Aggregate functions in SQL perform a calculation on a set of rows and return a single, summary value. The most common aggregate functions are COUNT, SUM, AVG, MIN, and MAX.

These functions are frequently used with the GROUP BY clause to calculate metrics for different categories.

Let's use this sample employees table for the examples:

employees table:

| ID | Name | Department | Salary |

| :--- | :--- | :--- | :--- |

| 1 | Alice | HR | 60000 |

| 2 | Bob | Engineering | 85000 |

| 3 | Charlie | Engineering | 110000 |

| 4 | Diana | Sales | 75000 |

| 5 | Eve | Sales | 68000 |

### COUNT()

The COUNT() function **counts the number of rows**. COUNT(\*) counts all rows, while COUNT(column\_name) counts non-NULL values in a specific column.

To count the total number of employees:

SQL

SELECT COUNT(\*) AS total\_employees  
FROM employees;

**Result:** 5

To count the number of employees in each department:

SQL

SELECT Department, COUNT(ID) AS number\_of\_employees  
FROM employees  
GROUP BY Department;

Result:

| Department | number\_of\_employees |

| :--- | :--- |

| HR | 1 |

| Engineering | 2 |

| Sales | 2 |

### SUM()

The SUM() function **calculates the total sum** of a numeric column. ➕

To get the total salary expense for the company:

SQL

SELECT SUM(Salary) AS total\_payroll  
FROM employees;

**Result:** 398000

### AVG()

The AVG() function **calculates the average value** of a numeric column.

To find the average salary of all employees:

SQL

SELECT AVG(Salary) AS average\_salary  
FROM employees;

**Result:** 79600

### MIN() and MAX()

The MIN() and MAX() functions find the **minimum** and **maximum** values in a column, respectively. 📉📈

To find the lowest and highest salaries in the company:

SQL

SELECT MIN(Salary) AS lowest\_salary, MAX(Salary) AS highest\_salary  
FROM employees;

Result:

| lowest\_salary | highest\_salary |

| :--- | :--- |

| 60000 | 110000 |