**Task 4:**

**Data Creation (Create the table and insert sample data)**

CREATE TABLE sales\_sample (

product\_id INTEGER,

region VARCHAR(50),

date DATE,

sales\_amount NUMERIC

);

INSERT INTO sales\_sample (product\_id, region, date, sales\_amount)

VALUES

(1, 'East', '2023-01-01', 1000.50),

(2, 'West', '2023-01-01', 750.25),

(1, 'North', '2023-01-02', 1250.75),

(3, 'South', '2023-01-02', 600.00),

(2, 'East', '2023-01-02', 850.60),

(3, 'West', '2023-01-02', 1100.25),

(1, 'North', '2023-01-03', 950.40),

(2, 'South', '2023-01-03', 1150.75),

(3, 'East', '2023-01-03', 700.25),

(1, 'West', '2023-01-03', 1020.90);

**Perform OLAP operations**

**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;

**Rollup: 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;

**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;

**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;

**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 = 1 OR product\_id = 2) AND (region = 'East' OR region = 'West')

GROUP BY product\_id, region, date

ORDER BY product\_id, region, date;