

## Exercise 2 : Aggregate functions & Grouping.

### 1. COUNT Function.

Write a SQL query to find the total salary paid to all employees in the IT department.  
Write a SQL query to find the total number of employees in the company.

#### Answer

SELECT COUNT(first-name) AS Total number of employees  
FROM employees;

total number of employees
10

### 2. SUM function.

Write a SQL query to find the total salary paid to all employees in the IT department.

SELECT department,  
FROM employees SUM(salary) AS total\_salary  
WHERE department = 'IT'  
GROUP BY department;

department	total_salary
IT	220 000

### 3. AVG() function.

Write an SQL Query to calculate the average salary of employees in the HR department.

```
SELECT department,  
       AVG(Salary) AS average_salary  
FROM employees  
WHERE department = 'HR'  
GROUP BY department ;
```

department	average_Salary
HR	49500

### 4. MIN() and MAX() functions

Write a SQL query to find the highest and lowest salary in the company.

```
SELECT MAX(Salary) AS highest_salary,  
       MIN(Salary) AS lowest_salary  
FROM employees ;
```

highest_salary	lowest_salary
62 000	48 000

## 5. GROUP BY statement

Write a SQL query to group employees by department and display the total salary paid in each department.

```
SELECT department,  
       Sum(Salary) AS total_salary_per_department  
FROM employees  
GROUP BY department;
```

department	total salary - per - department
IT	220 000
HR	99 000
Finance	119 000
Marketing	105 000

## 6. GROUP BY and COUNT()

Write a SQL query to count how many employees work in each city.

```
SELECT city,  
       COUNT(first_name) AS total_employees  
FROM employees  
GROUP BY city;
```

City	total employees
New York	2
Chicago	3
Los Angeles	2
San Francisco	2
Houston	1

### 7. GROUP BY and ORDER BY

Write a SQL query to group employees by department, calculate the average salary in each department, and order the results in descending order of average salary.

```

SELECT department,
       AVG(Salary) AS average-salary-per-department
FROM employees
GROUP BY department
WHERE
ORDER BY average-salary-per-department DESC;
    
```

department	average-salary-per-department
Finance	\$9 500
IT	\$5 000
Marketing	\$2 500
HR	\$9 500

## 8. HAVING CLAUSE

Write a SQL query to find departments where the total salary paid exceeds 100,000.  
(Use GROUP BY and HAVING).

```
SELECT department,
       sum(salary) AS total_salary_per_department
  FROM employees
 GROUP BY department
 HAVING sum(salary) > 100000;
```

department	total_salary_per_department
IT	220 000
Finance	119 000
Marketing	105 000

## 9. Combining GROUP BY, HAVING, and ORDER BY

Write a SQL query to list cities where more than one employee works, ORDERED BY the number of employees in descending order.

```
SELECT city,
       COUNT(first_name) AS total_employees
  FROM employees
 GROUP BY city
 HAVING COUNT(first_name) > 1
 ORDER BY (total_employees) DESC;
```

City	Total employees
Chicago	3 ✓
New York	2 ✓
Los Angeles	2 ✓
San Francisco	2 ✓

#### 10. Combining Aggregate functions -

Write a SQL query to find the department with the highest average salary.

```

SELECT department, ✓
      AVG(salary) AS average-salary ✓
  FROM employees ✓
 GROUP BY department ✓
by wrong HAVING AVG(salary) = Max(average-salary) j
  ORDER BY average-salary DESC
  LIMIT 1;
  
```

department	average-salary
Finance	59 500 ✓