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Web Technologies

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Lecture 21-22

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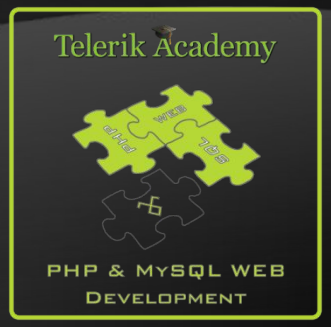

Working with Databases in PHP

Connecting, Queries, Best Practices

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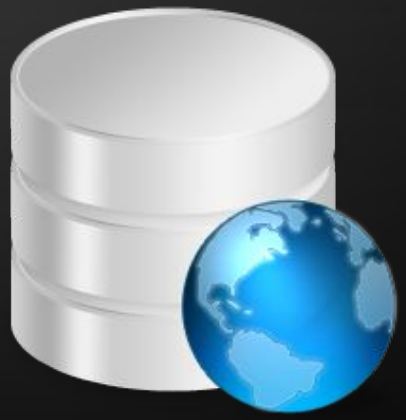

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4. Persistent connections
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Connecting Database from PHP

PHP and Databases

- PHP supports about 20 RDBM servers
  - Including MySQL, Oracle, MS SQL, DB2, Firebird and Paradox
  - Supports connection over ODBC driver
  - Provided different sets of functions for accessing the different RDBMS
    - Each function starts with prefix – the DB server type
      Example: mysql_connect, mssql_query, etc

Connecting MySQL

- `mysql_connect` – function to connect to MySQL server
  - Parameters: `$server, $username, $password, $new_link, $client_flags`
  - Returns resource result, identifying the new link (link identifier)
    - The result is used as parameter to other `mysql_` functions

```
mysql_connect("localhost",
"root", "rootpass");
```

Connecting MySQL (2)

- Once connected a database must be selected to perform queries upon
  - In some cases it is not required – `show databases` query for instance
  - `mysql_select_db ($dbname, $link)` – selects database from the server

```
$dblink = mysql_connect("local
host", "root", "rootpass");

mysql_select_db("mydb", $dblink);
```

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Connecting to DB

Live Demo

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Sending Query

Executing Query

- `mysql_query ($query, $link)` – execute query on database
  - `$query` is string – the query to be executed
  - `$link` is database link identifier
  - The returned result depends on the query
    - If query is select, show, describe, explain – returns resource or false on error

```
mysql_query("select * from users", $dblink);
```

  - The link parameter can be omitted in all `mysql_` functions if working with only one database

Select Query Results

- PHP provides several functions for working with MySQL select query results
  - `mysql_query` returns resource when performing select query that holds the data
  - The result is accessed row-per-row from first towards last with internal pointer
- Additional functions to get number of affected rows on update/delete or auto-generated id of inserted row

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Fetching Data

Fetch Row From Result

- `mysql_fetch_row` – returns numerical array, containing the current row from the result and moves the pointer to the next row
  - Returns false if there are no more rows

```
$res = mysql_query ("select id, name from
people");
$row = mysql_fetch_row($res);
if ($row)
   print_r($row); // 0->id, 1->name
else
   echo "No results!";
```

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MySQL Query

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Fetching Row From Result (2)

- `mysql_fetch_assoc` – returns associative array containing the current row in result and moved the pointer to the next one
  - The field names are keys in the array
  - Returns false if no more rows

```
$res = mysql_query ("select id, name from
people");
$row = mysql_fetch_assoc($res);
if ($row)
   echo "Name: ".$row['name'];
```

mysql_fetch_asso c

Live Demo

Fetching Single Value

- `mysql_result ($result, $row, $field)` – return the value or single cell In MySQL query result
  - `$field` is either field index or name
  - Returns false on failure
  - Must NOT be mixed with other functions for reading query result
  - Much slower than fetching data row-per-row

```
$res = mysql_query ("select count(*) from
people");
echo mysql_result($res, 0, 0);
```

mysql_result

Live Demo

Number of Rows

- `mysql_num_rows ($result)` – returns the number of rows in the result set
  - Does not work with unbuffered queries (`mysql_unbuffered_query`)

```
$res = mysql_query ("select id, name from
people");
$count = mysql_num_rows($res);
echo $count;
```

mysql_num_rows

Live Demo

Internal Pointer Change

- `mysql_data_seek ($result, $row)` – changes the position of the internal pointer in the result
  - Allows you to reuse result once fetched with `mysql_fetch_*` functions
  - Returns true on success, false on failure

Example :

view plain copy to clipboard print ?

```
01. <?php
02. $con = mysql_connect("localhost", "root", "mypass");
03. $selecteddb = mysql_select_db("tutorials");
04. $sql = "select * from tutorials";
05. $result = mysql_query($sql,$con);
06. mysql_data_seek($result,5);
07. print_r(mysql_fetch_row($result));<br>mysql_close($con);
08. ?>
```

Output :

Array ([0] => 4 [1] => mysql [2] => 500 [3] => 500 [4] => bc)

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Internal Pointer Change

Live Demo

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Executed Query Result

- `mysql_insert_id($link)` – get the auto generated ID of previous insert/replace query
  - Returns 0 if no ID was generated, false on error
  - Works only for `AUTO_INCREMENT` columns
  - `$link` can be omitted if only one link established

```
mysql_query ("insert into people ("name",
"age") values ("To6ko", "30");
echo mysql_insert_id();
```

mysql_insert_id

Live Demo

Executed Query Result (2)

- `mysql_affected_rows($link)` – returns number of affected rows in most recent insert/update/delete/replace query
  - As with all `mysql_` functions `$link` can be omitted if only one link established
  - Returns -1 if last query failed

```
mysql_query ("update people set age+1 where
age < 20");
echo mysql_insert_id();
```

Error Handling

- `mysql_errno ($link)` - returns the error code from the last query
  - Returns 0 if no error occurred
- `mysql_error ($link)` – returns the error text from the last query
  - Returns empty string if no error occurred

```
mysql_query ("insert into nosuchtable");
echo mysql_errno().": ".mysql_error();
```

Closing and Freeing

- `mysql_free_result($resource)` – clears the memory occupied by select query result
- `mysql_close($link)` – closes connection to mysql server
- When PHP script ends all resources are freed automatically and all connections – closed
  - Freeing is not necessary
  - Closing is needed only when using persistent connections

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Persistent Connections

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Persistent Connections

- Persistent connections are connections that are kept open after script ends
  - Allows reusing
  - Saves time for next script to connect
  - Very useful for slow-login databases (MS SQL, Firebird, etc)
  - When performing persistent connect PHP searches for already opened connection and reuses it
- `mysql_pconnect` – similar to `mysql_connect` but checks for previous persistent connection with same

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Best Practices

Escaping

- All strings that are generated from user input must be escaped
  - Quotes, double quotes and back slashes must be prefixed with back slash
  - Lack of escaping may lead to errors and security issues
- `mysql_real_escape_string` – returns given string with characters escaped, taking into account the character set of the connection
  - When using Cyrillic this may escape the Cyrillic characters and turn them into hex codes
- Escaping may be done by simple string replacement or with

Escaping

- Example escaping with string replacement

```
mysql_query ("insert into people values (null,
'.str_replace("'","\\'",$_POST['name'])'");
```

- When the string, inserted in the DB is going to be printed to a page, using `htmlentities` is good idea
  - Replaces all HTML special chars with their entities
  - Can be set to include quotes and double quotes

```
htmlentities("пробваме ', \", &^%", ENT_QUOTES);
```

  - Second parameter sets quotes converting

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Working with Databases in PHP

Questions?

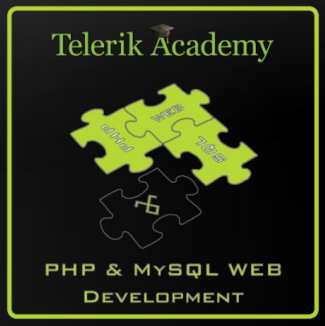
http://academy.telerik.com

Exercises

1. Create a PHP script to show a database table rows as HTML table.
2. Create PHP application that implements very simple message board. First create MySQL database and table messages(msg_id, msg_text, msg_date). Implement the following functionality:
   - Displaying table rows
   - Adding rows
   - Deleting rows

References

- "PHP & MySQL Web Design" course
  - academy.telerik.com/.../php-school-academy-meeting
- Telerik Software Academy
  - academy.telerik.com
- Telerik Academy @ Facebook
  - facebook.com/TelerikAcademy
- Telerik Software Academy Forums
  - forums.academy.telerik.com



LAB

- mysql_connect ()
  - $servername = "localhost";
    $username = "username";
    $password = "password";
- Mysql_selcect_db ( )
  - Database Name
  - Connection
- mysql_query

Constants.php

- <?php
- define("DB_SERVER","localhost");
- define("DB_USER","root");
- define("DB_PASS","");
- define("DB_NAME","lightningelectronics");
- ?>

LAB

```
<?php require("includes/constants.php"); ?>
<?php
// Create a database connection
$conection = mysql_connect(DB_SERVER,DB_USER,DB_PASS);
if(!$conection){
die("Database connection failed".mysql_error());
}
//Select a Database to Use
$db_select=mysql_select_db(DB_NAME,$conection);
if(!$db_select){
die("Databae Selection Failed".mysql_error());
}?>
```

LAB

```
$query = mysql_query("SELECT * FROM products LIMIT 5");
    if(!$query)
   { die("databae query failed".mysql_error());
   }
while($row=mysql_fetch_array($query))
{
 echo $row['name'];
 echo $row['description'];
?>
```

Insert Record

- $query="INSERT INTO `tbl_emp` (`name`, `email`, `address`) VALUES ('$name', '$email', '$address')";
- $result=mysql_query($query,$connection);
-

Update Record

- $query="UPDATE tbl_employee SET email='$email',password='$password',first_name='$fname',last_name='$lname' WHERE email='$mail'";
- $result=mysql_query($query,$connection);
-

Delete Record

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Assignment#4 Due Date 27-11-2017

- Create a file questions.txt that is in the following format
  - First line – question id
  - Second line – question text
  - Third line – question answer
- Create a web page that displays the question text and a user input for each question
- Create a PHP Script as a POST action which checks if the answers are correct

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Assignment#4 Due Date 27-11-2017

1. Write a program that prints the numbers from 1 to 50
2. Write a program that prints the numbers from 1 to 50 that are not divisible by 5 and 7
3. Write a program that prints HTML table with N columns and N rows with the numbers 1, 2, 3, … in its cells for a given N, defined as a constant
4. Write a program that finds the minimal element of an given indexed array

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Assignment#4 Due Date 27-11-2017

5. Write a program that calculates N! (factorial 1*2*..*N) for a defined constant N
6. Write a program that calculates N!*K!/(N-K)! for defined constants N and K
7. Write a program that prints the binary representation of a decimal number N, defined by a constant
8. Write a program that prints the decimal representation of a binary number, defined in a string