Aggregate Functions in SQL

In this lesson, we will learn about the different aggregate functions available in SQL.

Aggregate functions in SQL

In database management, an aggregate function is a function where the values of multiple rows are grouped together to form a single value of more significant meaning.

We will discuss the following in this lesson:

- `COUNT()`

- `SUM()`

- `AVG()`

- `MIN()`

- `MAX()`

Again we will be using the CUSTOMERS table.

The COUNT function

The `COUNT()` function returns the number of rows that match a specified criterion.

Syntax

The syntax for the `COUNT()` function is as follows:
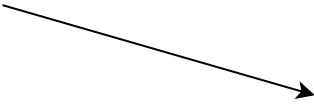
```
SELECT COUNT(column_name)

FROM table_name

WHERE condition;
```

This query will return the number of `Non-Null` values in the specified column.

Example

Let's say we apply the COUNT function to the `salary` column:

The COUNT() function will return the number of NON NULL salaries in the column

ID	NAME	AGE	ADDRESS	SALARY
1	Mark	32	Texas	50000.00
2	John	25	NY	65000.00
3	Emily	23	Ohio	20000.00
4	Bill	25	Chicago	75000.00
5	Tom	27	Washington	35000.00
6	Jane	22	Texas	45000.00

The following code shows the SQL query:

```
SELECT COUNT(SALARY)
FROM CUSTOMERS;
```

As we can see it returned the number of `Non-Null` values over the column salary i.e, 6.

The SUM function

The `SUM()` function returns the total sum of a numeric column.

Syntax #

The syntax for the SUM() function is as follows:
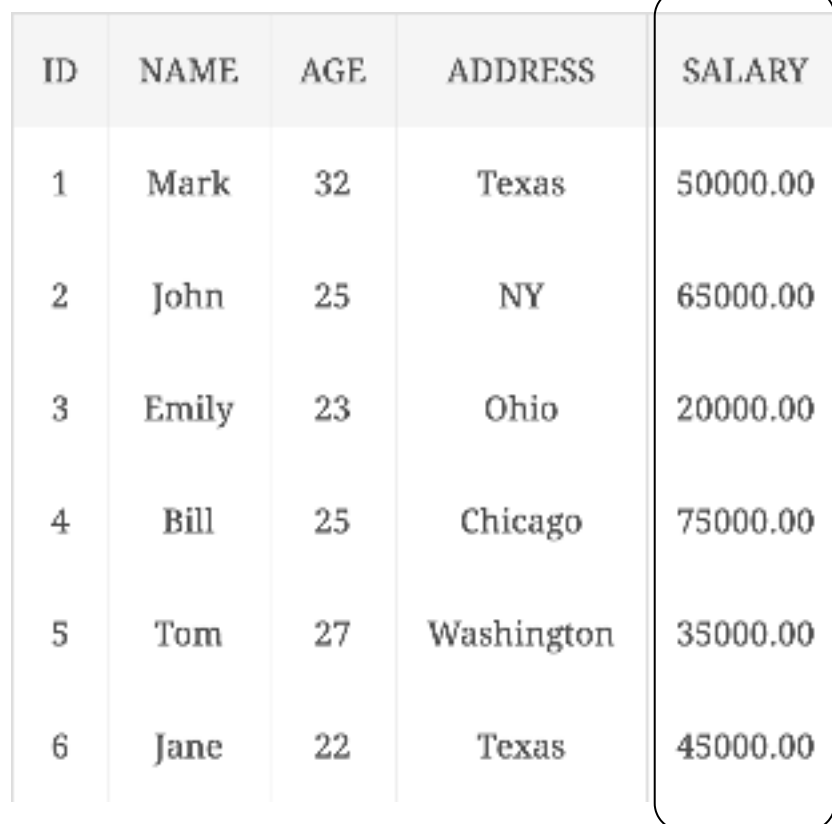
```
SELECT SUM(column_name)
```

```
FROM table_name




WHERE condition;
```

This query will return the sum of all `Non-Null` values in a particular column.

Example

Let's say we apply the `SUM` function to the `salary` column:

The SUM() function will return the sum of all NON NULL salaries in the column

ID	NAME	AGE	ADDRESS	SALARY
1	Mark	32	Texas	50000.00
2	John	25	NY	65000.00
3	Emily	23	Ohio	20000.00
4	Bill	25	Chicago	75000.00
5	Tom	27	Washington	35000.00
6	Jane	22	Texas	45000.00

So SUM() will return 290,000

The following code shows the SQL query:

```
SELECT SUM(SALARY)
FROM CUSTOMERS;
```

As we can see in the output above, the sum of all `Non-Null` values in the salary column is 290,000.

The AVG function

The `AVG()` function returns the average value of a numeric column.

Syntax

The syntax for the `AVG()` function is as follows:

```
SELECT AVG(column_name)

FROM table_name

WHERE condition;
```
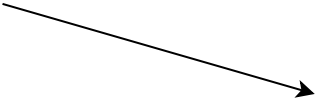
This query will return the average of all `Non-Null` values in a particular column.

Example

Let's say we apply the `AVG` function to the `salary` column:

The AVG() function will return the average value of all NON NULL salaries in the column

ID	NAME	AGE	ADDRESS	SALARY
1	Mark	32	Texas	50000.00
2	John	25	NY	65000.00
3	Emily	23	Ohio	20000.00
4	Bill	25	Chicago	75000.00
5	Tom	27	Washington	35000.00
6	Jane	22	Texas	45000.00

So AVG() function will return 48333.333333

The following code shows the SQL query:

```
SELECT AVG(SALARY)
FROM CUSTOMERS;
```

As we can see, it returned the average of `Non-Null` values of the column salary, i.e. 48333.33.

The MAX function

The `MAX()` function returns the largest value of the selected column.

Syntax #

The syntax for the `MAX()` function is as follows:
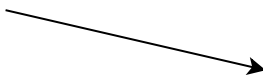
```
SELECT MAX(column_name)

FROM table_name

WHERE condition;
```

This query will return the max of all `Non-Null` values in a particular column.

Example #

Let's say we want to find the highest salary in the CUSTOMERS table:

The MAX() function will return the maximum salary from the column

ID	NAME	AGE	ADDRESS	SALARY
1	Mark	32	Texas	50000.00
2	John	25	NY	65000.00
3	Emily	23	Ohio	20000.00
4	Bill	25	Chicago	75000.00
5	Tom	27	Washington	35000.00
6	Jane	22	Texas	45000.00

So MAX() function will return 75000.00

The following code shows the SQL query:

```
SELECT MAX(SALARY)
FROM CUSTOMERS
```

The MIN function

The `MIN()` function returns the smallest value in the selected column.

Syntax #

The syntax for the `MIN()` function is as follows:

```
SELECT MIN(column_name)

FROM table_name

WHERE condition;
```
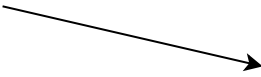
This query will return the min of all `Non-Null` values in a particular column.
Example #

Let's say we want to find the lowest salary in the CUSTOMERS table:

The MIN() function will return the minimum salary from the column

ID	NAME	AGE	ADDRESS	SALARY
1	Mark	32	Texas	50000.00
2	John	25	NY	65000.00
3	Emily	23	Ohio	20000.00
4	Bill	25	Chicago	75000.00
5	Tom	27	Washington	35000.00
6	Jane	22	Texas	45000.00

So MAX() function will return 75000.00

The following code shows the SQL query:

```sql
SELECT MIN(SALARY)
FROM CUSTOMERS;
```

Quick quiz!

Q   Which of the following SQL queries will return the youngest person in the CUSTOMERS table?

In the next lesson, we will discuss two important clauses: ORDER BY and GROUP BY.