EECS 485
(Web Databases & Information Systems)

Discussion

Jan 15th, 2010

PA1

- Apache Port vs. SSH port
- Due tonight
- Grades will be on Ctools

PA2

- Will be on Ctools tonight
- Due on Monday, January 25, 2010.
- Start early
- You'll have a database "groupname" and all privileges to your database; *password = secret string*

PHP and MySQL

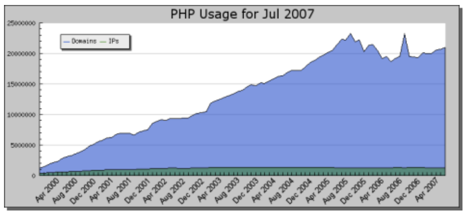
PA2

PHP

- PHP Hypertext Preprocessor
- Now very widely used for websites (Including Facebook)
- Designed to work in the world of HTML
- Has a lot of community support

Usage Stats

- http://www.php.net/usage.php



PHP is Cross Platform

- Runs on almost any Web server on several operating systems
  - Apache, Microsoft IIS, Caudium, Netscape Enterprise Server
  - UNIX (HP-UX, OpenBSD, Solaris, Linux), Mac OSX, Windows NT/98/2000/XP/2003
- One of the strongest features is the wide range of supported databases
  - Adabas D, dBase,Empress, FilePro (read-only), Hyperwave,IBM DB2, Informix, Ingres, InterBase, FrontBase, mSQL, Direct MS-SQL, MySQL, ODBC, Oracle (OCI7 and OCI8), Ovrimos, PostgreSQL, SQLite, Solid, Sybase, Velocis,Unix dbm

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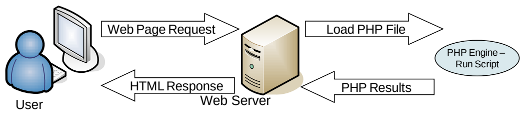
PHP

- Is run-time interpreted by the web server; execution is done before delivering content to the client



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PHP

- PHP is meant to be invoked inline with content
- Page "escapes" into and out of a regular html document
- File extension is .php (was .php3 for version 3)
- Initial use was control flow and simple scripting

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PHP Basics

- Building blocks of the PHP language
  - Syntax and structure
  - Variables, constants and operators
  - Data types and conversions
  - Decision making IF and switch
  - Interacting with the client application (HTML forms)

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Getting Started

```
<html>
<head>
<title>My First PHP Page</title>
</head>
<body>
<?php
echo "<h1>It Works!</h1>";
?>
</body>
</html>
```

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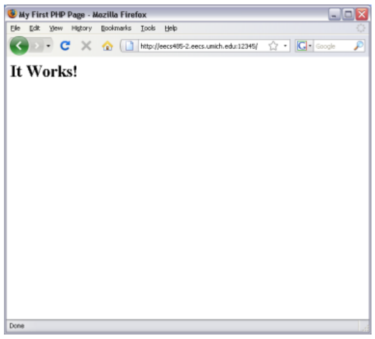
My First PHP Page - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://eecs485-2.eecs.umich.edu:12345/
Google
Done

It Works!

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Syntax and Structure

- Syntax somewhat similar to C and Perl
- All scripts between `<?php` CODE `?>`
- Line separator: `;` (semi-colon)
- Code block: `{ //code here }` (brace brackets)
- Comments are created using:
  - `// single line quote`
  - `/* Multiple line block quote */`
- Precedence
  - Enforced using parentheses
  - E.g. `$sum = 5 + 3 * 6; // would equal 23`
  - `$sum = (5 + 3) * 6; // would equal 48`

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Variables

- Prefixed with a `$`
- Assign values with `=` operator
- Example: `$author = "Malcolm Gladwell";`
- No need to define type
- Variable names are <u>case sensitive</u>
  - `$author` and `$Author` are different

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Example

```
<html> <body>
<?php
$sum = 5 + 3 * 6;
$Sum = "sum";
/*this is a comment
Also this */
echo "<h1>$Sum = $sum</h1><br>";
?>
</body> </html>
```

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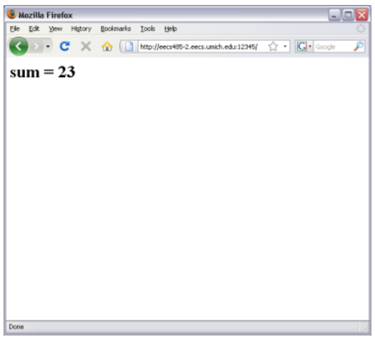
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http://eecs485-2.eecs.umich.edu:12345/
Google
Done

sum = 23

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Constants

- Constants are special variables that cannot be changed
- Use them for named items that will not change
- Created using a define function
  - `define('milestokm', 1.6);`
  - Used without $
  - `$km = 5 * milestokm;`

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Example

```
<html> <body>
<h1>
<?php
define('pound2kg', 0.45);
$kg = 185 * pound2kg;
echo "Weight = " . "$kg" . "kg";
?>
</h1>
</body> </html>
```

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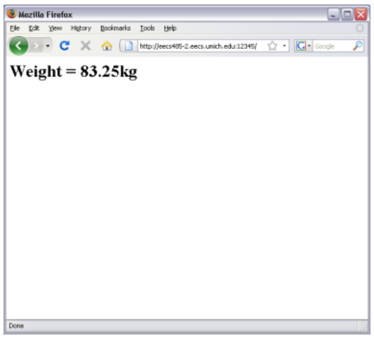
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http://eecs485-2.eecs.umich.edu:12345/
Done

Weight = 83.25kg

Operators

- Standard mathematical operators
  - +, -, *, / and % (modulus)
- String concatenation with a period (.)
  - `$car = "SEAT" . " Altea";`
  - `echo $car;` would output "SEAT Altea"
- Basic Boolean comparison with "=="
  - Using only = will overwrite a variable value
  - Less than < and greater than >
  - <= and >= as above but include equality

Data Types

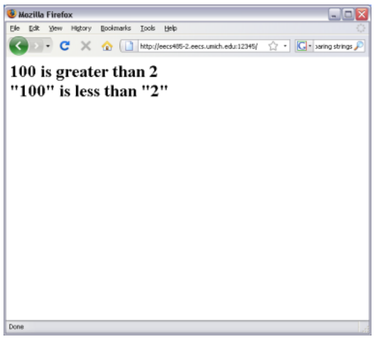
- PHP is **not** strictly typed
  - Different to JAVA where all variables are declared
- A data type is either text or numeric
  - PHP automatically figures out each variable's type
  - PHP can use variables in an appropriate way automatically
  - E.g.
    - **`$rate = 0.175; /* Rate is numeric */`**
    - **`echo $rate * 100 . "%"; //outputs "17.5%"`**
    - $rate is converted to a string for the purpose of the echo statement

IF / Switch statements

```
If (Boolean expression) {
   // one or more commands if true
} elseif (Boolean expression){
   // one or more commands if true
} else {
   // one or more commands otherwise
}
switch($choice) {
   case 0: {/* do things if choice equal 0 */ }
   case 1: {/* do things if choice equal 1 */ }
   default: {/* do if of the above */}
}
```

Example

```
<html><body><h1>
<?php
$a = 100;
$b = 2;
If($a > $b ){
  echo "$a is greater than $b<br>";
}
if(strcmp($a,$b) < 0){
  echo "\"$a\" is less than \"$b\"";
}
?>
</h1></body> </html>
```


Mozilla Firefox
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http://eecs485-2.eecs.umich.edu:12345/
Done

100 is greater than 2
"100" is less than "2"

Loop

```
for ( initialize a counter; conditional
  statement; increment a counter){
 do this code;
}


while (expression) {
  do this code;
}
```

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Example

```
<html> <body>
<?php
$price = 10;
echo "<table border=\"1\" >";
echo "<tr><th>Q</th><th>Price</th></tr>";
for( $c = 10; $c <= 100; $c += 10) {
   echo "<tr><td> $c </td>";
   echo "<td>" . $price * $c . "</td></tr>";
}
echo "</table>";
?>
</body> </html>
```

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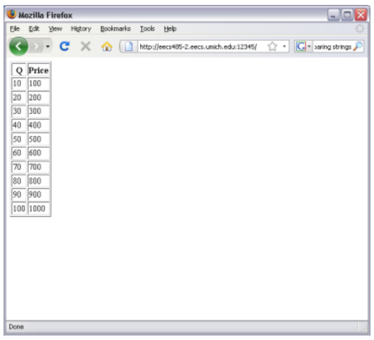
Mozilla Firefox
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http://eecs485-2.eecs.umich.edu:12345/
paring strings
Done

Q	Price
10	100
20	200
30	300
40	400
50	500
60	600
70	700
80	800
90	900
100	1000

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MySQL

```
/usr/bin/mysql
     -u username -ppassword db_name
```

- *username*: groupname
- *password*: secret string
- *db_name*: groupname

```
mysql>_
```

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MySQL

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| vahed              |
+--------------------+
2 rows in set (0.00 sec)
```

```
mysql> show tables;
+-----------------+
| Tables_in_vahed |
+-----------------+
| example         |
| test            |
+-----------------+
2 rows in set (0.00 sec)
```

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Connecting to Database

- The first thing you must do before you can do any work at all is to connect to the MySQL database

```
$user="username";
$password="password";
$database="database";
$con = mysql_connect(localhost,$user,$password);
```

- PHP source code is processed by the server before being sent to the browser so it is impossible for the user to see the script's source.

- Don't forget `mysql_close();`

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Selecting The Database

- Now you must then select the database you wish to use.
- This must be a database to which your username has access. (In PA2, your groupname)

```
@mysql_select_db($database, $con) or
      die('Could not connect: ' . mysql_error());
```

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Executing Commands

- Now you can begin executing commands on the server

```
$query="SELECT * FROM contacts";

mysql_query($query, $con);
```

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Outputting Data

- Assign a variable to the command

```
$query="SELECT * FROM contacts";
$result=mysql_query($query);
```

- Count the rows

```
$num=mysql_numrows($result);
```

- Setup a loop

```
$i=0;  while ($i < $num) {  CODE ;  $i++; }
```

- Assign the data to variables

```
$first=mysql_result($result,$i,"first");
```

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Example

```
<html> <body><?php
$query = "insert into example values (2, 'hello')";
//mysql_query($query, $con);
$query="SELECT * FROM example";
$result=mysql_query($query);
$num=mysql_numrows($result);
$i=0;
while ($i < $num) {
$id=mysql_result($result,$i,"id");
$data=mysql_result($result,$i,"data");
echo "<h1>$id, $data</h1>";
$i++;
}
mysql_close();
?></body> </html>
```

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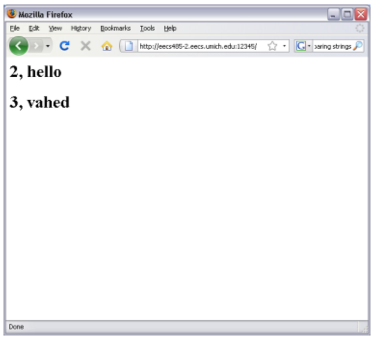
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http://eecs485-2.eecs.umich.edu:12345/
Done

2, hello

3, vahed

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Formatting Output

```
<html> <body><table border=\"1\" >";
<?php
$query="SELECT * FROM example";
$result = mysql_query($query);
$num = mysql_numrows($result);
for ($i = 0; $i < $num ; ++$i) {
      $id=mysql_result($result,$i,"id");
      $data=mysql_result($result,$i,"data");
     echo "<tr><td> $id </td><td> $data </td></tr> ";
}
mysql_close();
?>
</table></body> </html>
```

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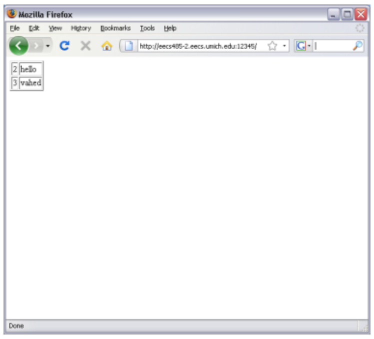
Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://eecs485-2.eecs.umich.edu:12345/
Done

2	hello
3	vahed

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Input Data: Forms

- Forms are parts of an HTML document that users can fill in. They may include buttons, checkboxes, text areas, file selections.
- What users fill in are called the controls.
- Controls are submitted to PHP in the form of variables. Each control in the HTML form becomes a variable in PHP.

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Form

- <form> admits a method= attribute.
- Determines the http method by which the form is submitted to the script.
  - method="get“ (default)
  - method="post"
- When the form is submitted the http request line that follows will have the method GET or POST.

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method="get"

- If you use GET, the form data is transmitted by appending it to the URL of the script. Google's Web search does it that way, for example.
- Advantage: you can bookmark the form.
- Problem: there is a limit of 1024 chars for the URL, therefore only limited information can be transmitted in this way.

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method="post"

- If you use post, the user agent sends the form as a POST message to the server.
- The data is sent in the body of the http request.
- Thus it can be as long as you want.

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the type= attribute of <input/>

- This attribute can only take the following values

– ‘text’	enter text
– ‘password’	enter text, but don't echo on screen
– ‘checkbox’	enter checks on boxes
– ‘radio’	check one select
– ‘submit’	press to submit form
– ‘reset’	reset form
– ‘file’	upload file (can only be done with POST)
– ‘hidden’	hidden form data, not shown
– ‘image’	image map submission, not covered further
– ‘button’	a button

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control name and PHP variable

- When the form is passed to the PHP script named with the action= of the the <form> the controls are accessible as PHP variables.
- If *name* is the name of the control, and if the method is POST, the control is read as the variable $_POST['*name*'].
- If *name* is the name of the control, and if the method is GET, the control is read as the variable $_GET['*name*'].

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Example

```
<html>
<body>
<form action="insert.php" method="GET">
First Name: <input type="text" name="first"><br>
Surname: <input type="text" name="last"><br>
<input type="Submit" value="click">
</form>
</body>
<html>
```

```
<html>
<body>
<?php
print "Hello ";
print $_GET['first'] . " " . $_GET['last'] ."<br>";
?>
<a href ="index.html">Click to go back</a>
</body>
<html>
```

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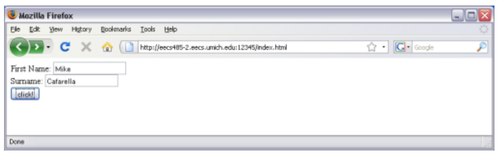
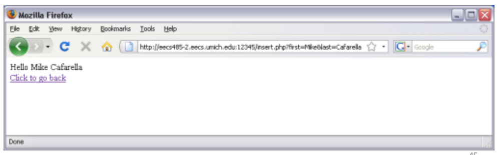


http://eecs485-2.eecs.umich.edu:12345/index.html

First Name: Mike
Surname: Cafarella
click!



http://eecs485-2.eecs.umich.edu:12345/insert.php?first=Mike&last=Cafarella

Hello Mike Cafarella
Click to go back

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