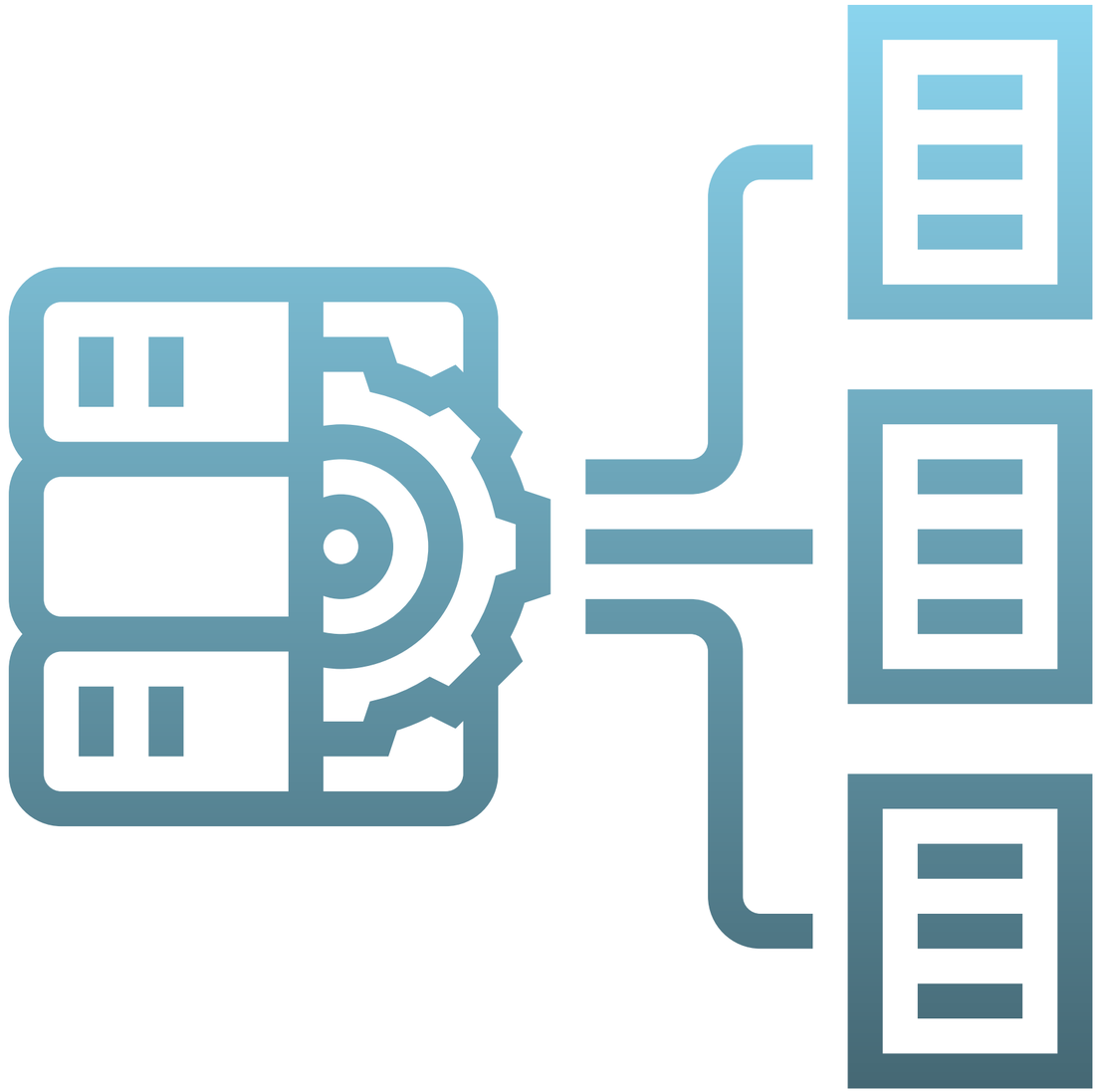
MySQL



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GROUP BY Clause

Grouping data

It clusters the rows with similar values of one or more columns into groups .

Placing in a query

It is placed after the “where” clause and before the “order by” clause

Result

The number of rows in the result set is decreased and one row is returned for each group.

‘HAVING’ clause

It functions alongside the GROUP BY clause to filter the data groupings that GROUP BY creates.

Without GROUP BY, HAVING behaves similarly to the WHERE clause, filtering individual rows.

It enables the application of conditions to the combined outcomes following grouping.

Logical operators like AND and OR can be used to create complex HAVING clauses.

Syntax

SELECT expression1, expression2, ..., aggregate_function(expression) AS alias FROM table_name [WHERE condition] GROUP BY expression1, expression2, ... expression_n HAVING condition;

The SELECT statement can be used to specify required columns, aggregate functions can be used to perform different aggregate functions (sum, avg, min, max etc.), WHERE condition can be used to filter the data, GROUP BY clause to group the data and HAVING clause to specify the conditions for grouping.

Advantages

- When used in combination, GROUP BY and HAVING let you analyze data in more complex ways. Within the categorized data, particular patterns or outliers can be found.

- Reduces the size of the data

- The HAVING clause applies criteria to the aggregated data in order to improve the GROUP BY results. Instead of filtering individual rows, you may filter groups based on computations (e.g., average, count).

Feature	GROUP BY	HAVING
Functionality	Groups data based on columns	Filters groups based on conditions
Data Manipulation	Summarizes data	Refines summarized data
Condition Application	Limited (on original data)	Works with aggregates (SUM, AVG etc.)

ROLL UP

With the help of the robust extension GROUP BY with ROLLUP, we can create several aggregation levels in a single query.

In contrast to conventional grouping, it generates extra rows containing subtotals and a grand total. Super-aggregate rows are these additional rows. NULL value in the grouping column(s) to identify entries that are super-aggregate.

SYNTAX:

```
SELECT column name1,column name2...
FROM table name
GROUP BY column name1, column name2  WITH ROLLUP;
```

Compared to executing different queries for every level, it saves time and increases efficiency.

Use Cases

Data Analysis
To analyze the section-wise statistics in different scenarios
eg: olympics performance, covid data analysis

Business
To formulate marketing strategies based on the performance of different products.

Marketing
To understand the consumer demographics in different industries.

Medical field
To inspect the surge of seasonal diseases, monitoring the progress of a patient's health, pharmaceutical management etc.

Performance monitoring
To examine peak usage times, track resource allocation, and pinpoint performance bottlenecks

Weather analysis
Group weather predictions by intensity or frequency. The HAVING clause can filter for particularly strong events.

References

- MySQL GROUP BY documentation
- MySQL HAVING documentation
- MySQL - having clause
- MySQL -group by clause