-- Task 3: Perform OLAP operations on sales data

-- Step 1: Create a database (using PostgreSQL) and a table for sales data

-- Create the "sales\_sample" table with the specified columns

CREATE TABLE sales\_sample (

Product\_id INTEGER,

Region VARCHAR(50),

Date DATE,

Sales\_Amount NUMERIC

);

-- Step 2: Insert 10 sample records into the "sales\_sample" table

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

VALUES

(101, 'East', '2023-05-01', 50000),

(102, 'West', '2023-05-02', 60000),

(103, 'North', '2023-05-03', 55000),

(104, 'South', '2023-05-04', 48000),

(101, 'East', '2023-05-05', 52000),

(102, 'West', '2023-05-06', 61000),

(105, 'North', '2023-05-07', 49000),

(103, 'South', '2023-05-08', 54000),

(106, 'East', '2023-05-09', 53000),

(104, 'West', '2023-05-10', 62000);

-- Step 3: Perform OLAP operations

-- a) Drill Down - Analyze sales data from region to product level

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

FROM sales\_sample

GROUP BY Region, Product\_id

ORDER BY Region, Product\_id;

-- b) Rollup - Summarize sales data from product to region level

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

FROM sales\_sample

GROUP BY Region

ORDER BY Region;

-- c) Cube - Explore sales data from different dimensions

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

FROM sales\_sample

GROUP BY ROLLUP (Region, Product\_id, Date)

ORDER BY Region, Product\_id, Date;

-- d) Slice - Extract data for a specific region and date range

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

FROM sales\_sample

WHERE Region = 'East' AND Date BETWEEN '2023-05-01' AND '2023-05-05'

GROUP BY Region, Date

ORDER BY Region, Date;

-- e) Dice - Extract data based on specific combinations of product, region, and date

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

FROM sales\_sample

WHERE Region = 'East' AND Product\_id = 101 AND Date BETWEEN '2023-05-01' AND '2023-05-05'

GROUP BY Region, Product\_id, Date

ORDER BY Region, Product\_id, Date;