EXPERIMENT - 8

DATABASE MANAGEMENT SYSTEMS LAB

Aim

Write the SQL queries to implement Having and Group By Clauses on table.

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Aim:

Write the SQL queries to implement Having and Group By Clauses on table.

Tools Used:

MariaDB

Procedure/ Queries:

What is the SQL Group by Clause?

The GROUP BY clause is a SQL command that is used to **group rows that have the same values**. The GROUP BY clause is used in the SELECT statement. Optionally it is used in conjunction with aggregate functions to produce summary reports from the database.

That's what it does, **summarizing data** from the database.

The queries that contain the GROUP BY clause are called grouped queries and only return a single row for every grouped item.

SQL GROUP BY Syntax

Now that we know what the SQL GROUP BY clause is, let's look at the syntax for a basic group by query.

SELECT statements... GROUP BY column_name1[,column_name2,...] [HAVING condition];

- "SELECT statements..." is the standard SQL SELECT command query.
- "**GROUP BY** *column_name1*" is the clause that performs the grouping based on column_name1.
- "[,column_name2,...]" is optional; represents other column names when the grouping is done on more than one column.
- "[HAVING condition]" is optional; it is used to restrict the rows affected by the GROUP BY clause. It is similar to the WHERE clause.

In this experiment we will be working on clauses like HAVING and GROUP BY to be applied on a table.

HAVING Clause: The HAVING clause was added to SQL because the WHERE keyword could not be used with the aggregate functions.

SYNTAX:

SELECT columnname(s)

From tablename

Where condition

GROUP BY columnname(s)

Having condition

ORDER BY columnname(s);

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

SYNTAX:

SELECT columnname(s)

FROM tablename

Where condition

GROUP BY columnname(s)

ORDER BY columnname(s);

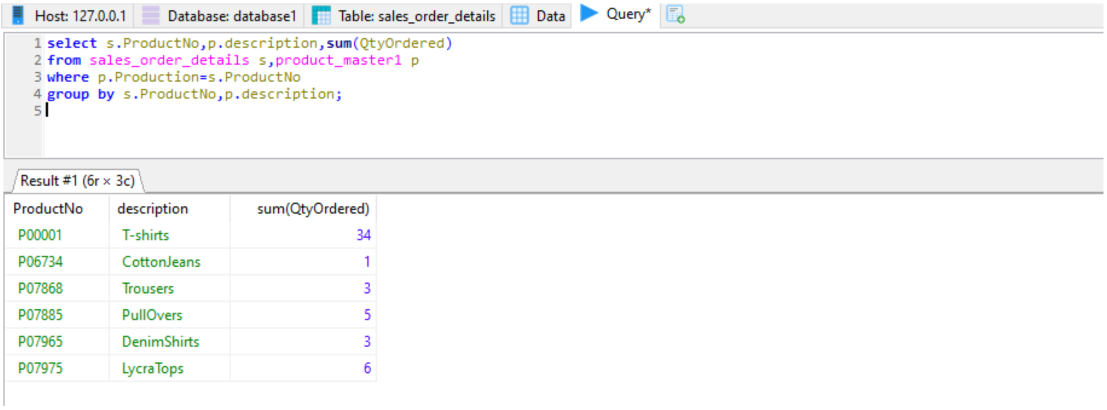
QUERIES:

Print the description and total qty sold for each product.

Input Query:

```
select s.ProductNo,p.description,sum(QtyOrdered)
from sales_order_details s,product_master1 p
where p.Production=s.ProductNo
group by s.ProductNo,p.description;
```

OUTPUT:



```
select s.ProductNo,p.description,sum(QtyOrdered)
from sales_order_details s,product_master1 p
where p.Production=s.ProductNo
group by s.ProductNo,p.description;
```

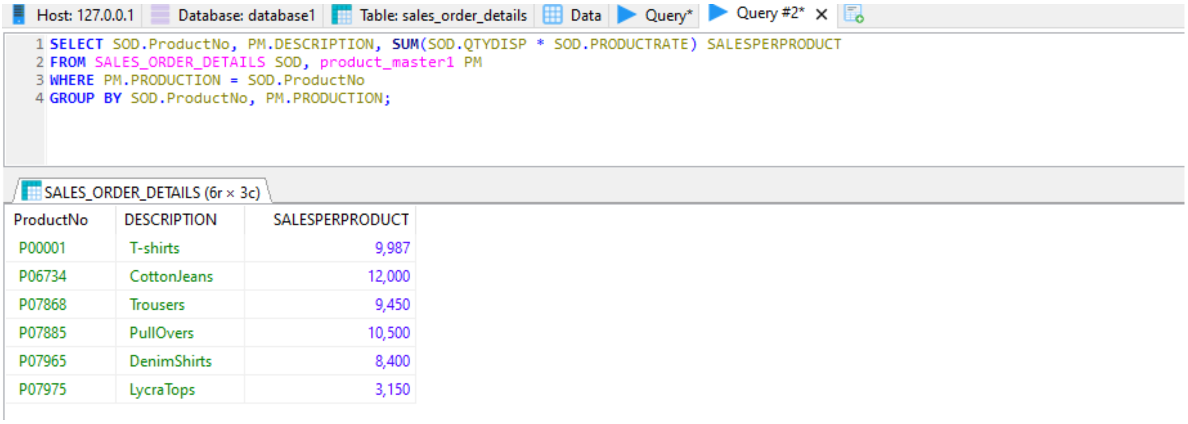
ProductNo	description	sum(QtyOrdered)
P00001	T-shirts	34
P06734	CottonJeans	1
P07868	Trousers	3
P07885	PullOvers	5
P07965	DenimShirts	3
P07975	LycraTops	6

Find the value of each product sold.

Input Query:

```
    SELECT SOD.ProductNo, PM.DESCRIPTION, SUM(SOD.QTYDISP * SOD.PRODUCTRATE)
SALESPERPRODUCT
    FROM SALES_ORDER_DETAILS SOD, product_master1 PM
    WHERE PM.PRODUCTION = SOD.ProductNo
    GROUP BY SOD.ProductNo, PM.PRODUCTION;
```

OUTPUT:



```
SELECT SOD.ProductNo, PM.DESCRIPTION, SUM(SOD.QTYDISP * SOD.PRODUCTRATE) SALESPERPRODUCT
FROM SALES_ORDER_DETAILS SOD, product_master1 PM
WHERE PM.PRODUCTION = SOD.ProductNo
GROUP BY SOD.ProductNo, PM.PRODUCTION;
```

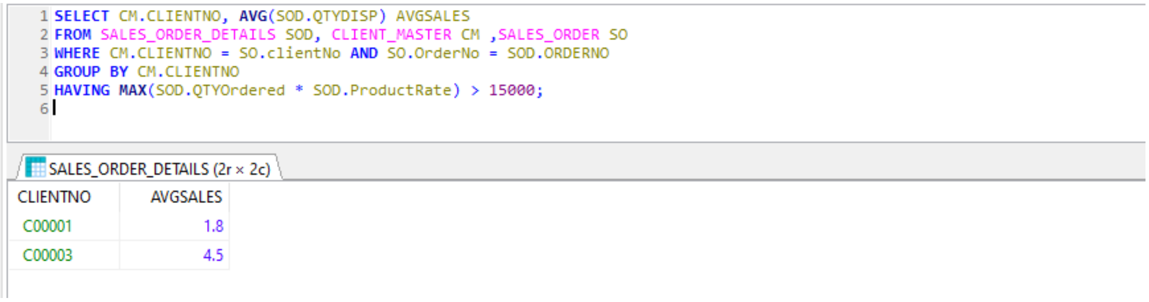
ProductNo	DESCRIPTION	SALESPERPRODUCT
P00001	T-shirts	9,987
P06734	CottonJeans	12,000
P07868	Trousers	9,450
P07885	PullOvers	10,500
P07965	DenimShirts	8,400
P07975	LycraTops	3,150

Calculate the average qty sold for each client that has a maximum order value for 15000.00

Input Query:

```
SELECT CM.CLIENTNO, AVG(SOD.QTYDISP) AVGSALES
FROM SALES_ORDER_DETAILS SOD, CLIENT_MASTER CM ,SALES_ORDER SO
WHERE CM.CLIENTNO = SO.clientNo AND SO.OrderNo = SOD.ORDERNO
GROUP BY CM.CLIENTNO
HAVING MAX(SOD.QTYOrdered * SOD.ProductRate) > 15000;
```

OUTPUT:



```
SELECT CM.CLIENTNO, AVG(SOD.QTYDISP) AVGSALES
FROM SALES_ORDER_DETAILS SOD, CLIENT_MASTER CM ,SALES_ORDER SO
WHERE CM.CLIENTNO = SO.clientNo AND SO.OrderNo = SOD.ORDERNO
GROUP BY CM.CLIENTNO
HAVING MAX(SOD.QTYOrdered * SOD.ProductRate) > 15000;
```

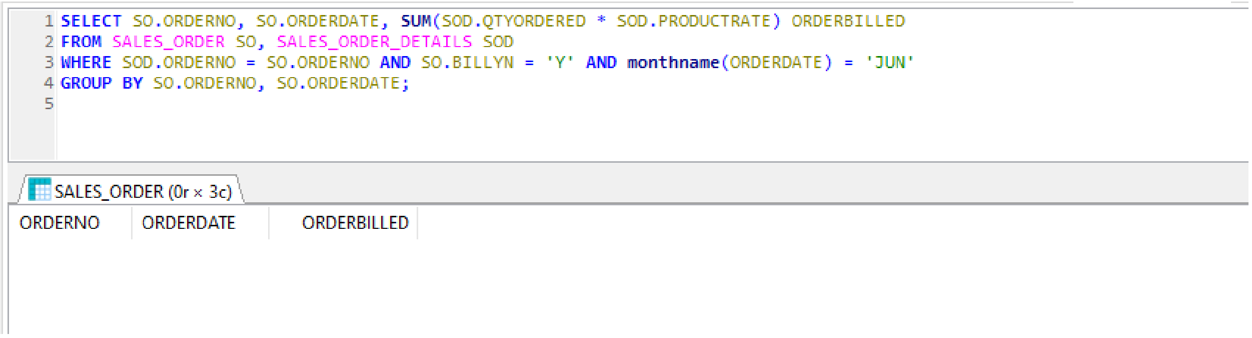
CLIENTNO	AVGSALES
C00001	1.8
C00003	4.5

Find out the total of all the billed orders for the month of June.

Input Query:

```
SELECT SO.ORDERNO, SO.ORDERDATE, SUM(SOD.QTYORDERED * SOD.PRODUCTRATE)
ORDERBILLED
   FROM SALES_ORDER SO, SALES_ORDER_DETAILS SOD
   WHERE SOD.ORDERNO = SO.ORDERNO AND SO.BILLYN = 'Y' AND
monthname(ORDERDATE) = 'JUN'
   GROUP BY SO.ORDERNO, SO.ORDERDATE;
```

OUTPUT:



```
SELECT SO.ORDERNO, SO.ORDERDATE, SUM(SOD.QTYORDERED * SOD.PRODUCTRATE) ORDERBILLED
FROM SALES_ORDER SO, SALES_ORDER_DETAILS SOD
WHERE SOD.ORDERNO = SO.ORDERNO AND SO.BILLYN = 'Y' AND monthname(ORDERDATE) = 'JUN'
GROUP BY SO.ORDERNO, SO.ORDERDATE;
```

ORDERNO	ORDERDATE	ORDERBILLED

VIVA QUESTIONS

Q.1: Explain HAVING and GROUP BY clause.

Ans.

HAVING clause: The HAVING clause was added to SQL because the WHERE keyword cannot be used with aggregate functions. The HAVING clause is used instead of WHERE with aggregate functions. The having clause is used with the WHERE clause in order to find rows with certain conditions. The having clause is always used after the Group By clause.

GROUP BY: The GROUP BY Statement in SQL is used to arrange identical data into groups with the help of some functions, that is, if a particular column has same values in different rows then it will arrange these rows in a group. The GROUP BY clause is used in collaboration with the SELECT statement to arrange identical data into groups. This GROUP BY clause follows the WHERE clause in a SELECT statement and precedes the ORDER BY clause.

Q.2: What is the syntax of HAVING clause?

Ans.

HAVING Syntax

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

Q.3: What is the syntax of GROUP BY clause?

Ans:

GROUP BY Syntax

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

Q.4: What is the difference between HAVING and WHERE clauses?

Ans:

S.NO	WHERE CLAUSE	HAVING CLAUSE
1.	WHERE Clause is used to filter the records from the table based on the specified condition	HAVING Clause is used to filter record from the groups based on the specified condition.
2.	WHERE CLAUSE can be used without GROUP BY CLAUSE.	HAVING CLAUSE cannot be used without GROUP BY clause
3.	WHERE Clause implements in row operations	HAVING Clause implements in column operation
4.	WHERE CLAUSE cannot contain aggregate functions.	HAVING CLAUSE can contain aggregate functions.
5.	WHERE Clause can be used with SELECT, UPDATE, DELETE statement.	HAVING CLAUSE is used after GROUP BY CLAUSE
6.	WHERE CLAUSE is used before GROUP BY CLAUSE	HAVING CLAUSE is used after GROUP BY CLAUSE

7.	WHERE Clause is used with single row function like UPPER, LOWER etc.	HAVING Clause is used with multiple row function like SUM, COUNT etc.

Q.5: What is the difference between GROUP BY and ORDER BY clause?

Ans:

S.NO	GROUP BY	ORDER BY
1.	Group by statement is used to group the rows that have the same value.	Whereas Order by statement sort the result-set either in ascending or in descending order.
2.	It many be allowed in CREATE VIEW statement.	It is not allowed in CREATE VIEW statement.
3.	In select statement, it is always used before the order by keyword.	While in select statement, it is always used after the group by keyword.
4.	In Group By statement ,attribute cannot be in aggregate function.	In Order By statement ,attribute can be in aggregate function.
5.	In group by clause, the tuples are grouped based on the similarity between the attribute values of tuples	Whereas in order by clause, the result-set is sorted based on ascending or descending order.
6.	It controls the presentation of tuples.	It controls the presentation of attributes.