

SQL: SUM

The `SUM()` function in SQL is used to calculate the total sum of a numeric column. It is an aggregate function, meaning it performs a calculation on a set of values and returns a single value.

Syntax

The basic syntax for using the `SUM()` function is:

```
SELECT SUM(column_name)
FROM table_name
WHERE condition;
```

Examples of Using `SUM()`

Let's go through some examples to understand how the `SUM()` function works.

Example Table: Sales

sale_id	product_name	quantity	price_per_unit
1	Widget A	10	5.00
2	Widget B	5	10.00
3	Widget C	8	7.50
4	Widget A	7	5.00
5	Widget B	3	10.00

1. Calculating the Total Quantity Sold:

Suppose you want to find the total quantity of all products sold:

```
SELECT SUM(quantity)
FROM Sales;
```

Result:

SUM(quantity)

33

This query calculates the total quantity sold for all products by summing the `quantity` column. The sum is $10 + 5 + 8 + 7 + 3 = 33$.

2. Calculating the Total Revenue: `SUM(quantity * price_per_unit)` 171.0

Suppose you want to calculate the total revenue from all sales:

```
SELECT SUM(quantity * price_per_unit)
FROM Sales;
```

Result:

SUM(quantity * price_per_unit)

171.0

This query calculates the total revenue by summing up the product of `quantity` and `price_per_unit` for each sale. The calculation is $(10 * 5.00) + (5 * 10.00) + (8 * 7.50) + (7 * 5.00) + (3 * 10.00) = 171.0$.

3. Calculating the Total Quantity Sold for a Specific Product:

Suppose you want to find the total quantity sold for "Widget A":

```
SELECT SUM(quantity)
FROM Sales
WHERE product_name = 'Widget A';
```

Result:

SUM(quantity)

17

This query calculates the total quantity sold for "Widget A". The sum of quantities for "Widget A" is $10 + 7 = 17$.

4. Combining `SUM()` with `GROUP BY`:

Suppose you want to calculate the total revenue generated for each product:

```
SELECT product_name, SUM(quantity * price_per_unit) AS total_revenue
```

```
FROM Sales
GROUP BY product_name;
```

Result:

product_name	total_revenue
Widget A	85.0
Widget B	80.0
Widget C	60.0

This query groups the results by `product_name` and calculates the total revenue for each product.

Key Points

- **Calculates the Sum:** `SUM()` returns the total sum of a set of numeric values.
- **Ignores NULL Values:** The function automatically ignores `NULL` values in the column when computing the sum.
- **Can Be Combined with GROUP BY :** You can use `SUM()` with `GROUP BY` to calculate sums for different groups of data, like products or other categories.
- **Can Include WHERE Clause:** Use the `WHERE` clause to filter the rows that contribute to the sum, allowing you to calculate conditional totals.

The `SUM()` function is a powerful tool for financial calculations, data analysis, and reporting in SQL, helping you to understand total values in your data.