PHP & MySQL

PHP will work with virtually all database software, including Oracle and Sybase but most commonly used is freely available MySQL database.

## **What you should already have?**

* You have gone through MySQL tutorial to understand MySQL Basics.
* Downloaded and installed a latest version of MySQL.
* Created database user **guest** with password **guest123**.
* If you have not created a database then you would need root user and its password to create a database.

# MySQL Database Connection

## **Opening Database Connection**

PHP provides **mysql\_connect** function to open a database connection. This function takes five parameters and returns a MySQL link identifier on success, or FALSE on failure.

### **Syntax**

connection mysql\_connect(server,user,passwd,new\_link,client\_flag);

|  |  |
| --- | --- |
| **No.** | **Parameter & Description** |
| 1 | **server**  Optional − The host name running database server. If not specified then default value is **localhost:3306**. |
| 2 | **user**  Optional − The username accessing the database. If not specified then default is the name of the user that owns the server process. |
| 3 | **passwd**  Optional − The password of the user accessing the database. If not specified then default is an empty password. |
| 4 | **new\_link**  Optional − If a second call is made to mysql\_connect() with the same arguments, no new connection will be established; instead, the identifier of the already opened connection will be returned. |
| 5 | **client\_flags**  Optional − A combination of the following constants −   * **MYSQL\_CLIENT\_SSL** − Use SSL encryption * **MYSQL\_CLIENT\_COMPRESS** − Use compression protocol * **MYSQL\_CLIENT\_IGNORE\_SPACE** − Allow space after function names * **MYSQL\_CLIENT\_INTERACTIVE** − Allow interactive timeout seconds of inactivity before closing the connection |

**NOTE** − You can specify server, user, passwd in **php.ini** file instead of using them again and again in your every PHP scripts. Check [php.ini file](https://www.tutorialspoint.com/php/php_ini_configuration.htm) configuration.

## **Closing Database Connection**

Its simplest function **mysql\_close** PHP provides to close a database connection. This function takes connection resource returned by mysql\_connect function. It returns TRUE on success or FALSE on failure.

### **Syntax**

**bool** mysqli\_close **(** **resource** $link\_identifier **);**

If a resource is not specified then last opend database is closed.

### **Example**

Try out following example to open and close a database connection

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14** | **<**?php    $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  **die(**'Could not connect: ' **.** mysqli\_error**(**$conn**));**  **}**    **echo** 'Connected successfully'**;**  mysqli\_close**(**$conn**);**  ?**>** |

## **Creating a Database**

To create and delete a database you should have admin privilege. Its very easy to create a new MySQL database. PHP uses **mysqli\_query** function to create a MySQL database. This function takes two parameters and returns TRUE on success or FALSE on failure.

### **Syntax**

bool mysql\_query( sql, connection );

|  |  |
| --- | --- |
| **No.** | **Parameter & Description** |
| 1 | **sql**  Required - SQL query to create a database |
| 2 | **connection**  Optional - if not specified then last opend connection by mysql\_connect will be used. |

### **Example**

Try out following example to create a database

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20** | **<**?php    $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  **die(**'Could not connect: ' **.** mysqli\_error**(**$conn**));**  **}**    $sql **=** 'CREATE DATABASE MyDB'**;**  $retval **=** mysqli\_query**(** $conn**,** $sql**);**    **if(!** $retval **) {**  **die(**'Could not create database: ' **.** mysqli\_error**(**$conn**));**  **}**    **echo** "Database MyDB created successfully\n"**;**  mysqli\_close**(**$conn**);** |

## **Selecting a Database**

Once you establish a connection with a database server then it is required to select a particular database where your all the tables are associated.

This is required because there may be multiple databases residing on a single server and you can do work with a single database at a time.

PHP provides function **mysql\_select\_db** to select a database.It returns TRUE on success or FALSE on failure.

### **Syntax**

bool mysql\_select\_db( db\_name, connection );

|  |  |
| --- | --- |
| **No.** | **Parameter & Description** |
| 1 | **db\_name**  Required - Database name to be selected |
| 2 | **connection**  Optional - if not specified then last opend connection by mysql\_connect will be used. |

### **Example**

Here is the example showing you how to select a database.

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13** | **<**?php  $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  **die(**'Could not connect: ' **.** mysqli\_error**(**$conn**));**  **}**    mysqli\_select\_db**(**$conn**,** 'MyDB'**);**  **echo** "Database MyDB is selected\n"**;**  mysqli\_close**(**$conn**);** |

## **Creating Database Tables**

To create tables in the new database you need to do the same thing as creating the database. First create the SQL query to create the tables then execute the query using mysql\_query() function.

### **Example**

Try out following example to create a table

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20**  **21**  **22**  **23**  **24**  **25**  **26**  **27** | **<**?php  $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  **die(**'Could not connect: ' **.** mysqli\_error**(**$conn**));**  **}**    $sql **=** 'CREATE TABLE Employee( '**.**  'eid INT NOT NULL AUTO\_INCREMENT, '**.**  'name VARCHAR(20) NOT NULL, '**.**  'address VARCHAR(20) NOT NULL, '**.**  'salary INT NOT NULL, '**.**  'join\_date timestamp(6) NOT NULL, '**.**  'primary key ( eid ))'**;**  mysqli\_select\_db**(**$conn**,** 'MyDB'**);**  $retval **=** mysqli\_query**(**$conn**,** $sql**);**  **if(!** $retval **) {**  **die(**'Could not create table: ' **.** mysqli\_error**(**$conn**));**  **}**  **echo** "Table Employee created successfully\n"**;**  mysqli\_close**(**$conn**);** |

In case you need to create many tables then its better to create a text file first and put all the SQL commands in that text file and then load that file into $sql variable and excute those commands.

Consider the following content in sql\_query.txt file

**CREATE TABLE** Employee**(**

eid **INT** **NOT NULL** AUTO\_INCREMENT**,**

name **VARCHAR(**20**)** **NOT NULL,**

address **VARCHAR(**20**)** **NOT NULL,**

salary **INT** **NOT NULL,**

join\_date **timestamp(**6**)** **NOT NULL,**

**primary key** **(** eid **))**

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20**  **21**  **22**  **23**  **24** | **<**?php  $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  **die(**'Could not connect: ' **.** mysqli\_error**(**$conn**));**  **}**    $query\_file **=** 'sql\_query.txt'**;**  $fp **=** fopen**(**$query\_file**,** 'r'**);**  $sql **=** fread**(**$fp**,** filesize**(**$query\_file**));**  fclose**(**$fp**);**  mysqli\_select\_db**(**$conn**,** 'MyDB'**);**  $retval **=** mysqli\_query**(**$conn**,** $sql**);**  **if(!** $retval **) {**  **die(**'Could not create table: ' **.** mysqli\_error**(**$conn**));**  **}**  **echo** "Table Employee created successfully\n"**;**  mysqli\_close**(**$conn**);** |

# Insert Data into MySQL Database

Data can be entered into MySQL tables by executing SQL INSERT statement through PHP function **mysql\_query**. Below a simple example to insert a record into **employee** table.

## **Example**

Try out following example to insert record into employee table.

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20**  **21**  **22**  **23**  **24** | **<**?php  $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  die**(**'Could not connect: ' . mysqli\_error**(**$conn**));**  **}**  $**sql** **=** 'INSERT INTO employee '.  '(name,address, salary, join\_date) '.  'VALUES ( "guest", "XYZ", 2000, NOW() )'**;**    mysqli\_select\_db**(**$conn**,** 'MyDB'**);**  $retval **=** mysqli\_query**(** $conn **,** $**sql** **);**    **if(!** $retval **) {**  die**(**'Could not enter data: ' . mysqli\_error**(**$conn**));**  **}**    echo "Entered data successfully\n"**;**    mysqli\_close**(**$conn**);** |

In real application, all the values will be taken using HTML form and then those values will be captured using PHP script and finally they will be inserted into MySQL tables.

While doing data insert its best practice to use function **get\_magic\_quotes\_gpc()** to check if current configuration for magic quote is set or not. If this function returns false then use function **addslashes()** to add slashes before quotes.

## **Example**

Try out this example by putting this code into add\_employee.php, this will take input using HTML Form and then it will create records into database.

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20**  **21**  **22**  **23**  **24**  **25**  **26**  **27**  **28**  **29**  **30**  **31**  **32**  **33**  **34**  **35**  **36**  **37**  **38**  **39**  **40**  **41**  **42**  **43**  **44**  **45**  **46**  **47**  **48**  **49**  **50**  **51**  **52**  **53**  **54**  **55**  **56**  **57**  **58**  **59**  **60**  **61**  **62**  **63**  **64**  **65**  **66**  **67**  **68**  **69**  **70**  **71**  **72** | **<**html**>**  **<**head**><**title**>Add New** Record **in** MySQL **Database</**title**></**head**>**  **<**body**>**  **<**?php  **if(**isset**(**$\_POST**[**'add'**])) {**  $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  die**(**'Could not connect: ' . mysqli\_error**(**$conn**));**  **}**    $emp\_name **=** $\_POST**[**'emp\_name'**];**  $emp\_address **=** $\_POST**[**'emp\_address'**];**  $emp\_salary **=** $\_POST**[**'emp\_salary'**];**    $**sql** **=** "INSERT INTO employee ".  "(name,address, salary, join\_date) ".  "VALUES('$emp\_name','$emp\_address',$emp\_salary, NOW())"**;**    mysqli\_select\_db**(**$conn**,**'MyDB'**);**  $retval **=** mysqli\_query**(**$conn**,** $**sql);**    **if(!** $retval **) {**  die**(**'Could not enter data: ' . mysqli\_error**(**$conn**));**  **}**    echo "Entered data successfully\n"**;**    mysqli\_close**(**$conn**);**  **}else** **{**  ?**>**  **<**form **method=**"post" **action=**"<?php $\_PHP\_SELF ?>"**>**  **<**table width**=**"400" border**=**"0" cellspacing**=**"1" cellpadding**=**"2"**>**  **<**tr**>**  **<**td width**=**"100"**>**Employee **Name</**td**>**  **<**td**><input name=**"emp\_name" **type=**"text" **id=**"emp\_name"**></**td**>**  **</**tr**>**    **<**tr**>**  **<**td width**=**"100"**>**Employee Address**</**td**>**  **<**td**><input name=**"emp\_address" **type=**"text"  **id** **=** "emp\_address"**></**td**>**  **</**tr**>**    **<**tr**>**  **<**td width**=**"100"**>**Employee Salary**</**td**>**  **<**td**><input name=**"emp\_salary" **type=**"text"  **id=**"emp\_salary"**></**td**>**  **</**tr**>**    **<**tr**>**  **<**td width**=**"100"**> </**td**>**  **<**td**> </**td**>**  **</**tr**>**    **<**tr**>**  **<**td width **=** "100"**> </**td**>**  **<**td**>**  **<input name=**"add" **type=**"submit" **id=**"add"  **value=**"Add Employee"**>**  **</**td**>**  **</**tr**>**  **</**table**>**  **</**form**>**  **<**?php  **}**  ?**>**  **</**body**>**  **</**html**>** |

# Getting Data From MySQL Database

Data can be fetched from MySQL tables by executing SQL SELECT statement through PHP function mysql\_query. You have several options to fetch data from MySQL.

The most frequently used option is to use function **mysql\_fetch\_array()**. This function returns row as an associative array, a numeric array, or both. This function returns FALSE if there are no more rows.

Below is a simple example to fetch records from **employee** table.

## **Example**

Try out following example to display all the records from employee table.

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20**  **21**  **22**  **23**  **24**  **25**  **26**  **27** | **<**?php  $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  die**(**'Could not connect: ' . mysqli\_error**(**$conn**));**  **}**  $**sql** **=** 'SELECT eid, name, salary FROM employee'**;**    mysqli\_select\_db**(**$conn**,** 'MyDB'**);**  $retval **=** mysqli\_query**(** $conn **,** $**sql** **);**    **if(!** $retval **) {**  die**(**'Could not enter data: ' . mysqli\_error**(**$conn**));**  **}**  while**(**$**row=**mysqli\_fetch\_array**(**$retval**)) {**  echo "EMP ID :{$row['eid']} <br> ".  "EMP NAME : {$row['name']} <br> ".  "EMP SALARY : {$row['salary']} <br> ".  "--------------------------------<br>"**;**  **}**    echo "Fetched data successfully\n"**;**  mysqli\_close**(**$conn**);** |

The content of the rows are assigned to the variable $row and the values in row are then printed.

**NOTE** − Always remember to put curly brackets when you want to insert an array value directly into a string.

In above example the constant **MYSQL\_ASSOC** is used as the second argument to mysql\_fetch\_array(), so that it returns the row as an associative array. With an associative array you can access the field by using their name instead of using the index.

PHP provides another function called **mysql\_fetch\_assoc()** which also returns the row as an associative array.

## **Example**

Try out following example to display all the records from employee table using mysqli\_fetch\_assoc() function.

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20**  **21**  **22**  **23**  **24**  **25**  **26**  **27** | **<**?php  $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  die**(**'Could not connect: ' . mysqli\_error**(**$conn**));**  **}**  $**sql** **=** 'SELECT eid, name, salary FROM employee'**;**    mysqli\_select\_db**(**$conn**,** 'MyDB'**);**  $retval **=** mysqli\_query**(** $conn **,** $**sql** **);**    **if(!** $retval **) {**  die**(**'Could not enter data: ' . mysqli\_error**(**$conn**));**  **}**  while**(**$**row** **=** mysqli\_fetch\_assoc**(**$retval**)) {**  echo "EMP ID :{$row['eid']} <br> ".  "EMP NAME : {$row['name']} <br> ".  "EMP SALARY : {$row['salary']} <br> ".  "--------------------------------<br>"**;**  **}**    echo "Fetched data successfully\n"**;**  mysqli\_close**(**$conn**);** |

You can also use the constant **MYSQL\_NUM**, as the second argument to mysql\_fetch\_array(). This will cause the function to return an array with numeric index.

## **Example**

Try out following example to display all the records from employee table.

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20**  **21**  **22**  **23**  **24**  **25**  **26**  **27** | **<**?php  $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  die**(**'Could not connect: ' . mysqli\_error**(**$conn**));**  **}**  $**sql** **=** 'SELECT eid, name, salary FROM employee'**;**    mysqli\_select\_db**(**$conn**,** 'MyDB'**);**  $retval **=** mysqli\_query**(** $conn **,** $**sql** **);**    **if(!** $retval **) {**  die**(**'Could not enter data: ' . mysqli\_error**(**$conn**));**  **}**  while**(**$**row** **=** mysqli\_fetch\_array**(**$retval**)) {**  echo "EMP ID :{$row[0]} <br> ".  "EMP NAME : {$row[1]} <br> ".  "EMP SALARY : {$row[2]} <br> ".  "--------------------------------<br>"**;**  **}**    echo "Fetched data successfully\n"**;**  mysqli\_close**(**$conn**);** |

All the above three examples will produce same result.

## **Releasing Memory**

Its a good practice to release cursor memory at the end of each SELECT statement. This can be done by using PHP function **mysql\_free\_result()**. Below is the example to show how it has to be used.

### **Example**

Try out following example

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20**  **21**  **22**  **23**  **24**  **25**  **26**  **27** | **<**?php  $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  die**(**'Could not connect: ' . mysqli\_error**(**$conn**));**  **}**  $**sql** **=** 'SELECT eid, name, salary FROM employee'**;**    mysqli\_select\_db**(**$conn**,** 'MyDB'**);**  $retval **=** mysqli\_query**(** $conn **,** $**sql** **);**    **if(!** $retval **) {**  die**(**'Could not enter data: ' . mysqli\_error**(**$conn**));**  **}**  while**(**$**row** **=** mysqli\_fetch\_array**(**$retval**)) {**  echo "EMP ID :{$row[0]} <br> ".  "EMP NAME : {$row[1]} <br> ".  "EMP SALARY : {$row[2]} <br> ".  "--------------------------------<br>"**;**  **}**  mysqli\_free\_result**(**$retval**);**  echo "Fetched data successfully\n"**;**  mysqli\_close**(**$conn**);** |

While fetching data you can write as complex SQL as you like. Procedure will remain same as mentioned above.

# Updating Data into MySQL Database

Data can be updated into MySQL tables by executing SQL UPDATE statement through PHP function **mysql\_query**.

Below is a simple example to update records into **employee** table. To update a record in any table it is required to locate that record by using a conditional clause. Below example uses primary key to match a record in employee table.

## **Example**

Try out following example to understand update operation. You need to provide an employee ID to update an employee salary.

|  |  |
| --- | --- |
| **Line** | **Code** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20**  **21**  **22**  **23**  **24**  **25**  **26**  **27**  **28**  **29**  **30**  **31**  **32**  **33**  **34**  **35**  **36**  **37**  **38**  **39**  **40**  **41**  **42**  **43**  **44**  **45**  **46**  **47**  **48**  **49**  **50**  **51**  **52**  **53**  **54**  **55**  **56**  **57** | **<**html**>**  **<**head**>**  **<**title**>Update** a Record **in** MySQL **Database</**title**>**  **</**head**>**  **<**body**>**  **<**?php  **if(**isset**(**$\_POST**[**'update'**])) {**  $dbhost **=** 'localhost:3306'**;**  $dbuser **=** 'root'**;**  $dbpass **=** ''**;**  $conn **=** mysqli\_connect**(**$dbhost**,** $dbuser**,** $dbpass**);**    **if(!** $conn **) {**  die**(**'Could not connect: ' . mysqli\_error**(**$conn**));**  **}**  $eid **=** $\_POST**[**'eid'**];**  $salary **=** $\_POST**[**'salary'**];**  $**sql** **=** "UPDATE employee SET salary = $salary WHERE eid = $eid" **;**  mysqli\_select\_db**(**$conn**,** 'MyDB'**);**  $retval **=** mysqli\_query**(**$conn**,**$**sql);**    **if(!** $retval **) {**  die**(**'Could not update data: ' . mysqli\_error**(**$conn**));**  **}**  echo "Updated data successfully\n"**;**  mysqli\_close**(**$conn**);**  **}else** **{**  ?**>**  **<**form **method=**"post" **action=**"<?php $\_PHP\_SELF ?>"**>**  **<table** width**=**"400" border**=**"0" cellspacing**=**"1"  cellpadding**=**"2"**>**  **<**tr**>**  **<**td width**=**"100"**>**Employee **ID</**td**>**  **<**td**><input name=**"eid" **type=**"text" **id=**"eid"**></**td**>**  **</**tr**>**  **<**tr**>**  **<**td width**=**"100"**>**Employee Salary**</**td**>**  **<**td**><input name=**"salary" **type=**"text" **id=**"salary"**></**td**>**  **</**tr**>**  **<**tr**>**  **<**td width**=**"100"**> </**td**>**  **<**td**> </**td**>**  **</**tr**>**  **<**tr**>**  **<**td width**=**"100"**> </**td**>**  **<**td**>**  **<input name=**"update" **type=**"submit" **id=**"update"  **value=**"Update"**>**  **</**td**>**  **</**tr**>**  **</table>**  **</**form**>**  **<**?php  **}**  ?**>**  **</**body**>**  **</**html**>** |