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Assignment: DWDM

**REPORT**

**Design a star schema to track and analyze product returns and refunds. This schema should include details about returns, products, customers, return dates, and refund amounts.**

**Creating Database and Tables:**  
create database products;

use products;

-- 1. Create Product Dimension Table

CREATE TABLE Product\_Dimension (

Product\_ID INT PRIMARY KEY AUTO\_INCREMENT,

Product\_Name VARCHAR(100),

Category VARCHAR(50),

Brand VARCHAR(50),

Supplier VARCHAR(50),

Cost\_Price DECIMAL(10, 2),

Selling\_Price DECIMAL(10, 2)

);

-- Insert Data into Product Dimension

INSERT INTO Product\_Dimension (Product\_Name, Category, Brand, Supplier, Cost\_Price, Selling\_Price)

VALUES

('Laptop', 'Electronics', 'Dell', 'Dell Inc.', 500.00, 700.00),

('Smartphone', 'Electronics', 'Apple', 'Apple Inc.', 900.00, 1200.00),

('Headphones', 'Accessories', 'Sony', 'Sony Corp.', 50.00, 100.00),

('Smartwatch', 'Electronics', 'Samsung', 'Samsung Inc.', 150.00, 250.00),

('Tablet', 'Electronics', 'Lenovo', 'Lenovo Group', 300.00, 400.00),

('Bluetooth Speaker', 'Accessories', 'JBL', 'Harman', 80.00, 120.00),

('Wireless Mouse', 'Accessories', 'Logitech', 'Logitech Inc.', 30.00, 50.00),

('Gaming Monitor', 'Electronics', 'Acer', 'Acer Inc.', 200.00, 300.00),

('Smart TV', 'Electronics', 'LG', 'LG Electronics', 600.00, 800.00),

('Digital Camera', 'Electronics', 'Canon', 'Canon Inc.', 400.00, 600.00),

('Action Camera', 'Electronics', 'GoPro', 'GoPro Inc.', 250.00, 350.00),

('External Hard Drive', 'Accessories', 'Seagate', 'Seagate Technology', 70.00, 120.00),

('Smart Home Assistant', 'Electronics', 'Amazon', 'Amazon Inc.', 100.00, 150.00),

('Fitness Tracker', 'Accessories', 'Fitbit', 'Fitbit Inc.', 75.00, 125.00),

('VR Headset', 'Electronics', 'Oculus', 'Meta', 300.00, 400.00),

('Laptop Bag', 'Accessories', 'Targus', 'Targus Inc.', 20.00, 40.00),

('Smart Light Bulb', 'Accessories', 'Philips', 'Philips Inc.', 15.00, 30.00),

('Wireless Charger', 'Accessories', 'Anker', 'Anker Innovations', 25.00, 40.00),

('E-Book Reader', 'Electronics', 'Amazon', 'Amazon Inc.', 100.00, 150.00),

('Gaming Console', 'Electronics', 'Sony', 'Sony Corp.', 300.00, 400.00);

-- 2. Create Customer Dimension Table

CREATE TABLE Customer\_Dimension (

Customer\_ID INT PRIMARY KEY AUTO\_INCREMENT,

Customer\_Name VARCHAR(100),

Gender VARCHAR(10),

Age INT,

City VARCHAR(50),

State VARCHAR(50),

Country VARCHAR(50)

);

-- Insert Data into Customer Dimension

INSERT INTO Customer\_Dimension (Customer\_Name, Gender, Age, City, State, Country)

VALUES

('John Doe', 'Male', 35, 'New York', 'NY', 'USA'),

('Jane Smith', 'Female', 28, 'Los Angeles', 'CA', 'USA'),

('Michael Brown', 'Male', 40, 'Chicago', 'IL', 'USA'),

('Emily Davis', 'Female', 22, 'Houston', 'TX', 'USA'),

('David Wilson', 'Male', 30, 'Miami', 'FL', 'USA'),

('Sophia Johnson', 'Female', 27, 'Phoenix', 'AZ', 'USA'),

('Liam Jones', 'Male', 24, 'San Diego', 'CA', 'USA'),

('Olivia White', 'Female', 32, 'Dallas', 'TX', 'USA'),

('Ethan Martinez', 'Male', 36, 'San Francisco', 'CA', 'USA'),

('Isabella Anderson', 'Female', 29, 'Las Vegas', 'NV', 'USA'),

('James Thomas', 'Male', 31, 'Portland', 'OR', 'USA'),

('Amelia Jackson', 'Female', 33, 'Austin', 'TX', 'USA'),

('Alexander Garcia', 'Male', 26, 'Charlotte', 'NC', 'USA'),

('Charlotte Lee', 'Female', 38, 'Orlando', 'FL', 'USA'),

('Benjamin Harris', 'Male', 29, 'San Antonio', 'TX', 'USA'),

('Mia Thompson', 'Female', 34, 'Seattle', 'WA', 'USA'),

('Noah Robinson', 'Male', 27, 'Denver', 'CO', 'USA'),

('Lucas King', 'Male', 39, 'Atlanta', 'GA', 'USA'),

('Harper Martinez', 'Female', 25, 'Boston', 'MA', 'USA'),

('Jack Scott', 'Male', 28, 'Minneapolis', 'MN', 'USA');

-- 3. Create Return Date Dimension Table

CREATE TABLE Return\_Date\_Dimension (

Return\_Date\_ID INT PRIMARY KEY AUTO\_INCREMENT,

Return\_Date DATE,

Day VARCHAR(10),

Month VARCHAR(10),

Quarter VARCHAR(5),

Year INT,

Is\_Holiday BOOLEAN

);

-- Insert Data into Return Date Dimension

INSERT INTO Return\_Date\_Dimension (Return\_Date, Day, Month, Quarter, Year, Is\_Holiday)

VALUES

('2023-01-05', 'Thursday', 'January', 'Q1', 2023, FALSE),

('2023-01-20', 'Friday', 'January', 'Q1', 2023, FALSE),

('2023-02-05', 'Sunday', 'February', 'Q1', 2023, FALSE),

('2023-02-20', 'Monday', 'February', 'Q1', 2023, TRUE),

('2023-03-10', 'Friday', 'March', 'Q1', 2023, FALSE),

('2023-03-25', 'Saturday', 'March', 'Q1', 2023, FALSE),

('2023-04-15', 'Saturday', 'April', 'Q2', 2023, FALSE),

('2023-04-30', 'Sunday', 'April', 'Q2', 2023, FALSE),

('2023-05-12', 'Friday', 'May', 'Q2', 2023, FALSE),

('2023-05-27', 'Saturday', 'May', 'Q2', 2023, FALSE),

('2023-06-05', 'Monday', 'June', 'Q2', 2023, FALSE),

('2023-06-20', 'Tuesday', 'June', 'Q2', 2023, FALSE),

('2023-07-10', 'Monday', 'July', 'Q3', 2023, FALSE),

('2023-07-25', 'Tuesday', 'July', 'Q3', 2023, FALSE),

('2023-08-15', 'Tuesday', 'August', 'Q3', 2023, TRUE),

('2023-08-30', 'Wednesday', 'August', 'Q3', 2023, FALSE),

('2023-09-10', 'Sunday', 'September', 'Q3', 2023, FALSE),

('2023-09-25', 'Monday', 'September', 'Q3', 2023, FALSE),

('2023-10-12', 'Thursday', 'October', 'Q4', 2023, FALSE),

('2023-10-27', 'Friday', 'October', 'Q4', 2023, FALSE);

-- 4. Create Return Reason Dimension Table

CREATE TABLE Return\_Reason\_Dimension (

Reason\_ID INT PRIMARY KEY AUTO\_INCREMENT,

Reason\_Description VARCHAR(255),

Return\_Type VARCHAR(50)

);

-- Insert Data into Return Reason Dimension

INSERT INTO Return\_Reason\_Dimension (Reason\_Description, Return\_Type)

VALUES

('Product was defective', 'Defective'),

('Product was damaged', 'Damaged'),

('Received wrong product', 'Incorrect Item'),

('Product did not match description', 'Dissatisfaction'),

('Customer changed mind', 'Customer Decision'),

('Product quality not as expected', 'Dissatisfaction'),

('Product stopped working', 'Defective'),

('Product arrived late', 'Late Delivery'),

('Product missing parts', 'Incomplete'),

('Found better price elsewhere', 'Customer Decision');

-- 5. Create Refund Method Dimension Table

CREATE TABLE Refund\_Method\_Dimension (

Refund\_Method\_ID INT PRIMARY KEY AUTO\_INCREMENT,

Method VARCHAR(50)

);

-- Insert Data into Refund Method Dimension

INSERT INTO Refund\_Method\_Dimension (Method)

VALUES

('Cash'),

('Credit Card'),

('Store Credit'),

('PayPal'),

('Bank Transfer');

-- 6. Create Return Fact Table

CREATE TABLE Return\_Fact (

Return\_ID INT PRIMARY KEY AUTO\_INCREMENT,

Product\_ID INT,

Customer\_ID INT,

Return\_Date\_ID INT,

Reason\_ID INT,

Refund\_Method\_ID INT,

Quantity\_Returned INT,

Refund\_Amount DECIMAL(10, 2),

Original\_Selling\_Price DECIMAL(10, 2),

Return\_Cost DECIMAL(10, 2),

FOREIGN KEY (Product\_ID) REFERENCES Product\_Dimension(Product\_ID),

FOREIGN KEY (Customer\_ID) REFERENCES Customer\_Dimension(Customer\_ID),

FOREIGN KEY (Return\_Date\_ID) REFERENCES Return\_Date\_Dimension(Return\_Date\_ID),

FOREIGN KEY (Reason\_ID) REFERENCES Return\_Reason\_Dimension(Reason\_ID),

FOREIGN KEY (Refund\_Method\_ID) REFERENCES Refund\_Method\_Dimension(Refund\_Method\_ID)

);

-- Insert Data into Return Fact Table

INSERT INTO Return\_Fact (Product\_ID, Customer\_ID, Return\_Date\_ID, Reason\_ID, Refund\_Method\_ID, Quantity\_Returned, Refund\_Amount, Original\_Selling\_Price, Return\_Cost)

VALUES

(1, 1, 1, 1, 1, 1, 700.00, 700.00, 50.00),

(2, 2, 2, 2, 2, 1, 1200.00, 1200.00, 70.00),

(3, 3, 3, 3, 3, 2, 100.00, 100.00, 10.00),

(4, 4, 4, 4, 4, 1, 250.00, 250.00, 20.00),

(5, 5, 5, 5, 5, 1, 400.00, 400.00, 30.00),

(6, 6, 6, 6, 1, 2, 120.00, 120.00, 15.00),

(7, 7, 7, 7, 2, 3, 50.00, 50.00, 5.00),

(8, 8, 8, 8, 3, 1, 300.00, 300.00, 25.00),

(9, 9, 9, 9, 4, 1, 800.00, 800.00, 40.00),

(10, 10, 10, 10, 5, 1, 600.00, 600.00, 35.00),

(11, 11, 11, 1, 1, 1, 350.00, 350.00, 20.00),

(12, 12, 12, 2, 2, 2, 120.00, 120.00, 15.00),

(13, 13, 13, 3, 3, 1, 150.00, 150.00, 10.00),

(14, 14, 14, 4, 4, 2, 125.00, 125.00, 8.00),

(15, 15, 15, 5, 5, 1, 400.00, 400.00, 30.00),

(16, 16, 16, 6, 1, 1, 40.00, 40.00, 3.00),

(17, 17, 17, 7, 2, 1, 30.00, 30.00, 2.00),

(18, 18, 18, 8, 3, 1, 150.00, 150.00, 10.00),

(19, 19, 19, 9, 4, 1, 400.00, 400.00, 25.00),

(20, 20, 20, 10, 5, 1, 400.00, 400.00, 30.00);

-- Show all tables in the retail\_store database

SHOW TABLES;

-- View data from each table

SELECT \* FROM Product\_Dimension;

SELECT \* FROM Customer\_Dimension;

SELECT \* FROM Return\_Date\_Dimension;

SELECT \* FROM Return\_Reason\_Dimension;

SELECT \* FROM Refund\_Method\_Dimension;

SELECT \* FROM Return\_Fact;

**TABLES:**

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**A screenshot of a computer

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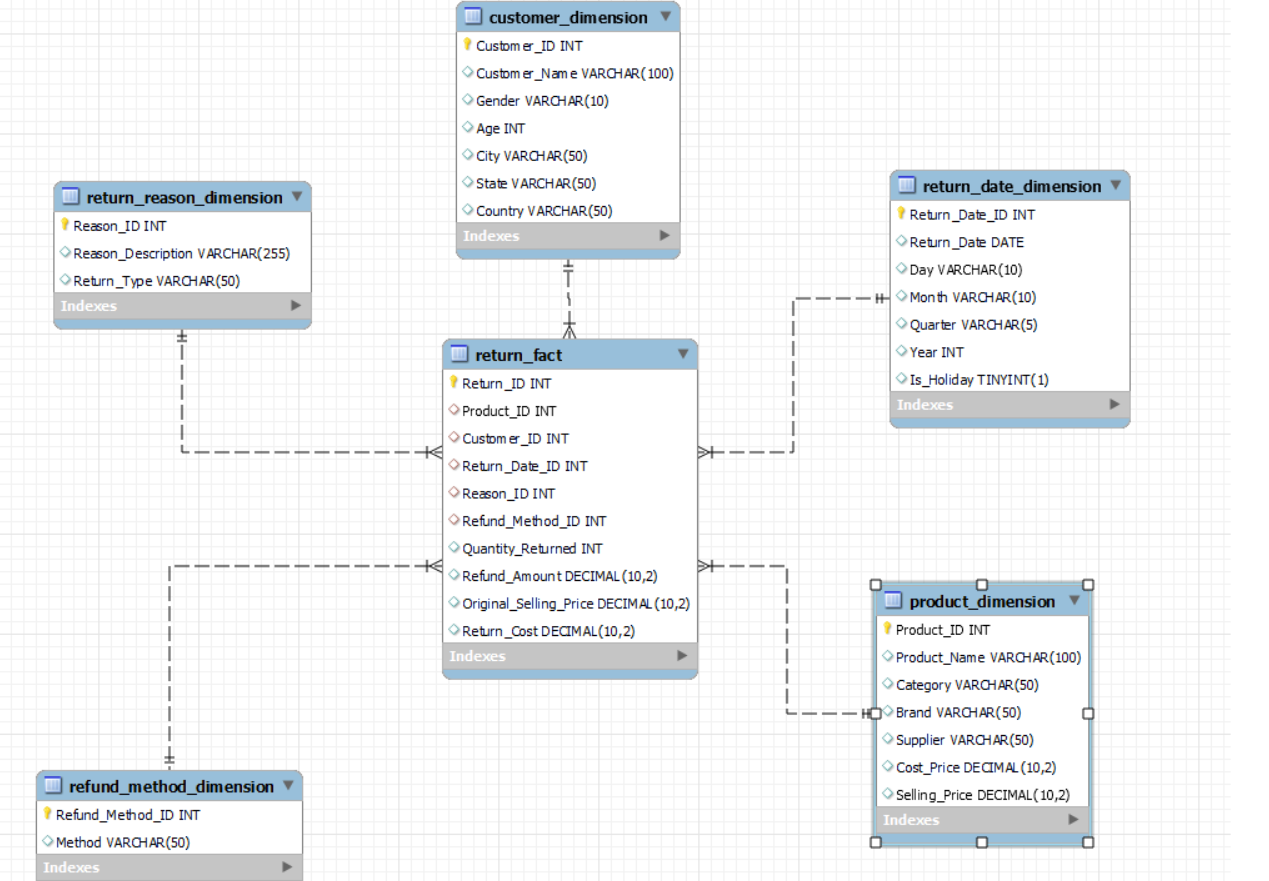
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**STAR SCHEMA:**

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