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| **BESE 16-A/B** | **CS340 Web Technologies** | **Dr Naima Iltaf** |

**Lab 9 – Introduction to MySQL**

**MySQL:**

MySQL is currently the most popular open source database server in existence. On top of that, it is very commonly used in conjunction with PHP scripts to create powerful and dynamic server-side applications. MySQL is also highly scalable, which means that it can grow with your website. In fact, in a comparison of several databases by eWEEK, MySQL and Oracle tied for both best performance and for greatest scalability. MySQL is developed, distributed, and supported by Oracle Corporation

**What is a database?**

A database is a structured collection of records or data stored in a computer system and organized in such a way that it can be quickly searched and information can be rapidly retrieved. The SQL in MySQL stands for Structured Query Language. This language is loosely based on English and is also used on other databases such as Oracle and Microsoft SQL Server. It is designed to allow simple requests from a database via queries.

A query is a question or a request. We can query a database for specific information and have a record set returned. Following is an example of a query:

SELECT title FROM publications WHERE author = 'Charles Dickens';

A MySQL database contains one or more tables, each of which contain records or rows. Within these rows are various columns or fields that contain the data itself.

**Querying a MySQL Database with PHP**

The reason for using PHP as an interface to MySQL is to format the results of SQL queries in a form visible in a web page. As long as you can log into your MySQL installation using your username and password, you can also do so from PHP. You will create query strings that are passed to MySQL. When MySQL returns its response, it will come as a data structure that PHP can recognize. Further PHP commands can retrieve the data and format it for the web page.

**The Process:**

The process of using MySQL with PHP is:

* Connect to MySQL.
* Select the database to use.
* Build a query string.
* Perform the query.
* Retrieve the results and output it to a web page.
* Repeat Steps 3 to 5 until all desired data have been retrieved.
* Disconnect from MySQL.

**Connecting to MySQL:**

<?php

$con = mysqli\_connect("localhost","root","1234");

if (!$con)

{

die('Could not connect: ' . mysql\_error());

}

else

{

echo "Connected with MySQL";

}

mysql\_close($con);

?>

This example runs PHP’s mysql\_connect function, which requires three parameters, the hostname, username, and password of a MySQL server. Upon success it returns an identifier to the server; otherwise, FALSE is returned. The second line uses if statement with the die function, which quits from PHP with an error message if $con is not TRUE.

The die message explains that it was not possible to connect to the MySQL database, and, to help identify why this happened, includes a call to the mysql\_error function. This function outputs the error text from the last called MySQL function.

**Creating a Database:**

<?php

$con = mysqli\_connect("localhost", "root", "1234");

if (!$con)

die("Unable to connect to MySQL: " . mysql\_error());

$sql="CREATE DATABASE my\_database";

if (mysqli\_query($con,$sql))

{

echo "Database my\_database created successfully";

}

else

{

echo "Error creating database: " . mysqli\_error($con);

}

?>

**Creating a Table:**

<?php

$con = mysqli\_connect('localhost','root','1234');

if (!$con)

die("Unable to connect to MySQL: " . mysql\_error());

$database="my\_database";

if(mysqli\_select\_db($con, $database))

{

$query = "CREATE TABLE cats (

id SMALLINT NOT NULL AUTO\_INCREMENT,

family VARCHAR(32) NOT NULL,

name VARCHAR(32) NOT NULL,

age TINYINT NOT NULL,

PRIMARY KEY (id)

)";

$result = mysqli\_query($con,$query);

if (!$result)

die ("Database access failed: " . mysqli\_error($con));

}

else

echo "Error in connecting to database." . mysqli\_error($con);

mysqli\_close($con);

?>

**Describing a Table:**

<?php

$con = mysqli\_connect('localhost','root','1234');

if (!$con)

die("Unable to connect to MySQL: " . mysql\_error());

$database="my\_database";

mysqli\_select\_db($con, $database);

$query = "DESCRIBE cats";

$result = mysqli\_query($con,$query);

if (!$result)

die ("Database access failed: " . mysqli\_error());

$rows = mysqli\_num\_rows($result);

echo "<table><tr> <th>Column</th> <th>Type</th>

<th>Null</th> <th>Key</th> </tr>";

for ($j = 0 ; $j < $rows ; ++$j) {

$row = mysqli\_fetch\_row($result);

echo "<tr>";

for ($k = 0 ; $k < 4 ; ++$k)

echo "<td>$row[$k]</td>";

echo "</tr>"; }

echo "</table>";

?>

**Inserting data into Table:**

<?php

$con = mysqli\_connect('localhost','root','1234');

if (!$con)

die("Unable to connect to MySQL: " . mysql\_error());

$database="my\_database";

mysqli\_select\_db($con, $database);

$query = "INSERT INTO cats VALUES(NULL, 'Lion', 'Leo', 4)";

$result = mysqli\_query($con,$query);

if (!$result)

die ("Database access failed: " . mysql\_error());

else

echo "Data inserted<br>";

$query = "INSERT INTO cats VALUES(NULL, 'Cheetah', 'Charly', 3)";

$result = mysqli\_query($con,$query);

if (!$result)

die ("Database access failed: " . mysql\_error());

else

echo "Data inserted";

?>

**Retrieving Data:**

<?php

$con = mysqli\_connect('localhost','root','1234');

if (!$con)

die("Unable to connect to MySQL: " . mysqli\_error());

$database="my\_database";

mysqli\_select\_db($con, $database);

$query = "SELECT \* FROM cats";

$result = mysqli\_query($con,$query);

if (!$result) die ("Database access failed: " . mysqli\_error());

$rows = mysqli\_num\_rows($result);

echo "<table border='2'><tr> <th>Id</th> <th>Family</th>

<th>Name</th><th>Age</th></tr>";

for ($j = 0 ; $j < $rows ; ++$j) {

$row = mysqli\_fetch\_row($result);

echo "<tr>";

for ($k = 0 ; $k < 4 ; ++$k) echo "<td>$row[$k]</td>";

echo "</tr>"; }

echo "</table>";

?>

**Updating Data:**

<?php

$con = mysqli\_connect('localhost','root','1234');

if (!$con)

die("Unable to connect to MySQL: " . mysqli\_error());

$database="my\_database";

mysqli\_select\_db($con, $database);

$query = "UPDATE cats SET name='Charlie' WHERE name='Charly'";

$result = mysqli\_query($con,$query);

if (!$result)

die ("Database access failed: " . mysqli\_error());

else

echo "Record Updated..";

?>

Rerun the code of retrieving data to view the updated record.

**Deleting Data:**

<?php

$con = mysqli\_connect('localhost','root','1234');

if (!$con)

die("Unable to connect to MySQL: " . mysqli\_error());

$database="my\_database";

mysqli\_select\_db($con, $database);

$query = "DELETE FROM cats WHERE name='Leo'";

$result = mysqli\_query($con,$query);

if (!$result)

die ("Database access failed: " . mysql\_error());

else

echo "Record deleted..";

?>

Rerun the code of retrieving data to view the changes.

**Lab Tasks**

1. **Create a form for adding and deleting data using MySQL.**



**Solution:**

<?php

$con = mysqli\_connect("localhost", "root", "1234");

**if** (!$con)

**die**("Unable to connect to MySQL.. " . mysqli\_error());

$sql="CREATE DATABASE IF NOT EXISTS Contacts";

**if**(!(mysqli\_query($con,$sql)))

{

**die**("Unable to create database.. " . mysqli\_error());

}

$database="Contacts";

**if**(!(mysqli\_select\_db($con, $database)))

{

**die**("Unable to select database.. " . mysqli\_error());

}

**if**(**isset**($\_POST['insert']))

{

$first=$\_POST['first'];

$last=$\_POST['last'];

$phone=$\_POST['phone'];

$mobile=$\_POST['mobile'];

$fax=$\_POST['fax'];

$email=$\_POST['email'];

$web=$\_POST['web'];

$query = "CREATE TABLE IF NOT EXISTS Contacts (

First VARCHAR(30) NOT NULL,

Last VARCHAR(32) NOT NULL,

Phone VARCHAR(32) NOT NULL,

Mobile VARCHAR(30) NOT NULL,

Fax VARCHAR(32) NOT NULL,

Email VARCHAR(32) NOT NULL,

Web VARCHAR(32) NOT NULL

)";

$result1 = mysqli\_query($con,$query);

**if** (!$result1)

**die** ("Database access failed: " . mysqli\_error($con));

$query = "INSERT INTO Contacts VALUES('$first','$last','$phone','$mobile','$fax','$email','$web')";

mysqli\_query($con,$query);

}

**else if**(**isset**($\_POST['delete']))

{

$name=$\_POST['del\_name'];

$query = "DELETE FROM Contacts WHERE First='$name'";

$result = mysqli\_query($con,$query);

**if** (!$result)

**die** ("Database access failed: " . mysqli\_error());

}

$query = "SELECT \* FROM Contacts";

$result = mysqli\_query($con,$query);

**if** (!$result)

**die** ("Database access failed: " . mysqli\_error());

$rows = mysqli\_num\_rows($result);

**echo** "<table border='1'><tr> <th>First</th> <th>Last</th> <th>Phone</th> <th>Mobile</th> <th>Fax</th>

<th>Email</th><th>Web</th></tr>";

**for** ($j = 0 ; $j < $rows ; ++$j) {

$row = mysqli\_fetch\_row($result);

**echo** "<tr>";

**for** ($k = 0 ; $k < 7 ; ++$k) **echo** "<td>$row[$k]</td>";

**echo** "</tr>"; }

**echo** "</table>";

mysql\_close();

?>

<form action=*"sqltest.php"* method=*"post"*>

<br>

<table>

<tr><td>First Name: </td><td><input type=*"text"* name=*"first"*></td></tr>

<tr><td>Last Name: </td><td><input type=*"text"* name=*"last"*></td></tr>

<tr><td>Phone: </td><td><input type=*"text"* name=*"phone"*></td></tr>

<tr><td>Mobile: </td><td><input type=*"text"* name=*"mobile"*></td></tr>

<tr><td>Fax: </td><td><input type=*"text"* name=*"fax"*></td></tr>

<tr><td>E-mail: </td><td><input type=*"text"* name=*"email"*></td></tr>

<tr><td>Web: </td><td><input type=*"text"* name=*"web"*></td></tr>

<tr><td colspan=*"2"* align=*"center"*><input type=*"Submit"* value=*"Insert Record"* name=*"insert"*></td></tr>

</table>

<br>

<table>

<tr><td>Delete Name: </td><td><input type=*"text"* name=*"del\_name"*></td></tr>

<tr><td colspan=*"2"* align=*"center"*><input type=*"Submit"* value=*"Delete Record"* name=*"delete"*></td></tr>

</table>

</form>