MySQL: Joins

This MySQL tutorial explains how to use MySQL **JOINS** (inner and outer) with syntax, visual illustrations, and examples.

Description

MySQL **JOINS** are used to retrieve data from multiple tables. A MySQL JOIN is performed whenever two or more tables are joined in a SQL statement.

There are different types of MySQL joins:

- MySQL INNER JOIN (or sometimes called simple join)
- MySQL LEFT OUTER JOIN (or sometimes called LEFT JOIN)
- MySQL RIGHT OUTER JOIN (or sometimes called RIGHT JOIN)

So let's discuss MySQL JOIN syntax, look at visual illustrations of MySQL JOINS, and explore MySQL JOIN examples.

INNER JOIN (simple join)

Chances are, you've already written a statement that uses a MySQL INNER JOIN. It is the most common type of join. MySQL INNER JOINS return all rows from multiple tables where the join condition is met.

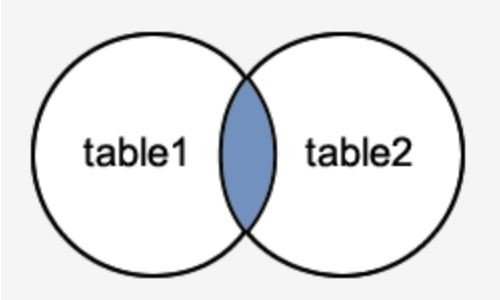
Syntax

The syntax for the INNER JOIN in MySQL is:

```
SELECT columns
FROM table1
INNER JOIN table2
ON table1.column = table2.column;
```

Visual Illustration

In this visual diagram, the MySQL INNER JOIN returns the shaded area:



The MySQL INNER JOIN would return the records where *table1* and *table2* intersect.

Example

Here is an example of a MySQL INNER JOIN:

```
SELECT suppliers.supplier_id, suppliers.supplier_name, orders.order_date
FROM suppliers
INNER JOIN orders
ON suppliers.supplier_id = orders.supplier_id;
```

This MySQL INNER JOIN example would return all rows from the suppliers and orders tables where there is a matching supplier_id value in both the suppliers and orders tables.

Let's look at some data to explain how the INNER JOINS work:

We have a table called *suppliers* with two fields (supplier_id and supplier_name). It contains the following data:

supplier_id	supplier_name
10000	IBM
10001	Hewlett Packard
10002	Microsoft
10003	NVIDIA

We have another table called *orders* with three fields (order_id, supplier_id, and order_date). It contains the following data:

order_id	supplier_id	order_date
500125	10000	2013/05/12
500126	10001	2013/05/13
500127	10004	2013/05/14

If we run the MySQL SELECT statement (that contains an INNER JOIN) below:

```
SELECT suppliers.supplier_id, suppliers.supplier_name, orders.order_date
FROM suppliers
INNER JOIN orders
ON suppliers.supplier_id = orders.supplier_id;
```

Our result set would look like this:

supplier_id	name	order_date
10000	IBM	2013/05/12
10001	Hewlett Packard	2013/05/13

The rows for *Microsoft* and *NVIDIA* from the supplier table would be omitted, since the supplier_id's 10002 and 10003 do not exist in both tables. The row for 500127 (order_id) from the orders table would be omitted, since the supplier_id 10004 does not exist in the suppliers table.

Old Syntax

As a final note, it is worth mentioning that the MySQL INNER JOIN example above could be rewritten using the older implicit syntax as follows (but we still recommend using the INNER JOIN keyword syntax):

```
SELECT suppliers.supplier_id, suppliers.supplier_name, orders.order_date
FROM suppliers, orders
WHERE suppliers.supplier_id = orders.supplier_id;
```

LEFT OUTER JOIN

Another type of join is called a MySQL LEFT OUTER JOIN. This type of join returns all rows from the LEFT-hand table specified in the ON condition and **only** those rows from the other table where the joined fields are equal (join condition is met).

Syntax

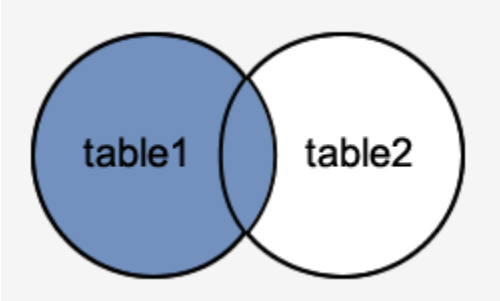
The syntax for the LEFT OUTER JOIN in MySQL is:

```
SELECT columns
FROM table1
LEFT [OUTER] JOIN table2
ON table1.column = table2.column;
```

In some databases, the LEFT OUTER JOIN keywords are replaced with LEFT JOIN.

Visual Illustration

In this visual diagram, the MySQL LEFT OUTER JOIN returns the shaded area:



The MySQL LEFT OUTER JOIN would return the all records from *table1* and only those records from *table2* that intersect with *table1*.

Example

Here is an example of a MySQL LEFT OUTER JOIN:

```
SELECT suppliers.supplier_id, suppliers.supplier_name, orders.order_date
FROM suppliers
LEFT JOIN orders
ON suppliers.supplier_id = orders.supplier_id;
```

This LEFT OUTER JOIN example would return all rows from the suppliers table and only those rows from the orders table where the joined fields are equal.

If a supplier_id value in the suppliers table does not exist in the orders table, all fields in the orders table will display as <null>in the result set.

Let's look at some data to explain how LEFT OUTER JOINS work:

We have a table called *suppliers* with two fields (supplier_id and supplier_name). It contains the following data:

supplier_id	supplier_name
10000	IBM
10001	Hewlett Packard
10002	Microsoft
10003	NVIDIA

We have a second table called *orders* with three fields (order_id, supplier_id, and order_date). It contains the following data:

order_id	supplier_id	order_date
500125	10000	2013/05/12
500126	10001	2013/05/13

If we run the SELECT statement (that contains a LEFT OUTER JOIN) below:

```
SELECT suppliers.supplier_id, suppliers.supplier_name, orders.order_date
FROM suppliers
LEFT JOIN orders
ON suppliers.supplier_id = orders.supplier_id;
```

Our result set would look like this:

supplier_id	supplier_name	order_date

supplier_id	supplier_name	order_date
10000	IBM	2013/05/12
10001	Hewlett Packard	2013/05/13
10002	Microsoft	<null>
10003	NVIDIA	<null>

The rows for *Microsoft* and *NVIDIA* would be included because a LEFT OUTER JOIN was used. However, you will notice that the order_date field for those records contains a <null> value.

RIGHT OUTER JOIN

Another type of join is called a MySQL RIGHT OUTER JOIN. This type of join returns all rows from the RIGHT-hand table specified in the ON condition and **only** those rows from the other table where the joined fields are equal (join condition is met).

Syntax

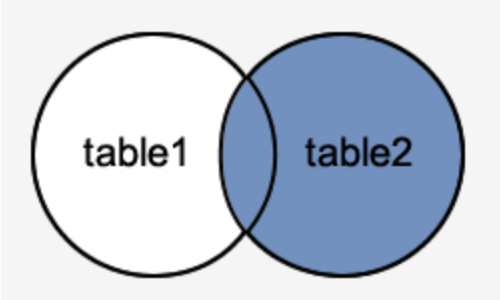
The syntax for the RIGHT OUTER JOIN in MySQL is:

```
SELECT columns
FROM table1
RIGHT [OUTER] JOIN table2
ON table1.column = table2.column;
```

In some databases, the RIGHT OUTER JOIN keywords are replaced with RIGHT JOIN.

Visual Illustration

In this visual diagram, the MySQL RIGHT OUTER JOIN returns the shaded area:



The MySQL RIGHT OUTER JOIN would return the all records from *table2* and only those records from *table1* that intersect with *table2*.

Example

Here is an example of a MySQL RIGHT OUTER JOIN:

```
SELECT orders.order_id, orders.order_date, suppliers.supplier_name
FROM suppliers
RIGHT JOIN orders
ON suppliers.supplier_id = orders.supplier_id;
```

This RIGHT OUTER JOIN example would return all rows from the orders table and only those rows from the suppliers table where the joined fields are equal.

If a supplier_id value in the orders table does not exist in the suppliers table, all fields in the suppliers table will display as <null> in the result set.

Let's look at some data to explain how RIGHT OUTER JOINS work:

We have a table called *suppliers* with two fields (supplier_id and supplier_name). It contains the following data:

supplier_id	supplier_name
10000	Apple
10001	Google

We have a second table called *orders* with three fields (order_id, supplier_id, and order_date). It contains the following data:

order_id	supplier_id	order_date

order_id	supplier_id	order_date
500125	10000	2013/08/12
500126	10001	2013/08/13
500127	10002	2013/08/14

If we run the SELECT statement (that contains a RIGHT OUTER JOIN) below:

```
SELECT orders.order_id, orders.order_date, suppliers.supplier_name
FROM suppliers
RIGHT JOIN orders
ON suppliers.supplier_id = orders.supplier_id;
```

Our result set would look like this:

order_id	order_date	supplier_name
500125	2013/08/12	Apple
500126	2013/08/13	Google
500127	2013/08/14	<null>

The row for *500127* (order_id) would be included because a RIGHT OUTER JOIN was used. However, you will notice that the supplier_name field for that record contains a <null> value.