



MySQL MINUS

Summary: in this tutorial, you will learn how about SQL `MINUS` operator and how to simulate `MINUS` in MySQL using join.

Note that MySQL does not support the `MINUS` operator. This tutorial shows you to how to emulate the `MINUS` operator in MySQL using join clauses.

Introduction to SQL MINUS operator

The `MINUS` operator is one of three set operators in the SQL standard that includes `UNION` (<https://www.mysqltutorial.org/sql-union-mysql.aspx>) , `INTERSECT` (<https://www.mysqltutorial.org/mysql-intersect/>) , and `MINUS` .

The `MINUS` compares the results of two queries and returns distinct rows from the result set of the first query that does not appear in the result set of the second query.

The following illustrates the syntax of the `MINUS` operator:

```
SELECT select_list1
FROM table_name1
MINUS
SELECT select_list2
FROM table_name2;
```

The basic rules for a query that uses `MINUS` operator are the following:

- The number and order of columns in both `select_list1` and `select_list2` must be the same.
- The [data types](https://www.mysqltutorial.org/mysql-data-types.aspx) (<https://www.mysqltutorial.org/mysql-data-types.aspx>) of the corresponding columns in both queries must be compatible.

Suppose that we have two tables `t1` and `t2` with the following structure and data:

```
CREATE TABLE t1 (  
    id INT PRIMARY KEY  
);  
  
CREATE TABLE t2 (  
    id INT PRIMARY KEY  
);  
  
INSERT INTO t1 VALUES (1),(2),(3);  
INSERT INTO t2 VALUES (2),(3),(4);
```

The following query returns distinct values from the query of the `t1` table that is not found in the result of the query of the `t2` table.

```
SELECT id FROM t1  
MINUS  
SELECT id FROM t2;
```

The following Venn diagram illustrates the `MINUS` operation:

Note that some database systems e.g., Microsoft SQL Server and PostgreSQL use the `EXCEPT` instead of `MINUS`. They have the same function.

MySQL MINUS operator emulation

Unfortunately, MySQL does not support `MINUS` operator. However, you can use [join](https://www.mysqltutorial.org/mysql-join/) (<https://www.mysqltutorial.org/mysql-join/>) to emulate it.

To emulate the `MINUS` of two queries, you use the following syntax:

```
SELECT
    select_list
FROM
    table1
LEFT JOIN table2
    ON join_predicate
WHERE
    table2.column_name IS NULL;
```

For example, the following query uses the `LEFT JOIN` (<https://www.mysqltutorial.org/mysql-left-join.aspx>) clause to return the same result as the `MINUS` operator:

```
SELECT
    id
FROM
    t1
```

```
LEFT JOIN
  t2 USING (id)
WHERE
  t2.id IS NULL;
```

In this tutorial, you have learned about the SQL MINUS operator and how to emulate MINUS operator in MySQL using `LEFT JOIN` clause.