

LAB - SELECT TOP

In this lab, you will learn how to use the SQL Server `SELECT TOP` statement to limit the rows returned by a query.

The `SELECT TOP` clause allows you to limit the number of rows or percentage of rows returned in a query result set.

Because the order of rows stored in a table is unspecified, the `SELECT TOP` statement is always used in conjunction with the `ORDER BY` clause. Therefore, the result set is limited to the first `N` number of ordered rows.

The following shows the syntax of the `TOP` clause with the `SELECT` statement:

```
SELECT TOP (expression) [PERCENT]
    [WITH TIES]
FROM
    table_name
ORDER BY
    column_name;
```

In this syntax, the `SELECT` statement can have other clauses such as `WHERE`, `JOIN`, `HAVING`, and `GROUP BY`.

expression

Following the `TOP` keyword is an expression that specifies the number of rows to be returned. The expression is evaluated to a float value if `PERCENT` is used, otherwise, it is converted to a `BIGINT` value.

PERCENT

The `PERCENT` keyword indicates that the query returns the first `N` percentage of rows, where `N` is the result of the `expression`.

WITH TIES

The `WITH TIES` allows you to return more rows with values that match the last row in the limited result set. Note that `WITH TIES` may cause more rows to be returned than you specify in the expression.

For example, if you want to return the most expensive products, you can use the `TOP 1`. However, if two or more products have the same prices as the most expensive product, then you miss the other most expensive products in the result set.

To avoid this, you can use `TOP 1 WITH TIES`. It will include not only the first expensive product but also the second one, and so on.

Examples

We will use the `production.products` table for the demonstration.

production.products
* product_id
product_name
brand_id
category_id
model_year
list_price

1) Using TOP with a constant value

The following example uses a constant value to return the top 10 most expensive products.

```
SELECT TOP 10
    product_name,
    list_price
FROM
    production.products
ORDER BY
    list_price DESC;
```

Here is the result:

product_name	list_price
Trek Domane SLR 9 Disc - 2018	11999.99
Trek Domane SLR 8 Disc - 2018	7499.99
Trek Silque SLR 8 Women's - 2017	6499.99
Trek Domane SL Frameset - 2018	6499.99
Trek Domane SL Frameset Women's - 2018	6499.99
Trek Emonda SLR 8 - 2018	6499.99
Trek Silque SLR 7 Women's - 2017	5999.99
Trek Domane SLR 6 Disc - 2017	5499.99
Trek Domane SL 8 Disc - 2018	5499.99
Trek Domane SLR 6 Disc Women's - 2018	5499.99

2) Using TOP to return a percentage of rows

The following example uses `PERCENT` to specify the number of products returned in the result set. The `production.products` table has 321 rows, therefore, one percent of 321 is a fraction value (3.21), SQL Server rounds it up to the next whole number which is four (4) in this case.

```

SELECT TOP 1 PERCENT
    product_name,
    list_price
FROM
    production.products
ORDER BY
    list_price DESC;

```

The output is:

product_name	list_price
Trek Domane SLR 9 Disc - 2018	11999.99
Trek Domane SLR 8 Disc - 2018	7499.99
Trek Domane SL Frameset - 2018	6499.99
Trek Domane SL Frameset Women's - 2018	6499.99

3) Using TOP WITH TIES to include rows that match the values in the last row

The following statement returns the top three most expensive products:

```

SELECT TOP 3 WITH TIES
    product_name,
    list_price
FROM
    production.products
ORDER BY
    list_price DESC;

```

The output is as follows:

product_name	list_price	
Trek Domane SLR 9 Disc - 2018	11999.99	} TOP 3
Trek Domane SLR 8 Disc - 2018	7499.99	
Trek Domane SL Frameset - 2018	6499.99	
Trek Domane SL Frameset Women's - 2018	6499.99	} WITH TIES
Trek Emonda SLR 8 - 2018	6499.99	
Trek Silque SLR 8 Women's - 2017	6499.99	

In this example, the third expensive product has a list price of 6499.99. Because the statement used TOP WITH TIES, it returned three more products whose list prices are the same as the third one.

In this lab, you have learned how to use the SQL Server SELECT TOP statement to limit the number of rows or percentage of rows returned by a query.

