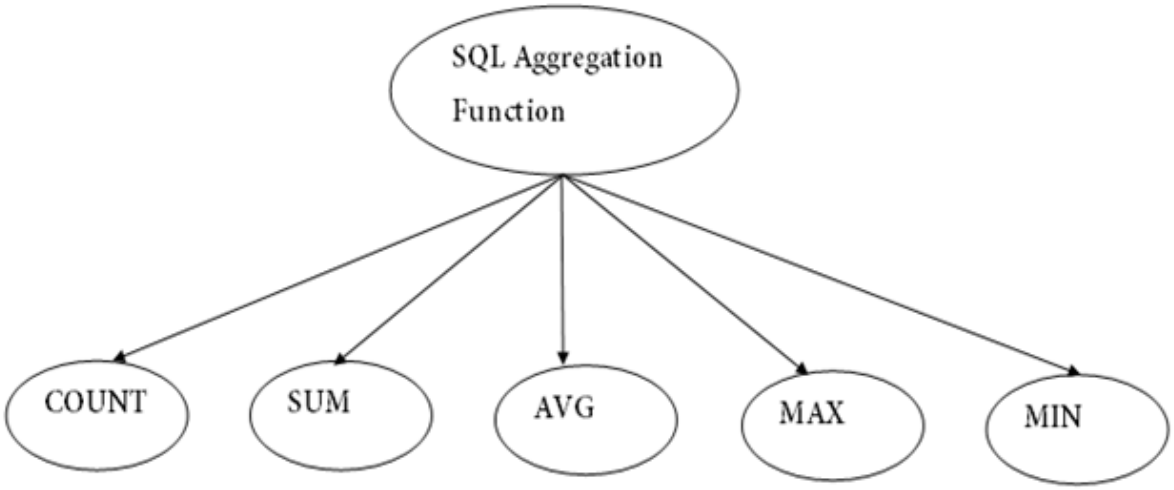
SQL Aggregate Functions

- SQL aggregation function is used to perform the calculations on multiple rows of a single column of a table. It returns a single value.
- It is also used to summarize the data.

Types of SQL Aggregation Function



1. COUNT FUNCTION

- 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.

Syntax

```
COUNT(*)
or
COUNT( [ALL|DISTINCT] expression )
```

Sample table:

PRODUCT_MAST

PRODUCT	COMPANY	QTY	RATE	COST
Item1	Com1	2	10	20
Item2	Com2	3	25	75
Item3	Com1	2	30	60
Item4	Com3	5	10	50
Item5	Com2	2	20	40
Item6	Cpm1	3	25	75
Item7	Com1	5	30	150
Item8	Com1	3	10	30
Item9	Com2	2	25	50
Item10	Com3	4	30	120

Example: COUNT()

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

Output:

```
10
```

Example: COUNT with WHERE

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

Output:

```
7
```

Example: COUNT() with DISTINCT

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

Output:

```
3
```

Example: COUNT() with GROUP BY

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

Output:

```
Com1    5
Com2    3
Com3    2
```

Example: COUNT() with HAVING

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

Output:

```
Com1    5
Com2    3
```

2. SUM Function

Sum function is used to calculate the sum of all selected columns. It works on numeric fields only.

Syntax

```
SUM()
or
SUM( [ALL|DISTINCT] expression )
```

Example: SUM()

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

Output:


```
670
```

Example: SUM() with WHERE

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

Output:

```
320
```

Example: SUM() with GROUP BY

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

```
WHERE QTY>3
GROUP BY COMPANY;
```

Output:

```
Com1    150
Com2    170
```

Example: SUM() with HAVING


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

Output:

```
Com1    335
Com3    170
```

3. AVG function

The AVG function is used to calculate the average value of the numeric type. AVG function returns the average of all non-Null values.

Syntax

```
AVG()
or
AVG( [ALL|DISTINCT] expression )
```

Example:

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

Output:

```
67.00
```

4. MAX Function

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.

Syntax

```
MAX()
or
MAX( [ALL|DISTINCT] expression )
```

Example:

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

```
30
```

5. MIN Function

MIN function is used to find the minimum value of a certain column. This function determines the smallest value of all selected values of a column.

Syntax

```
MIN()
or
MIN( [ALL|DISTINCT] expression )
```

Example:

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

Output:

```
10
```

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