

CS50 Section Week 8

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Agenda

Static vs Dynamic Webpages

PHP: Syntax & Examples

SQL

Model-View-Controller (MVC)

Pset 7 Distro Walkthrough

PHP & SQL

PHP – PHP Hypertext Processor (recursive name!)

SQL – Structured Query Language

PHP is a server-side scripting language used to make webpages dynamic.

SQL is a language used to interact with databases.

HTML

Recall: HTML is used to structure webpages.

However, on its own HTML is static.

HTML does have features that make it possible to pair it with languages like PHP to make it dynamic.

HTML & PHP: Quick Example

Let's take a look at the HTML/PHP form that you worked with last week.

hello.html laid out a static form

hello.php rendered the dynamic result of that form.

Let's take a look at the code.

PHP at a high-level

- Server-side scripting language
 - To the user, pages still “seem” dynamic – nothing changes in front of their eyes after a page has loaded. All dynamic content is server generated.
- PHP is a programming language because it has logic: if, else, loops
- Much higher level than C – lots of powerful features built in!

Embedded PHP

<?php ?>

<? ?>

<?php= ?>

<?= ?>

Variables & Arrays

```
$var = 0;
```

```
$name = "Samuel";
```

```
$arr = [0,1,2,3,4];
```

```
$assoc_array = [$fn=> "Sam", $ln =>  
    "Green"];
```


Communicating with PHP

GET vs POST

“action” field in HTML form.

`$_GET` and `$_POST` are associative array
super globals.

`$_GET[“name”]` accesses the “name” index.

PSet 5 in PHP

```
<?php
function load($dictionary)
{
    global $size;
    global $table;
    foreach(file($dictionary) as $word)
    {
        $table[$word] = true;
    }
}

?>
```

Key Points: PHP

- PHP is wrapped – begins with `<? php` and ends with `?>`.
 - This lets you stick PHP inside any HTML file!
 - Also lets you have separate PHP files and pass data to a different PHP file containing HTML.
- **GET** method and **POST** method
 - GET request is passed via the URL
 - POST is “hidden” inside the HTTP body.
 - Understand this difference: typical quiz question!

PHP: foreach loop

- Awesome thing in PHP – loops that figure out for themselves how long to run.
- syntax: `foreach($group as $individual)`
- This lets you write logic controlled function without worrying about figuring out running length.
- Under the hood, PHP is doing the heavy lifting on its own.

PHP Arrays

- PHP introduces the concept of **associative arrays**.
- In C, arrays were set up using integers to correspond to indices.
- In PHP, we can associate a “key” with a “value.”
 - Example: `$array = [“foo” => “bar”, “bar” => “Queen’s Head”, “num” => 3000];`
- No fixed typing for arrays!
- Indexing: `$array[“foo”] → “bar”`

SQL: Structured Query Language

UPDATE

`“UPDATE table SET col1 = val,”`

INSERT

`INSERT INTO table (col1, col2,...) VALUES (val1, val2,...)”`

SELECT

`SELECT col FROM table WHERE col = “identifier”`

DELETE

`DELETE FROM table WHERE col = “identifier”`

MODEL-VIEW-CONTROLLER

MVC is a web-programming pattern that helps us keep website back-ends organized.

In broad terms: a **MODEL** like a SQL database or table is manipulated by a **CONTROLLER**, like a PHP script, which creates **VIEWS** to manage how a user interacts with the application.