SQL: AVG

The `AVG()` function in SQL is used to calculate the average (mean) value of a numeric column. It is an aggregate function, meaning it performs a calculation on a set of values and returns a single value.

Syntax

The basic syntax for using the `AVG()` function is:

```
SELECT AVG(column_name)
FROM table_name
WHERE condition;
```

Examples of Using `AVG()`

Let's look at some examples to understand how the `AVG()` function works.

Example Table: Employees

employee_id	first_name	last_name	department	salary
1	John	Doe	Sales	60000
2	Jane	Smith	Marketing	55000
3	Alice	Johnson	Sales	50000
4	Bob	Brown	IT	70000
5	Carol	White	Marketing	52000

1. **Calculating the Average Salary of All Employees**:

   Suppose you want to find the average salary of all employees:

   ```
   SELECT AVG(salary)
   FROM Employees;
   ```

   Result:

   AVG(salary)

   57400

This query calculates the average salary of all employees. It adds up all the salaries (60000 + 55000 + 50000 + 70000 + 52000 = 287000) and divides by the number of salaries (5), resulting in an average of 57400.

2. **Calculating the Average Salary in a Specific Department**:

Suppose you want to find the average salary of employees in the Sales department:

```
SELECT AVG(salary)
FROM Employees
WHERE department = 'Sales';
```

Result:

AVG(salary)

55000

This query filters the employees to only those in the Sales department and then calculates the average salary. The sum of salaries in Sales (60000 + 50000 = 110000) is divided by 2 (the number of employees in Sales), resulting in an average of 55000.

3. **Calculating the Average Salary Excluding Certain Salaries**:

Suppose you want to calculate the average salary of employees who earn more than 50,000:

```
SELECT AVG(salary)
FROM Employees
WHERE salary > 50000;
```

Result:

AVG(salary)

59250

This query calculates the average salary for employees who earn more than 50,000. The sum of these salaries (60000 + 55000 + 70000 + 52000 =

237000) is divided by the count of these salaries (4), resulting in an average of 59250.

4. **Combining** `AVG()` **with** `GROUP BY`:

   Suppose you want to calculate the average salary for each department:

```
SELECT department, AVG(salary)
FROM Employees
GROUP BY department;
```

   Result:

department	AVG(salary)
Sales	55000
Marketing	53500
IT	70000

   This query groups the employees by department and calculates the average salary for each department.

Key Points

- **Calculates the Mean**: `AVG()` returns the arithmetic mean of a set of numeric values.

- **Ignores** `NULL` **Values**: The function automatically ignores `NULL` values in the column when computing the average.

- **Can Be Combined with** `GROUP BY`: You can use `AVG()` with `GROUP BY` to calculate averages for different groups of data, like departments or other categories.

- **Can Include** `WHERE` **Clause**: Use the `WHERE` clause to filter the rows that contribute to the average, allowing you to calculate conditional averages.

The `AVG()` function is an essential tool for statistical analysis and reporting in SQL, helping you to understand average values in your data.