CROSS JOIN

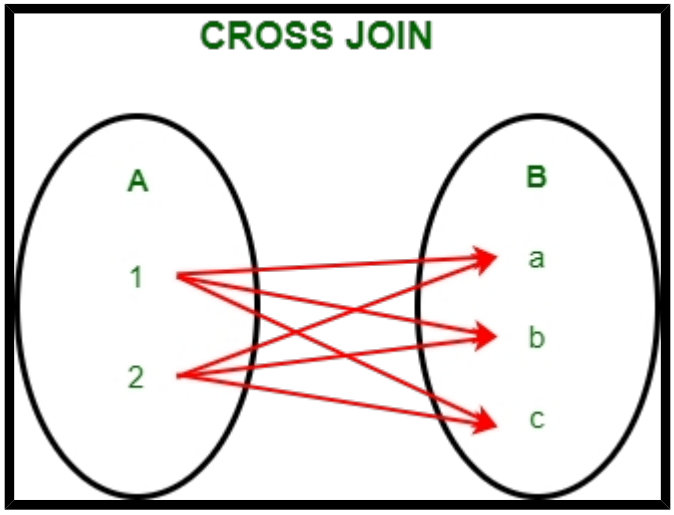
SQL CROSS JOIN returns all the records from the left and right tables. CROSS JOIN returns a combination of each row in the left table paired with each row in the right table.

CROSS JOIN in SQL

Cross Join in SQL produces a result set that contains the cartesian product of two or more tables. Cross join is also called a **Cartesian Join**.

When CROSS JOIN is used with a **WHERE clause**, it behaves like **INNER JOIN**, filtering the results based on specific conditions.

CROSS JOIN is the best choice when we need to match each row of one table to every other row of another table. It is helpful in many applications where we need to obtain paired combinations of records.



Cross Join B/W Two Sets

Syntax

```
SELECT *
FROM table1
CROSS JOIN table2;
```

SQL CROSS JOIN Example

Let's look at some examples of CROSS JOIN statement in SQL to understand it's working.

Demo SQL Database

In this CROSS JOIN tutorial, we will use the following two tables in examples:

Table 1 - Customer

ID	NAME	AGE	PHONE

1	AMIT JAIN	21	98474
2	JATIN VERMA	47	63996

Table 2 - Orders

ORDER_ID	AMOUNT	PLACED_ON
101	999	2023-04-19
102	4999	2023-04-20

To create both these tables on your system, you can write the following code:

```
CREATE DATABASE GeeksForGeeks;
USE GeeksForGeeks;
CREATE TABLE CUSTOMER (
    ID INT,
    NAME VARCHAR(20),
    AGE INT,
    PHONE INT
);
CREATE TABLE ORDERS (
    ORDER_ID INT,
    AMOUNT INT,
    PLACED_ON DATE
);
INSERT INTO CUSTOMER
VALUES (1, 'AMIT JAIN', 21, 98474),
       (2, 'JATIN VERMA', 47, 63996);
INSERT INTO ORDERS
VALUES (101, 999, '2023-04-19'),
       (102, 4999, '2023-04-20');
```

CROSS JOIN Example

In this example, we will use the CROSS JOIN command to match the data of the Customer and Orders table.

Query

```
SELECT *
FROM CUSTOMER
CROSS JOIN ORDERS;
```

Output

```
mysql> SELECT *
    -> FROM CUSTOMER
    -> CROSS JOIN ORDERS;
+------+------------+------+-------+----------+--------+------------+
| ID   | NAME       | AGE  | PHONE | ORDER_ID | AMOUNT | PLACED_ON  |
+------+------------+------+-------+----------+--------+------------+
|    2 | JATIN VERMA |   47 | 63996 |      101 |    999 | 2023-04-19 |
|    1 | AMIT JAIN   |   21 | 98474 |      101 |    999 | 2023-04-19 |
|    2 | JATIN VERMA |   47 | 63996 |      102 |   4999 | 2023-04-20 |
|    1 | AMIT JAIN   |   21 | 98474 |      102 |   4999 | 2023-04-20 |
+------+------------+------+-------+----------+--------+------------+
4 rows in set (0.06 sec)

mysql>
```

Cross Join

As we can see, whether the other table matches or not, the CROSS JOIN keyword returns all similar records from both tables. Therefore, if there are rows in “Customers” or “Orders” that do not match any entries in either table, those rows will also be listed.

Important Points About CROSS JOIN

- CROSS JOIN performs the cross-product of records from two or more joined tables.
- It is used when we want every possible combination of rows to be present in a database’s tables.
- SQL CROSS JOIN with condition of WHERE Clause operates as an INNER JOIN; when used without one, it produces the cartesian product of all the rows from all the tables provided in the SQL query.
- CROSS JOIN is different from other join types like INNER JOIN, **LEFT JOIN**, and **RIGHT JOIN**, as it does not require a matching condition between the tables.

Frequently Asked Questions on SQL CROSS JOIN

When to use the CROSS JOIN in SQL?

The **CROSS JOIN** in to tables used to generate all combinations of records. For example, we have two columns: size and color, and we need a result to display all the possible paired combinations of those columns that’s where the CROSS JOIN will come.

What happens when a WHERE condition is specified in CROSS JOIN?

In case a **WHERE condition** is specified then Cross Join behaves as a Inner Join.

What is the difference between CROSS JOIN and Natural Join?

Natural Join joins two tables based on same attribute name and datatypes. **Cartesian/CROSS Join** produces cartesian product of two tables.