**Sales Data**

1. Database Creation

-- Create Database

CREATE DATABASE sales\_data;

USE sales\_data;

-- Create Table

CREATE TABLE sales\_sample (

Product\_Id INT,

Region VARCHAR(50),

Date DATE,

Sales\_Amount DECIMAL(10,2),

INDEX idx\_product (Product\_Id),

INDEX idx\_region (Region),

INDEX idx\_date (Date)

);

-- Insert Sample Data

INSERT INTO sales\_sample (Product\_Id, Region, Date, Sales\_Amount) VALUES

(1001, 'East', '2024-01-15', 5000.00),

(1002, 'West', '2024-01-15', 6500.00),

(1001, 'North', '2024-01-20', 4500.00),

(1003, 'South', '2024-01-20', 7500.00),

(1002, 'East', '2024-02-01', 5500.00),

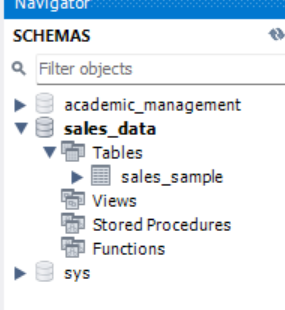
(1004, 'West', '2024-02-01', 8500.00),

(1003, 'North', '2024-02-05', 6000.00),

(1001, 'South', '2024-02-05', 7000.00),

(1004, 'East', '2024-02-10', 9000.00),

(1002, 'West', '2024-02-10', 8000.00);



1. OLAP Functions
2. Drill Down-Analyze sales data at a more detailed level. Write a query to perform drill down from region to product level to understand sales performance.

-- Level 1: Total Sales by Region

SELECT

Region,

SUM(Sales\_Amount) as Total\_Sales

FROM

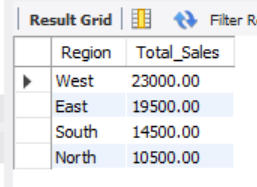
sales\_sample

GROUP BY

Region

ORDER BY

Total\_Sales DESC;



- Level 2: Region and Product Level

SELECT

Region,

Product\_Id,

SUM(Sales\_Amount) as Total\_Sales

FROM

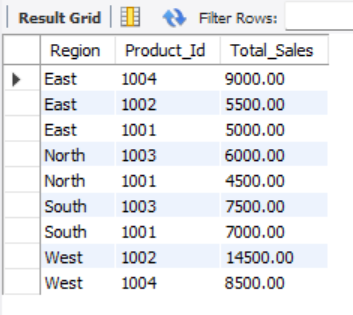
sales\_sample

GROUP BY

Region, Product\_Id

ORDER BY

Region, Total\_Sales DESC;



-- Level 3: Region, Product, and Monthly Level

SELECT

Region,

Product\_Id,

DATE\_FORMAT(Date, '%Y-%m') as Month,

SUM(Sales\_Amount) as Total\_Sales

FROM

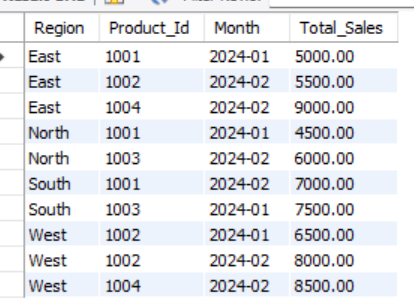
sales\_sample

GROUP BY

Region, Product\_Id, DATE\_FORMAT(Date, '%Y-%m')

ORDER BY

Region, Product\_Id, Month;



-- Level 4: Most Detailed Level (All Dimensions)

SELECT

Region,

Product\_Id,

Date,

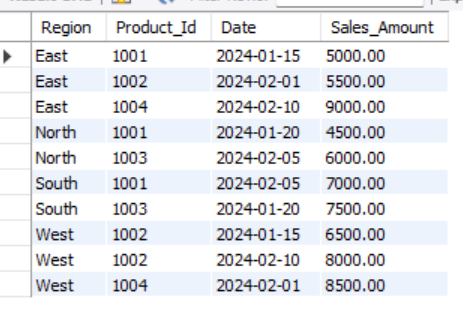
Sales\_Amount

FROM

sales\_sample

ORDER BY

Region, Product\_Id, Date;



1. Rollup- To summarize sales data at different levels of granularity. Write a query to perform roll up from product to region level to view total sales by region.

-- 1. Basic ROLLUP - Region and Product Level

SELECT

Region,

Product\_Id,

SUM(Sales\_Amount) as Total\_Sales,

COUNT(\*) as Number\_of\_Transactions

FROM

sales\_sample

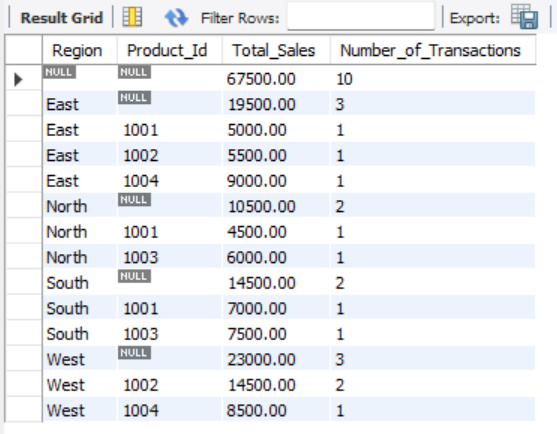
GROUP BY

Region, Product\_Id

WITH ROLLUP

ORDER BY

Region, Product\_Id;



-- 2. ROLLUP with Time Dimension

SELECT

Region,

DATE\_FORMAT(Date, '%Y-%m') as Month,

SUM(Sales\_Amount) as Total\_Sales

FROM

sales\_sample

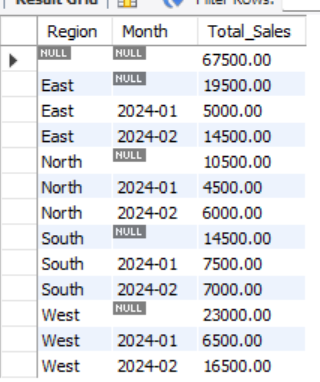
GROUP BY

Region, DATE\_FORMAT(Date, '%Y-%m')

WITH ROLLUP

ORDER BY

Region, Month;



-- 4. ROLLUP with Percentage Contribution

WITH SalesRollup AS (

SELECT

Region,

Product\_Id,

SUM(Sales\_Amount) as Total\_Sales

FROM

sales\_sample

GROUP BY

Region, Product\_Id

WITH ROLLUP

)

SELECT

IFNULL(Region, 'Grand Total') as Region,

IFNULL(Product\_Id, 'Region Total') as Product\_Id,

Total\_Sales,

ROUND(

(Total\_Sales / SUM(Total\_Sales) OVER()) \* 100,

2

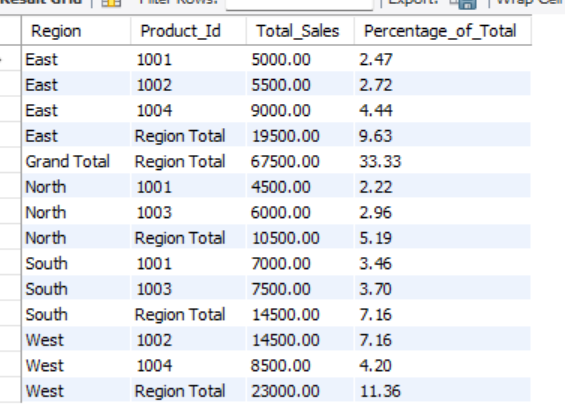
) as Percentage\_of\_Total

FROM

SalesRollup

ORDER BY

Region, Product\_Id;



-- 6. Region-wise Product Performance with ROLLUP

SELECT

IFNULL(Region, 'Grand Total') as Region,

IFNULL(Product\_Id, 'Region Total') as Product\_Id,

SUM(Sales\_Amount) as Total\_Sales,

COUNT(\*) as Number\_of\_Sales,

ROUND(AVG(Sales\_Amount), 2) as Avg\_Sale\_Amount,

MIN(Sales\_Amount) as Min\_Sale,

MAX(Sales\_Amount) as Max\_Sale

FROM

sales\_sample

GROUP BY

Region, Product\_Id

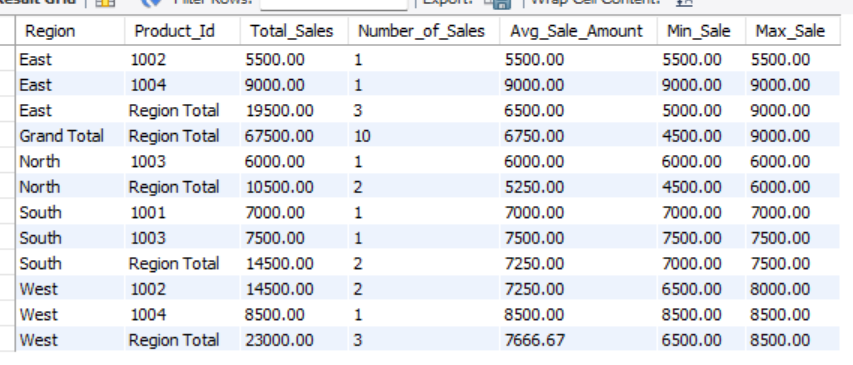
WITH ROLLUP

HAVING

Total\_Sales > 5000

ORDER BY

Region, Product\_Id;



1. Cube - To analyze sales data from multiple dimensions simultaneously. Write a query to Explore sales data from different perspectives, such as product, region, and date.

SELECT

COALESCE(Region, 'All Regions') as Region,

COALESCE(Product\_Id, 'All Products') as Product\_Id,

SUM(Sales\_Amount) as Total\_Sales,

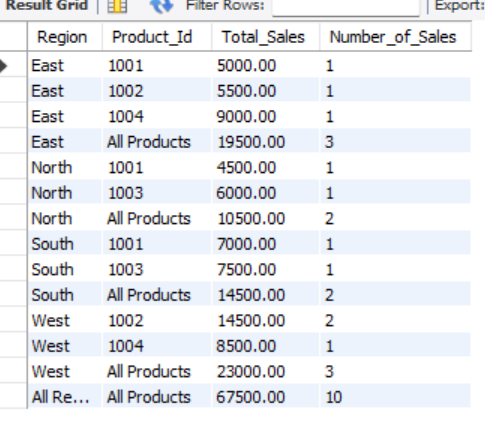
COUNT(\*) as Number\_of\_Sales

FROM

sales\_sample

GROUP BY

Region, Product\_Id WITH ROLLUP;



SELECT

COALESCE(Product\_Id, 'All Products') as Product\_Id,

COUNT(\*) as Number\_of\_Sales,

SUM(Sales\_Amount) as Total\_Sales,

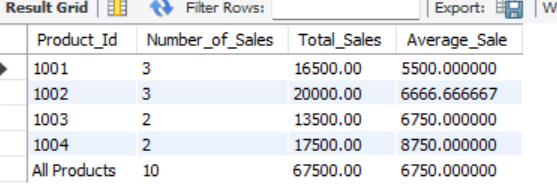
AVG(Sales\_Amount) as Average\_Sale

FROM

sales\_sample

GROUP BY

Product\_Id WITH ROLLUP;



1. Slice- To extract a subset of data based on specific criteria. Write a query to slice the data to view sales for a particular region or date range.

SELECT

Product\_Id,

Date,

Sales\_Amount,

Region

FROM

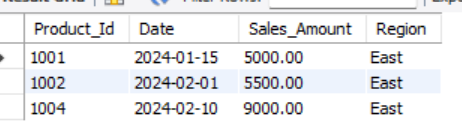
sales\_sample

WHERE

Region = 'East'

ORDER BY

Date;



SELECT

Product\_Id,

COUNT(\*) as Number\_of\_Sales,

SUM(Sales\_Amount) as Total\_Sales,

AVG(Sales\_Amount) as Average\_Sale,

MIN(Sales\_Amount) as Minimum\_Sale,

MAX(Sales\_Amount) as Maximum\_Sale

FROM

sales\_sample

WHERE

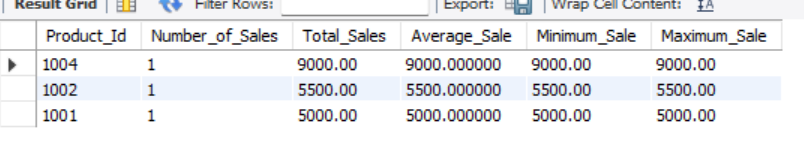
Region = 'East'

GROUP BY

Product\_Id

ORDER BY

Total\_Sales DESC;



1. Dice - To extract data based on multiple criteria. Write a query to view sales for specific combinations of product, region, and date.

-- 1. Basic Dice: View sales for specific product and region

SELECT

Date,

Product\_Id,

Region,

Sales\_Amount

FROM

sales\_sample

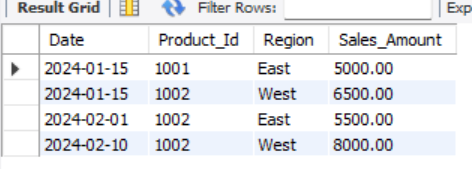
WHERE

Product\_Id IN (1001, 1002)

AND Region IN ('East', 'West')

ORDER BY

Date;



-- 4. Dice with Daily Analysis

SELECT

Date,

Region,

COUNT(\*) as Sales\_Count,

SUM(Sales\_Amount) as Daily\_Sales

FROM

sales\_sample

WHERE

Product\_Id IN (1001, 1002)

AND Region IN ('East', 'West')

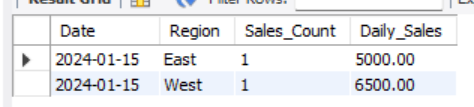
AND MONTH(Date) = 1

GROUP BY

Date, Region

ORDER BY

Date, Region;



-- 6. Dice with Monthly Comparison

SELECT

DATE\_FORMAT(Date, '%Y-%m') as Month,

Region,

Product\_Id,

SUM(Sales\_Amount) as Monthly\_Sales

FROM

sales\_sample

WHERE

Product\_Id IN (1001, 1002)

AND Region IN ('East', 'West')

GROUP BY

DATE\_FORMAT(Date, '%Y-%m'), Region, Product\_Id

ORDER BY

Month, Region, Product\_Id;

