**Scenario:** Imagine a small online retail business that sells products across multiple categories. They track customer orders, product inventory, and employee details.

You

**Dataset Tables:**

1. **Customers**
2. **Products**
3. **Orders**
4. **OrderDetails**
5. **Employees**

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1. Customers Table

| **CustomerID** | **FirstName** | **LastName** | **Email** | **Phone** | **JoinDate** |
| --- | --- | --- | --- | --- | --- |
| 1 | John | Doe | [john.doe@example.com](mailto:john.doe@example.com) | 123-456789 | 2022-01-15 |
| 2 | Jane | Smith | [jane.smith@example.com](mailto:jane.smith@example.com) | 987-654321 | 2022-03-22 |
| 3 | Jim | Brown | [jim.brown@example.com](mailto:jim.brown@example.com) | 456-789123 | 2022-05-30 |
| ... | ... | ... | ... | ... | ... |
| 50 | Emma | Johnson | [emma.johnson@example.com](mailto:emma.johnson@example.com) | 321-654987 | 2023-07-01 |

2. Products Table

| **ProductID** | **ProductName** | **Category** | **Price** | **StockQuantity** |
| --- | --- | --- | --- | --- |
| 1 | Laptop | Electronics | 800.00 | 25 |
| 2 | Headphones | Electronics | 150.00 | 50 |
| 3 | Office Chair | Furniture | 120.00 | 30 |
| ... | ... | ... | ... | ... |
| 50 | Desk Lamp | Furniture | 35.00 | 45 |

3. Orders Table

| **OrderID** | **CustomerID** | **OrderDate** | **EmployeeID** |
| --- | --- | --- | --- |
| 1 | 1 | 2023-01-10 | 2 |
| 2 | 2 | 2023-02-15 | 1 |
| 3 | 3 | 2023-03-20 | 3 |
| ... | ... | ... | ... |
| 150 | 50 | 2023-06-28 | 4 |

4. OrderDetails Table

| **OrderDetailID** | **OrderID** | **ProductID** | **Quantity** |
| --- | --- | --- | --- |
| 1 | 1 | 1 | 1 |
| 2 | 1 | 2 | 2 |
| 3 | 2 | 3 | 1 |
| ... | ... | ... | ... |
| 150 | 150 | 50 | 3 |

5. Employees Table

| **EmployeeID** | **FirstName** | **LastName** | **Department** | **HireDate** |
| --- | --- | --- | --- | --- |
| 1 | Alice | Johnson | Sales | 2021-04-12 |
| 2 | Bob | Williams | Customer Care | 2020-08-21 |
| 3 | Carol | Davis | Management | 2019-11-10 |
| ... | ... | ... | ... | ... |
| 10 | Frank | Miller | Sales | 2022-07-15 |
| Create datasets |  |  |  |  |

-- Create Customers Table

CREATE TABLE Customers (

CustomerID INT PRIMARY KEY,

FirstName VARCHAR(50),

LastName VARCHAR(50),

Email VARCHAR(100),

Phone VARCHAR(20),

JoinDate DATE

);

-- Insert Data into Customers Table

INSERT INTO Customers (CustomerID, FirstName, LastName, Email, Phone, JoinDate) VALUES

(1, 'John', 'Doe', 'john.doe@example.com', '123-456789', '2022-01-15'),

(2, 'Jane', 'Smith', 'jane.smith@example.com', '987-654321', '2022-03-22'),

(3, 'Jim', 'Brown', 'jim.brown@example.com', '456-789123', '2022-05-30'),

-- Add more customers up to 50

(50, 'Emma', 'Johnson', 'emma.johnson@example.com', '321-654987', '2023-07-01');

-- Create Products Table

CREATE TABLE Products (

ProductID INT PRIMARY KEY,

ProductName VARCHAR(100),

Category VARCHAR(50),

Price DECIMAL(10, 2),

StockQuantity INT

);

-- Insert Data into Products Table

INSERT INTO Products (ProductID, ProductName, Category, Price, StockQuantity) VALUES

(1, 'Laptop', 'Electronics', 800.00, 25),

(2, 'Headphones', 'Electronics', 150.00, 50),

(3, 'Office Chair', 'Furniture', 120.00, 30),

-- Add more products up to 50

(50, 'Desk Lamp', 'Furniture', 35.00, 45);

-- Create Orders Table

CREATE TABLE Orders (

OrderID INT PRIMARY KEY,

CustomerID INT,

OrderDate DATE,

EmployeeID INT,

FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID),

FOREIGN KEY (EmployeeID) REFERENCES Employees(EmployeeID)

);

-- Insert Data into Orders Table

INSERT INTO Orders (OrderID, CustomerID, OrderDate, EmployeeID) VALUES

(1, 1, '2023-01-10', 2),

(2, 2, '2023-02-15', 1),

(3, 3, '2023-03-20', 3),

-- Add more orders up to 150

(150, 50, '2023-06-28', 4);

-- Create OrderDetails Table

CREATE TABLE OrderDetails (

OrderDetailID INT PRIMARY KEY,

OrderID INT,

ProductID INT,

Quantity INT,

FOREIGN KEY (OrderID) REFERENCES Orders(OrderID),

FOREIGN KEY (ProductID) REFERENCES Products(ProductID)

);

-- Insert Data into OrderDetails Table

INSERT INTO OrderDetails (OrderDetailID, OrderID, ProductID, Quantity) VALUES

(1, 1, 1, 1),

(2, 1, 2, 2),

(3, 2, 3, 1),

-- Add more order details up to 150

(150, 150, 50, 3);

-- Create Employees Table

CREATE TABLE Employees (

EmployeeID INT PRIMARY KEY,

FirstName VARCHAR(50),

LastName VARCHAR(50),

Department VARCHAR(50),

HireDate DATE

);

-- Insert Data into Employees Table

INSERT INTO Employees (EmployeeID, FirstName, LastName, Department, HireDate) VALUES

(1, 'Alice', 'Johnson', 'Sales', '2021-04-12'),

(2, 'Bob', 'Williams', 'Customer Care', '2020-08-21'),

(3, 'Carol', 'Davis', 'Management', '2019-11-10'),

-- Add more employees up to 10

(10, 'Frank', 'Miller', 'Sales', '2022-07-15');

Example SQL Practice Questions

1. **Select all customer names and their email addresses.**

SELECT FirstName, LastName, Email FROM Customers;

1. **Find all products in the 'Electronics' category.**

SELECT \* FROM Products WHERE Category = 'Electronics';

1. **List all orders made by customer with ID 1.**

SELECT \* FROM Orders WHERE CustomerID = 1;

1. **Calculate the total sales amount for each order (considering quantity and price).**

SELECT o.OrderID, SUM(p.Price \* od.Quantity) AS TotalAmount  
FROM Orders o  
JOIN OrderDetails od ON o.OrderID = od.OrderID  
JOIN Products p ON od.ProductID = p.ProductID  
GROUP BY o.OrderID;

1. **Find the employees who have processed orders.**

SELECT DISTINCT e.EmployeeID, e.FirstName, e.LastName  
FROM Employees e  
JOIN Orders o ON e.EmployeeID = o.EmployeeID;

1. **Retrieve the number of products in each category.**

SELECT Category, COUNT(\*) AS NumberOfProducts  
FROM Products  
GROUP BY Category;

1. **List all customers who joined after January 1, 2023.**

SELECT \* FROM Customers WHERE JoinDate > '2023-01-01';

1. **Find the most ordered product.**

SELECT p.ProductName, SUM(od.Quantity) AS TotalQuantity  
FROM Products p  
JOIN OrderDetails od ON p.ProductID = od.ProductID  
GROUP BY p.ProductName  
ORDER BY TotalQuantity DESC  
LIMIT 1;

1. **Retrieve the order details along with customer names for orders placed in March 2023.**

SELECT o.OrderID, c.FirstName, c.LastName, od.ProductID, od.Quantity  
FROM Orders o  
JOIN Customers c ON o.CustomerID = c.CustomerID  
JOIN OrderDetails od ON o.OrderID = od.OrderID  
WHERE o.OrderDate BETWEEN '2023-03-01' AND '2023-03-31';

1. **Find employees hired before 2021.**

SELECT \* FROM Employees WHERE HireDate < '2021-01-01';