**Task 4- OLAP Operations (Using Redshift Or PostgreSQL)**

**1.Database Creation**

CREATE TABLE sales\_sample (

Product\_Id INTEGER,

Region VARCHAR(50),

Date DATE,

Sales\_Amount NUMERIC

);

**2.Data Creation**

INSERT INTO sales\_sample

VALUES

(201, 'East', '2023-01-01', 3213),

(202, 'Central', '2023-01-01', 3352),

(201, 'North', '2023-01-02', 1250),

(205, 'West', '2023-01-02', 6002),

(204, 'East', '2023-01-02', 850),

(205, 'North', '2023-01-02', 1100),

(201, 'Central', '2023-01-03', 950),

(204, 'South', '2023-01-03', 1150175),

(202, 'West', '2023-01-03', 32025),

(205, 'South', '2023-01-03', 102190);

**3.Perfom OLAP operations**

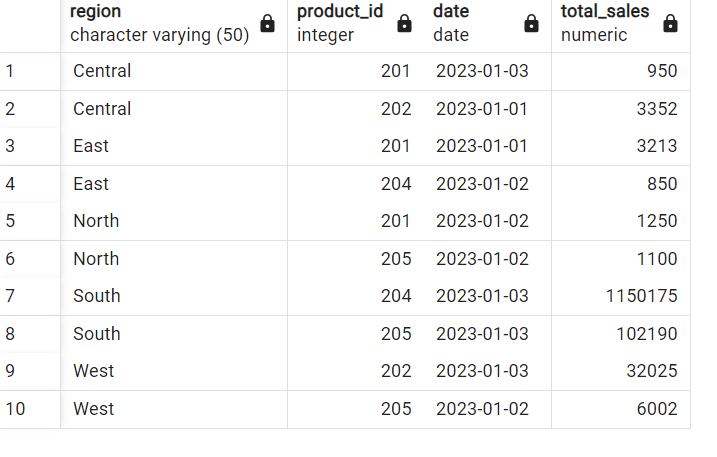
**(a) Drill Down: Analyze sales data at a more detailed level (Region to Product).**

SELECT Region, Product\_Id, Date, SUM(Sales\_Amount) AS Total\_Sales

FROM sales\_sample

GROUP BY Region, Product\_Id, Date

ORDER BY Region, Product\_Id, Date;

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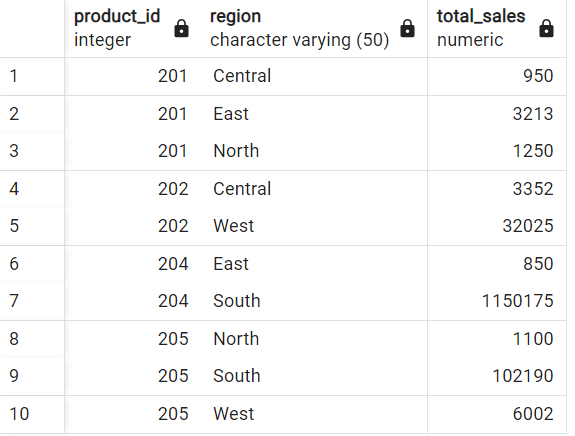
**(b) Roll Up:Summarize sales data at different levels of granularity (Product to Region).**

SELECT Product\_Id, Region, SUM(Sales\_Amount) AS Total\_Sales

FROM sales\_sample

GROUP BY Product\_Id, Region

ORDER BY Product\_Id, Region;



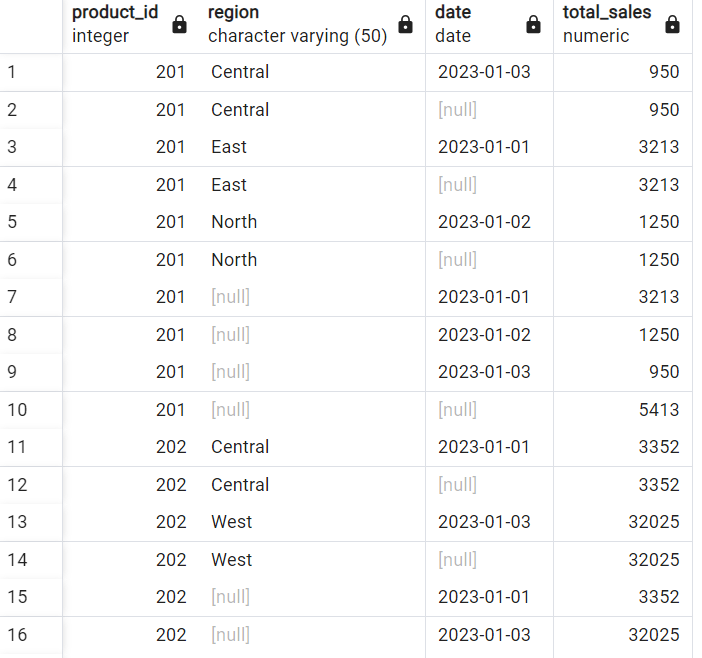
**(c) Cube: Analyze sales data from multiple dimensions (Product, Region, Date).**

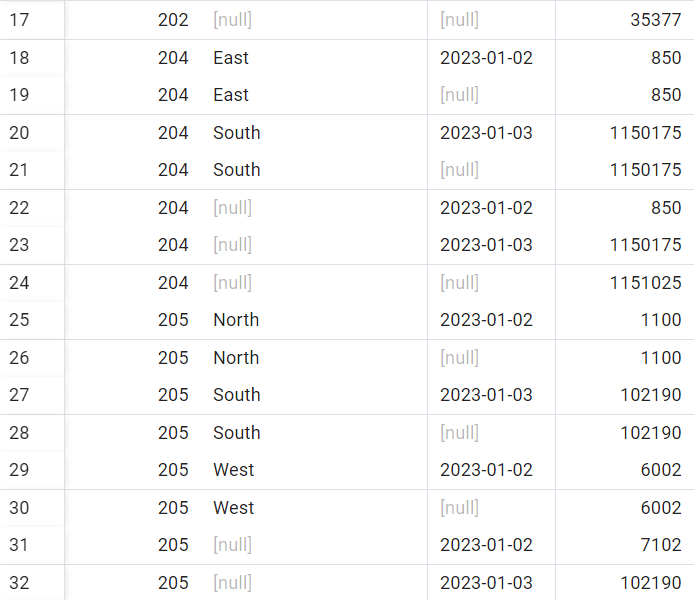
SELECT Product\_Id, Region, Date, SUM(Sales\_Amount) AS Total\_Sales

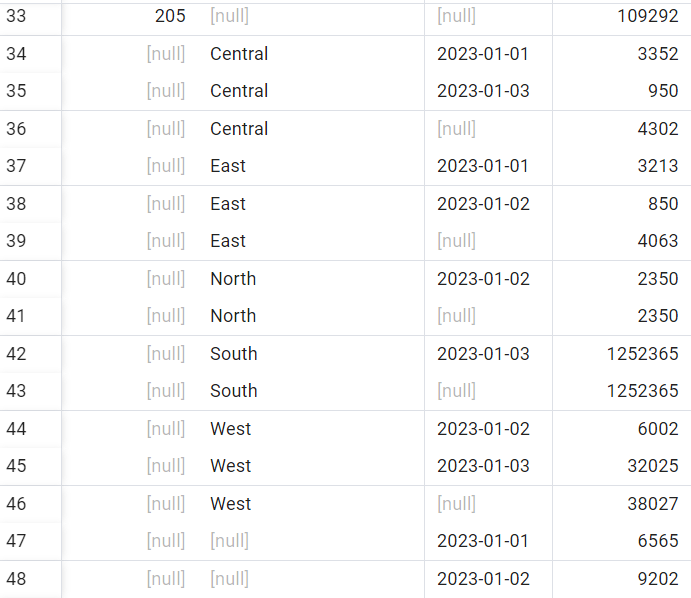
FROM sales\_sample

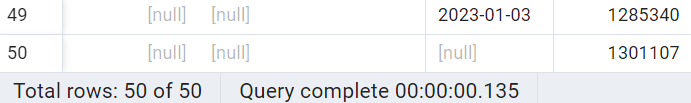
GROUP BY CUBE (Product\_Id, Region, Date)

ORDER BY Product\_Id, Region, Date;





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**(d) Slice:Extract a subset of data based on specific criteria (e.g., sales for a particular region).**

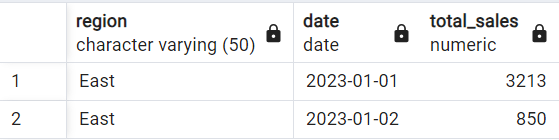
SELECT Region, Date, SUM(Sales\_Amount) AS Total\_Sales

FROM sales\_sample

WHERE Region = 'East'

GROUP BY Region, Date

ORDER BY Date;

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**(e) Dice: Extract data based on multiple criteria (specific combinations of Product, Region, Date).**

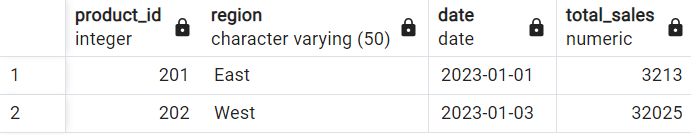
SELECT Product\_Id, Region, Date, SUM(Sales\_Amount) AS Total\_Sales

FROM sales\_sample

WHERE (Product\_Id =201 OR Product\_Id = 202) AND (Region = 'East' OR Region = 'West')

GROUP BY Product\_Id, Region, Date

ORDER BY Product\_Id, Region, Date;

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