Reference card

# SQL numeric functions and aggregation

## Numeric functions

Numeric functions are built-in functions that **operate on numeric data types** (such as integers, decimals, and floating-points) and perform various **mathematical** and **statistical operations** on them.

## AGGREGATE

Aggregate numeric functions are functions that operate on **a set of row values of a column** and return a **single** computed **result**.

### MIN()

Returns the **smallest or lowest value** of the selected column:

```
SELECT
    MIN(Column_name) AS Alias
FROM
    Table_name;
```

### MAX()

Returns the **largest or highest value** of the selected column:

```
SELECT
    MAX(Column_name) AS Alias
FROM
    Table_name;
```

### AVG()

Returns the **average value** of the selected numeric column:

```
SELECT
    AVG(Column_name) AS Alias
FROM
    Table_name;
```

### COUNT()

Returns the **number of rows** of a specified column:

```
SELECT
    COUNT(Column_name) AS Alias
FROM
    Table_name;
```

### COUNT(DISTINCT column)

Returns the **distinct or unique number of rows** of a specified column:

```
SELECT
    COUNT(DISTINCT Column_name) AS Alias
FROM
    Table_name;
```

### SUM()

Returns the **total sum** of a specified numeric column:

```
SELECT
    SUM(Column_name) AS Alias
FROM
    Table_name;
```

## SCALAR

Scalar numeric functions are functions that operate on **a set of row values on a column** and return a result for **each row**.

### ROUND()

Rounds a numerical value to a **specified number of decimal places**:

```
SELECT
    ROUND(Column_name, decimal_places) AS Alias
FROM
    Table_name;
```

### SQRT()

Returns the **square root** of a numerical value:

```
SELECT
    SQRT(Column_name) AS Alias
FROM
    Table_name;
```

### LOG()

Returns the **logarithm of a numeric value** with a specified base:

```
SELECT
    LOG(Column_name, base) AS Alias
FROM
    Table_name;
```

## Aggregation clauses

These are **aggregation and ordering clauses** used together with aggregate numeric functions in SQL.

### GROUP BY

A clause used with aggregate functions to **group the result set by one or more columns**.

```
SELECT
    Column_1,
    AGG_FUNCTION(Column_N)
FROM
    Table_name
GROUP BY
   Column_1;
```

### HAVING

A clause used to **filter the result set** based on a **condition**.

```
SELECT
    Column_1,
    AGG_FUNCTION(Column_N)
FROM
    Table_name
GROUP BY
   Column_1
HAVING
   Condition;
```

### ORDER BY

A clause used to **sort the result set** based on the calculated values of the aggregation.

```
SELECT
    Column_1,
    AGG_FUNCTION(Column_N) AS Aggr_column
FROM
    Table_name
GROUP BY
    Column_1
ORDER BY Aggr_column;
```

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