>
```



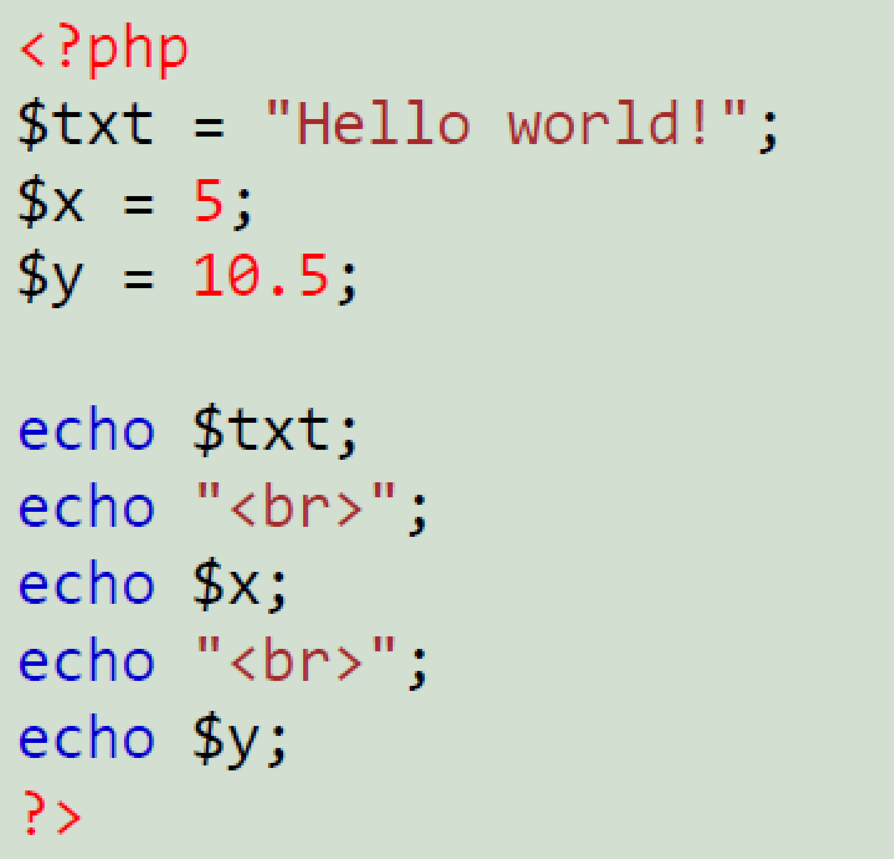
```
Hello World!
Hello World!
Hello World!
```

Variables

- Creating (declaring) PHP variables



```
Hello world!
5
10.5
```



```php
<?php
$txt = "Hello world!";
$x = 5;
$y = 10.5;

echo $txt;
echo "<br>";
echo $x;
echo "<br>";
echo $y;
?>
```

- When assigning a text value to a variable, put quotes around the value.
- Unlike other programming languages, PHP has no command for declaring a variable. A variable is created when you first assign a value to it.

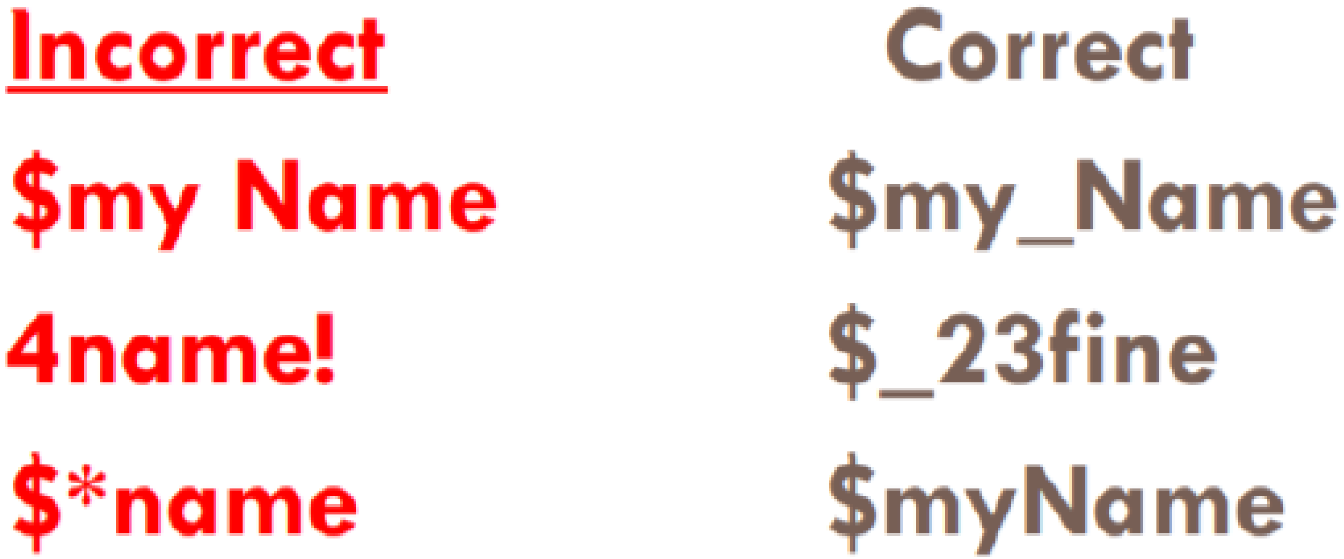
Variables

- A variable can have a short name (like $x and $y) or a more descriptive name ($age, $carname, $total_volume).

Rules for PHP variables:

- A variable starts with the $ sign, followed by the name of the variable
- A variable name must start with a letter or the underscore character
- A variable name cannot start with a number
- A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and _)
- Variable names are case-sensitive ($age and $AGE are two different variables)

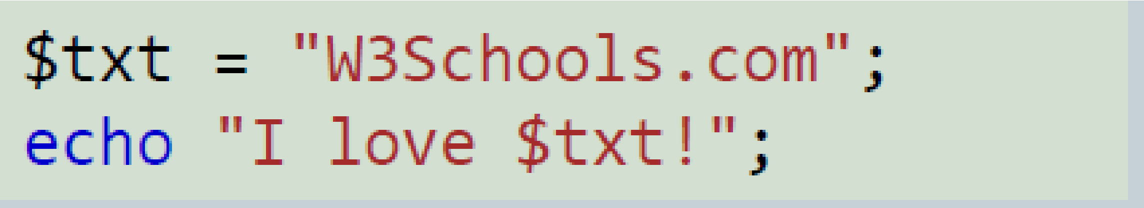
Variables



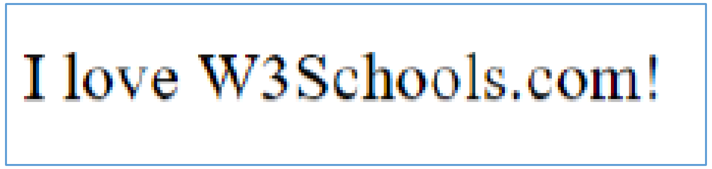
Incorrect	Correct
$my Name	$my_Name
4name!	$_23fine
$*name	$myName

Output Variables

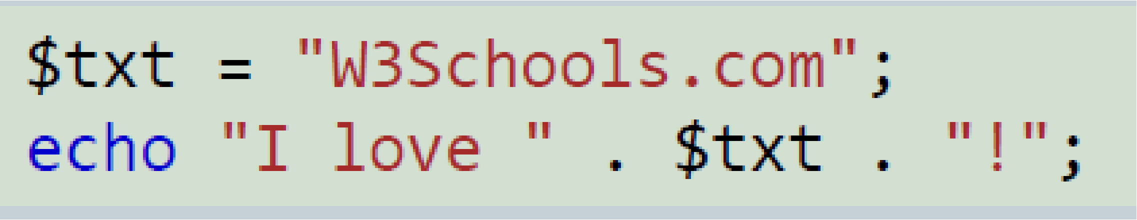
- The PHP echo statement is often used for outputting data to screen.



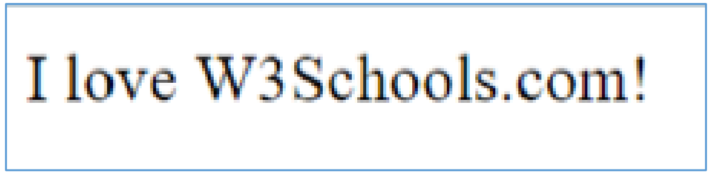
```php
$txt = "W3Schools.com";
echo "I love $txt!";
```



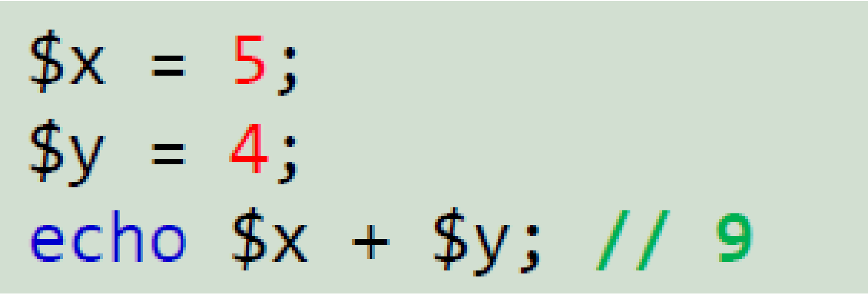
```
I love W3Schools.com!
```



```php
$txt = "W3Schools.com";
echo "I love " . $txt . "!";
```



```
I love W3Schools.com!
```



```php
$x = 5;
$y = 4;
echo $x + $y; // 9
```

- Sum of two variables

Variables Scope

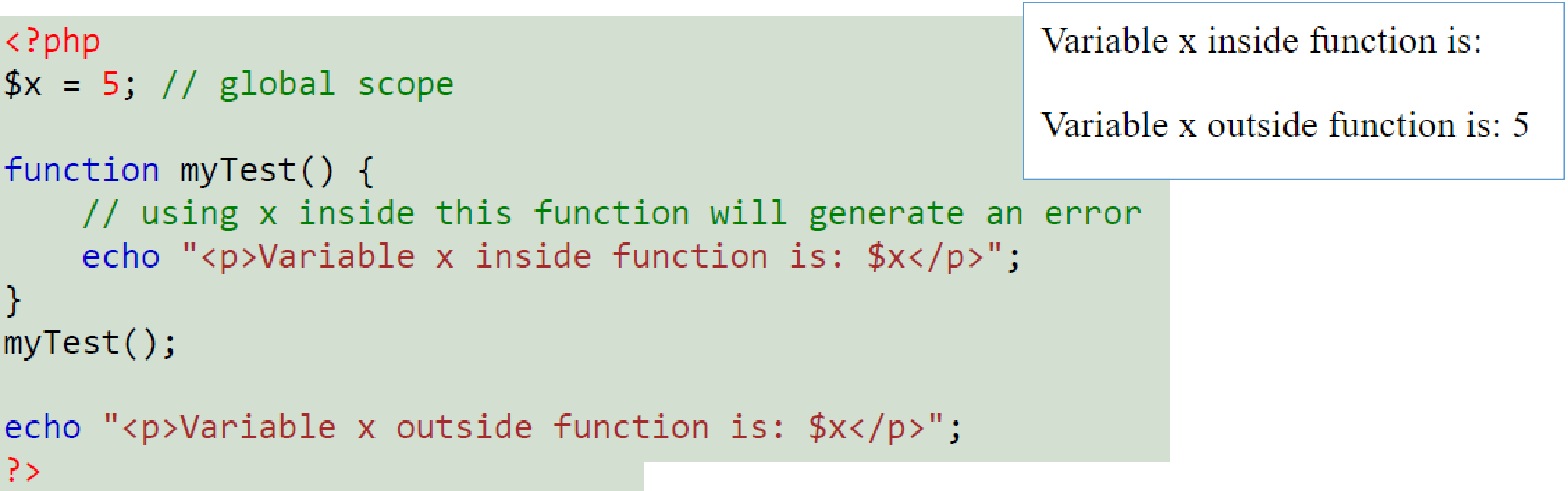
- In PHP, variables can be declared anywhere in the script.

- The scope of a variable is the part of the script where the variable can be referenced or used.

- PHP has three different variable scopes:
  - local
  - global
  - static

Global Scope

- Variables declared outside a function can only be accessed outside a function.
  - This is **different from C and JavaScript**.
  - Like a barrier (not a one-way mirror); outside cannot see in, inside cannot see out.

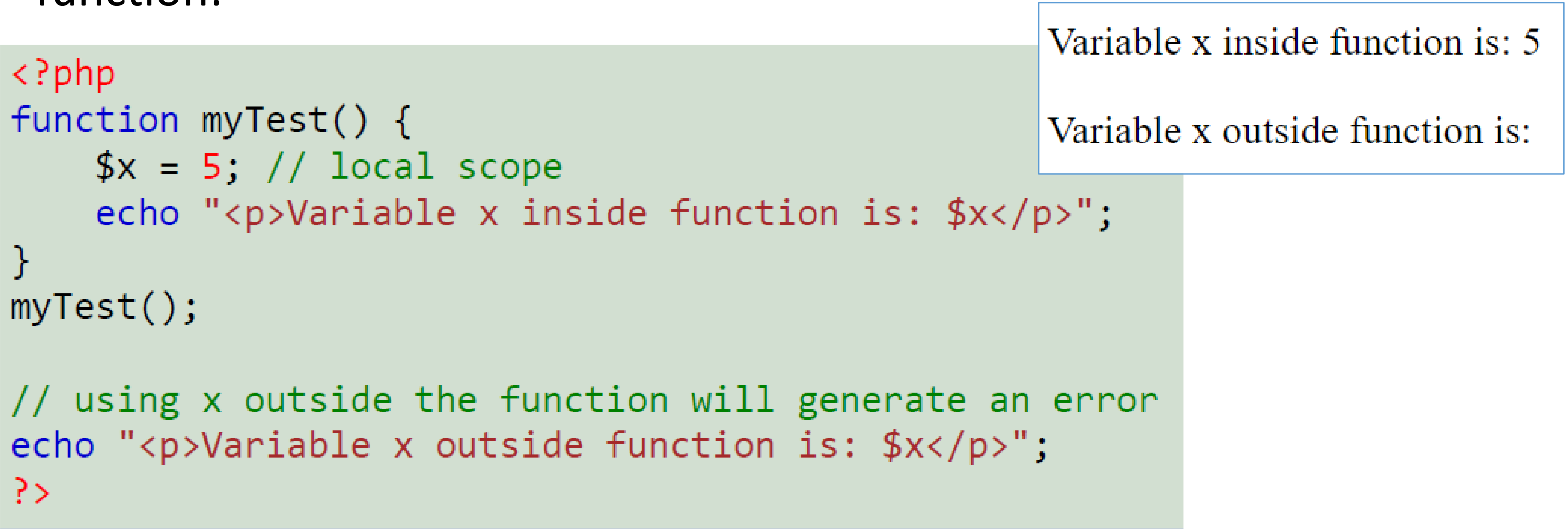


```php
<?php
$x = 5; // global scope

function myTest() {
    // using x inside this function will generate an error
    echo "<p>Variable x inside function is: $x</p>";
}
myTest();

echo "<p>Variable x outside function is: $x</p>";
?>
```

```
Variable x inside function is:

Variable x outside function is: 5
```

Local Scope

- Variables declared inside a function can only be accessed inside that function:



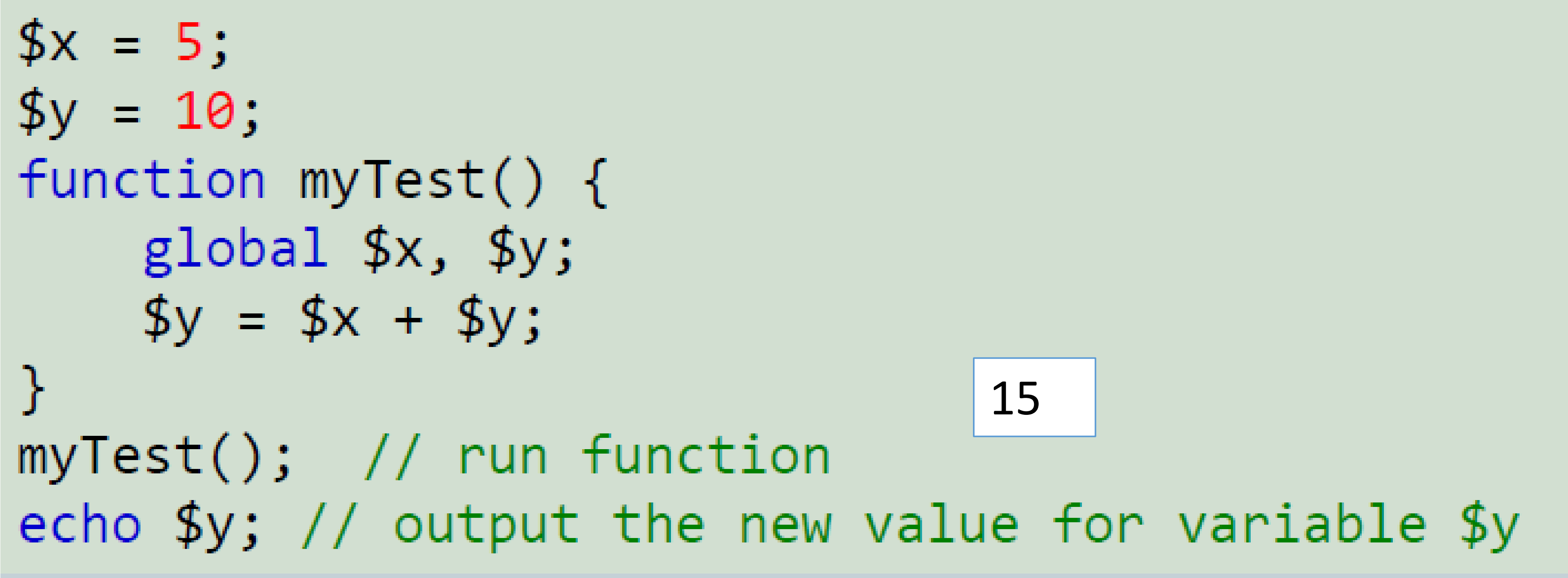
```
<?php
function myTest() {
    $x = 5; // local scope
    echo "<p>Variable x inside function is: $x</p>";
}
myTest();

// using x outside the function will generate an error
echo "<p>Variable x outside function is: $x</p>";
?>
```

```
Variable x inside function is: 5

Variable x outside function is:
```

- Can have local variables with same name in different functions, because local variables are only recognized by the function in which they are declared.

The global Keyword

- The global keyword is used to access a global variable from inside a function.

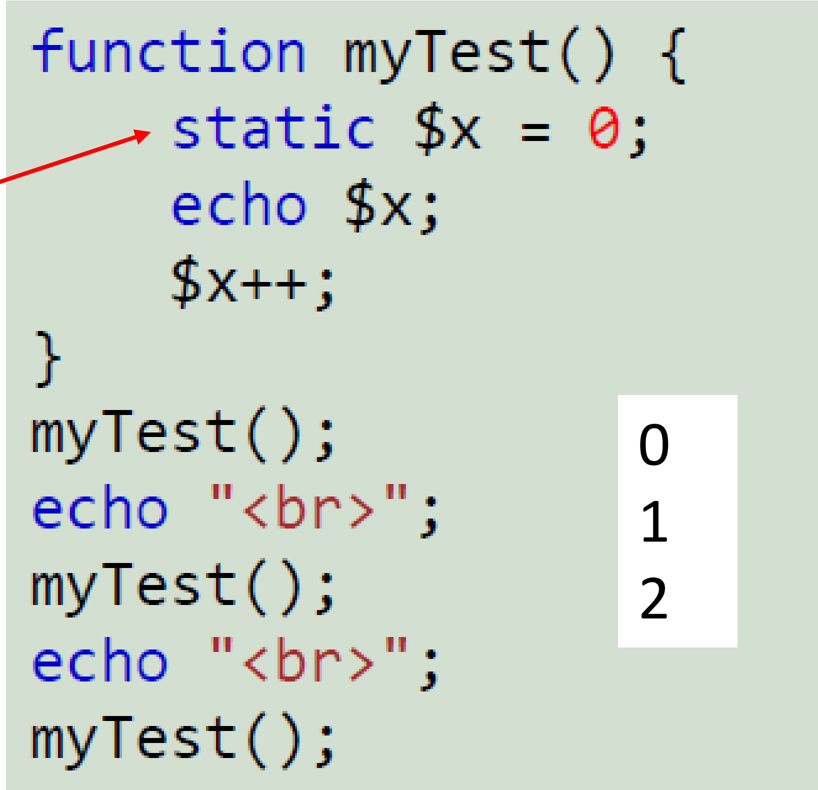


```
$x = 5;
$y = 10;
function myTest() {
    global $x, $y;
    $y = $x + $y;
}
myTest();  // run function
echo $y; // output the new value for variable $y
```

```
15
```

The static Keyword

- Normally, when a function is completed or executed, all of its variables are deleted.
- Sometimes we want a local variable NOT to be deleted
- Use the static keyword when you first declare the variable.
- Similar to C



```
function myTest() {
    static $x = 0;
    echo $x;
    $x++;
}
myTest();
echo "<br>";
myTest();
echo "<br>";
myTest();
```

```
0
1
2
```

- Each time the function is called, that variable still maintains its value from the last time the function was called.

echo and print Statements

- In PHP there are two basic ways to get output: echo and print.
- echo and print are more or less the same.
- In this class, we’ll mainly use the echo statement

echo Statement

- The echo statement can be used with or without parentheses:

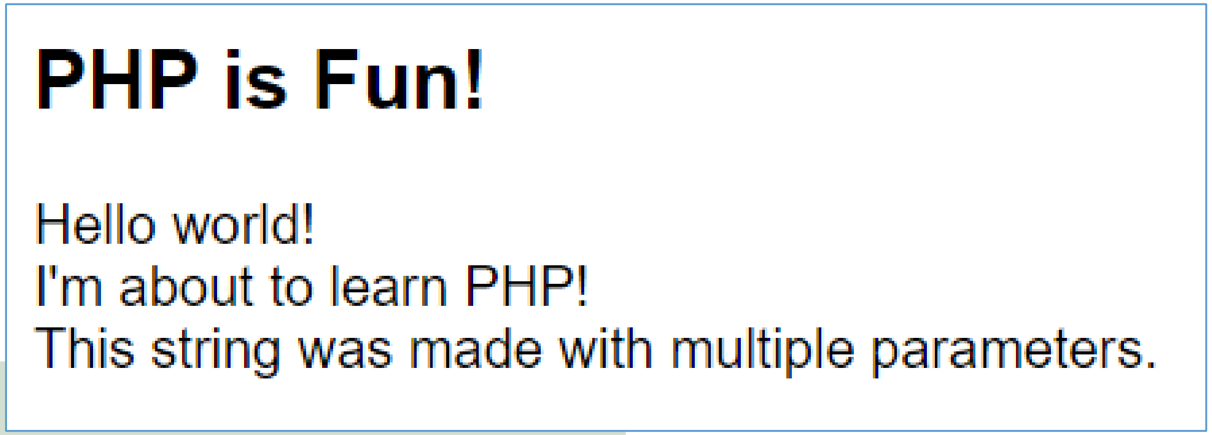
  echo or echo().

echo is used for

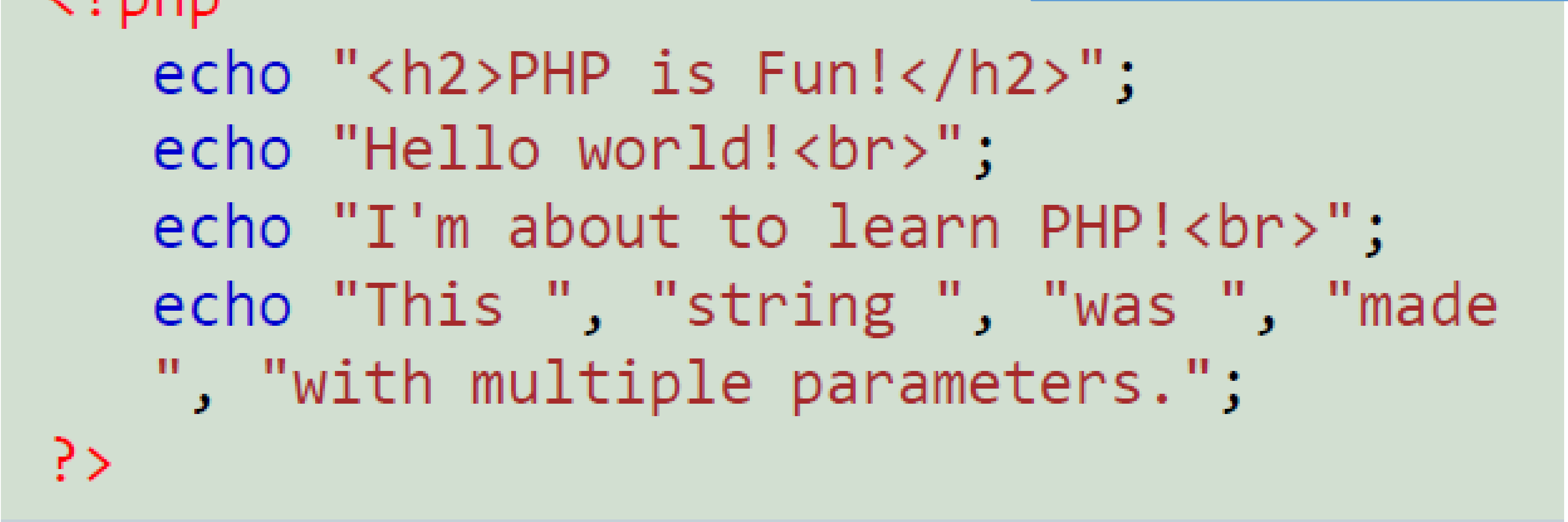
- displaying text
- displaying variables

echo Statement

- Displaying text



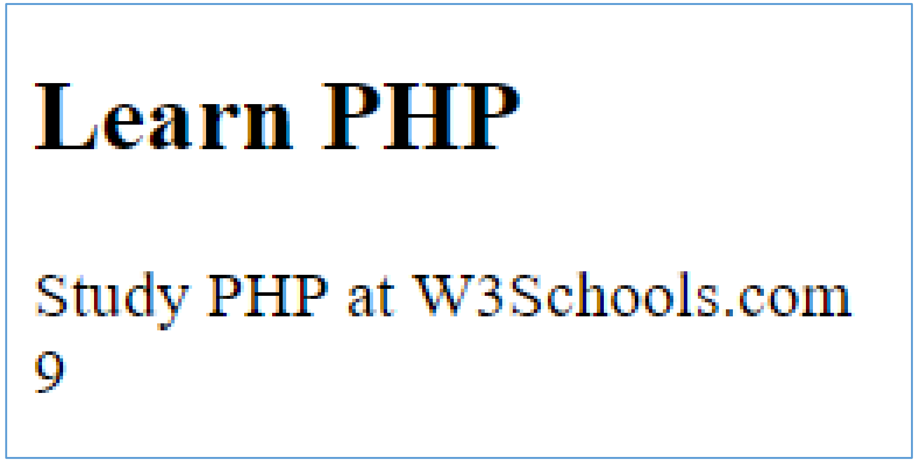
```
PHP is Fun!

Hello world!
I'm about to learn PHP!
This string was made with multiple parameters.
```



```php
<?php
   echo "<h2>PHP is Fun!</h2>";
   echo "Hello world!<br>";
   echo "I'm about to learn PHP!<br>";
   echo "This ", "string ", "was ", "made
   ", "with multiple parameters.";
?>
```

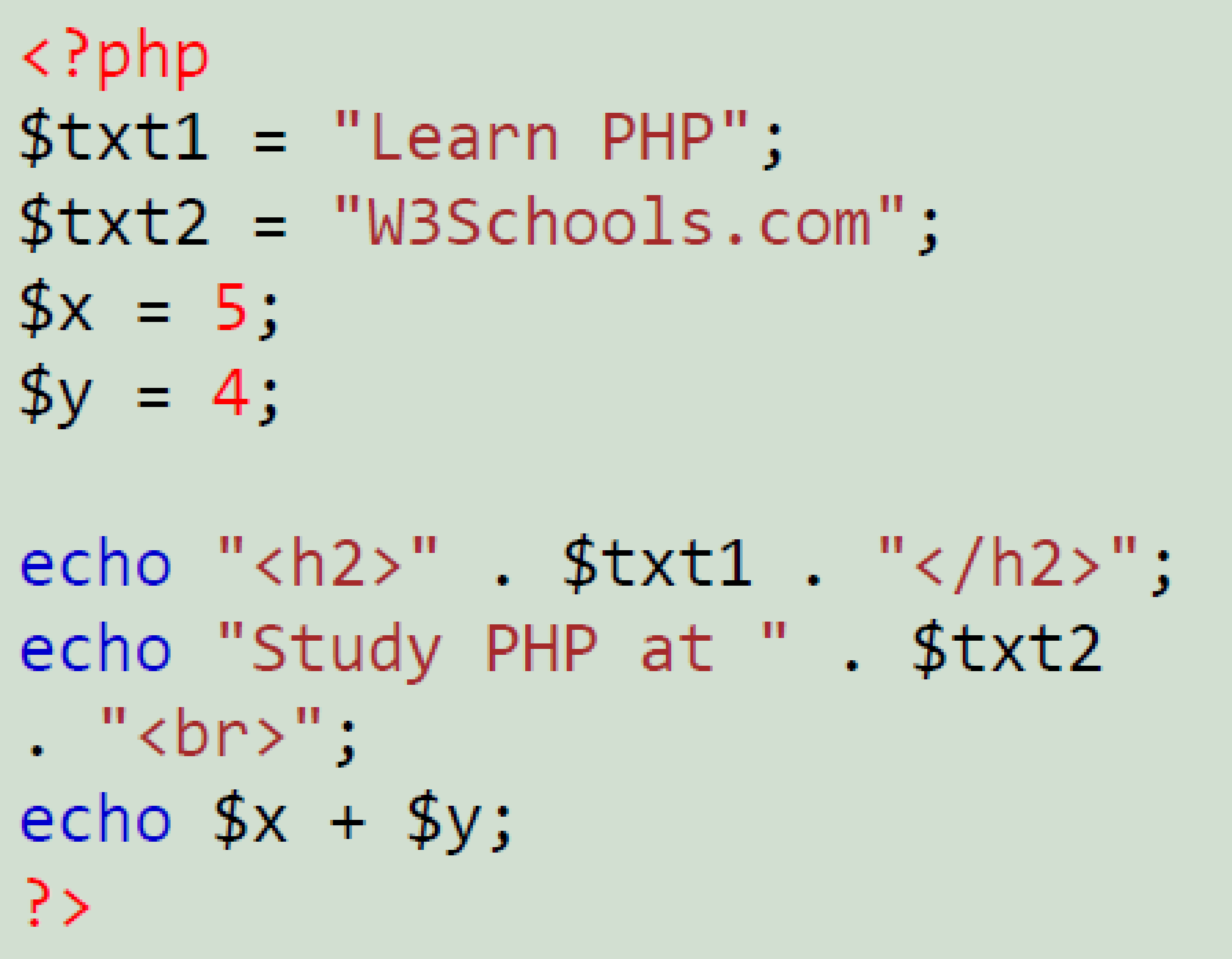
echo Statement

- Displaying variables



Learn PHP

Study PHP at W3Schools.com
9



```
<?php
$txt1 = "Learn PHP";
$txt2 = "W3Schools.com";
$x = 5;
$y = 4;

echo "<h2>" . $txt1 . "</h2>";
echo "Study PHP at " . $txt2
. "<br>";
echo $x + $y;
?>
```

References in iSpace

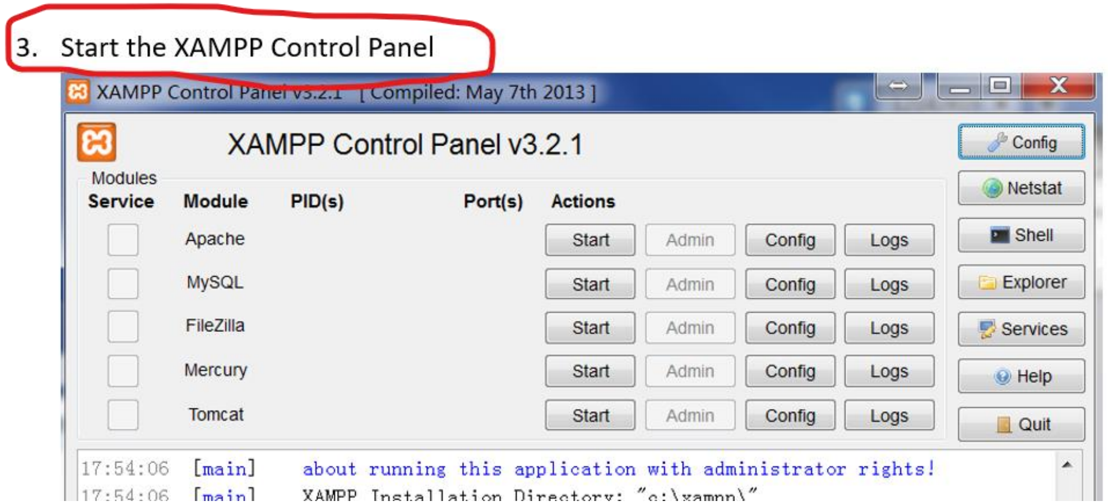
In iSpace > 3_PhpMySql/SampleCodes/PhpIntro_samples

- SampleCodes > PhpIntro_samples contains sample from this PPT.
- The folder "PhpPdf" contains other basic PHP statements.
  - These basic statements (arrays, if-else, etc.) are similar to those in C and JavaScript.

- Two videos are available in the Videos folder:
  - 1. Introduction to PHP
    - The section on installing XAMPP starting at 6:20 (6 minutes 20 sec) of the video is useful.
  - PHP Programming
- Watch the videos during Reading Week.

XAMPP - Installing

- XAMPP is already installed in the lab computers, but you should also install it in your own computer.
- The code and instructions are in iSpace > Tools section.
- Follow the instruction in the installation guide “XAMPP installation v0.1.docx”
- After installing successfully, you can run the app.
  - In the installation guide, search for “3. Start the XAMPP Control Panel”, and follow the steps.
  - You only need to run “setup_xampp” on the first time you use XAMPP.
  - If there are no red error messages, you have started XAMPP successfully.



3. Start the XAMPP Control Panel

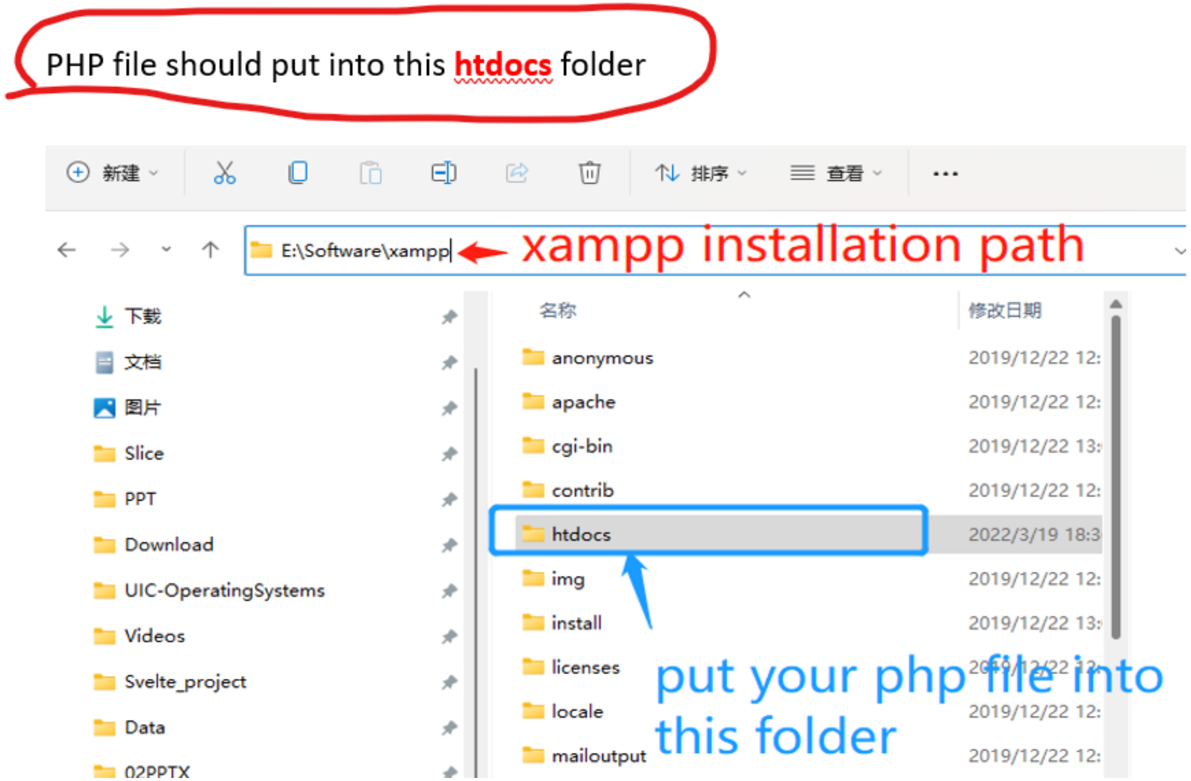
XAMPP Control Panel v3.2.1 [Compiled: May 7th 2013]

XAMPP Control Panel v3.2.1

```
17:54:06  [main]   about running this application with administrator rights!
17:54:06  [main]   XAMPP Installation Directory: "c:\xampp\"
```

XAMPP - Running

- In the installation guide, look for “PHP file should be put into this htdocs folder”.
- If your XAMPP installation path is c:\xampp, put your PHP file into c:\xampp\htdocs or in a subfolder of that.



PHP file should put into this htdocs folder

E:\Software\xampp

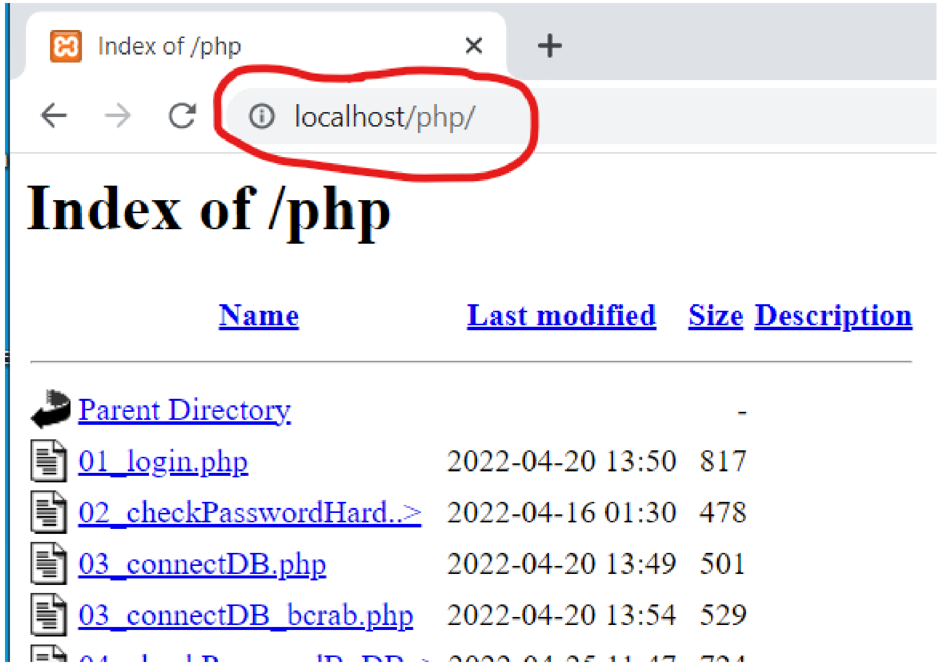
xampp installation path

put your php file into this folder

- Create the folder c:\xampp\htdocs\php and put a sample code there, (e.g. the sample code 02_php_variable.php).

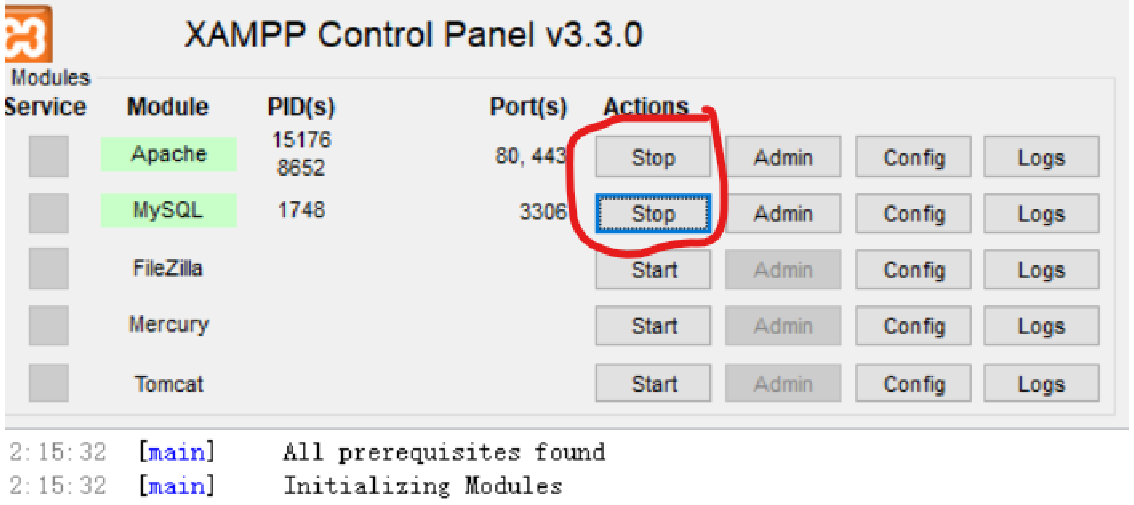
XAMPP - Running

- In a browser, type in “localhost/php/
- Your PHP file should appear.
- Click on one of the sample files, and the result should appear.



Index of /php

Name	Last modified	Size	Description
Parent Directory		-	
01_login.php	2022-04-20 13:50	817	
02_checkPasswordHard..>	2022-04-16 01:30	478	
03_connectDB.php	2022-04-20 13:49	501	
03_connectDB_bcrab.php	2022-04-20 13:54	529	



Service	Module	PID(s)	Port(s)	Actions			
	Apache	15176 8652	80, 443	Stop	Admin	Config	Logs
	MySQL	1748	3306	Stop	Admin	Config	Logs
	FileZilla			Start	Admin	Config	Logs
	Mercury			Start	Admin	Config	Logs
	Tomcat			Start	Admin	Config	Logs

```
2:15:32  [main]   All prerequisites found
2:15:32  [main]   Initializing Modules
```

- When you are finished, stop the Apache and MySQL servers in the XAMPP control panel.

Class Exercises

(1) Install XAMPP in your own computer.

- You will need XAMPP starting next week.

(2) Practice running some sample codes in “Php_samples”

- ~~For this week, you can use the online site https://www.json.cn/runcode/run_php/~~

~~(3) Do the class exercises in “PhpIntro_ClassEx.pdf”~~

- ~~After you get your PHP file to run in the online site, copy your code into a PHP file and it “PhpIntro_ClassEx.php”.~~
- ~~Submit your php file in iSpace.~~

- Watch the videos if need be during Reading Week.

Running PHP files and Class Exercises

- You can run PHP files using
  - XAMPP
  - https://www.json.cn/runcode/run_php/

- These sites used to work, but they may need VPN now
  - https://www.jdoodle.com/php-online-editor
  - https://c.runoob.com/compile/1/
    - Doesn’t recognize HTML commands such as <br>
  - https://www.w3schools.com/php/default.asp
  - https://www.w3schools.cn/php/default.asp
  - https://www.quanzhanketang.com/php/