**Exercise 1: Ranking and Window Functions**

**SQL**

-- Create sample Products table

CREATE TABLE Products (

ProductID INT,

ProductName VARCHAR(100),

Category VARCHAR(50),

Price DECIMAL(10,2)

);

-- Insert sample data

INSERT INTO Products VALUES

(1, 'Laptop Pro', 'Electronics', 1500.00),

(2, 'Smartphone X', 'Electronics', 1200.00),

(3, 'Tablet Z', 'Electronics', 1200.00),

(4, 'Headphones', 'Electronics', 300.00),

(5, 'Sofa', 'Furniture', 800.00),

(6, 'Dining Table', 'Furniture', 800.00),

(7, 'Chair', 'Furniture', 200.00),

(8, 'Desk', 'Furniture', 500.00);

-- Query using different ranking functions

WITH RankedProducts AS (

SELECT

ProductName,

Category,

Price,

ROW\_NUMBER() OVER (PARTITION BY Category ORDER BY Price DESC) AS RowNum,

RANK() OVER (PARTITION BY Category ORDER BY Price DESC) AS RankNum,

DENSE\_RANK() OVER (PARTITION BY Category ORDER BY Price DESC) AS DenseRankNum

FROM Products

)

SELECT

ProductName,

Category,

Price,

RowNum,

RankNum,

DenseRankNum

FROM RankedProducts

WHERE RowNum <= 3

ORDER BY Category, Price DESC;

**Output:**

ProductName | Category | Price | RowNum | RankNum | DenseRankNum

Laptop Pro | Electronics | 1500.00| 1 | 1 | 1

Smartphone X | Electronics | 1200.00| 2 | 2 | 2

Tablet Z | Electronics | 1200.00| 3 | 2 | 2

Sofa | Furniture | 800.00 | 1 | 1 | 1

Dining Table | Furniture | 800.00 | 2 | 1 | 1

Desk | Furniture | 500.00 | 3 | 3 | 2