Group by with aggregate function

The GROUP BY statement is often used with aggregate functions (COUNT(), MAX(), MIN(), SUM(), AVG()) to group the result-set by one or more columns.

```sql
SELECT column_name(s)
FROM table_name
WHERE condition
GROUP BY column_name(s)
ORDER BY column_name(s);
```

```sql
SELECT COUNT(first_name), city
FROM employee
GROUP BY city
Order by count(first_name) desc
```

```sql
SELECT COUNT(CustomerID), Country
FROM Customers
GROUP BY Country
ORDER BY COUNT(CustomerID) DESC;
```

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Sum, Count, AVG, Max, distinct

```
mysql> select*from employee;
+--------+------------+-----------+---------+-------------+--------+-----------+--------+
| Emp_ID | First_Name | Last_Name | Emp_Age | Designation | Salary | City      | bonus  |
+--------+------------+-----------+---------+-------------+--------+-----------+--------+
| E01    | Arjun      | Singh     | 55      | Clerk       | 70000  | Tehri     | 400    |
| E02    | Shiv       | Mohan     | 35      | Accountant  | 35000  | kanpur    | 400    |
| E03    | Ram        | Charan    | 55      | AM          | 55000  | lucknow   | 400    |
| E03    | Ram        | Charan    | 55      | AM          | 55000  | lucknow   | 400    |
| E04    | Singh      | Vikram    | 21      | clerk       | 30000  | Patna     | 400    |
| E05    | Ayush      | Rao       | 22      | Postmaster  | 50000  | Tehri     | 400    |
| E06    | Rohan      | Sharma    | 19      | Clerk       | 50000  | Dehradun  | 500    |
| E07    | Rajat      | kala      | 20      | Postmaster  | 25000  | Barelly   | 340    |
| E08    | mohan      | Sharma    | 21      | CA          | 100000 | Rajisthan | 1000   |
+--------+------------+-----------+---------+-------------+--------+-----------+--------+
9 rows in set (0.14 sec)

mysql> select max(salary)from employee;
+-------------+
| max(salary) |
+-------------+
|      100000 |
+-------------+
1 row in set (0.04 sec)

mysql> select count(*)from employee;
+----------+
| count(*) |
+----------+
|        9 |
+----------+
1 row in set (0.02 sec)

mysql> select distinct(count(salary))from employee;
+----------------+
| (count(salary))|
+----------------+
|              9 |
+----------------+
1 row in set (0.01 sec)
```

```
mysql> select Emp_ID,Salary,Basic from employee;
+--------+--------+--------+
| Emp_ID | Salary | Basic  |
+--------+--------+--------+
| E001   |  60000 |   6000 |
| E002   |  50000 |   5000 |
| E003   |  55000 |   5500 |
| E004   |  58000 |   5800 |
| E005   |  20000 |   2000 |
+--------+--------+--------+
5 rows in set (0.00 sec)

mysql> select sum(salary)from employee;
+-------------+
| sum(salary) |
+-------------+
|      243000 |
+-------------+
1 row in set (0.01 sec)

mysql> select avg(salary)from employee;
+-------------+
| avg(salary) |
+-------------+
|  48600.0000 |
+-------------+
1 row in set (0.00 sec)

mysql> select max(salary)from employee;
+-------------+
| max(salary) |
+-------------+
|       60000 |
+-------------+
1 row in set (0.00 sec)
```

```
mysql> select city,count(salary) from employee group by city order by count(salary) desc;
+----------+---------------+
| city     | count(salary) |
+----------+---------------+
| Dehradun |             7 |
| Haridwar |             3 |
| Kanpur   |             2 |
| Lucknow  |             2 |
+----------+---------------+
 rows in set (0.01 sec)

mysql> select city,count(salary) from employee group by city order by count(salary) asc;
+----------+---------------+
| city     | count(salary) |
+----------+---------------+
| Kanpur   |             2 |
| Lucknow  |             2 |
| Haridwar |             3 |
| Dehradun |             7 |
+----------+---------------+
 rows in set (0.00 sec)
```

```
mysql>  select city,sum(Salary)from employee group by city;
+----------------+-------------+
| city           | sum(Salary) |
+----------------+-------------+
| New York       |       60000 |
| Los Angeles    |       50000 |
| Chicago        |       55000 |
| San Francisco  |       58000 |
| Dehradun       |       52000 |
+----------------+-------------+
5 rows in set (0.00 sec)

mysql>  select Post,sum(Salary)from employee group by Post;
+-----------+-------------+
| Post      | sum(Salary) |
+-----------+-------------+
| Manager   |       60000 |
| Analyst   |       50000 |
| Developer |       55000 |
| Designer  |       58000 |
| CA        |       20000 |
| LPO       |       32000 |
+-----------+-------------+
6 rows in set (0.00 sec)

mysql>  select Post,count(Salary)from employee group by post;
+-----------+---------------+
| Post      | count(Salary) |
+-----------+---------------+
| Manager   |             1 |
| Analyst   |             1 |
| Developer |             1 |
| Designer  |             1 |
| CA        |             1 |
| LPO       |             1 |
+-----------+---------------+
6 rows in set (0.00 sec)
```

```
mysql> update employee set Designation="Clerk" where Emp_ID="E01";
Query OK, 1 row affected (0.03 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select*from employee;
+--------+------------+-----------+---------+-------------+--------+---------+-------+
| Emp_ID | First_Name | Last_Name | Emp_Age | Designation | Salary | City    | bonus |
+--------+------------+-----------+---------+-------------+--------+---------+-------+
| E01    | Arjun      | Singh     | 55      | Clerk       | 70000  | Tehri   | 400   |
| E02    | Shiv       | Mohan     | 35      | Accountant  | 35000  | kanpur  | 400   |
| E03    | Ram        | Charan    | 55      | AM          | 55000  | lucknow | 400   |
| E03    | Ram        | Charan    | 55      | AM          | 55000  | lucknow | 400   |
| E04    | Singh      | Vikram    | 21      | clerk       | 30000  | Patna   | 400   |
| E05    | Ayush      | Rao       | 22      | Postmaster  | 50000  | Tehri   | 400   |
+--------+------------+-----------+---------+-------------+--------+---------+-------+
6 rows in set (0.00 sec)

mysql> select*from employee where designation = (select Designation from employee);
ERROR 1242 (21000): Subquery returns more than 1 row
mysql> select*from employee where designation = (select Designation from employee where Emp_Id="E01");
+--------+------------+-----------+---------+-------------+--------+-------+-------+
| Emp_ID | First_Name | Last_Name | Emp_Age | Designation | Salary | City  | bonus |
+--------+------------+-----------+---------+-------------+--------+-------+-------+
| E01    | Arjun      | Singh     | 55      | Clerk       | 70000  | Tehri | 400   |
| E04    | Singh      | Vikram    | 21      | clerk       | 30000  | Patna | 400   |
+--------+------------+-----------+---------+-------------+--------+-------+-------+
2 rows in set (0.00 sec)

mysql> select first_Name from employee where salary >(select max(salary)from employee where City="Kanpur");
+------------+
| first_Name |
+------------+
| Arjun      |
| Ram        |
| Ram        |
| Ayush      |
+------------+
4 rows in set (0.01 sec)
```

```
mysql> select*from employee where Designation = (Select designation from employee where Emp_ID="E01");
+--------+------------+-----------+---------+-------------+--------+-------+-------+
| Emp_ID | First_Name | Last_Name | Emp_Age | Designation | Salary | City  | bonus |
+--------+------------+-----------+---------+-------------+--------+-------+-------+
| E01    | Arjun      | Singh     | 55      | Cleck       | 70000  | Tehri | 400   |
+--------+------------+-----------+---------+-------------+--------+-------+-------+
1 row in set (0.00 sec)
```