UNIVERSIDAD AUTÓNOMA DE ZACATECAS
INGENIERÍA DE SOFTWARE
LABORATORIO DE SISTEMAS DE BASE DE DATOS II
FORMATO DE PRÁCTICAS

PRÁCTICA:	**8**
TITULO:	**Reporting Aggregated Data Using the Group Functions**
OBJETIVO:	**Realizar ejercicios sobre los temas del capítulo 5: Reporting Aggregated Data Using the Group Functions**
DURACIÓN:	**4 horas**
FECHA:	
FECHA DE ENTREGA:	

ACTIVIDADES A REALIZAR:

Practices for Lesson 5

At the end of this practice, you should be familiar with using group functions and selecting groups of data.

Practice 5-1: Reporting Aggregated Data Using the Group Functions

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/False
2) Group functions include nulls in calculations.
   True/False
3) The `WHERE` clause restricts rows before inclusion in a group calculation.
   True/False

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. Save your SQL statement as `lab_05_04.sql`. Run the query.

	Maximum	Minimum	Sum	Average
1	24000	2500	175500	8775

5) Modify the query in `lab_05_04.sql` to display the minimum, maximum, sum, and average salary for each job type. Save `lab_05_04.sql` as `lab_05_05.sql` again. Run the statement in `lab_05_05.sql`.

	JOB_ID	Maximum	Minimum	Sum	Average
1	AC_MGR	12000	12000	12000	12000
2	AC_ACCOUNT	8300	8300	8300	8300
3	IT_PROG	9000	4200	19200	6400
4	ST_MAN	5800	5800	5800	5800
5	AD_ASST	4400	4400	4400	4400
6	AD_VP	17000	17000	34000	17000
7	MK_MAN	13000	13000	13000	13000
8	SA_MAN	10500	10500	10500	10500
9	MK_REP	6000	6000	6000	6000
10	AD_PRES	24000	24000	24000	24000
11	SA_REP	11000	7000	26600	8067
12	ST_CLERK	3500	2500	11700	2925

6) Write a query to display the number of people with the same job.

	JOB_ID	COUNT(*)
1	AC_ACCOUNT	1
2	AC_MGR	1
3	AD_ASST	1
4	AD_PRES	1
5	AD_VP	2
6	IT_PROG	3
7	MK_MAN	1
8	MK_REP	1
9	SA_MAN	1
10	SA_REP	3
11	ST_CLERK	4
12	ST_MAN	1

Generalize the query so that the user in the HR department is prompted for a job title. Save the script to a file named `lab_05_06.sql`. Run the query. Enter `IT_PROG` when prompted.

	JOB_ID	COUNT(*)
1	IT_PROG	3

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.

	Number of Managers
1	8

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

	DIFFERENCE
1	21500

If you have time, complete the following exercises:

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.

	MANAGER_ID	MIN(SALARY)
1	102	9000
2	205	8300
3	149	7000

If you want an extra challenge, complete the following exercises:

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.

	TOTAL	1995	1996	1997	1998
1	20	1	2	2	3

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.

	Job	Dept 20	Dept 50	Dept 80	Dept 90	Total
1	AC_MGR	(null)	(null)	(null)	(null)	12000
2	AC_ACCOUNT	(null)	(null)	(null)	(null)	8300
3	IT_PROG	(null)	(null)	(null)	(null)	19200
4	ST_MAN	(null)	5800	(null)	(null)	5800
5	AD_ASST	(null)	(null)	(null)	(null)	4400
6	AD_VP	(null)	(null)	(null)	34000	34000
7	MK_MAN	13000	(null)	(null)	(null)	13000
8	SA_MAN	(null)	(null)	10500	(null)	10500
9	MK_REP	6000	(null)	(null)	(null)	6000
10	AD_PRES	(null)	(null)	(null)	24000	24000
11	SA_REP	(null)	(null)	19600	(null)	26600
12	ST_CLERK	(null)	11700	(null)	(null)	11700

Actividad 2:

The following questions will help you measure your understanding of the material presented in this unit. Read all the choices carefully because there might be more than one correct answer. Choose all the correct answers for each question.

DESCRIBE THE GROUP FUNCTIONS

1. What result is returned by the following statement?

SELECT COUNT(*) FROM DUAL; (Choose the best answer.)

A. NULL

B. 0

C. 1

D. None of the above

2. Choose one correct statement regarding group functions.

A. Group functions may only be used when a GROUP BY clause is present.

B. Group functions can operate on multiple rows at a time.

C. Group functions only operate on a single row at a time.

D. Group functions can execute multiple times within a single group.

IDENTIFY THE AVAILABLE GROUP FUNCTIONS

3. What value is returned after executing the following statement?

SELECT SUM(SALARY) FROM EMPLOYEES;

Assume there are 10 employee records and each contains a SALARY value of 100, except for 1, which has a null value in the SALARY field. (Choose the best answer.)

A. 900

B. 1000

C. NULL

D. None of the above

4. Which values are returned after executing the following statement?

SELECT COUNT(*), COUNT(SALARY) FROM EMPLOYEES;

Assume there are 10 employee records and each contains a SALARY value of 100, except for 1, which has a null value in their SALARY field. (Choose all that apply.)

A. 10 and 10

B. 10 and NULL

C. 10 and 9

D. None of the above

5. What value is returned after executing the following statement?

SELECT AVG(NVL(SALARY,100)) FROM EMPLOYEES;

Assume there are ten employee records and each contains a SALARY value of 100, except for one employee, who has a null value in the SALARY field. (Choose the best answer.)

A. NULL

B. 90

C. 100

D. None of the above

GROUP DATA USING THE GROUP BY CLAUSE

6. What value is returned after executing the following statement?

SELECT SUM((AVG(LENGTH(NVL(SALARY,0)))))

FROM EMPLOYEES

GROUP BY SALARY;

Assume there are ten employee records and each contains a SALARY value of 100, except for one, which has a null value in the SALARY field. (Choose the best answer.)

A. An error is returned

B. 3

C. 4

D. None of the above

7. How many records are returned by the following query?

SELECT SUM(SALARY), DEPARTMENT_ID FROM EMPLOYEES

GROUP BY DEPARTMENT_ID;

Assume there are 11 nonnull and 1 null unique DEPARTMENT_ID values. All records have a nonnull SALARY value. (Choose the best answer.)

A. 12

B. 11

C. NULL

D. None of the above

8. What values are returned after executing the following statement?

SELECT JOB_ID, MAX_SALARY FROM JOBS GROUP BY MAX_SALARY;

Assume that the JOBS table has ten records with the same JOB_ID value of DBA

and the same MAX_SALARY value of 100. (Choose the best answer.)

A. One row of output with the values DBA, 100

B. Ten rows of output with the values DBA, 100

C. An error is returned

D. None of the above

INCLUDE OR EXCLUDE GROUPED ROWS USING THE HAVING CLAUSE

9. How many rows of data are returned after executing the following statement?

SELECT DEPT_ID, SUM(NVL(SALARY,100)) FROM EMP

GROUP BY DEPT_ID HAVING SUM(SALARY) > 400;

Assume the EMP table has ten rows and each contains a SALARY value of 100, except for one, which has a null value in the SALARY field. The first and second five rows have DEPT_ID values of 10 and 20, respectively. (Choose the best answer.)

A. Two rows

B. One row

C. Zero rows

D. None of the above

10. How many rows of data are returned after executing the following statement?

SELECT DEPT_ID, SUM(SALARY) FROM EMP GROUP BY DEPT_ID HAVING SUM(NVL(SALARY,100)) > 400;

Assume the EMP table has ten rows and each contains a SALARY value of 100, except for one, which has a null value in the SALARY field. The first and second five rows have DEPT_ID values of 10 and 20, respectively. (Choose the best answer.)

A. Two rows

B. One row

C. Zero rows

D. None of the above

Ejercicio 3: Para la base de datos “Hotel”

- **Elabore 2 consultas para cada una de las siguientes funciones:**
  - **AVG**
  - **SUM**
  - **MAX**
  - **MIN**
  - **COUNT(*)**

- **COUNT(COLUMNA)**
- **DISTINCT EN FUNCIONES DE GRUPO**

- **Elabore 3 sentencias con group by**
- **Elabore 3 sentencias con having**
- **Elabore 3 sentencias con anidación de funciones de grupo**