Summarising Data in SQL

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This article discusses the concepts of GROUPING SETS, CUBE, and ROLLUP in SQL, including examples demonstrating their application and the corresponding outputs.

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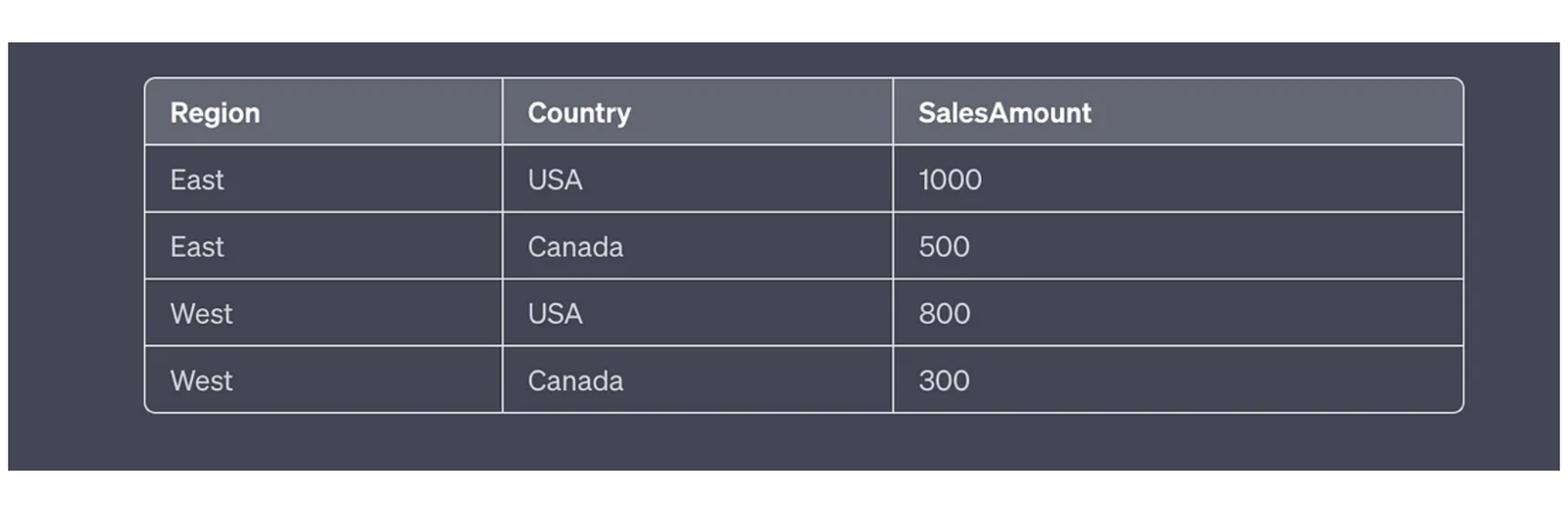
Introduction:

In the realm of SQL, the need for efficient data summarization and analysis is paramount for generating meaningful insights. The GROUPING SETS, CUBE, and ROLLUP operators provide powerful tools for creating comprehensive summaries and subtotals in SQL queries. This article will delve into each of these operators, providing insights into their functionalities, followed by illustrative examples that showcase their application and outputs.

GROUPING SETS:

GROUPING SETS is an operator that allows the grouping of data in a number of different ways within a single SELECT statement. Let's consider the following scenario with a sales table:

Input:



Region	Country	SalesAmount
East	USA	1000
East	Canada	500
West	USA	800
West	Canada	300

Query:

```
SELECT Region, Country, SUM(SalesAmount) as TotalSales
FROM Sales
GROUP BY GROUPING SETS ((Region, Country), (Region), ())
ORDER BY Region, Country;
```

Output:

CUBE:

The CUBE operator is used for generating subtotals and grand totals for a set of columns, producing results for every possible combination of the provided columns. Let's consider a sample dataset in the Orders table:

Input:

Query:

```
SELECT Product, Region, SUM(SalesAmount) as TotalSales
FROM Orders
GROUP BY CUBE (Product, Region)
ORDER BY Product, Region;
```

Output:

ROLLUP:

ROLLUP is another operator that is used to generate subtotals and grand totals, similar to CUBE. Consider the following dataset in the EmployeeSales table:

Input:

Query:

```
SELECT EmployeeName, Year, SUM(SalesAmount) as TotalSales
FROM EmployeeSales
GROUP BY ROLLUP (EmployeeName, Year)
ORDER BY EmployeeName, Year;
```

Output:

Conclusion:

The GROUPING SETS, CUBE, and ROLLUP operators are powerful tools in SQL for creating comprehensive and meaningful summaries of data. They enable the generation of subtotals and grand totals based on various combinations of specified columns, providing a clear overview of the data. By leveraging these operators, analysts and data professionals can gain deeper insights into their datasets, facilitating informed decision-making and analysis.

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