Topic 9: Databases connectivity with Web Based Applications.

Contents

Learning outcomes

Upon completing this topic, you should be able to:

1. Understand front -end web-based application.
2. Understand back-end support to Web-based Applications.
3. Use Databases connectivity technologies
4. Understand how the challenges of different database connectivity.

9.1. Introduction

9.1.1. Introduction to MySQL Databases.

MySql databases allows us to create database driven web application with the following capabilities:

- Add records to database through web forms.
- Retrieve information from database to web pages.
- Update database records.
- Delete records from database through web pages

MySQL is the most popular open-source database system and the data in MySQL isstored in database objects called tables.

A table is a collection of related data entries and it consists of columns and rows. Databases are useful when storing information that are related.

For example, a company may have a database with the following tables: Employees, Products, Customers and Orders.

Database Tables

A database most often contains one or more tables. Each table is identified by a name (e.g. students or lecturer).

Tables contain records (rows) with data. The following is an example of a student's table.

first name	Lastname	Address	City
Kyalo	Ochieng	123	Nairobi
Juma	Wamala	234	Kisumu
Kipchoge	Steven	432	Nakuru
Kimani	Onyango	987	Mombasa

Figure 1: Students Table

9.1.2. Database Queries

A query is a question or a request.

We query a database for specific information and have a record set returned.

Example.

SELECT LastName **FROM** students

output

Lastname

```
Ochieng

Wamala

Steven

Onyango
```

9.2. PHP MySQL Connect to a Database

Creating a Connection to a MySQL Database server Before you can access data in a database, you must create a connection to the database. In PHP, this is done with the mysql_connect() function.

Syntax

mysql_connect(servername,username,password);

Parameter description is as explained here below: -

- **servername**

  Optional. Specifies the server to connect to. Default value is "localhost:3306"

- **username**

  Optional. Specifies the username to log in with. Default value is “root” or the name

  of the user that owns the server process.

- **password**
  Optional. Specifies the password to log in with. Default is " "

Example

In the following example we store the connection in a variable ($con) for later use in the script. The "die" part will be executed if the connection fails:

```
<?php

$con = mysql_connect("localhost","peter","abc123");

if (! $con)

{

die (’Could not connect: ’ . mysql_error()); }

// some code

?>
```

Closing a Connection

The connection will be closed automatically when the script ends. To close the connection before, use the **mysql_close() function:**

```
<?php

$con = mysql_connect("localhost","peter","abc123");

if (!$con)

{
```

```
die(’Could not connect: ’ . mysql_error());
}
// some code
mysql_close($con);
?>
```

9.2.1. Selecting MySql Database

After creating connection to database server next is to select the databse to use. This is done by use of **mysql_select_db () function**.

Parameters:

- Database name.
- Connection handle

```
$mydb= mysql_select_db($db,$myconn);
if(!$mydb)
{ //
echo "Database not selected";
} else
echo "Database Musau selected<br>";
```

9.2.2. Querying From a Table

To select records from a given table in the dataset, then use **mysql_query () function.**

Example

```
$result = mysql_query("SELECT * FROM customer");
if(!$result) {
echo "table not selected";
}
else
echo "Table selected";
```

9.2.3. Insert Data from a Form into a Database table.

The INSERT INTO statement is used to add new records to a database table.

Syntax

It is possible to write the INSERT INTO statement in two forms.

- The first form doesn’t specify the column names where the data will be inserted, only their values:

  INSERT INTO table_name VALUES (value1, value2, value3,...).

- The second form specifies both the column names and the values to be inserted:

  INSERT INTO table_name (column1, column2, column3,...) VALUES (value1, value2, value3,...)

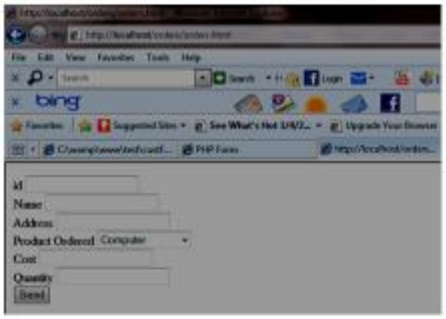
Example

First create an HTML form that can be used to add new records to the "Students" table.

Here is the HTML form:

```
<body>
<form name="orders" action="student.php" method="post">
id <input type="text" name=" StudID"><br>
Name <input type="text" name="StudName"><br>
Address <input type="text" name="StudAddress"><br>
Product <select name="prod">
<option> Choose a Course </option>
<option>Computer </option>
<option>Phone <option>
<option>TV<option>
<option>Camera</option>
</select><br>
Cost <input type="text" name=" prodCost"><br>
Quantity <input type="text" name=" qty"><br>
<input type="submit" value="Send">
</form>
</body>
```

The form should appear as shown here below.



Product Ordered Computer

Figure 2: Form Interface.

- When a user clicks the submit button in the HTML form in the example above, the form data is sent to "student.php". The "student.php" file connects to a database, and retrieves the values from the form with the PHP $_POST variables. Then, the mysql_query() function executes the INSERT INTO statement, and a new record will be added to the "students" table.

Here is the "student.php" page:

```
<?php require_once('conn.php'); //call the connection code first
//receive values from form and assign them to variables
$id=$_POST['studID'];
$names=$_POST['studNames'];
$addr=$_POST['studtAddress'];
$prod=$_POST['prod'];
$cost=$_POST['prodCost'];
$qty=$_POST['qty'];
//execute insert statement
$mydata="insert into customer values('$id','$names','$addr','$prod','$cost','$qty')";
if(!mysql_query($mydata))
{
echo "Record not added into the table";
}
else echo "Recorded added successfully!";
?>
```

9.2.4. Selecting Data From a Database Table and display in web page.

The SELECT statement is used to select data from a database.

Syntax

SELECT column_name(s) FROM table_name

To get PHP to execute the statement above we must use the mysql_query() function.

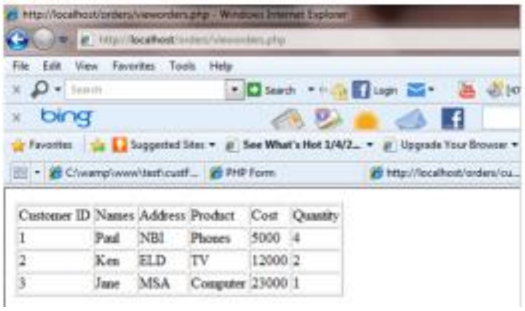
This function is used to send a query or command to a MySQL connection.

Example

The following example selects all the data stored in the "student" table (The * character selects all the data in the table):

```
<?php require_once(’conn.php’);
$result = mysql_query("SELECT * FROM customer");
echo "<table border=1>";
echo "<tr>";
echo "<td>"."Customer ID". "</td>";
echo "<td>"."Names"."</td>";
echo"<td>"."Address"."</td>";
echo "<td>"."Product"."</td>";
echo "<td>"."Cost"."</td>";
echo "<td>"."Quantity"."</td>";
echo "</tr>";
//fetch the record per row and loop to fetch all the records
while($row=mysql_fetch_array($result))
{
echo"<tr>";
echo "<td>".$row[’custid’]."</td>";
echo "<td>".$row[’Names’]."</td>";
echo "<td>".$row[’Address’]."</td>";
echo "<td>".$row[’Product’]."</td>";
echo "<td>".$row[’Cost’]."</td>";
echo "<td>".$row['Quantity']."</td>";

echo "</tr>";

}

echo "</table>";

?>
```

Results will appear as shown below



http://localhost/orders/vieworders.php - Windows Internet Explorer
http://localhost/orders/vieworders.php
File Edit View Favorites Tools Help
Search
Login
bing
Favorites
Suggested Sites
See What's Hot 1/4/2...
Upgrade Your Browser
C:\wamp\www\test\custf...
PHP Form
http://localhost/orders/cu...

Customer ID	Names	Address	Product	Cost	Quantity
1	Paul	NBI	Phones	5000	4
2	Ken	ELD	TV	12000	2
3	Jane	MSA	Computer	23000	1

Figure 2: The page using Select statement.

9.2.5. Update Data

In a Database The UPDATE statement is used to update existing records in a table.

Syntax

```
UPDATE table_name

SET column1=value, column2=value2,...

WHERE some_column=some_value
```

Note: Notice the WHERE clause in the UPDATE syntax. The WHERE clause specifies which record or records that should be updated. If you omit the WHERE clause, all records will be updated! To get PHP to execute the statement above we must use the mysql_query() function. This function is used to send a query or command to a MySQL connection.

Example

The following code updates the student's table.

```
<?php

$con = mysql_connect("localhost","peter","abc123");

if (!$con)

{

die('Could not connect: ' . mysql_error());
}

mysql_select_db("my_db", $con);

mysql_query("UPDATE students SET Age = ’23’ WHERE FirstName = ’Kimani’

AND LastName = ’Onyango’");

mysql_close($con); ?>
```

9.2.6. Delete Data in a Database

The DELETE FROM statement is used to delete records from a database table.

Syntax

```
DELETE FROM table_name

WHERE some_column = some_value
```

Note: Notice the WHERE clause in the DELETE syntax. The WHERE clause specifies which record or records that should be deleted. If you omit the WHERE clause, all records will be deleted.

Example

The following example deletes all the records in the "students" table where LastName=’Onyango’.

```
<?php

$con = mysql_connect("localhost","peter","abc123");

if (!$con) { die(’Could not connect: ’ . mysql_error());

}

mysql_select_db("my_db", $con);

mysql_query("DELETE FROM students WHERE LastName=’Onyango’");

mysql_close($con);

?>
```

Summary

MySql databases allows us to create database driven web application with the following capabilities:

- Add records to database through web forms.
- Retrieve information from database to web pages.
- Update database records.
- Delete records from database through web pages

MySQL is the most popular open-source database system and the data in MySQL is stored in database objects called tables. A table is a collection of related data entries and it consists of columns and rows. Databases are useful when storing information that are related.

Revision Questions

1. Name the main operations that can be performed on the data on the database.

   Solution:

   Add records to database through web forms.

   Retrieve information from database to web pages.

   Update database records.

   Delete records from database through web pages

2. Explain the process of performing database connection.
3. Write a simple statement to delete all records from a database table called students with surname that begins with letter
4. Write a simple to add multiple values or records for four students.
5. Write a SQL statement to modify the record of a student marks from 60 to 70 for databases unit whose regno is J77-34-9089/2013.
6. Implement a web based online system that allows customers to order for products online. The system should have the following features: Provide the details of various products available e.g product name, available units (quantity), prices and photos. The products can be uploaded, edited and deleted from the system Register customers online before they can place order Allow registered customers to place orders online. Allow customers to make more enquiries by sending email from the web system.