

Lecture 08

PHP - Database handling

IT1100 Internet and Web technologies

Content

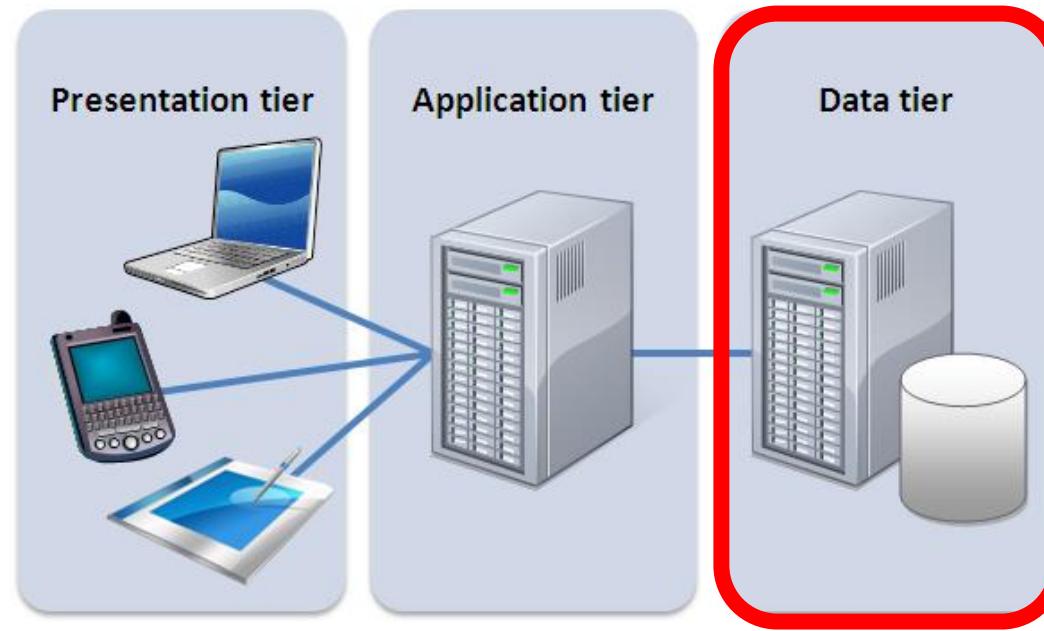
- Introduction
- The connection
- **C**reate
- **R**ead
- **U**pdate
- **D**elete

Introduction

- How to store data in software applications?
- What is the best method to store data in software applications?
- What is a Database?

Introduction

- **Database** is an external resource, hosted in a **database server**, and managed by a **DBMS**
- The database server is considered as a separate tier



Introduction

- **MySQL database server** is the de facto standard for PHP applications
- There are multiple ways to connect to a database using PHP
- PHP can perform **CRUD** operations on a database using SQL

Ways to connect to DB using PHP

1. MySQL extension

- Support only PHP versions before v7
- Procedural

2. MySQLi (improved)

- Support since PHP version 7
- Support both procedural and OOP
- Support prepared statements

3. PHP Data Objects (PDO)

- A lightweight, consistent interface for accessing databases in PHP.
- Support many DB servers
- Only OOP
- Support prepared statements

The connection - Configurations

- It is a good idea to keep the DB configurations in a dedicated file config.php

```
//The connection object  
//$con= new mysqli("Server", "UN", "PW", "DB");
```

```
$con=new mysqli("localhost","root","123","test");
```

The connection - Configurations

- Check for errors before continue

```
// Check connection
if ($con->connect_error)
{
    die("Connection failed: " . $con->connect_error);
}
```

The **connect_error** function returns the error description from the last connection error, if any. NULL if no error occurred.

The connection - Configurations

- The configuration file can be linked when needed
- index.php (or any other page/file)

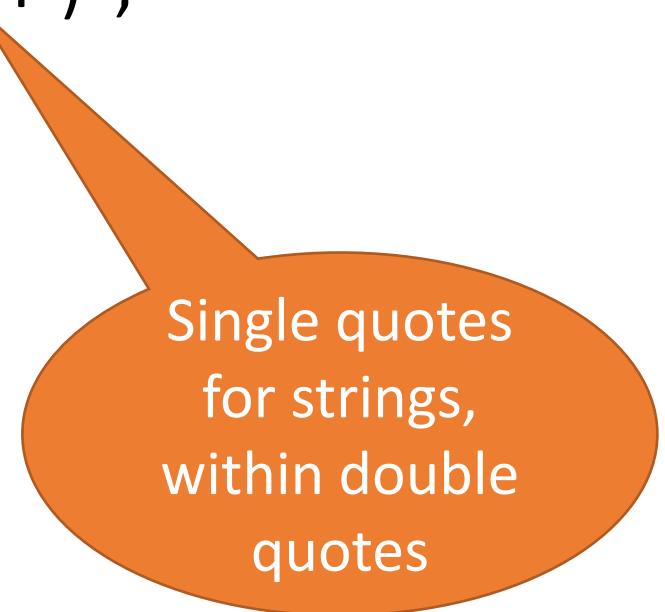
```
//Linking the configuration file  
require 'config.php';
```

- require is identical to include except upon failure it will also produce a fatal E_COMPILE_ERROR level error.
- It will halt the script whereas include only emits a warning (E_WARNING) which allows the script to continue.
- The require_once statement is identical to require except PHP will check if the file has already been included, and if so, not include (require) it again

Create - The INSERT statement

- To create data, an insert SQL statement is used

```
$sql= "INSERT INTO myTable(ID, Name) VALUES (1, 'SLIIT');
```



Single quotes
for strings,
within double
quotes

Execute the statement

- `$con->query($sql)`

- This returns a Boolean value to indicate the (un)successful execution of the statement in the DB server

Execute the statement

```
if ($con->query($sql))  
{  
    echo "Inserted successfully";  
}  
else  
{  
    echo "Error: ". $con->error;  
}
```

Execute the statement

- Do not forget to close the connection
 - After executing any operation

```
$con->close();
```

Complete Code

```
<?php  
//Linking the configuration file  
require 'config.php';  
$sql= "INSERT INTO myTable(ID,Name)VALUES(11111,'SLIIT');  
if($con->query($sql)){  
    echo "Inserted successfully";  
}  
else{  
    echo "Error:". $con->error;  
}  
$con->close();  
?>
```

```
<?php  
//The connection object  
  
$con=new mysqli("localhost","root","","MyDB");  
// Check connection  
if($con->connect_error){  
    die("Connection failed: " . $con->connect_error);  
}  
?>
```

config.php

Problems in data INSERT method

- Can insert One Record at a time
- User need access rights to internal .PHP pages stored in webserver (ex. /htdocs/...)

Solutions

- Use a HTML Form
- Use a PHP Form

Solution1

Use a HTML Form

```
<!doctype html>
<html>
  <head> </head>

  <body>
    <form method="post" action="form_process.php">
      <h3>Input Student Data </h3>
      Student ID :<input type="text" name="stuID"><BR />
      Student Name :<input type="text" name="stuName"><BR />
      <input type="submit" value="Submit">
      <input type="reset" value="Reset">
    </form>
  </body>
</html>
```



```
<?php
//Linking the configuration file
require 'config.php';
$ID = $_POST["stuID"];
$Name = $_POST["stuName"];
$sql= "INSERT INTO myTable(ID,Name)VALUES($ID,$Name)";
if($con->query($sql)){
  echo "Inserted successfully";
}
else{
  echo "Error:". $con->error;
}
$con->close();
?>
```

```
<?php  
  
//Linking the configuration file  
require 'config.php';  
  
?>  
  
<form method="post" action=<?php echo htmlspecialchars($_SERVER["PHP_SELF"]);?>>  
    <h3>Input Student Data </h3>  
    Student ID :<input type="text" name="stuID"><BR />  
    Student Name :<input type="text" name="stuName"><BR />  
    <input type="submit" value="Submit" name="btnSubmit">  
    <input type="reset" value="Reset">  
</form>  
  
<?php  
if(isset($_POST["btnSubmit"])){  
    $stuID = $_POST["stuID"];  
    $stuName = $_POST["stuName"];  
  
    $sql= "INSERT INTO myTable(ID,Name)VALUES($stuID,'$stuName')";  
    if($con->query($sql)){  
        echo "Inserted successfully";  
    }  
    else{  
        echo "Error:". $con->error;  
    }  
}  
$con->close();  
?>
```

Solution 2

Use a PHP Form

Select statement

- When reading data from a DB, we use a select statement, which returns a dataset as the result.

```
$sql = "select ID, name from myTable"
```

Read - Result set

- We execute the select SQL statement, then assign the result set into a variable

```
$result = $con->query($sql);
```

Read - Result set - availability

- If only there are results, we can read them

```
if ($result->num_rows > 0)
{
    //read data
}
else
{ echo "no results"; }
```

Result set – read data

- We read the dataset row by row using a loop
- There are multiple functions to fetch a row from a dataset
 - `fetch_all` — Fetches all result rows as an associative array, a numeric array, or both
 - `fetch_array` — Fetch a result row as an associative, a numeric array, or both
 - `fetch_assoc` — Fetch a result row as an associative array
 - `fetch_field_direct` — Fetch meta-data for a single field
 - `fetch_field` — Returns the next field in the result set
 - `fetch_fields` — Returns an array of objects representing the fields in a result set
 - `fetch_object` — Returns the current row of a result set as an object
 - `fetch_row` — Get a result row as an enumerated array

Result set – read data

- Lets use `fetch_assoc()`, which return the row as an associative array

```
while($row = $result->fetch_assoc())
{
    //Read and utilize the row data
}
```

Result set – read data

- Column names can be used as the indexes to read the cell data in the fetched row

```
echo $row["ID"]. " – " . $row["Name"] . "<BR />";
```

EX: show the data inside a table, on the page

Read -Complete function

- Column names can be used as the indexes to read the cell data in the fetched row

```
echo $row["ID"]. " – ". $row["Name"] . "<BR />";
```

EX: show the data inside a table, on the page

```
<?php  
//Linking the configuration file  
require 'config.php';  
  
$sql = "select ID, Name from myTable";  
  
$result = $con->query($sql);  
  
if($result->num_rows > 0){  
    //read data  
    while($row = $result->fetch_assoc()){  
        //Read and utilize the row data  
        echo $row["ID"] . " – " . $row["Name"] . "<BR />";  
    }  
}  
else  
{  
    echo "no results";  
}  
  
$con->close();  
?>
```

```
<?php  
//The connection object  
$con=new mysqli("localhost","root","","","MyDB");  
// Check connection  
if($con->connect_error){  
    die("Connection failed: " . $con->connect_error);  
}  
?>
```

Complete
Code

Read Complete function

```
<?php
require 'config.php';
function readData()
{
    global $con;
    $sql = "SELECT ID, Name FROM myTable";
    $result = $con->query($sql);
    if ($result->num_rows > 0)
    {
        while($row = $result->fetch_assoc())
        {
            echo "ID: " . $row["ID"]. " - Name: " . $row["Name"]. "<br>";
        }
    }
    else
    {
        echo "No results";
    }
    $con->close();
}
readData();
```

```
<?php
$con=new mysqli("localhost","root","","test");
if($con->connect_error)
{
    die("Connection failed: ". $con->connect_error);
}
?>
```

Read

- Modify the given php code to display data inside a table.

Summary

Introduction

The connection

Create

Read
