Lesson #8

Databases and Web Applications with PHP and MySQL

What is MySQL? (Main Characteristics)

Database system used on the web.

Database system that runs on a server.

Ideal for both small and large applications.

Very fast, reliable, and easy to use.

Uses standard SQL.

Compiles on a number of platforms.

Free to download and use.

Developed, distributed, and supported by Oracle Corporation.

Named after co-founder Monty Widenius's daughter: My.

What is MySQL? (Main Characteristics)

The data in a MySQL database are stored in tables. A table is a collection of related data, and it consists of columns and rows.

Databases are useful for storing information categorically. A company may have a database with the following tables:

Employees

Products

Customers

Orders

What is MySQL? (Main Characteristics)

PHP combined with MySQL are cross-platform (you can develop in Windows and serve on a Unix platform).

MySQL is the standard database system for web sites with large volumes of both data and end-users (like Facebook, Twitter, and Wikipedia).

Another great thing about MySQL is that it can be scaled down to support embedded database applications.

Interaction between PHP and MySQL can be made three ways: MySQLi procedural, MySQL object-oriented, and PDO (PHP Data Objects). We will use the first one.

Setting Up MySQL

MySQL databases have a standard setup. They are made up of a database, in which is contained tables.

Each of these tables is quite separate and can have different fields even though it is part of one database.

Each table contains records which are made up of fields.

If you have PHPMyAdmin (or a similar program) installed you can just go to it to log in with your user name and password. If not you must do all your database administration using PHP scripts (or other server-side language).

Creating a Table

Before you can do anything with your database, you must create a table.

A table is a section of the database for storing related information. In a table you will set up the different fields which will be used in that table.

Because of this construction, nearly all of a site's database needs can be satisfied using just one database.

The database itself must be created beforehand. For that you use the Database in your hosts' control panel or you ask your systems administrator.

Connecting to a Database

```
<?php
$servername = "localhost";
$username = "username";
$password = "password";

// Create connection
$conn = mysqli_connect($servername, $username, $password);
// Check connection
if (!$conn) {
   die("Connection failed: " . mysqli_connect_error());
}
```

Creating a Table

```
<?php
// sql to create table
$sql = "CREATE TABLE MyGuests (
id INT(6) UNSIGNED AUTO_INCREMENT PRIMARY KEY,
firstname VARCHAR(30) NOT NULL,
lastname VARCHAR(30) NOT NULL,
email VARCHAR(50),
reg_date TIMESTAMP
)";

?>
```

Inserting Data into a Table

```
<?php
$sql = "INSERT INTO MyGuests (firstname, lastname, email)
VALUES ('John', 'Doe', 'john@example.com')";

if (mysqli_query($conn, $sql)) {
   echo "New record created successfully";
} else {
   echo "Error: " . $sql . "<br>" . mysqli_error($conn);
}
?>
```

Select Data from a Table

```
<?php
$sql = "SELECT id, firstname, lastname FROM MyGuests";
$result = $conn->query($sql);

if ($result->num_rows > 0) {
   // output data of each row
   while($row = $result->fetch_assoc()) {
      echo "id: " . $row["id"]. " - Name: " . $row["firstname"]. " " . $row["lastname"]. "<br>";
   }
} else {
   echo "0 results";
}
?>
```

Delete Data from a Table

```php
<?php
// sql to delete a record
$sql = "DELETE FROM MyGuests WHERE id=3";

if (mysqli_query($conn, $sql)) {
    echo "Record deleted successfully";
} else {
    echo "Error deleting record: " . mysqli_error($conn);
}
?>
```

Update Data from a Table

```
<?php
$sql = "UPDATE MyGuests SET lastname='Doe' WHERE id=2";

if (mysqli_query($conn, $sql)) {
   echo "Record updated successfully";
} else {
   echo "Error updating record: " . mysqli_error($conn);
}
?>
```

MySQL Limits

MySQL provides a LIMIT clause that is used to specify the number of records to return.

The LIMIT clause makes it easy to code multi page results or pagination with SQL, and is very useful on large tables. Returning a large number of records can impact on performance.

Assume we wish to select all records from 1 - 30 (inclusive) from a table called "Orders". The SQL query would then look like this:

```
$sql = "SELECT * FROM Orders LIMIT 30";
```

When the SQL query above is run, it will return the first 30 records.

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The database contains 1 table: top_vote.

top_vote :

artist [varchar(255)], title [varchar(255)], cover [text], plus [int(11)], minus [int(11)], score [int(11)], last_vote [varchar(16)]

Josh Sumibcay	Seabird [2011]	http://s20.postimg.cc/ja1wu6u8t/sumibcay.jpg	8	0	8	2018-10-06 21:21

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Now for the results of the top 50 rated songs:

```
$query =
"SELECT ,`top_vote`.`cover`,`top_vote`.`artist`,`top_vote`.`
title`, `top_vote`.`plus`, `top_vote`.`minus`,
`top_vote`.`score` FROM top_vote WHERE
(`top_vote`.`score` > 0) ORDER BY `top_vote`.`score` DESC,
`top_vote`.`last_vote` ASC LIMIT 0,50";

 $result =  mysqli_query($query);
```

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```
<?php
for ($i=1;$i<=50;++$i)
{
        echo "<div align='center' style='float:left;text-align:center;margin:5px 13px 15px 13px;width:166px;height:210px;font-size:1.2em;line-height: 105%;'>";
        echo "<span style='font-size:1.0em;'># $i</span><br>";
        $pos = $i;
        $line = mysql_fetch_array($result);
        $cover = $line["cover"];
        echo "<img src=";
        echo $cover;
        echo " width='166' height='166' style='border-radius:15px;border:1px solid red;'><div style='text-transform:uppercase;font-weight:400;position:relative;top:-1px;'>";
        echo $line["artist"];
        echo "</div><div style='position:relative;top:-3px;font-weight:300;'>";
        echo $line["title"];
        echo "</div></div>";
}
?>
```

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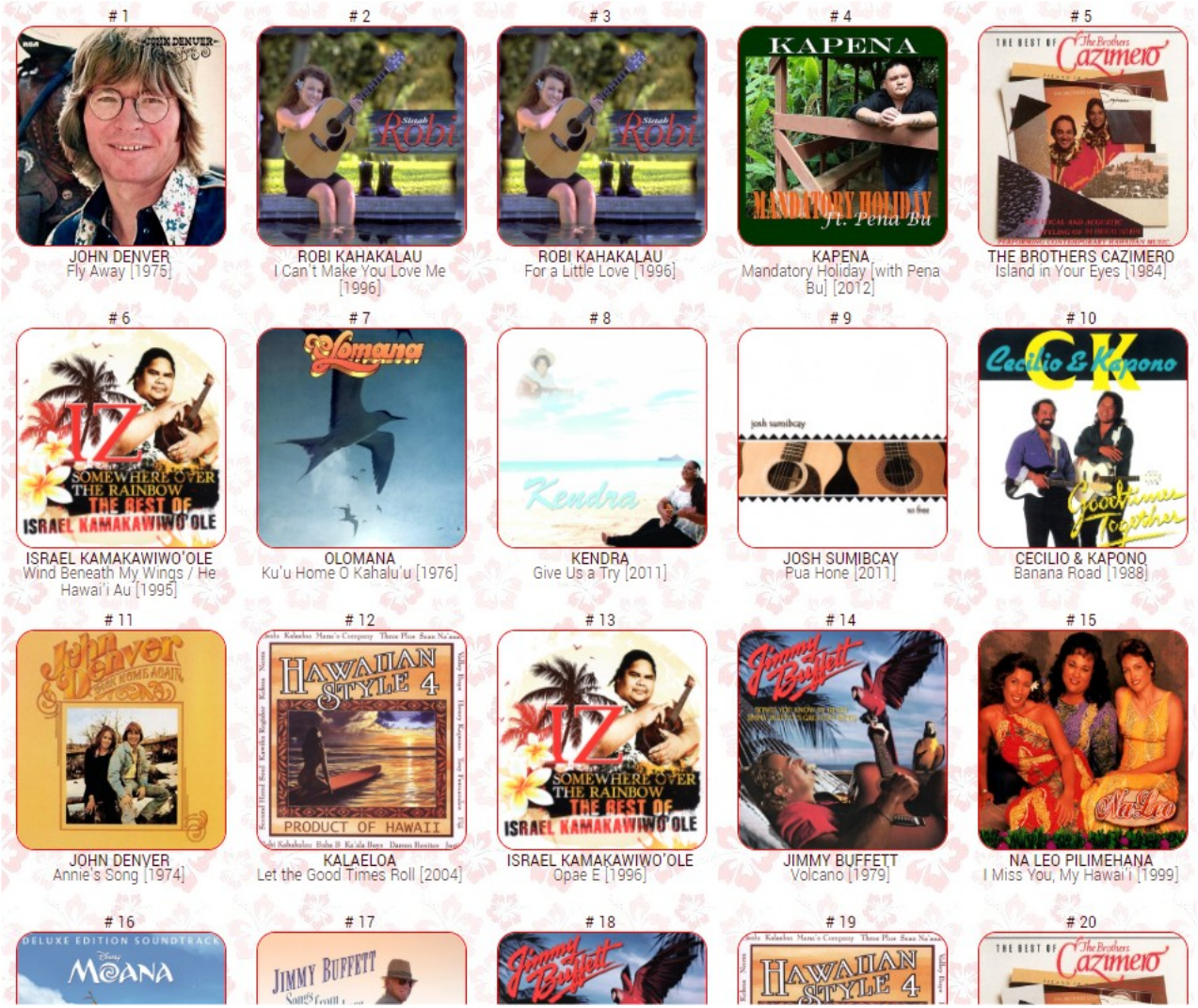
The result:



End of Lesson