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WEDNESDAY, NOVEMBER 22, 2017

How to join three tables in SQL query - MySQL Example

Three table JOIN Example SQL

Joining three tables in single SQL query can be very tricky if you are not good with the concept of SQL Join. SQL Joins have always been tricky not only for new programmers but for many others, who are in [programming](#) and SQL for more than 2 to 3 years. There are enough to confuse someone on SQL JOIN ranging from various types of SQL JOIN like INNER and OUTER join, LEFT and RIGHT outer join, CROSS join etc. Between all of these fundamentals, What is most important about Join is, combining multiple tables. If you need data from multiple tables in one [SELECT query](#) you need to use either [subquery](#) or JOIN. Most of the times we only join two tables like Employee and Department but sometimes you may require joining more than two tables and a popular case is joining three tables in SQL.

In the case of joining three tables table, 1 relates to table 2 and then table 2 relates to table 3. If you look at closely you find that table 2 is a joining table which contains [primary key](#) from both table 1 and table 2. As I said it can be extremely confusing to understand join of three or more tables.

I have found that understanding table relationship as [the primary key and foreign key](#) helps to alleviate confusion than the classical matching row paradigm.

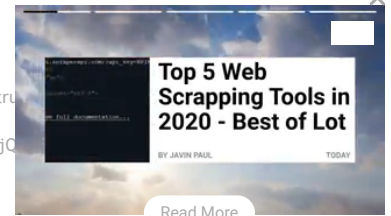
SQL Join is also a very popular topic in SQL interviews and there are always been some questions from Joins, like the difference between INNER and OUTER JOIN, SQL query with JOIN e.g. Employee Department relationship and Difference between LEFT and RIGHT OUTER JOIN etc. In short, this is one of the most important topics in SQL both from experience and interview point of view.

But, if you are new to SQL world, it's better to start with a comprehensive SQL course like [The Complete SQL Bootcamp](#) course by Jose Portilla on Udemy. That will help you to learn SQL better and quicker, and these kinds of articles will also make more sense once you have some SQL knowledge under your belt.

Three table JOIN syntax in SQL

Here is a general SQL query syntax to join three or more table. This SQL query should work in all major relation database e.g. MySQL, Oracle, Microsoft SQLServer, Sybase, and PostgreSQL:

```
SELECT t1.col, t3.col FROM table1 join table2 ON table1.primarykey =
table2.foreignkey
join table3 ON table2.primarykey =
table3.foreignkey
```



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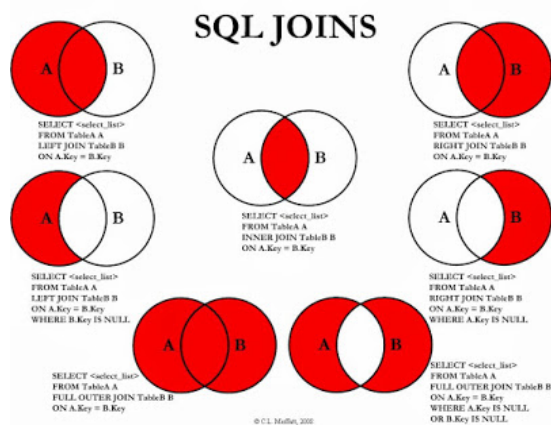
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We first join table 1 and table 2 which produce a temporary table with combined data from table1 and table2, which is then joined to table3. This formula can be extended to more than 3 tables to N tables, You just need to make sure that SQL query should have N-1 join statement in order to join N tables. like for joining two tables we require 1 join statement and for joining 3 tables we need [2 join statement](#).

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Here is a nice diagram which also shows how does different types of JOINS e.g. inner, left outer, right outer and cross joins works in SQL:



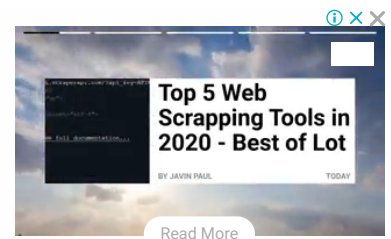
SQL Query to JOIN three tables in MySQL



In order to better understand the *joining of 3 tables in the SQL query* let's see an example. Consider the popular example of Employee and Department schema. In our case, we have used a link table called Register which links or relates both Employee to Department. The primary key of the Employee table (emp_id) is a foreign key in Register and similarly, the primary key of the Department table (dept_id) is a foreign key in Register table.

Btw, the only way to master SQL join is doing as much exercise as possible. If you could solve most of SQL puzzles from Joe Celko's classic book, [SQL Puzzles, and Answers, 2nd edition](#), you will more confident about dealing with SQL joins, whether it could be two, three or four tables.

In order to write an SQL query to print employee name and department name alongside we need to **join 3 tables**. First JOIN statement will join Employee and Register and create a temporary table which will have dept_id as another column. Now second JOIN statement will



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join this temp table with Department table on dept_id to get the desired result.

Here is the complete [SELECT SQL query example](#) to join 3 tables and it can be extended to join more than 3 or N tables.

```
mysql> SELECT * FROM Employee;
```

```
+-----+-----+-----+
| emp_id | emp_name | salary |
+-----+-----+-----+
| 1      | James   | 2000   |
| 2      | Jack    | 4000   |
| 3      | Henry   | 6000   |
| 4      | Tom     | 8000   |
+-----+-----+-----+
4 rows IN SET (0.00 sec)
```

```
mysql> SELECT * FROM Department;
```

```
+-----+-----+
| dept_id | dept_name |
+-----+-----+
| 101     | Sales     |
| 102     | Marketing |
| 103     | Finance   |
+-----+-----+
3 rows IN SET (0.00 sec)
```

```
mysql> SELECT * FROM Register;
```

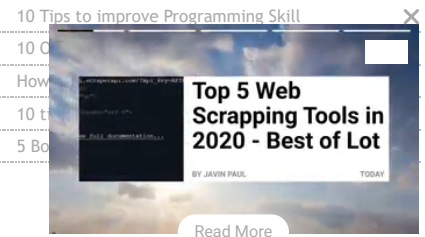
```
+-----+-----+
| emp_id | dept_id |
+-----+-----+
| 1      | 101     |
| 2      | 102     |
| 3      | 103     |
| 4      | 102     |
+-----+-----+
4 rows IN SET (0.00 sec)
```

```
mysql> SELECT emp_name, dept_name FROM Employee e JOIN Register r ON
e.emp_id=r.emp_id JOIN Department d ON r.dept_id=d.dept_id;
```

```
+-----+-----+
| emp_name | dept_name |
+-----+-----+
| James    | Sales     |
| Jack     | Marketing |
| Henry    | Finance   |
| Tom      | Marketing |
+-----+-----+
4 rows IN SET (0.01 sec)
```

If you want to understand it even better than try joining tables step by step. So instead of joining 3 tables in one go, first join 2 tables and see how the result table will look like. That's all on How to join three tables in one SQL query in the relational database.

By the way, in this SQL JOIN Example, we have used ANSI SQL and it will work in another relational database as well e.g. Oracle, SQL Server, Sybase, PostgreSQL etc. Let us know if



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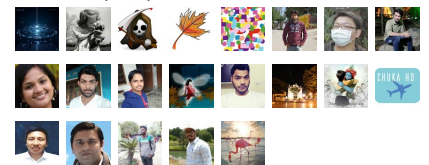
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you face any issue while running this 3 table JOIN query in any other database.

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Thanks for reading this article so far, if you like this article then please share with your friends and colleagues. If you have any questions, suggestions or doubt then please drop a comment and I'll try to answer your question.



By javin paul at [November 22, 2017](#)

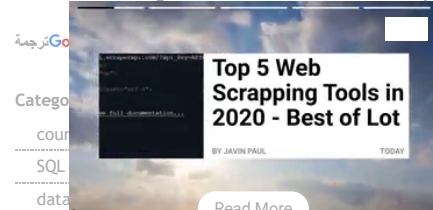
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33 comments :

Tim said...

From long time I had difficulty joining more than two tables, as soon as number of tables increased from 2 to 3, it's started getting messy for me. This particular example of How to join three tables in SQL made my life easy. keep the

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good work. Can you also share some JOIN examples from other major database e.g. Oracle, SQLServer 2008 and SQL Server 2010 please

December 18, 2012 at 12:42 AM

[Unknown](#) said...

(SELECT p.`Code`, c.Name, a.Name, p.`Name`, p.`Price`, p.`Description`,p.`ImageName`, p.`Date` FROM `products` p JOIN `categories` c ON p.CID = c.ID JOIN `accessories` a ON p.AID = a.ID)
WHY MY SQL SHOW ONLY COLUMN AND IT DOESN'T SHOW ROW IN TABLE?

July 6, 2013 at 9:40 PM

[khawaraleem](#) said...

sir ,please write article on MySQL ans PostgreSQL Such as performance ans which one is better to follow ect

December 28, 2013 at 9:11 PM

[Rubens](#) said...

Hi all,
If I suppose that one employee can belong to severan departments,
I would look for employees who do not belong to the sales department, what will be the query?

January 1, 2014 at 1:30 PM

[Unknown](#) said...

In the organization no employee can belong to more than one department

April 16, 2014 at 10:41 PM

[Pritam](#) said...

Well explained, but beginners for more understanding try below :

```
SELECT e.emp_name, d.dept_name
```

```
FROM Employee e
```

```
JOIN
```

```
Register r ON e.emp_id=r.emp_id
```

```
JOIN
```

```
Department d ON r.dept_id=d.dept_id;
```

April 28, 2014 at 10:53 AM

[Anonymous](#) said...

I love this example. Just one thing must be informed to the reader. Remember that when we JOIN any two tables together on any condition the resultant table contains ALL THE COLUMNS HEADINGS of the two table. KEEP this thing clear it will solve the problem when JOIN works with three or more tables.

June 11, 2014 at 11:41 PM

[Anonymous](#) said...

Very well explained. Thank you. I was looking for a solution on how to join 3 tables and the explanations on other websites were not clear. This one is excellent and solved my problem.

June 17, 2014 at 7:24 PM

[Anonymous](#) said...

thank you so much for providing such a gud example

February 17, 2015 at 8:59 PM

[Anonymous](#) said...

nice explanation to JOIN three tables in MySQL

July 29, 2015 at 10:58 AM

[Anonymous](#) said...

I get a syntax error when I execute this command

August 27, 2015 at 11:23 AM

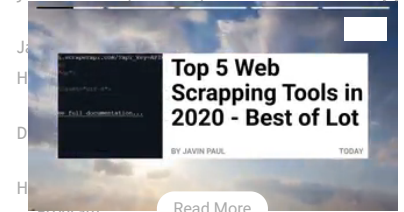
[javin paul](#) said...

@Anonymous, what error did you get? Can you please post here?

August 30, 2015 at 6:14 AM

[Unknown](#) said...

java.io.IOException: Map failed and



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References

1. [Oracle's Java Tech Network](#)
2. [jQuery Documentation](#)
3. [Microsoft SQL Server Documentation](#)
4. [Java SE 8 API Documentation](#)
5. [Spring Documentation](#)
6. [Oracle's Java Certification](#)
7. [Spring Security 5 Documentation](#)

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how to join two or more different tables in same columns?

for example:table name:ledger2000,ledger2001,ledger2002,ledger2003

September 10, 2015 at 4:36 AM

[javin paul](#) said...

@Unknownwn, In order to join table you must have same keys e.g. primary key and foreign key, if you have that than you can easily join them following syntax given in this tutorial e.g.

```
select .... from
ledger2000 L1 join ledger2001 L2 on L1.id = L2.id
join ledger2002 L3 on L2.id = L3.id
join ledger2004 L4 on L3.id = L4.id
```

You can use L2.id or L1.id on second join syntanx depending upon your requirement. Remember, when we join two tables a third temporary table is created which contains all columns of both tables, so you are free to use key from any of the table.

September 10, 2015 at 9:48 PM

[Unknown](#) said...

@narong kh. You have 3 columns with the same name. Try using an alias:

```
(SELECT
p.`Code`,
c.`Name` AS category_name,
a.`Name` AS accessory_name,
p.`Name` AS product_name,
p.`Price`,
p.`Description`,
p.`ImageName`,
p.`Date`
FROM `products` p
JOIN `categories` c ON p.CID = c.ID
JOIN `accessories` a ON p.AID = a.ID)
```

Be careful, if a product is not associated to any category then the JOIN will discard it. If a product is not associated to any accessory, then it will be discarded. JOIN will silently remove a row if the "ON" condition is not fulfilled for that specific row. Use "LEFT JOIN" instead of "JOIN" to see these rows (select all the columns that are used on any of the ON conditions, the rows with NULL values are the ones that are failing one or more ON conditions depending on which column in NULL).

```
p.CID p.AID c.ID a.ID
1 1 1 1 // All OK
2 2 NULL 2 // missing category
3 3 3 NULL // missing accessory
4 4 NULL NULL // missing both category and accessory
NULL 5 NULL 5 // product doesn't specify a category
6 NULL 6 NULL // product doesn't specify an accessory
```

November 9, 2015 at 2:29 AM

[Anonymous](#) said...

Hi all,

I was always using below method for multiple join table, which quite different from all you all talking.

```
SELECT a.*,b.*
FROM employee a
JOIN (department b,register c)
ON (a.dept_id=b.dept_id AND b.emp_id=c.empid)
```

Will my statement going to have serious performance issue?
Please point me out if I am doing wrong.

December 2, 2015 at 11:34 PM

[Anonymous](#) said...

it worked well, thanks a lot

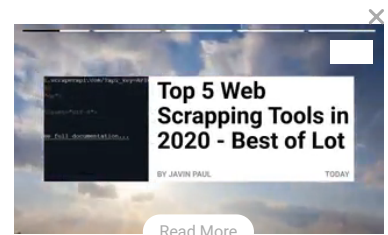
May 3, 2016 at 3:03 AM

[Unknown](#) said...

Very helpful for me

June 26, 2016 at 5:03 AM

[Travis](#) said...



Thank you so much. This is the solution that worked for my needs. I had been looking for this solution for weeks. Thank you.

[July 7, 2016 at 7:42 AM](#)

Anonymous said...

Thanks alot for very nice explanation of this topic.its really very helpful to me

[August 5, 2016 at 8:03 PM](#)

Anonymous said...

Do it yourself

[September 23, 2016 at 1:36 PM](#)

[Unknown](#) said...

Well explained , nice keep it up

[October 21, 2016 at 7:59 PM](#)

[shivanaidu](#) said...

THANKS man

[September 18, 2017 at 8:07 AM](#)

Anonymous said...

```
$rs = getRs("SELECT o.first_name, o.last_name, o.email, o.company, o.address, o.suite, o.city, o.state, o.zip,
o.country, o.order_id, o.ordernumber, o.total, o.date_created, o.shipping, o.subtotal, o.total, o.discount,
o.promo_discount, o.tax, o.premium_packaging, o.shipping_id, sh.shipping_name, sh.description AS
shipping_description, p.promo_name, p.description AS promo_description FROM promo p RIGHT JOIN (shipping sh
RIGHT JOIN orders o ON sh.shipping_id = o.shipping_id) ON p.promo_id = o.promo_id WHERE o.account_id =
{$row_t[account_id]} AND ordernumber = " . formatSql($ordernumber) . """);
```

[December 7, 2017 at 1:45 AM](#)

[oliver](#) said...

Apart from the [mysql join](#) types you have mentioned, there is also union. Union in MySQL is used to unite multiple columns from different tables into a single column in MySQL.

[December 10, 2018 at 5:12 AM](#)

Anonymous said...

```
SELECT EMP_NAME FROM EMPLOYEE WHERE DEPARTMENT <> SALES
```

[February 5, 2019 at 3:56 AM](#)

[Unknown](#) said...

Can u give a perfect example for joining 3 tables

[August 28, 2019 at 8:46 AM](#)

[Anjali](#) said...

How to add where clause while joining 3 tables?

[October 8, 2019 at 10:46 AM](#)

[javin paul](#) said...

```
Hello @Unknown, just like you do for one table, write the WHERE clause after JOIN clause like
JOIN ON
JOIN ON
JOIN ON
WHERE
```

[October 9, 2019 at 4:49 AM](#)

Anonymous said...

This is Right..

Very helpful Query for me

[January 31, 2020 at 4:19 AM](#)

[javin paul](#) said...

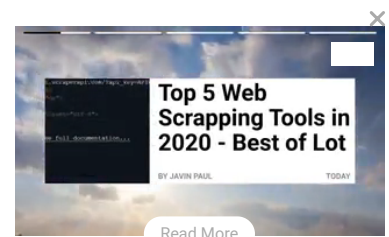
Thanks @Anonymous, I am happy that you find this query useful.

[January 31, 2020 at 4:52 AM](#)

[Gopal Kumar](#) said...

p.CID=c.ID never work. It should be p.CID=c.CID or p.ID=c.ID. Field name should be same.

[June 2, 2020 at 1:43 AM](#)



[javin paul](#) said...

Hello @Gopal, very well spotted, join column name must be same.

June 3, 2020 at 11:57 PM

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ahm7dkhalifa@



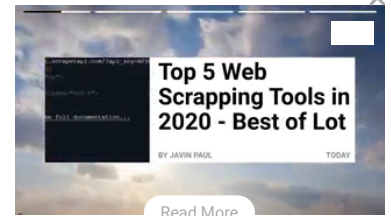
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