

EX NO: 10	AGGREGATING DATA USING GROUP RELATIONS
9/10/24	

Determine the validity of the following three statements. Circle either True or False.

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

True

2. Group functions include nulls in calculations.

False

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

True

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
13000	3000	163900	7126

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

```
SELECT JOB_ID, ROUND(MIN(SALARY)) AS "Minimum", ROUND(MAX(SALARY)) AS "Maximum",  
ROUND(SUM(SALARY)) AS "Sum", ROUND(AVG(SALARY)) AS "Average" FROM EMPLOYEES GROUP BY  
JOB_ID;
```

JOB_ID	Minimum	Maximum	Sum	Average
IT_PROG	4800	13000	51000	7286
STOCK_CLERK	8500	8500	8500	8500
MGR	7000	7000	7000	7000
SALES	5000	5300	10300	5150
FIN_ANALYST	7500	7500	7500	7500
HR_REP	3000	7800	28100	5620
SALES_REP	6000	12000	51500	8583

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 JOB_ID, COUNT(*) AS "Number of People" FROM EMPLOYEES WHERE JOB_ID = 'IT_PROG'
GROUP BY JOB_ID;
```

JOB_ID	Number of People
IT_PROG	7

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
5

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

```
SELECT MAX(SALARY) - MIN(SALARY) AS "Difference" FROM EMPLOYEES;
```

Difference
10000

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;
```

MANAGER_ID	Lowest Salary
201	6500

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 TO_CHAR(HIRE_DATE, 'YYYY') AS YEAR, COUNT(*) AS TOTAL_EMPLOYEES FROM EMPLOYEES WHERE HIRE_DATE LIKE '%1995' OR HIRE_DATE LIKE '%1996' OR HIRE_DATE LIKE '%1997' OR HIRE_DATE LIKE '%1998' GROUP BY TO_CHAR(HIRE_DATE, 'YYYY');
```

YEAR	TOTAL_EMPLOYEES
1998	5

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, DEPARTMENT_ID, SUM(SALARY) AS "Total Salary" FROM EMPLOYEES WHERE DEPARTMENT_ID IN (20, 50, 80, 90) GROUP BY JOB_ID, DEPARTMENT_ID;
```

JOB_ID	DEPARTMENT_ID	Total Salary
FIN_ANALYST	50	7500
SALES	80	10300
SALES_REP	80	36500
HR_REP	50	7000
SALES_REP	20	9000
IT_PROG	50	18500
SALES_REP	50	6500

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.DEPT_NAME AS "Department Name", L.CITY AS "Location", COUNT(E.EMPLOYEE_ID) AS  
"Number of People", ROUND(AVG(E.SALARY), 2) AS "Average Salary" FROM DEPARTMENT D JOIN  
EMPLOYEES E ON D.DEPT_ID = E.DEPARTMENT_ID JOIN LOCATION L ON D.LOCATION_ID =  
L.LOCATION_ID GROUP BY D.DEPT_NAME, L.CITY;
```

Department Name	Location	Number of People	Average Salary
HR	San Francisco	12	5833.33
Finance	New York	6	7800
Finance	Chicago	6	7800
IT	Los Angeles	5	7900
IT	Toronto	5	7900