Distinct Keyword

- It is used to ensure that duplicate rows are removed from our resultset.
- It returns only unique rows.

Syntax:

```
Select Distinct column
From table_name;
```

Ex. Finding unique job roles in emp table.

```
mysql> select distinct job
    -> from emp;
+-----------+
| job       |
+-----------+
| CLERK     |
| SALESMAN  |
| MANAGER   |
| ANALYST   |
| PRESIDENT |
+-----------+
```

Ex. To get distinct department numbers.

```
mysql> select distinct deptno
    -> from emp;
+--------+
| deptno |
+--------+
|     20 |
|     30 |
|     10 |
+--------+
```

Group By Clause:

It used to group rows which share the same value in specified columns into summary rows.

It is commonly used with aggregate function like COUNT(), SUM(), AVG(), MIN(), MAX()

IMPs:

Group by clause will come after where clause and before the order by clause(If using it)

Ex. Total employees with department.

```
mysql> Select deptno, count(*) as 'Total Employees'
    -> from emp
    -> group by deptno;
+--------+-----------------+
| deptno | Total Employees |
+--------+-----------------+
|     20 |               5 |
|     30 |               6 |
|     10 |               3 |
+--------+-----------------+
```

Aggregate Functions:

- It is used to perform calculations on set of values.
- It returns a summarized result.

Function	Description
COUNT()	Count the number of rows
SUM()	Returns the total sum of numeric values in a column
MIN()	Finds the smallest value in a column
MAX()	Finds the largest value in a column
AVG()	Calculate the average of numeric values

1. COUNT()

- Counts the number of rows in a specified column

Ex. mysql> Select COUNT(*) as Total_Employees from emp;

```
+-----------------+
| Total_Employees |
+-----------------+
|              14 |
+-----------------+
```

- Count distinct job roles

```
mysql> select count(distinct job) from emp;
+--------------------+
| count(distinct job) |
+--------------------+
|                  5 |
+--------------------+
```

2. SUM():

Ex. To get the total salary of employees.

```
mysql> select sum(sal) as Total_salary from emp;
+--------------+
| Total_salary |
+--------------+
|     29025.00 |
+--------------+
```

Ex. Total Salary by department.

```
mysql> Select deptno, sum(sal) as Total_salary
    -> from emp
```

```
    -> group by deptno;
+--------+--------------+
| deptno | Tootal_salary |
+--------+--------------+
|     20 |      10875.00 |
|     30 |       9400.00 |
|     10 |       8750.00 |
+--------+--------------+
```

3. Avg()

Ex. To get the average salary of employees

```
mysql> select avg(sal) as Average_Salary
    -> from emp;
+---------------+
| Average_Salary |
+---------------+
|    2073.214286 |
+---------------+
```

Ex. To get average salary by job.

```
mysql> select job, avg(sal) as avg_salary
    -> from emp
    -> group by job;
```

```
+-----------+-------------+
| job       | avg_salary  |
+-----------+-------------+
| CLERK     | 1037.500000 |
| SALESMAN  | 1400.000000 |
| MANAGER   | 2758.333333 |
| ANALYST   | 3000.000000 |
| PRESIDENT | 5000.000000 |
+-----------+-------------+
```

MIN() & MAX()

To get the minimum and maximum salary.

```
Select min(sal) as Minimum_salary, max(sal) as
Maximum_salary from emp;
```

```
mysql> Select min(sal) as Minimum_salary, max(sal) as
Maximum_salary from emp;
+---------------+---------------+
| Minimum_salary | Maximum_salary |
+---------------+---------------+
|         800.00 |        5000.00 |
+---------------+---------------+
```

Ex. To get the min and max salary by department.

```
mysql> select deptno, min(sal), max(sal)
    -> from emp
    -> group by deptno;
+--------+----------+----------+
| deptno | min(sal) | max(sal) |
+--------+----------+----------+
|     20 |   800.00 |  3000.00 |
|     30 |   950.00 |  2850.00 |
|     10 |  1300.00 |  5000.00 |
+--------+----------+----------+
```

DDL - Data Definition Language

Create:

Alter: used to modify the structure of existing table

Ex. To add a column in a table

```
mysql> Alter table emp
    -> add Bonus DECIMAL(7,2);
```

Ex. Modify a column(change the salary colum to hold 10 digits and 2 decimal places)

mysql> alter table emp modify sal decimal(10,2);

Ex. To drop a column

Alter table emp drop column bonus;

- Drop Statement
- It permanently removes the table or database;
  Drop table emp;
  Delete the emp table along with its data and structure
  FlashBack*

- Truncate Statement:
- It removes rows from table and keeps the table structure.
  Truncate table emp;

Ex. To add the email column in a table
Ex. To drop email column
Ex. To change the limit of ename column to store 100 characters
Ex. To rename the tableName
Emp -> employees

Ex. TO rename the column name(ename-> employeeName)