MySQL Databases

Using a Database with your website

Russell Newman
rn2@ecs.soton.ac.uk

Today

- Introducing the MySQLi library.
- SELECTing.
- INSERT, UPDATE and DELETE.
- Escaping text.

MySQLi

- Library for connecting MySQL databases in PHP.
- Use OO-Mode.

Getting Connected

You will need:

- Server hostname.
- DB username.
- DB password.
- DB schema.

Getting Connected

```php
<?php

// Instantiate a new MySQLi instance and connect
$mysqli = new mysqli('hostname', 'username',
'password', 'schema');

// Check that the connection succeeded
if($mysqli->connect_error) {
    die("Could not connect to MySQL");
}
var_dump($result);
```

Running Queries

Send a valid SQL query to the server through the MySQLi object.

MySQLi returns a Result object.

```php
<?php
// Run a SELECT query on the database
$result = $mysqli->query("SELECT * FROM game");
```

Reading Results

Run fetch_object() on the Result object to iterate over the results.

```
// Run a SELECT query on the database
$result = $mysqli->query("SELECT * FROM game");

// Iterate over each result.
// Each row is returned as an object.
while($game = $result->fetch_object()) {
    // Write out the name of the person.
    echo $game->name;
}
```

A Classes Trick

Normally, `$result->fetch_object()` returns an anonymous StdClass object.

It can also populate your own classes.

Benefits: better typing and class functions.

```
// Fetch each result as a game object.
while($game = $result->fetch_object("game")) {
    // Write out the name of the person.
    echo $game->name;
}
```

Other Queries

Use concatenation to create your queries.

```
// Name of developer to INSERT
$name = "Firaxis Games";

// Insert the row.
$result = $mysqli->query("INSERT INTO developers
(name) VALUES ('$name')");

// $result will be TRUE if the INSERT succeeded.
// or FALSE if it failed.
var_dump($result);
```

Other Queries

- UPDATE and DELETE are done in exactly the same way.
- Use $_GET to feed variables to queries.

A Debugging Technique

Is a query not behaving?

Echo the entire query, check it over and test it.

Escaping

SQL relies on apostrophes and other characters for its syntax.

So we “escape” these characters in queries.

```
-- Un-escaped. This will fail on syntax.
SELECT * FROM game WHERE name = 'Sid Meier's Pirates!';

-- Escaped with a \. This will succeed.
SELECT * FROM game WHERE name = 'Sid Meier\'s Pirates!';
```

Escaping

MySQLi's real_escape_string() function will escape text for you!

```php
// This variable has a ' that breaks SQL syntax
$name = "Sid Meier's Pirates!";

// Run it through the SQL sanitiser.
$name = $mysqli->real_escape_string($name);

// This would now echo Sid Meier\'s Pirates!.
// Safe for SQL!
echo $name;
```

A read-only DB for you to try

Host	comp2203.ecs.soton.ac.uk
Username	testData
Password	K0w2tj0hdHGYf2pjgUYG920
Schema name	testData

Reference

- www.php.net/mysqli
  PHP MySQLi reference.
- Beware outdated PHP/MySQL Reference
  We are using mysqli in a modern, OO way.
  Lots of the internet doesn't do this yet.

Apps

Windows: HeidiSQL
We've not tried this, but it looks alright...

Mac: SequelPro
Our favourite SQL app for Mac.

Mac/Windows: MySQL Workbench
Fully-featured, but more complex.

All the above are better than PHPMyAdmin!