Databases with *MYSQL*

9. Group Functions *Querys*

Dante – Digital Area for Networking Teachers and Educators

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Learning Outcomes

After this lesson, the learner will be able to use all the following *SQL* Group Function query commands to retrieve data from database tables:

- AVG
- COUNT
- MAX
- MIN
- SUM
- GROUP BY
- HAVING

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AVG(*n*)

Average value of n.

To get the highest Salary among all employees:

```
SELECT AVG(SAL) "Average Salary" FROM EMP;
```

	Average Salary
▶	2073.214286

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COUNT(*n* *)

Number of times *n* takes a non-zero value.

Number of employees in department 20:

```
SELECT COUNT(*) "Number of Emplyess" FROM EMP WHERE
DEPTNO=20;
```

	Number of Emplyess
▶	5

Number of Commissions obtained:

```
SELECT COUNT(COMM) "N.of Comissions" FROM EMP;
```

```
SQL> SELECT COUNT(COM) "Nº. de Comissões" FROM EMPR;

Nº. de Comissões
----------------
               4
```

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MAX(*n*)

Maximum value of *n*.

To get the highest Salary among employees who earned commissions:

```
SELECT MAX(SAL) "Highest Salary" FROM EMP WHERE
IFNULL(COMM,0)>0;
```

	Highest Salary
▶	1600.00

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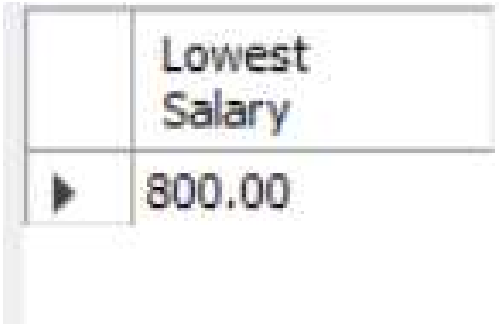
MIN(*n*)

Minimum value of *n*.

Lowest salary among employees who did not earn commissions:

```
SELECT MIN(SAL) "Lowest Salary" FROM EMP WHERE
IFNULL(COMM,0)=0;
```



	Lowest Salary
▶	800.00

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SUM(*n*)

Sum of *n*, ignoring null values.

Total commissions earned:

```
SELECT SUM(COMM) "Total Comissions" FROM EMP;
```

	Total Comissions
▶	2200.00

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GROUP BY

Group By can be used to divide records in a table into smaller groups.

To calculate the average salary for each job:

```
SELECT JOB, AVG(SAL) FROM EMP GROUP BY JOB;
```

JOB	AVG(SAL)
CLERK	1037.500000
SALESMAN	1400.000000
MANAGER	2758.333333
ANALYST	3000.000000
PRESIDENT	5000.000000

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GROUP BY

To display the average salary for each job within each department:

```
SELECT DEPTNO,JOB, AVG(SAL) FROM EMP GROUP BY
DEPTNO,JOB;
```

DEPTNO	JOB	AVG(SAL)
20	CLERK	950.000000
30	SALESMAN	1400.000000
20	MANAGER	2975.000000
30	MANAGER	2850.000000
10	MANAGER	2450.000000
20	ANALYST	3000.000000
10	PRESIDENT	5000.000000
30	CLERK	950.000000
10	CLERK	1300.000000

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HAVING

HAVING can be used to specify which groups should be displayed.

This clause is only used when there is a group function in the WHERE condition.

To show average salaries for jobs whose salary is greater than or equal to 1000:

```
SELECT JOB, AVG(SAL) FROM EMP GROUP BY JOB HAVING
MAX(SAL)>1000;
```

JOB	AVG(SAL)
CLERK	1037.500000
SALESMAN	1400.000000
MANAGER	2758.333333
ANALYST	3000.000000
PRESIDENT	5000.000000