Ex.No: 10 DATE:26.10.2024

#### AGGREGATING DATA USING GROUP FUNCTION

1. Group functions work across many rows to produce one result per group.

Explanation: Group functions, like SUM, AVG, COUNT, MAX, and MIN, aggregate data across multiple rows to produce a single result per group defined by the GROUP BY clause.

2. Group functions include nulls in calculations.

#### **False**

Explanation: Most group functions ignore NULL values in their calculations (e.g., SUM and AVG skip NULLS). However, COUNT (\*) will count all rows, including those with NULL values.

3. The WHERE clause restricts rows prior to inclusion in a group calculation. True

Explanation: The WHERE clause filters rows before grouping occurs. Only the rows that meet the WHERE condition are included in the group calculation.

The HR department needs the following reports:

4. Find the highest, lowest, sum, and average salary of all employees. Label the columns Maximum, Minimum, Sum, and Average, respectively. Round your results to the nearest whole number

#### **SELECT**

ROUND(MAX(salary)) AS Maximum, ROUND(MIN(salary)) AS Minimum, ROUND(SUM(salary)) AS Sum, ROUND(AVG(salary)) AS Average

FROM employees;

MAXIMUM	MINIMUM	SUM	AVERAGE
7000	4500	28000	5600

5. Modify the above query to display the minimum, maximum, sum, and average salary for each job type.

#### SELECT

job\_id,

ROUND(MAX(salary)) AS Maximum,

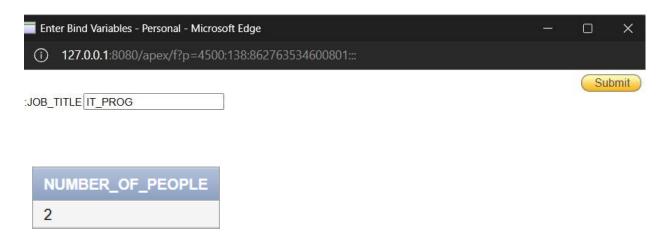
ROUND(MIN(salary)) AS Minimum, ROUND(SUM(salary)) AS Sum, ROUND(AVG(salary)) AS Average FROM employees GROUP BY job\_id;

JOB_ID	MAXIMUM	MINIMUM	SUM	AVERAGE
IT_PROG	5000	4500	9500	4750
AD_ASST	7000	7000	7000	7000
SA_MAN	5500	5500	5500	5500
HR_REP	6000	6000	6000	6000

6. Write a query to display the number of people with the same job. Generalize the query so that the user in the HR department is prompted for a job title.

## SELECT

COUNT(\*) AS Number\_of\_People FROM employees WHERE job\_id = :job\_title;



7. Determine the number of managers without listing them. Label the column Number of Managers. Hint: Use the MANAGER\_ID column to determine the number of Managers.

#### **SELECT**

COUNT(DISTINCT manager\_id) AS "Number of Managers" FROM employees WHERE manager\_id IS NOT NULL;

# Number of Managers 2

8. Find the difference between the highest and lowest salaries. Label the column DIFFERENCE.

#### **SELECT**

MAX(salary) - MIN(salary) AS DIFFERENCE FROM employees;

## DIFFERENCE 2500

9. Create a report to display the manager number and the salary of the lowest-paid employee for that manager. Exclude anyone whose manager is not known. Exclude any groups where the minimum salary is \$6,000 or less. Sort the output in descending order of salary.

#### **SELECT**

manager\_id,
MIN(salary) AS Lowest\_Salary
FROM employees
WHERE manager\_id IS NOT NULL
GROUP BY manager\_id
HAVING MIN(salary) > 6000
ORDER BY Lowest\_Salary DESC;

no data found

10. Create a query to display the total number of employees and, of that total, the number of employees hired in 1995, 1996, 1997, and 1998. Create appropriate column headings.

#### SELECT

COUNT(\*) AS Total\_Employees,

SUM(CASE WHEN EXTRACT(YEAR FROM hire\_date) = 1995 THEN 1 ELSE 0 END) AS Hired\_in\_1995,

SUM(CASE WHEN EXTRACT(YEAR FROM hire\_date) = 1996 THEN 1 ELSE 0 END) AS Hired\_in\_1996,

SUM(CASE WHEN EXTRACT(YEAR FROM hire\_date) = 1997 THEN 1 ELSE 0 END) AS Hired\_in\_1997,

SUM(CASE WHEN EXTRACT(YEAR FROM hire\_date) = 1998 THEN 1 ELSE 0 END) AS Hired\_in\_1998

FROM employees;

TOTAL_EMPLOYEES	HIRED_IN_1995	HIRED_IN_1996	HIRED_IN_1997	HIRED_IN_1998
5	2	1	1	1

11. Create a matrix query to display the job, the salary for that job based on department number, and the total salary for that job, for departments 20, 50, 80, and 90, giving each column an appropriate heading.

#### **SELECT**

```
job id,
```

SUM(CASE WHEN department\_id = 20 THEN salary ELSE 0 END) AS Dept\_20\_Salary, SUM(CASE WHEN department\_id = 50 THEN salary ELSE 0 END) AS Dept\_50\_Salary, SUM(CASE WHEN department\_id = 80 THEN salary ELSE 0 END) AS Dept\_80\_Salary, SUM(CASE WHEN department\_id = 90 THEN salary ELSE 0 END) AS Dept\_90\_Salary, SUM(salary) AS Total\_Salary

FROM employees

WHERE department\_id IN (20, 50, 80, 90) GROUP BY job\_id;

TOTAL_EMPLOYEES	HIRED_IN_1995	HIRED_IN_1996	HIRED_IN_1997	HIRED_IN_1998
5	2	1	1	1

12. Write a query to display each department's name, location, number of employees, and the average salary for all the employees in that department. Label the column name-Location, Number of people, and salary respectively. Round the average salary to two decimal places.

#### **SELECT**

```
d.department_name || '-' || I.location_id AS "name-Location", COUNT(e.employee_id) AS "Number of people", ROUND(AVG(e.salary), 2) AS "salary" FROM departments d JOIN employees e ON d.department_id = e.department_id JOIN locations I ON d.location id = I.location id
```

### GROUP BY d.department\_name, l.location\_id;

name-Location	Number of people	salary
Sales-1700	1	5500
IT-1500	2	4750
HR-1600	1	6000
Administration-1800	1	7000