**NAME:=Purva Tagde PRN:=23070521111 Sub:=DBMS LAB**

**SQL Aggregate Functions in SQL\*Plus**

**(Oracle) & MySQL**

Aggregate functions perform calculations on multiple rows and return a **single** value. These functions are useful in **summarizing** data, such as totals, averages, counts, etc.

Below are detailed examples covering all aggregate functions in **SQL\*Plus (Oracle)** and **MySQL**.

# 1. Aggregate Functions in SQL\*Plus (Oracle)

## 1.1 SUM() – Total of a Column

SELECT SUM(salary) AS total\_salary FROM employees; -- Total salary of all employees

SELECT department\_id, SUM(salary) FROM employees GROUP BY department\_id; -- Total salary per department

**DONE**

## 1.2 AVG() – Average of a Column

SELECT AVG(salary) AS avg\_salary FROM employees; -- Average salary

SELECT department\_id, AVG(salary) FROM employees GROUP BY department\_id; -- Average salary per department

**DONE**

## 1.3 COUNT() – Counting Rows

SELECT COUNT(\*) FROM employees; -- Total number of employees SELECT COUNT(employee\_id) FROM employees WHERE department\_id = 10; --

Count employees in department 10

SELECT department\_id, COUNT(\*) FROM employees GROUP BY department\_id; -- Count per department

**DONE**

## 1.4 MAX() – Maximum Value

SELECT MAX(salary) FROM employees; -- Highest salary in the company

SELECT department\_id, MAX(salary) FROM employees GROUP BY department\_id; -- Highest salary per department

**DONE**

## 1.5 MIN() – Minimum Value

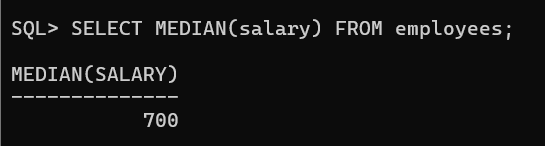
SELECT MIN(salary) FROM employees; -- Lowest salary in the company

SELECT department\_id, MIN(salary) FROM employees GROUP BY department\_id; -- Lowest salary per department

**DONE**

## 1.6 MEDIAN() – Median Value (Oracle-Only)

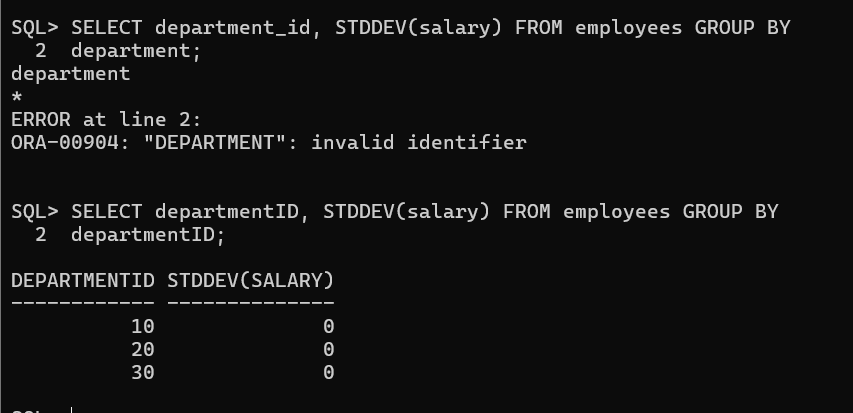
SELECT MEDIAN(salary) FROM employees; -- Median salary of all employees



## 1.7 STDDEV() – Standard Deviation

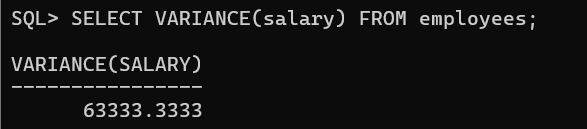
SELECT STDDEV(salary) FROM employees; -- Standard deviation of salaries

SELECT department\_id, STDDEV(salary) FROM employees GROUP BY department\_id; -- Std deviation per department



**1.8 VARIANCE() – Variance of a Column**

SELECT VARIANCE(salary) FROM employees; -- Variance of salaries

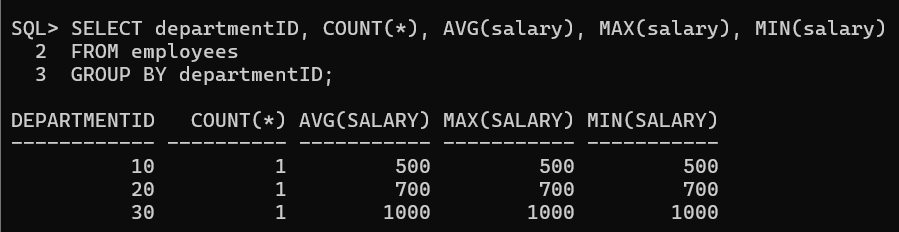


## 1.9 GROUP BY with Aggregate Functions

SELECT department\_id, COUNT(\*), AVG(salary), MAX(salary), MIN(salary)

FROM employees

GROUP BY department\_id; -- Aggregate calculations per department



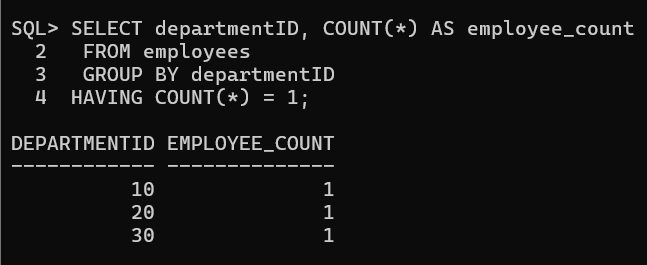
## 1.10 HAVING Clause (Filtering Groups)

SELECT department\_id, COUNT(\*) AS employee\_count

FROM employees

GROUP BY department\_id

HAVING COUNT(\*) > 5; -- Only departments with more than 5 employees



# 2. Aggregate Functions in MySQL

## 2.1 SUM() – Total of a Column

SELECT SUM(salary) AS total\_salary FROM employees; -- Total salary of all employees

SELECT department\_id, SUM(salary) FROM employees GROUP BY department\_id; -- Total salary per department

## 2.2 AVG() – Average of a Column

SELECT AVG(salary) AS avg\_salary FROM employees; -- Average salary

SELECT department\_id, AVG(salary) FROM employees GROUP BY department\_id; -- Average salary per department

## 2.3 COUNT() – Counting Rows

SELECT COUNT(\*) FROM employees; -- Total number of employees SELECT COUNT(employee\_id) FROM employees WHERE department\_id = 10; --

Count employees in department 10

SELECT department\_id, COUNT(\*) FROM employees GROUP BY department\_id; -- Count per department

## 2.4 MAX() – Maximum Value

SELECT MAX(salary) FROM employees; -- Highest salary in the company

SELECT department\_id, MAX(salary) FROM employees GROUP BY department\_id; -- Highest salary per department

## 2.5 MIN() – Minimum Value

SELECT MIN(salary) FROM employees; -- Lowest salary in the company

SELECT department\_id, MIN(salary) FROM employees GROUP BY department\_id; -- Lowest salary per department

## 2.6 STDDEV() – Standard Deviation

SELECT STDDEV(salary) FROM employees; -- Standard deviation of salaries

SELECT department\_id, STDDEV(salary) FROM employees GROUP BY department\_id; -- Std deviation per department

**2.7 VARIANCE() – Variance of a Column**

SELECT VARIANCE(salary) FROM employees; -- Variance of salaries

## 2.8 GROUP BY with Aggregate Functions

SELECT department\_id, COUNT(\*), AVG(salary), MAX(salary), MIN(salary)

FROM employees

GROUP BY department\_id; -- Aggregate calculations per department

## 2.9 HAVING Clause (Filtering Groups)

SELECT department\_id, COUNT(\*) AS employee\_count

FROM employees

GROUP BY department\_id

HAVING COUNT(\*) > 5; -- Only departments with more than 5 employees

**3. Key Differences Between SQL\*Plus (Oracle) and**

# MySQL Aggregate Functions

|  |  |  |
| --- | --- | --- |
| **Feature** | **Oracle (SQL\*Plus)** | **MySQL** |
| Basic Aggregate  Functions | SUM(), AVG(), COUNT(),  MAX(), MIN() | SUM(), AVG(), COUNT(),  MAX(), MIN() |
| Median Calculation | MEDIAN() | Not available (requires workaround) |
| Standard Deviation | STDDEV() | STDDEV() |
| Variance Calculation | VARIANCE() | VARIANCE() |
| Handling NULL values | Ignores NULL values in aggregate functions | Ignores NULL values in aggregate functions |
| HAVING Clause | Used after GROUP BY | Used after GROUP BY |
| GROUP BY | Used to group and aggregate | Used to group and aggregate |

## 4. Special Notes

* **Oracle** provides the **MEDIAN()** function, but **MySQL does not**. In MySQL, median must be calculated using a workaround.
* **Both** ignore NULL values when computing aggregates unless explicitly handled.
* **HAVING** is used **after GROUP BY** to filter aggregated results in both Oracle and MySQL.