**Exercise 1: Ranking and Window FunctionsCODE:**

-- Create the Sales table

CREATE TABLE Sales (

sale\_id INT PRIMARY KEY,

salesperson NVARCHAR(50),

region NVARCHAR(50),

amount DECIMAL(10, 2)

);

-- Insert sample data

INSERT INTO Sales (sale\_id, salesperson, region, amount) VALUES

(1, 'Alice', 'East', 5000),

(2, 'Bob', 'East', 7000),

(3, 'Alice', 'West', 6000),

(4, 'Charlie', 'East', 7000),

(5, 'Bob', 'West', 5000),

(6, 'Alice', 'East', 8000);

-- 1️⃣ Rank each sale within each region based on amount (highest first)

SELECT

sale\_id,

salesperson,

region,

amount,

RANK() OVER (PARTITION BY region ORDER BY amount DESC) AS sales\_rank

FROM Sales;

-- 2️⃣ Number each sale across the whole table ordered by amount descending

SELECT

sale\_id,

salesperson,

region,

amount,

ROW\_NUMBER() OVER (ORDER BY amount DESC) AS row\_num

FROM Sales;

-- 3️⃣ Calculate running total of amount for each region ordered by amount descending

SELECT

sale\_id,

salesperson,

region,

amount,

SUM(amount) OVER (PARTITION BY region ORDER BY amount DESC ROWS BETWEEN UNBOUNDED PRECEDING AND CURRENT ROW) AS running\_total

FROM Sales;

-- 4️⃣ Assign each sale to a quartile (4 buckets) based on amount

SELECT

sale\_id,

salesperson,

region,

amount,

NTILE(4) OVER (ORDER BY amount DESC) AS quartile

FROM Sales;

For each salesperson, get their highest sale amount and the rank of that sale within their region

WITH SalesWithRank AS (

SELECT

sale\_id,

salesperson,

region,

amount,

RANK() OVER (PARTITION BY region ORDER BY amount DESC) AS region\_rank

FROM Sales

)

SELECT

salesperson,

MAX(amount) AS highest\_amount,

MIN(region\_rank) AS best\_rank\_in\_region

FROM SalesWithRank

GROUP BY salesperson;

**OUTPUT:**

