Introduction to Internet Technology and Web Programming

Computer Science 103
Boston University
Vahid Azadeh-Ranjbar

These notes are based on the lecture notes provided by Professor Susan Worst.

Lecture 9-2

BU CS 103, Spring 2019

Assignments

❖ New Assignments
  ➢ **Lab 8 Assignment** is posted now
    ✓ Due Wednesday April 03 at 6:00 pm.
    ✓ This assignment is not coding.
    ✓ Instead, it is about making plans for your final project website.
  ➢ **Lab 8 Challenge** will be posted tomorrow
    ✓ Due Thursday (tomorrow) at midnight.
❖ Deadlines
  ➢ **Lab 7 Assignment** due was today at 6:00 pm.
  ➢ **HW 5** due is Monday at 6:00 pm. (Start asap)

What will be Covered Today?

❖ An Announcement
  ➢ Show and Tell Day
❖ Dynamic Web Pages vs. Static Web Pages
❖ Content Management Systems (Wordpress)
❖ Server-Side Programming Languages (PHP)

Show and Tell Day @ **April 17 & 24**

❖ There are many topics you can present in the Show and Tell day. The following are just some suggestions but you can pick your own idea as well.

➢ **Embedding Instagram Posts and Feeds**

➢ **Create a Google Custom Search Engine**

➢ **Creating and Embedding a Google Map**

➢ **Embedding Built-in projects in JavaScript such as:**

✓ **TypeitJS** https://typeitjs.com/

✓ **Readmore** http://jedfoster.com/Readmore.js/

✓ **Charts and Maps** https://www.amcharts.com/javascript-maps/

✓ **Carousel** https://www.sitepoint.com/building-3d-rotating-carousel-css-javascript/

❖ The total time will be **120 minutes** and it means about **12 presentations**.

❖ So let me know by email if you want to present for the class asap.

Content Management Systems

❖ As a part of HW5, you are asked to install WordPress, to build a website.

❖ This is different from what we have been doing so far.

❖ WordPress is called a content management system.

❖ Websites that are made by HTML/CSS called "static" web pages.

Static Web Pages

❖ "Static" means "unchanging".

❖ Static web pages are written entirely in HTML.

❖ Static web pages are files in a directory.

❖ Once a static web page is built, it looks exactly the same until a web developer updates it.

Content Management Systems
How they work?

❖ In a Content Management System, users write only the content of a web page not the elements such as header, footer etc.

❖ This content is stored in a database so that it can be used in multiple places on a website

❖ When you want to create a web page, a **server-side programming language** retrieves the data from the database, combines it with fixed layouts, and creates the web page.

Why Content Management Systems?

❖ Length of time required to update websites
  ➢ Updates had to be written by a content owner but then passed to a programmer to implement
❖ Expense of updating websites
  ➢ Highly paid programmers required for even minor changes
❖ Risk of content owners damaging layout or functionality while updating
  ➢ Content owners may not know HTML very well

CMS Uses Server-Side Languages

❖ Content Management Systems are written in server-side web programming languages.
❖ Server-side languages run on the web server (e.g., DreamHost's computers)
❖ The server-side language used by WordPress is PHP

Content Management Systems

❖ 44% of websites use a Content Management System

❖ The three most popular CMS are

➢ WordPress (60.3% market share)

➢ Joomla (6.2% market share)

➢ Drupal (4.3% market share)

❖ All three of these CMS are written in PHP.

Source: w3techs.com

CMS Uses PHP

❖ A content management system (CMS) stores the parts of a web page (text, images) in a database...

❖ ... and PHP pulls them together into web pages

➢ It Makes it easier to display the same information in more than one place.

Dynamic Web Pages

❖ "Dynamic" means "changing."

❖ To create a dynamic web page, you need to use a web programming language.

❖ Web programming languages come in two types:

➢ server-side which runs on the web server (web host)

➢ client-side which runs in the web browser (individual users' computers)

Server-Side Web Programming Languages

❖ Top four as of March 2019, as measured by W3Techs.com

Language	Maker	% of Market
PHP	Open source	83%
ASP.NET	Microsoft	15%
Java	Oracle	3%
ColdFusion	Adobe	0.6%

Server-side vs. Client-side

❖ The other type of web programming language is client-side.

❖ "Client" – an old word for a personal computer

❖ "Client-side" means "installed on the user's computer."

❖ The only major client-side web programming language is JavaScript.

❖ JavaScript is installed inside every web browser.

❖ We will work with JavaScript in Lab 9.

Advantages of Server-Side Programming Languages

❖ Advantages:

➢ They work with all browsers and screen readers

➢ User can't turn them off

➢ They can access resources (like databases) that are accessible from the web server, but not open to the public

Server-Side Programming Languages

❖ Disadvantages
  ➢ Most are expensive
    ✓ Except for PHP, which is open source.
  ➢ All processing occurs on the web server
    ✓ The work of processing is not shared by the user's computer
    ✓ **Loading the web page may take longer because of the distance between the web browser and the web server**
    ✓ You can not see the actual programming by using "Source" tab in the menu of web browsers.
    ✓ You will see the resultant html codes.

PHP Key Facts

❖ PHP stands for **PHP: Hypertext Preprocessor**
❖ Runs on the web server (DreamHost), not in a web browser
❖ Filename must end in .php, otherwise the PHP code will not be processed
❖ PHP code and HTML code can be combined
❖ **Lab 8 Challenge example**
  ➢ Finds the current date and time.
  ➢ Prints it to the screen
  ➢ Wishes you a good morning or day, depending on the time

Finding the PHP Code

❖ In a PHP file, PHP and HTML are usually combined. Within the file, PHP code begins with

<?php

and end with

?>

Examining the Lab 8 Challenge PHP Code

❖ The PHP code given in Lab 8 challenge gives you examples of common programming language features, including:

Variables (anything starting with $)

Functions (time(), date())

Commands (echo " … ")

Comparison operator (==)

Lets experience some basic PHP coding!

Detailed Example

```php
<?php
$t = time();
echo( date( "g:ia T D F d Y." , $t) );
?>
```

Time(); function that returns the current date and time on the server

$t = time();** set **$t to the current time
Echo: print to the screen
Date: return a formatted value of a time variable

g:ia T D F d Y. Is the format

Digging In to the Date Format

❖ date("g:ia T D F d Y.",$t));
❖ g: 12 hour date format without leading zeroes
❖ i: minutes with leading zeroes
❖ a: am or pm
❖ T: time zone abbreviation
❖ D: three-letter representation of the day
❖ F: full textual representation of the month
❖ d: day of month, 2 digits with leading zeroes
❖ Y: four-digit year
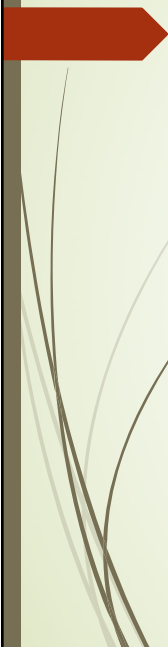
Comments in PHP

There are two kinds of comments:
➢ Single line comment using //
➢ Multi-line comments using /* … */

In-Class Activity

➢ Go to Piazza and open the given URL
➢ There are 5 exercises.
➢ Do them with your friends around you as a group work.

https://www.w3schools.com/php/exercise.asp?filename=exercise_syntax1

Review from Last Lecture

Where the alt text can be placed for background images?

A. In the background-alt property
B. In the background-text property
C. Background images have no alt text
D. In the <img> tag

What is NOT an advantage of using web fonts as opposed to system fonts?

A. More choices for web designers
B. Easier to achieve a unique look
C. All users see the same fonts
D. Faster load times
E. C and D

For next time

Enjoy the lab tomorrow!