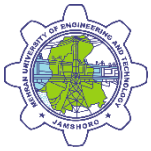


DEPARTMENT OF COMPUTER SYSTEMS ENGINEERING
MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO
Database Management Systems (4th Semester) 18CS
Lab Experiment 6

Roll No: **Date of Conduct:**

Submission Date: **Grade Obtained:**

Problem Recognition (0.3)	Completeness & accuracy (0.4)	Timeliness (0.3)	Score (1.0)

Objective: To use Group functions in SQL queries.

Tools: MySQL, Oracle

Introduction:

Group Function: Group functions are mathematical functions to operate on sets of rows to give one result per set.

Syntax:

The general syntax for using Group functions is:
SELECT <column>, group_function (column) FROM <table>
WHERE <condition> [GROUP BY <column>]
[ORDER BY <column>]

Note that the column on which the group function is applied must exist in the SELECT column list.

Types of Group Function

Here are the different types of the Group function in SQL:

i. **AVG, MIN, MAX, and SUM function:** you can use AVG, MIN, MAX and SUM for numeric data.

Syntax:

SELECT AVG(column_name),MIN(column_name),

SUM(column_name), MAX(column_name)

FROM *t*able1 WHERE condition*;*

ii. **COUNT() Function:**

- COUNT(*) function return the number of in a table;
- COUNT (expr) returns the number of rows with non-null values for the expr.
- COUNT (DISTINCT expr) returns the number of distinct non-null values of the expr.

Syntax:

```
SELECT COUNT(Column_name)
FROM table1
WHERE condition;
```

iii. **NVL() Function:** The NVL() function forces Group functions to include the null values.

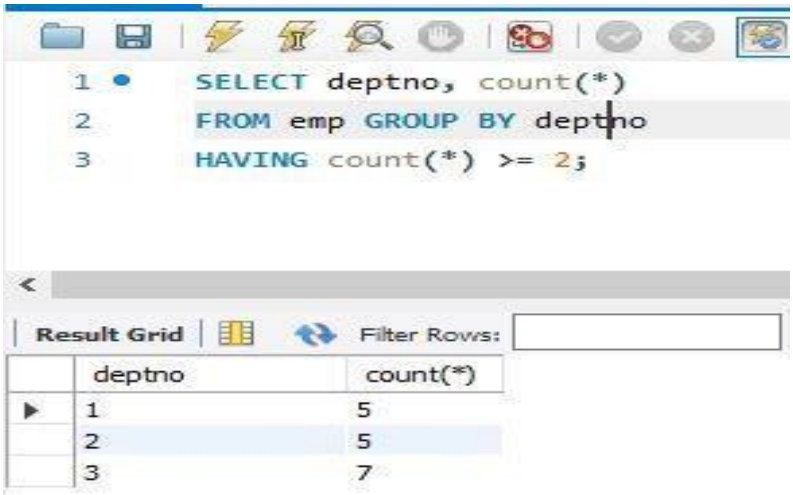
Syntax:

```
SELECT NVL(column_name)  FROM table11;
```

Lab Task

1. List out the department numbers that have at least 4 employees.

Task:



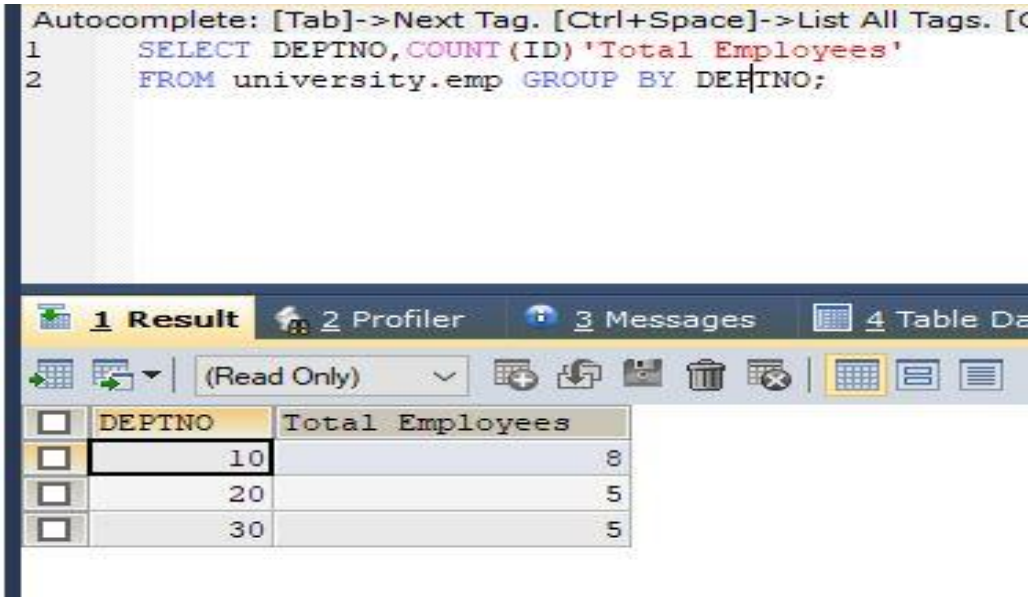
```
1  SELECT deptno, count(*)
2  FROM emp GROUP BY deptno
3  HAVING count(*) >= 2;
```

Result Grid | Filter Rows:

deptno	count(*)
1	5
2	5
3	7

2. Display the number of employees in each department.

Task:



```
Autocomplete: [Tab]->Next Tag. [Ctrl+Space]->List All Tags. [C
1   SELECT DEPTNO,COUNT(ID)'Total Employees'
2   FROM university.emp GROUP BY DEPTNO;
```

1 Result | 2 Profiler | 3 Messages | 4 Table Da

(Read Only)

DEPTNO	Total Employees
10	8
20	5
30	5

3. Display the manager no 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 less than 1000. Sort the output in descending order of salary.

Task:

```
1 •  SELECT mgr, MIN(sal) FROM emp
2     WHERE mgr IS NOT NULL
3     GROUP BY mgr
4     HAVING MIN(sal) > 1000
5     ORDER BY MIN(sal) DESC;
```

Result Grid | Filter Rows:

mgr	MIN(sal)
103	13000
101	10000
104	8000
102	7000
105	6000
7821	5000
7566	3000
7339	2450
7839	2350

4. Find the most recently hired employee in each department.

Task:

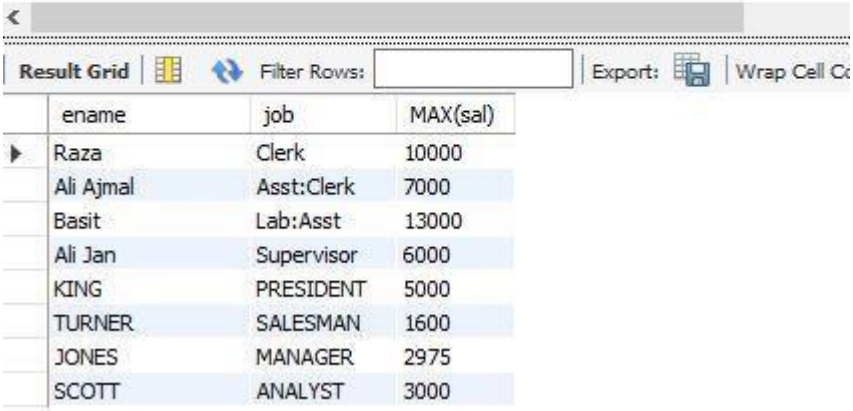
```
1 •  SELECT * FROM emp e
2    WHERE hiredate IN (SELECT max(hiredate)
3    FROM emp WHERE e.deptno = deptno )
4    ORDER BY hiredate DESC;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

empno	deptno	ename	job	mgr	hiredate	sal	comm
7902	2	FORD	ANALYST	7566	2003-02-11	3000	
7900	3	JAMES	CLERK	7698	2002-04-11	950	
7732	1	CLARK	MANAGER	7339	2001-03-08	2450	
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

5. List the highest salary paid for each job.

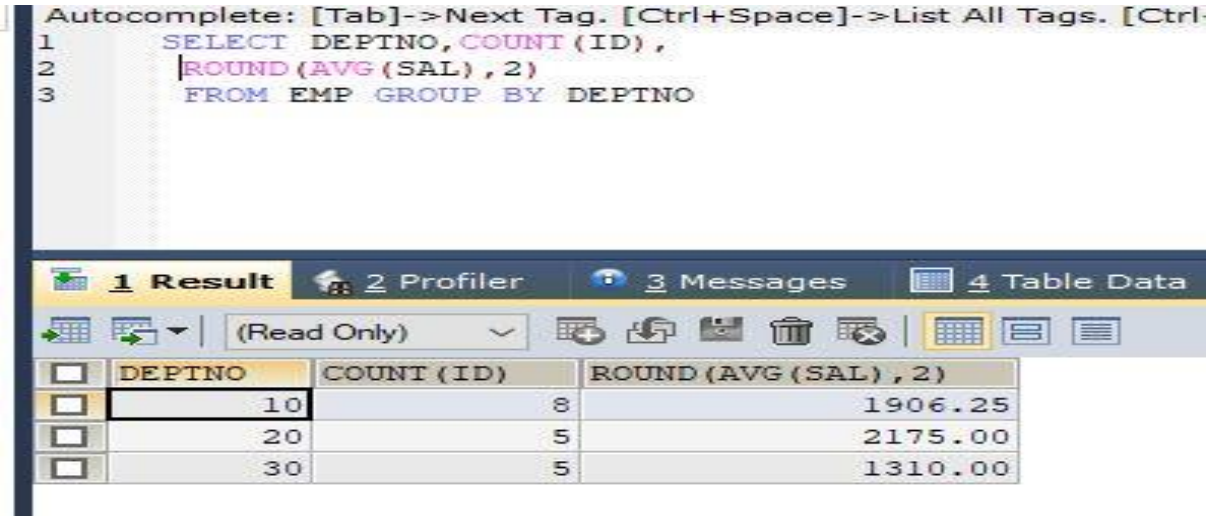
Task:



ename	job	MAX(sal)
Raza	Clerk	10000
Ali Ajmal	Asst:Clerk	7000
Basit	Lab:Asst	13000
Ali Jan	Supervisor	6000
KING	PRESIDENT	5000
TURNER	SALESMAN	1600
JONES	MANAGER	2975
SCOTT	ANALYST	3000

6. Display the department number, number of employees in that dept and the average salary for all employees in that department. Round the average salary to two decimal places.

Task:



DEPTNO	COUNT(ID)	ROUND(AVG(SAL),2)
10	8	1906.25
20	5	2175.00
30	5	1310.00

7. Write a query that will display the difference between the highest and lowest salaries. Label the column DIFFERENCE.

Task:

```
1    SELECT MAX(sal) - MIN(sal) DIFFERENCE
2    FROM emp;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

DIFFERENCE
12200

8. Display the number of employees with same job.

Task:

```
1    SELECT job, COUNT(*)
2    FROM emp
3    GROUP BY job;
4
```

Result Grid | Filter Rows:

job	COUNT(*)
Clerk	4
Asst:Clerk	1
Lab:Asst	1
Supervisor	1
PRESIDENT	1
SALESMAN	4
MANAGER	3
ANALYST	2

9. Determine the number of managers without listing them. (Hint: Use MGR column)

Task:

```
1 •  Select count(distinct mgr)"Number oF Manager"
2    from emp;
```

Result Grid | Filter Rows: | Export: | Wrap Cell

	Number oF Manager
▶	11

10. Display the job title and total monthly salary for each job title with a total payroll exceeding 5000. Exclude salespeople and sorts the list by the total monthly salary.

Task:

```
1 •  SELECT  job, SUM(sal) "Monthly Salary"
2     From emp  WHERE  job NOT LIKE 'SALES%'
3     GROUP BY  job HAVING SUM(sal)>5000
4      ORDER BY  SUM(sal) ;
```

Result Grid | Filter Rows: | Export: | Wr

	job	Monthly Salary
▶	Supervisor	6000
	ANALYST	6000
	Asst:Clerk	7000
	MANAGER	7775
	Lab:Asst	13000
	Clerk	19750