



Aggregate functions GROUP BY HAVING

*<Practice with aggregate functions and
GROUP BY + HAVING>*



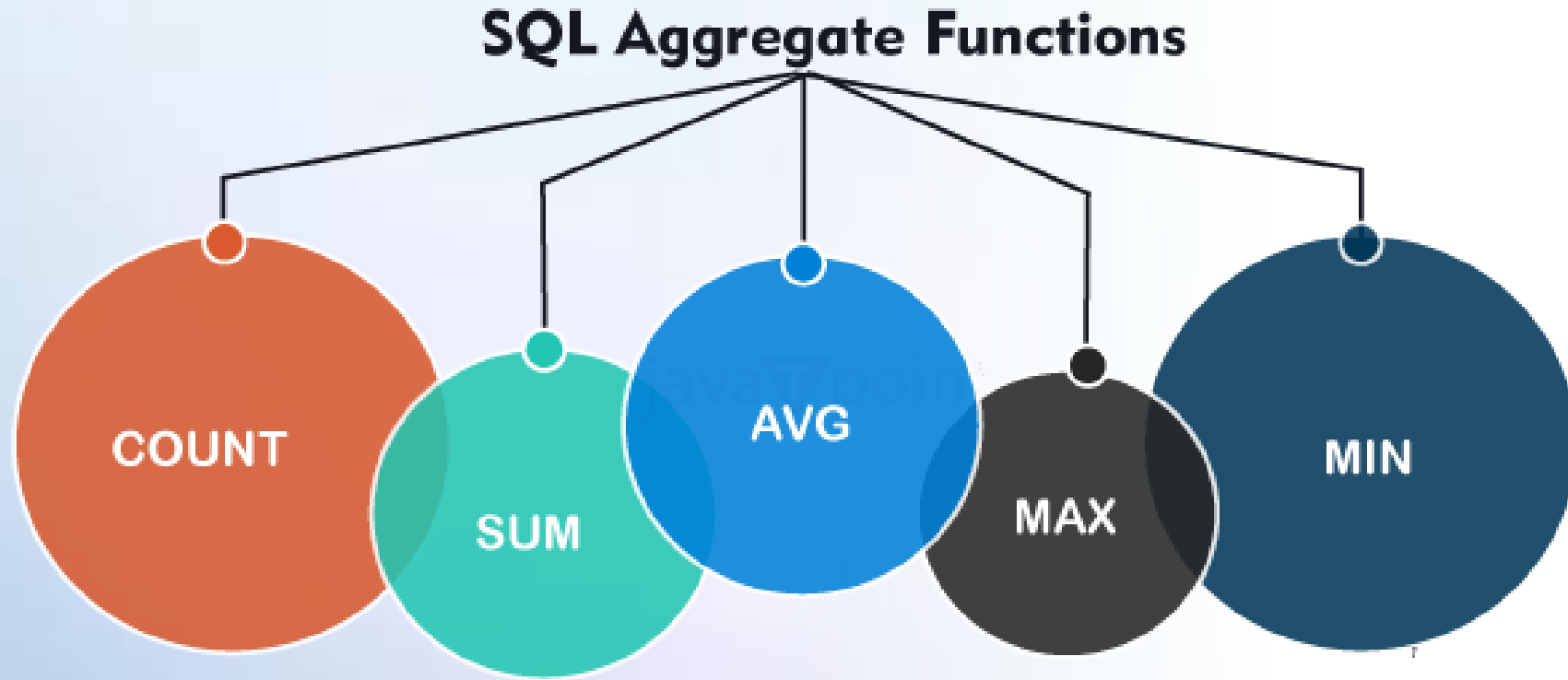
The task has been
prepared by
Yevhenii Fortuna



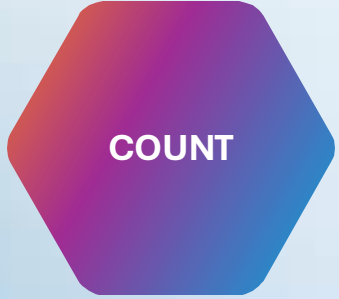
Aggregate functions

<Let's explore common aggregate functions>

Aggregate Functions

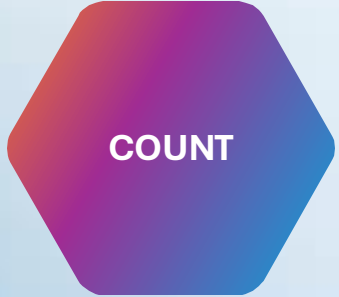


Aggregate Functions



COUNT function is used to Count the number of rows in a database table

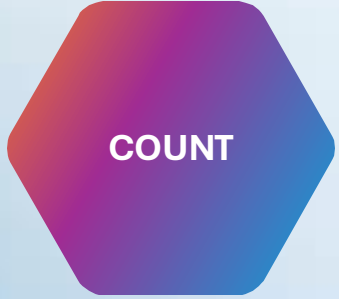
Aggregate Functions



COUNT function is used to Count the number of rows in a database table

It can work on both numeric and non-numeric data types

Aggregate Functions

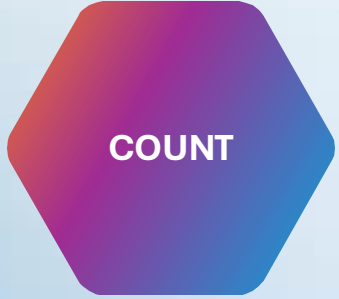


COUNT function is used to Count the number of rows in a database table

It can work on both numeric and non-numeric data types

COUNT function uses the COUNT(*) that returns the count of all the rows in a specified table

Aggregate Functions



COUNT function is used to Count the number of rows in a database table

It can work on both numeric and non-numeric data types

COUNT function uses the COUNT(*) that returns the count of all the rows in a specified table

COUNT(*) considers duplicate and Null

Aggregate Functions



COUNT

Samples:

```
SELECT COUNT(*)  
FROM PRODUCT_MAST;
```

Aggregate Functions



COUNT

Samples:

```
SELECT COUNT(*)  
FROM PRODUCT_MAST;
```

```
SELECT COUNT(*)  
FROM PRODUCT_MAST;  
WHERE RATE>=20;
```

Aggregate Functions



COUNT

Samples:

```
SELECT COUNT(*)  
FROM PRODUCT_MAST;
```

```
SELECT COUNT(*)  
FROM PRODUCT_MAST;  
WHERE RATE>=20;
```

```
SELECT COUNT(DISTINCT COMPANY)  
FROM PRODUCT_MAST;
```

Aggregate Functions



COUNT

Samples:

```
SELECT COUNT(*)  
FROM PRODUCT_MAST;
```

```
SELECT COUNT(*)  
FROM PRODUCT_MAST;  
WHERE RATE>=20;
```

```
SELECT COUNT(DISTINCT COMPANY)  
FROM PRODUCT_MAST;
```

```
SELECT COMPANY, COUNT(*)  
FROM PRODUCT_MAST  
GROUP BY COMPANY  
HAVING COUNT(*)>2;
```

Aggregate Functions

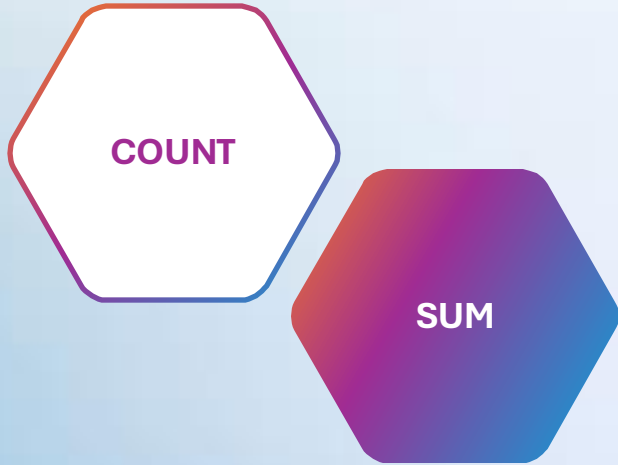


COUNT

SUM

Sum function is used to calculate the sum of all selected columns

Aggregate Functions



Sum function is used to calculate the sum of all selected columns

It works on numeric fields only

Aggregate Functions

COUNT

Samples:

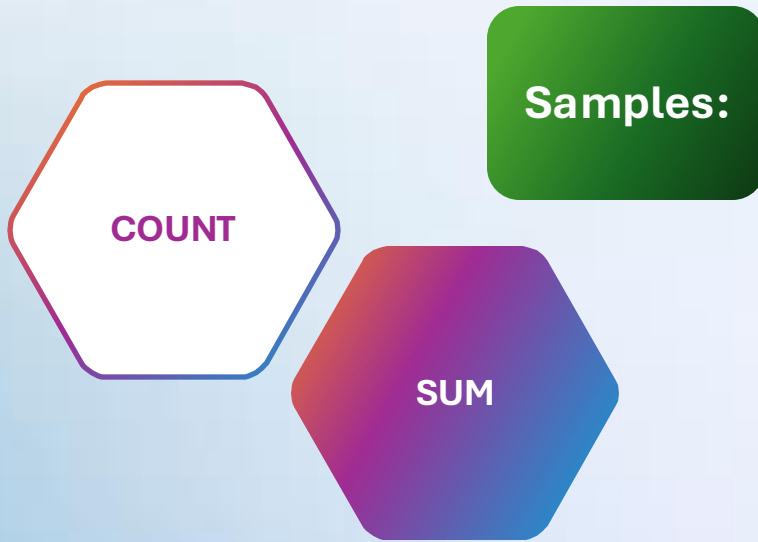
SUM

SUM()

or

SUM([ALL|DISTINCT] expression)

Aggregate Functions



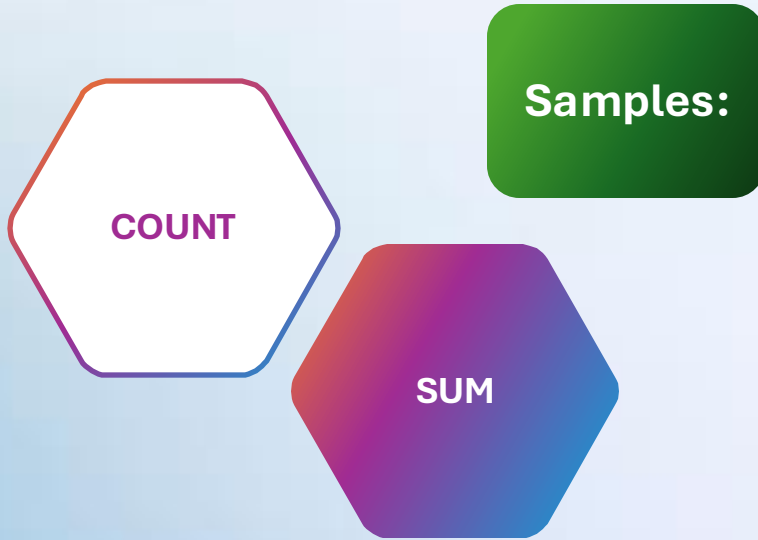
SUM()

or

SUM([ALL|**DISTINCT**] expression)

```
SELECT SUM(COST)  
FROM PRODUCT_MAST;
```


Aggregate Functions



SUM()

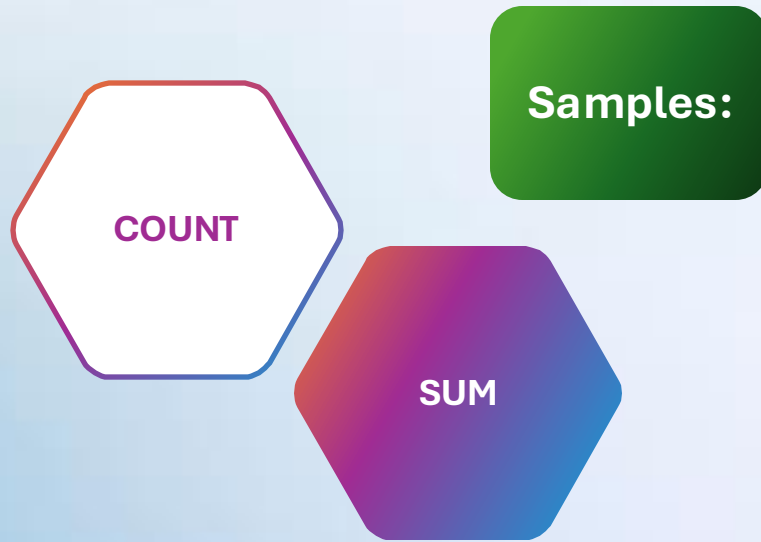
or

SUM([ALL|**DISTINCT**] expression)

```
SELECT SUM(COST)  
FROM PRODUCT_MAST;
```

```
SELECT SUM(COST)  
FROM PRODUCT_MAST  
WHERE QTY>3  
GROUP BY COMPANY;
```

Aggregate Functions



SUM()

or

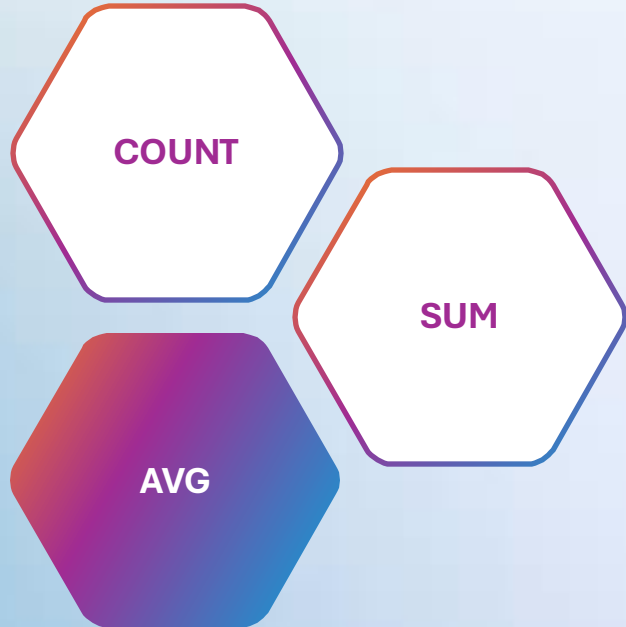
SUM([ALL|**DISTINCT**] expression)

```
SELECT SUM(COST)  
FROM PRODUCT_MAST;
```

```
SELECT SUM(COST)  
FROM PRODUCT_MAST  
WHERE QTY>3  
GROUP BY COMPANY;
```

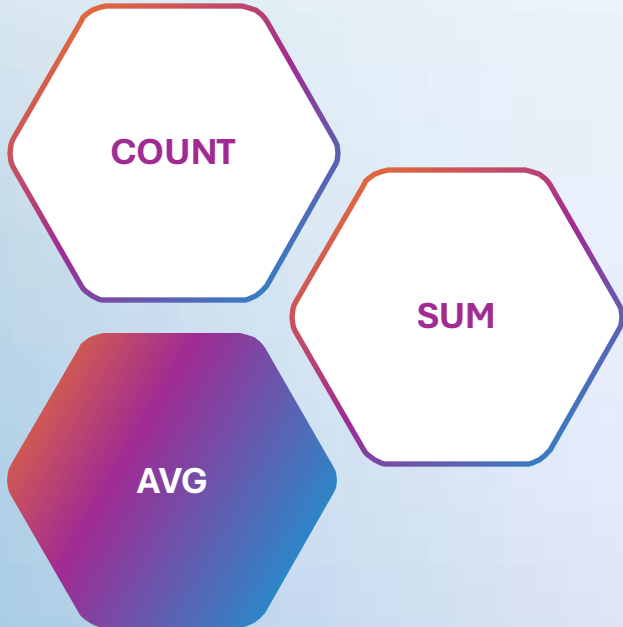
```
SELECT COMPANY, SUM(COST)  
FROM PRODUCT_MAST  
GROUP BY COMPANY  
HAVING SUM(COST)>=170;
```

Aggregate Functions



The AVG function is used to calculate the average value of the numeric type

Aggregate Functions



The AVG function is used to calculate the average value of the numeric type

AVG function returns the average of all non-Null values

Aggregate Functions

Samples:

COUNT

SUM

AVG

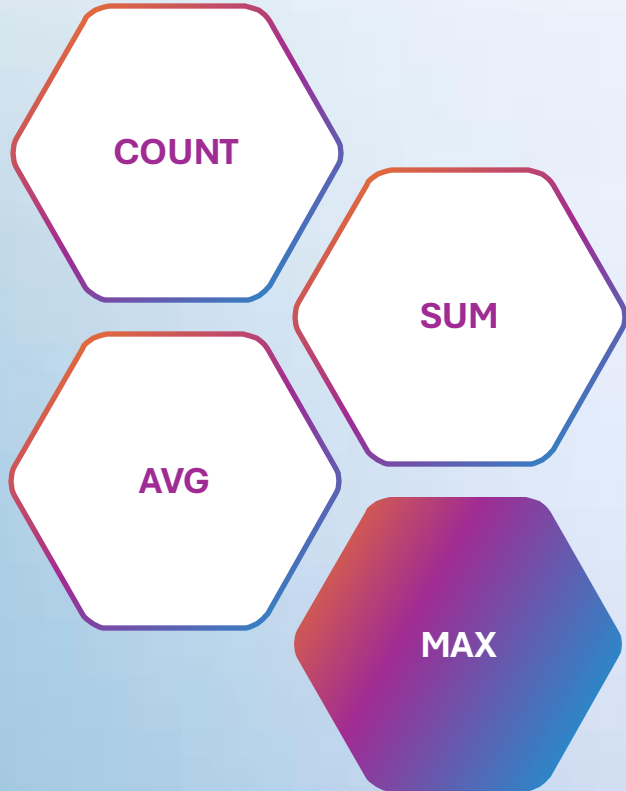
AVG()

or

AVG([ALL|DISTINCT] expression)

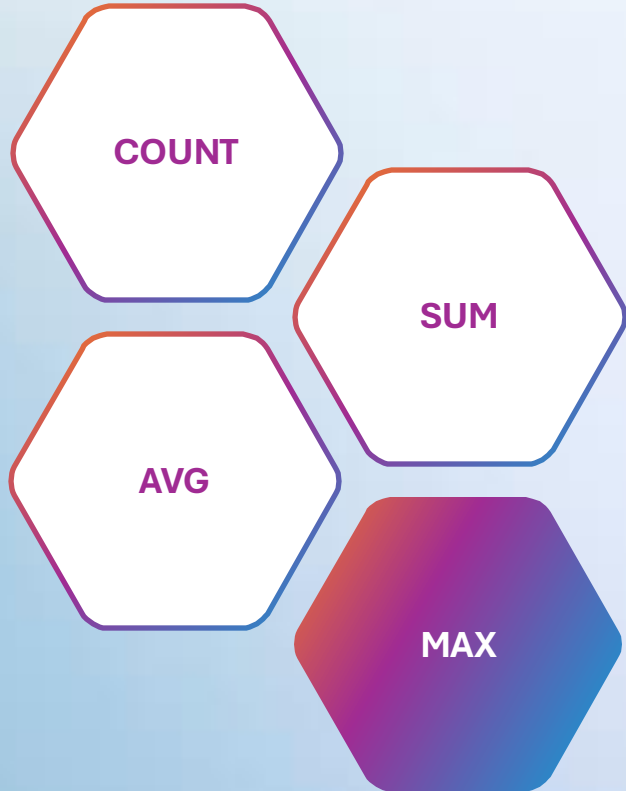
```
SELECT AVG(COST)
FROM PRODUCT_MAST;
```

Aggregate Functions



MAX function is used to find the maximum value of a certain column

Aggregate Functions



MAX function is used to find the maximum value of a certain column

This function determines the largest value of all selected values of a column

Aggregate Functions

Samples:

COUNT

SUM

AVG

MAX

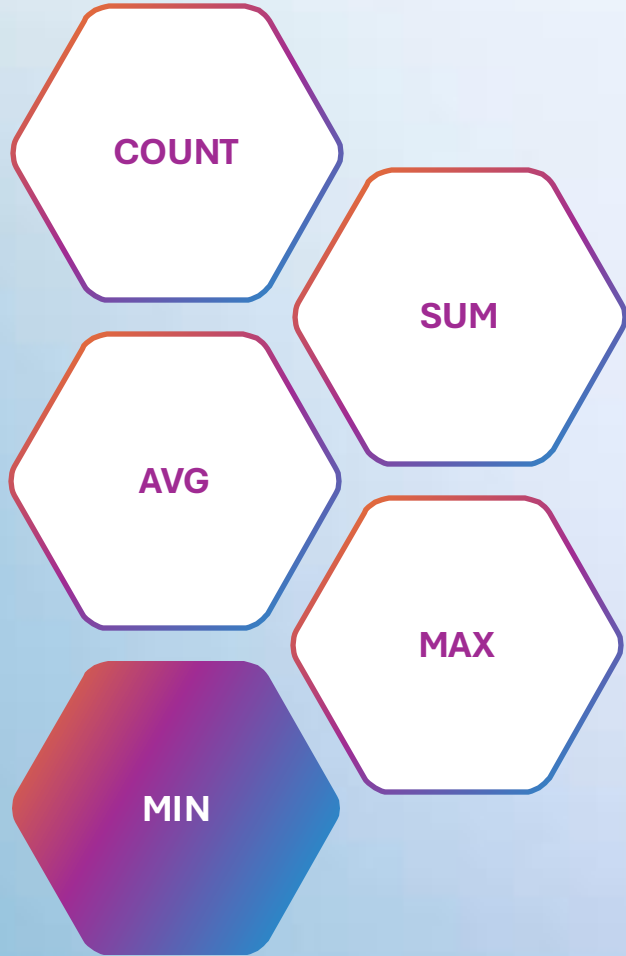
MAX()

or

MAX([ALL|**DISTINCT**] expression)

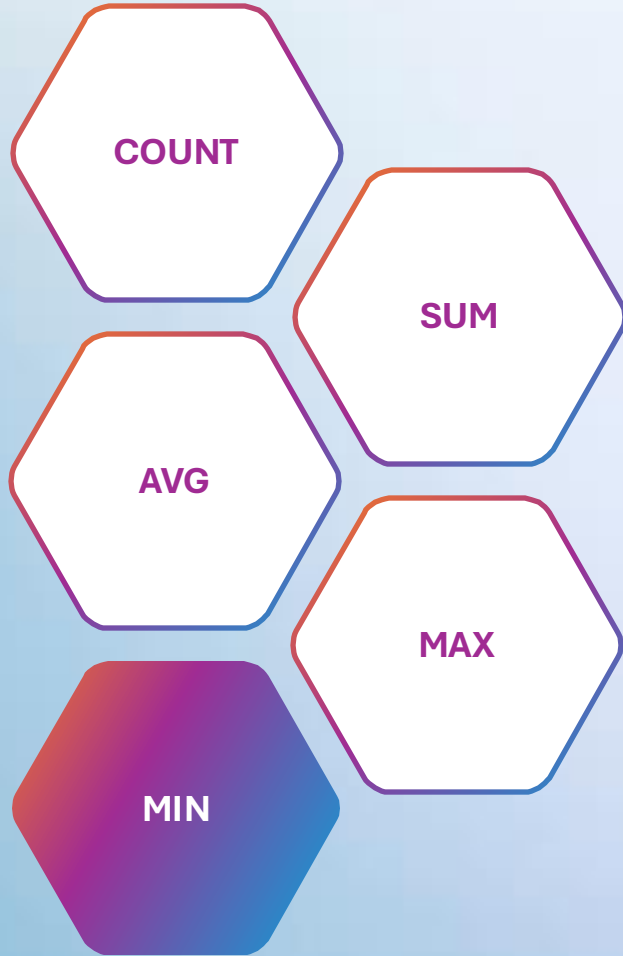
```
SELECT MAX(RATE)  
FROM PRODUCT_MAST;
```


Aggregate Functions



Opposite to MAX function

Aggregate Functions



Opposite to MAX function

This function determines the smallest value of all selected values of a column

Aggregate Functions

Samples:

COUNT

SUM

AVG

MAX

MIN

MIN()

or

MIN([ALL|**DISTINCT**] expression)

```
SELECT MIN(RATE)  
FROM PRODUCT_MAST;
```



GROUP BY

<Let's explore how to use GROUP BY in SQL>

GROUP BY

The **GROUP BY** clause is used in SQL to group rows that have the same value in one or more columns

GROUP BY

Groups rows with the same column value

The GROUP BY clause is used in SQL to group rows that have the same value in one or more columns

GROUP BY

The **GROUP BY** clause is used in SQL to group rows that have the same value in one or more columns

Groups rows with the same column value

Often used with COUNT, SUM, AVG

GROUP BY

The **GROUP BY** clause is used in SQL to group rows that have the same value in one or more columns

Groups rows with the same column value

Often used with COUNT, SUM, AVG

Placed after FROM or WHERE (if WHERE is present)

GROUP BY

The **GROUP BY** clause is used in SQL to group rows that have the same value in one or more columns

Groups rows with the same column value

Often used with COUNT, SUM, AVG

Placed after FROM or WHERE (if WHERE is present)

Use HAVING to filter grouped results

GROUP BY

The **GROUP BY** clause is used in SQL to group rows that have the same value in one or more columns

Groups rows with the same column value

Often used with COUNT, SUM, AVG

Placed after FROM or WHERE (if WHERE is present)

Use HAVING to filter grouped results

Selected columns must be in GROUP BY

GROUP BY

The **GROUP BY** clause is used in SQL to group rows that have the same value in one or more columns

Groups rows with the same column value

Often used with COUNT, SUM, AVG

Placed after FROM or WHERE (if WHERE is present)

Use HAVING to filter grouped results

Selected columns must be in GROUP BY

Can group by more than one column

GROUP BY

The **GROUP BY** clause is used in SQL to group rows that have the same value in one or more columns

Groups rows with the same column value

Often used with COUNT, SUM, AVG

Placed after FROM or WHERE (if WHERE is present)

Use HAVING to filter grouped results

Selected columns must be in GROUP BY

Can group by more than one column

Grouped NULL values count as one group

GROUP BY

The **GROUP BY** clause is used in SQL to group rows that have the same value in one or more columns

Groups rows with the same column value

Often used with COUNT, SUM, AVG

Placed after FROM or WHERE (if WHERE is present)

Use HAVING to filter grouped results

Selected columns must be in GROUP BY

Can group by more than one column

Grouped NULL values count as one group

Placed before ORDER BY

GROUP BY

Sample:

Groups users by
country and
counts how many
users are from
each

```
SELECT country, COUNT(*) AS total_users  
FROM users  
GROUP BY country;
```

GROUP BY

Sample:

Groups
employees by
both city and
department

```
SELECT city, department, COUNT(*) AS total  
FROM employees  
GROUP BY city, department;
```

GROUP BY

Sample:

Shows only
departments with
more than 5
employees

```
SELECT department, COUNT(*) AS employee_count  
FROM employees  
GROUP BY department  
HAVING COUNT(*) > 5;
```




HAVING

<Let's explore how to use HAVING in SQL>

HAVING

Filters results after GROUP BY

HAVING

Filters results after GROUP BY

The HAVING clause is always executed with the GROUP BY clause

HAVING

Filters results after GROUP BY

The HAVING clause is always executed with the GROUP BY clause

The HAVING clause can include SQL aggregate functions in a query or statement

HAVING

Filters results after GROUP BY

The HAVING clause is always executed with the GROUP BY clause

The HAVING clause can include SQL aggregate functions in a query or statement

We can only use SELECT statement with HAVING clause for filtering the records

HAVING

Filters results after GROUP BY

The HAVING clause is always executed with the GROUP BY clause

The HAVING clause can include SQL aggregate functions in a query or statement

We can only use SELECT statement with HAVING clause for filtering the records

WHERE It is a pre-filter && HAVING It is a post-filter

HAVING

Filters results after GROUP BY

The HAVING clause is always executed with the GROUP BY clause

The HAVING clause can include SQL aggregate functions in a query or statement

We can only use SELECT statement with HAVING clause for filtering the records

WHERE It is a pre-filter && HAVING It is a post-filter

WHERE is used to filter the single record of the table

HAVING

Filters results after GROUP BY

The HAVING clause is always executed with the GROUP BY clause

The HAVING clause can include SQL aggregate functions in a query or statement

We can only use SELECT statement with HAVING clause for filtering the records

WHERE It is a pre-filter && HAVING It is a post-filter

WHERE is used to filter the single record of the table

HAVING is used to filter groups

HAVING

The HAVING clause is used to filter grouped data - like WHERE, but it works after GROUP BY and with aggregate functions like COUNT, SUM, AVG or with statements

HAVING

Sample:

```
SELECT department, COUNT(*) AS employee_count  
FROM employees  
GROUP BY department  
HAVING COUNT(*) > 5;
```

Thank you

- Author: Yevhenii Fortuna
- My LinkedIn: <https://www.linkedin.com/in/yevhenii-fortuna/>
- March 2025
- [Join Codeus community in Discord](#)
- [Join Codeus community in LinkedIn](#)