PHP Workshop

Outline

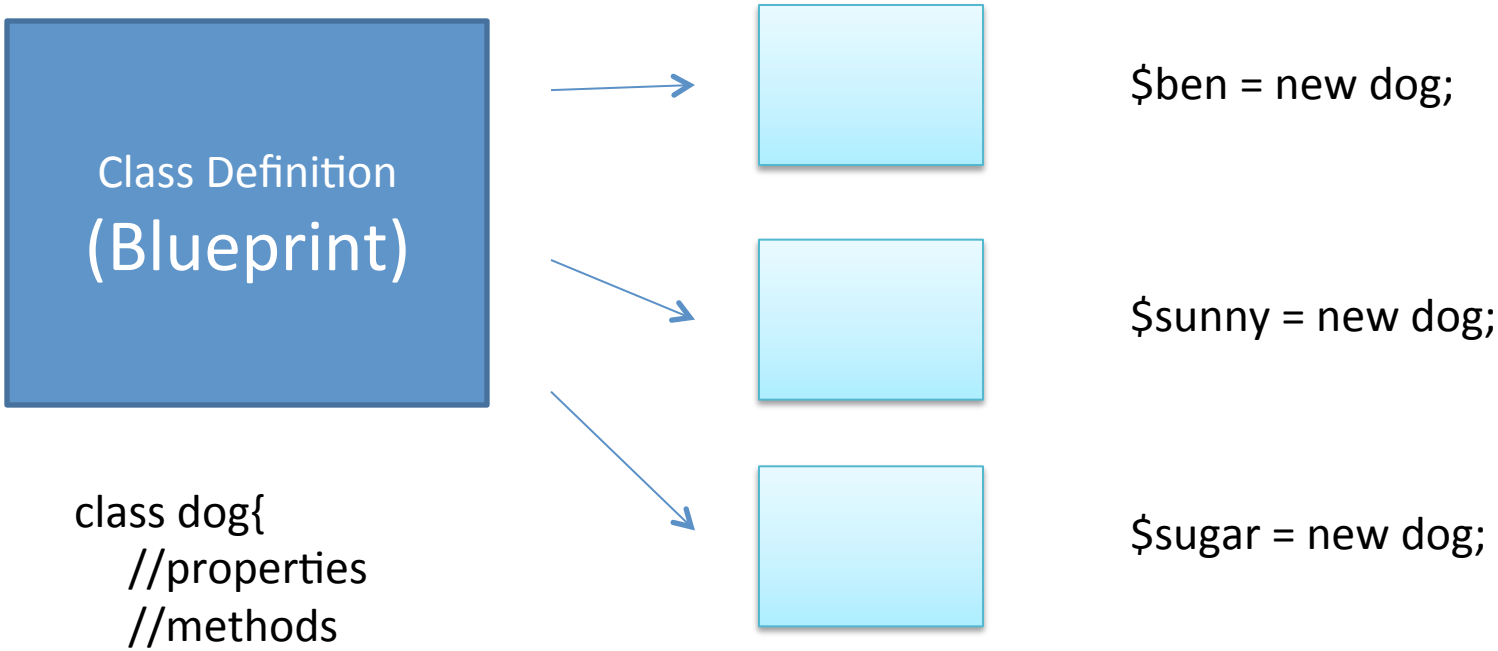
- PHP Classes (Brief Overview)
- Accessing MySQL via the mysqli class
  - Connecting to MySQL
  - Querying the MySQL
  - Retrieving results from MySQL
- DEMO
- Notes for Assignment 4

Classes and OOP

(Basic Conceptual Overview)

Define the blueprint of your own class (object)

Instantiate instances of your object and use them in your program




```
class dog{
    //properties
    //methods
}
```

Reading: http://codular.com/introducing-php-classes

Defining Classes

```
class dog {
        //Properties
        public $name;
        public $breed;

        //Methods
        public function bark(){
                echo $this->name . " barked… Woof!";
        }

        //Constructor (optional)
        public __construct($nameOfDog){
                $this->name = $nameOfDog;
        }
}
```

Working with Classes

```
$sugar = new dog("Sugar"); //pass "Sugar" to constructor

$sugar->breed = "German Shepherd"; //set breed property equal to "German Shepherd"

echo $sugar->name . " is a " . $sugar->breed;
        >>Sugar is a German Shepherd

$sugar->bark(); //call the "bark" method
        >>sugar barked... Woof!
```

Mysqli Class

The mysqli class is the main class you can use to:

- Set up a connection to the MySQL database
- Send SQL queries to the MySQL database (CRUD Operations)
- Read results (if any) from the query
- Check for any error connecting to or executing SQL queries on a MySQL database

Reading: http://www.w3schools.com/php/php_ref_mysqli.asp

1. Connecting to DB with Mysqli

```
//Instantiate mysqli object & create connection
$db = new mysqli("localhost", "username", "password", "database_name");

//Check for any errors connecting
If($db->connect_errorno){
        //There was an error connecting to the database. Put code here on what you would like to about it like…
        echo "Error: " . $db->connect_error;
}else{
        //Put code here when you connect to the database.
}
```

Example: post.php, get.php, get2.php

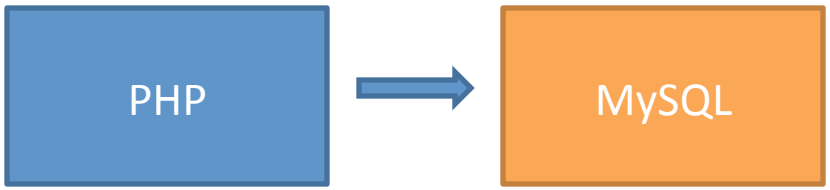
2. Querying the DB via Mysqli (Single Query)

```
//Construct some query (it's just a string)
$query_noresult = "INSERT INTO …";
$query_result = ''SELECT * FROM DIVECUST";
```

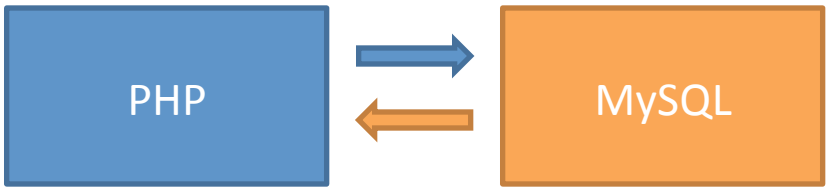
---

2 Types of Queries

No Result Queries
INSERT, DELETE, CREATE, etc…



Result Queries
SELECT



Example: post.php, get.php, get2.php

3. Retrieving results from MySQL

(No Result Queries)

```
If($db->query($query_noresult) === TRUE){
        //Your query worked, yay
}
```

Note about INSERT SQL queries

- You can use **$db->insert_id;** to retrieve the AUTO_INCREMENT ID generated for an inserted record. You do NOT need to run a separate query to get that ID value.

3. Retrieving results from MySQL

(Result Queries)

```
if($result = $db->query($query_result)){

        echo $result->num_rows;

        while($row = $result->fetch-array()){
                echo $row['Name'];
        }

        $result->free();
}
```

Returns a **mysqli_result** object

Column or Attribute name returned from query

Free up the result from memory

Example: get.php, get2.php

3.1. Result Modes

You can return results in 2 ways (result modes)

$db->query($query_result, **MYSQLI_STORE_RESULT**)

- Return entire results to memory
- Can use $result->data_seek(index) to jump to different rows in your result set (i.e. after you loop through the results, do $result->data_seek(0); to go to starting point to loop again)
- **Default** (this is the executed mode if you don't specify a "result mode")

$db->query($query_result, **MYSQLI_USE_RESULT**)

- MySQL "spoon feeds" the rows to server running PHP each time a fetches a row
- Useful if expecting a large dataset (too large to put in memory of PHP server)
- Must free results in order to run another query ($result->free();)

Example: get.php, get2.php

4. Closing Connections

When you are done using the database, make sure to close the connection…

$db->close();

Before DEMO time

You may need to know

- Super Global Variables
- Passing Variables
- JSON
- AJAX
- Security Issues (SQL Injection and XSS)
- Import & Export DB

Super Global Variables

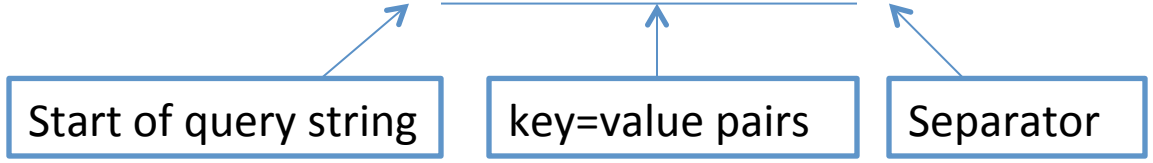
There are predefined “Super Global” variables that are made available to you through the PHP runtime that you can use within your PHP code.

Super Global	Content
$_SERVER	Contains info about the web server environment such as Server Name, Request Method, Document Root, etc.
$_GET	Contains any GET variables in the URL query string
$_POST	Contains any POST variables submitted via a form post submission
$_COOKIE	Contains any HTTP Cookie Info
$_FILES	Contains information on POST file uploads
$_SESSION	Contains information about any variables registered in a session (if created)

There are some other super globals but these are the main ones…

Passing Variable to PHP (GET)

www.site.com/index.php?query=ischool&lang=en




```
<?php
    $var1 = $_GET['query'];
    $var2 = $_GET['lang'];
?>
```

Note- certain characters cannot be put in the URL (such as space character). You will to "**URL Encode**" those special characters. For example, a space character will show up as a %20 in the URL query string.

Reference: http://www.url-encode-decode.com/

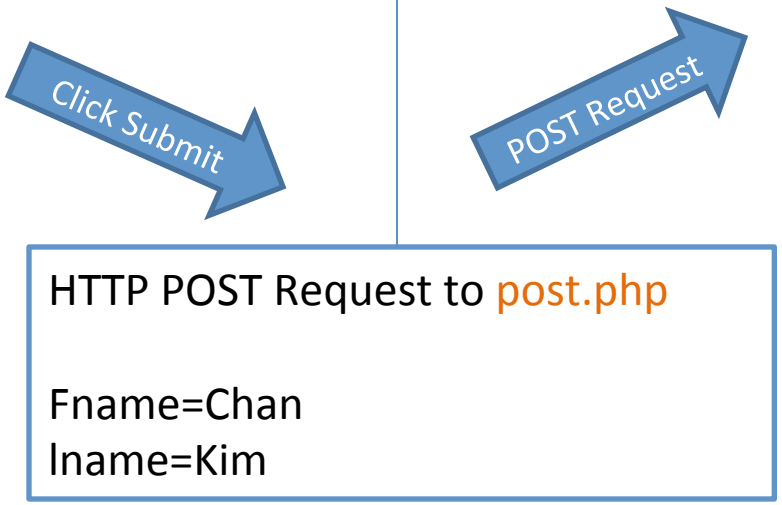
Passing Variables to PHP (POST)

Your form html or php file

```
<form method="post" action="post.php">
    <input type="text" name="fname"/>
    <input type="text" name="lname" />

    <input type="submit" value="Submit"/>
</form>
```

The post.php file that will process the request (which could be the same as the posting file)

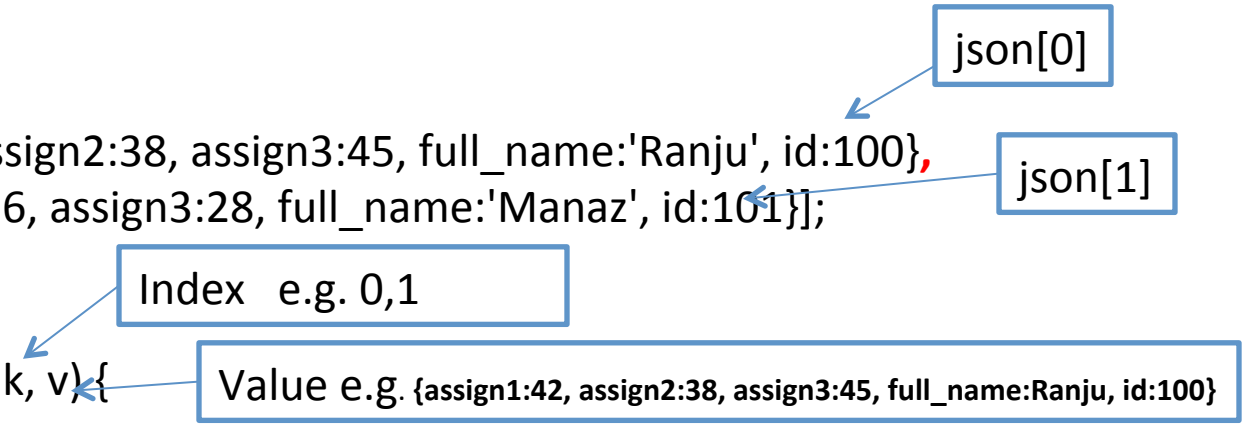
```
<?php
    $var1 = $_POST['fname'];
    $var2 = $_POST['lname'];
?>
```



JSON

- JSON: JavaScript Object Notation
- JSON is syntax for storing and exchanging text information. Much like XML. JSON is smaller than XML, and faster and easier to parse.

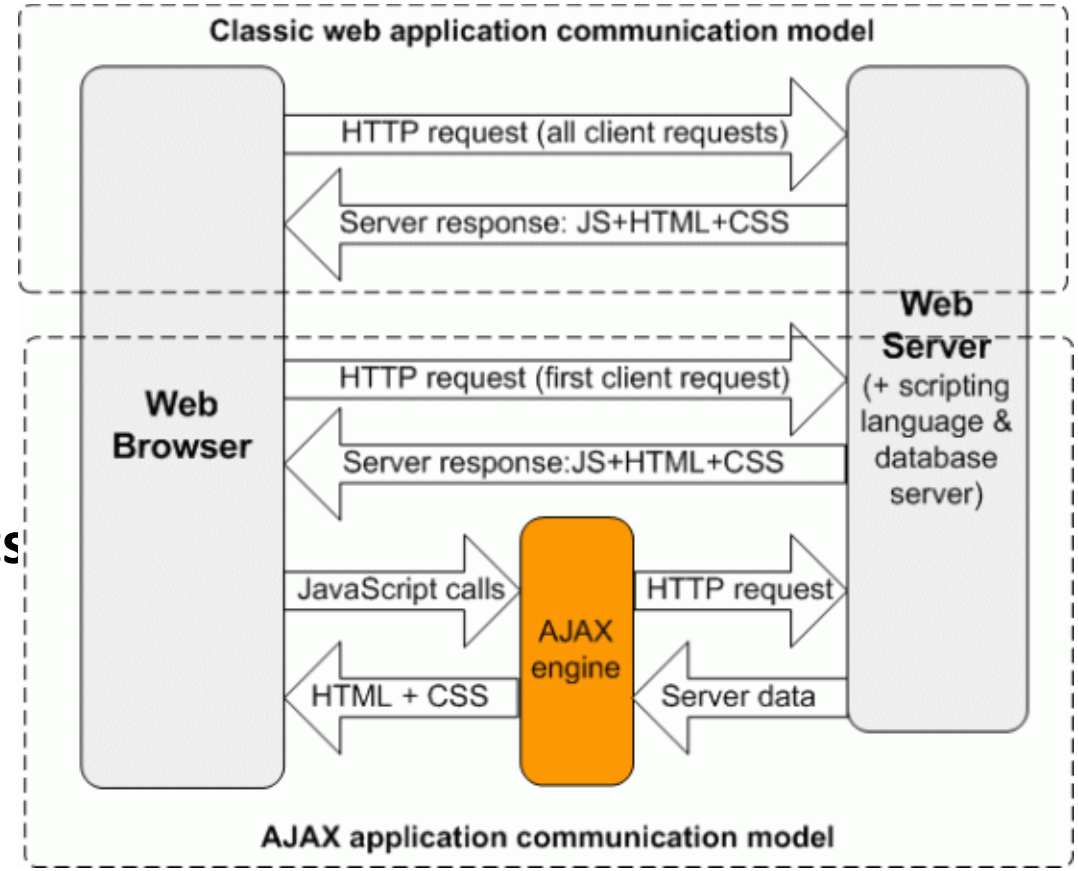
```
var Name = { "firstName":"John" , "lastName":"Doe" }
Name.firstName
>> John

json= [ {assign1:42, assign2:38, assign3:45, full_name:'Ranju', id:100},
{assign1:29, assign2:26, assign3:28, full_name:'Manaz', id:101}];

$.each(json, function(k, v){

        myTable +=  v.id+v.full_name+v.assign1+v.assign2+v.assign3; });
```



AJAX

- AJAX: Asynchronous JavaScript and XML.
- AJAX is **not** a new programming language, but a new way to use existing standards.

- AJAX is the art of **exchanging data with a server**, and **updating parts of a web page** – without reloading the whole page.



Reference: http://stackoverflow.com/questions/1510011/how-does-ajax-work

Security (SQL Injection and XSS)

HTTP POST Request

fname=Arian
lname=*SQL Code*

In your PHP…

A malicious user can submit (POST or GET)

- SQL Code → SQL Injection Attack, or
- HTML tags that could be anything from a form to a <script> tag → XSS Attack.

```
$query = "INSERT INTO table (fname, lname)";
$query .= "VALUES ('{$_POST['fname']}', '{$_POST['lname']}');"
```

Preventing SQL Injection & XSS

To prevent this, you have to *sanitize* your input variables and make sure you *output safe HTML*

```
//Sanitize → SQL Injection
$sanitized_variable = $db->real_escape_string($_POST['lname']);

//Output Safe HTML → XSS
echo htmlspecialchars($row['lname']);
```

You can try to *sanitize* for HTML tags by using strip_tags($_POST[]) before you input the value into the database. Just make sure that is what you want to do…

Example: post.php

Additional Security Tip

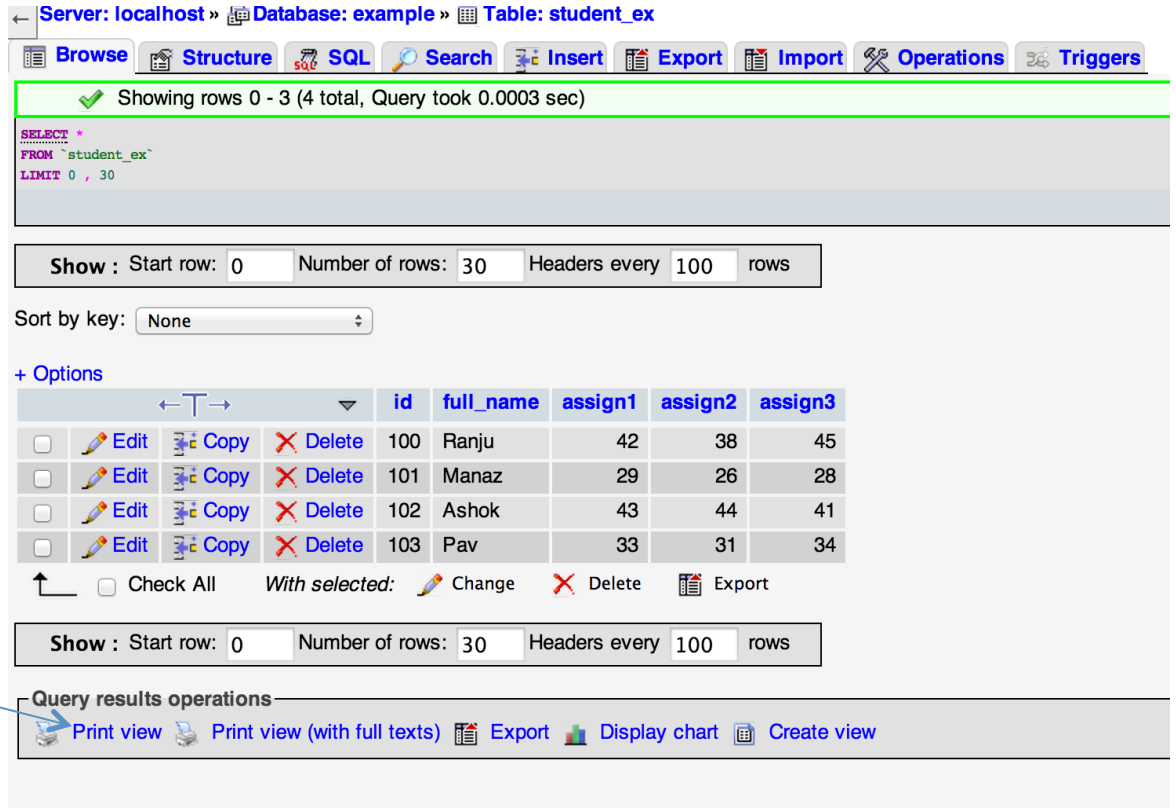
Don't type out the username and password when instantiating mysqli. Instead, create a special PHP file that *defines* certain constants outside the root of your website which you can then *include* and use in your PHP code.

define(SQL_PASSWORD, "mypassword");

Notes for assignment 4

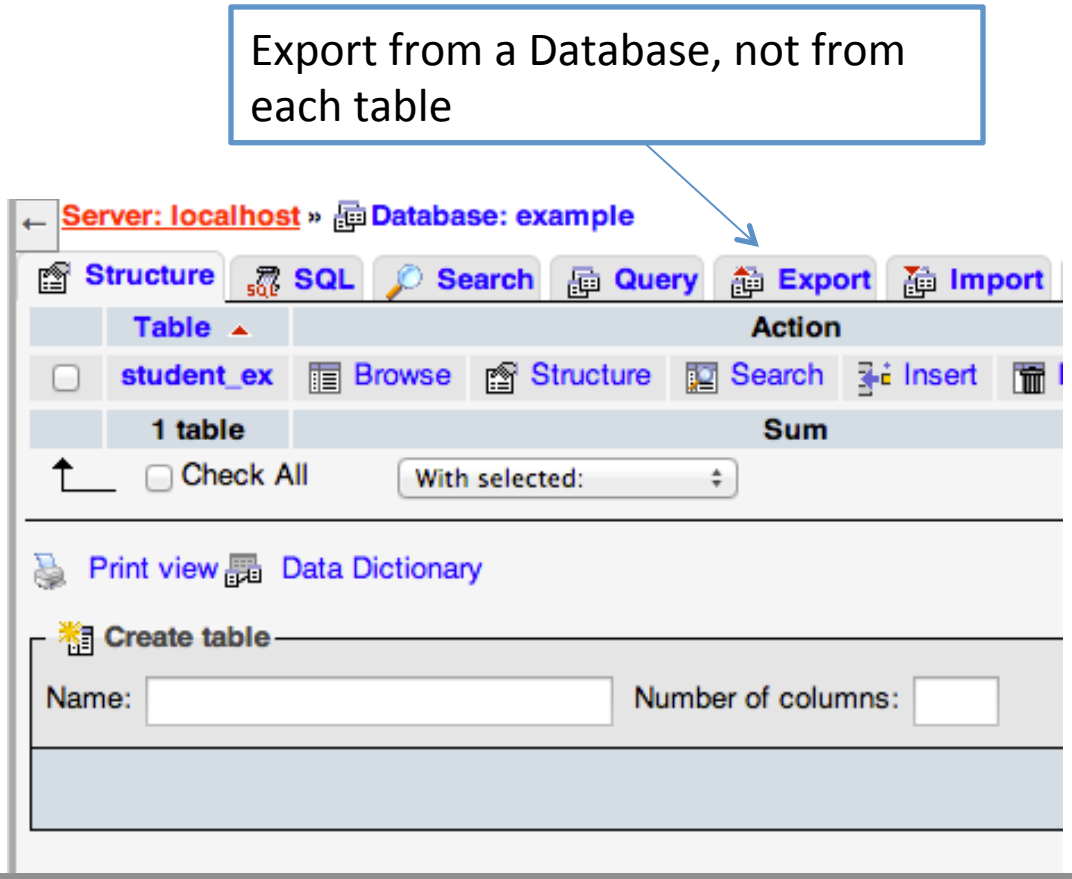
- Sample reports

Print View of each table



Notes for assignment 4

- Please send your DB dump file for TAs testing



Reading: http://www.howtogeek.com/howto/mysql/backup-mysql-database-to-a-file/

Demo Time

example.php : main page
student.sql : DB dump
configure.php : configuration of DB

get.php : php codes for get example
get2.php : php codes for get example 2
post.php : php codes for post example
script.js : AJAX call
style.css : css file

Student_ex

Id
full_name
Assign1
assign2
assign3