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Task 1:

Create a DBMS using OLTP for ECOMMERCE.

Query:

```
CREATE TABLE Customers (
CustomerID INT PRIMARY KEY IDENTITY(1,1),
CustomerName VARCHAR(100) NOT NULL,
CustomerLocation VARCHAR(100) NOT NULL
);

CREATE TABLE Products (
ProductID INT PRIMARY KEY IDENTITY(1,1),
ProductName VARCHAR(100) NOT NULL,
Category VARCHAR(100) NOT NULL,
Price DECIMAL(10,2) NOT NULL
);


CREATE TABLE Orders (
OrderID INT PRIMARY KEY IDENTITY(1,1),
CustomerID INT NOT NULL,
FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)
);
```

```
CREATE TABLE OrderDetails (
OrderDetailsID INT PRIMARY KEY IDENTITY(1,1),
OrderID INT NOT NULL,
ProductID INT NOT NULL,
Quantity INT NOT NULL,
FOREIGN KEY (OrderID) REFERENCES Orders(OrderID),
FOREIGN KEY (ProductID) REFERENCES Products(ProductID)
);
```

Result:

Results Messages

	CustomerID	CustomerName	CustomerLocation
1	1	Emma Williams	San Francisco
2	2	Liam Johnson	Seattle
3	3	Olivia Brown	San Francisco
4	4	Noah Davis	Seattle
5	5	Ava Martinez	Seattle

Results Messages

	ProductID	ProductName	Category	Price
1	1	Mobile Phone X100	Electronics	699.99
2	2	Bluetooth Speaker S2	Audio	229.99
3	3	Mobile Phone Z200	Electronics	799.99
4	4	Portable Speaker P5	Audio	189.99
5	5	Smartphone Y300	Electronics	899.99
6	6	Wireless Earbuds A1	Audio	159.99
7	7	Laptop Pro 15	Computers	1399.99
8	8	Gaming Console GX	Gaming	499.99
9	9	Tablet T10	Electronics	399.99
10	10	Home Theater System H5	Audio	599.99
11	11	Smartwatch S10	Wearables	299.99
12	12	Digital Camera D5	Photography	649.99

Results Messages

	OrderID	CustomerID
1	1	1
2	2	3
3	3	4
4	4	2

Results Messages

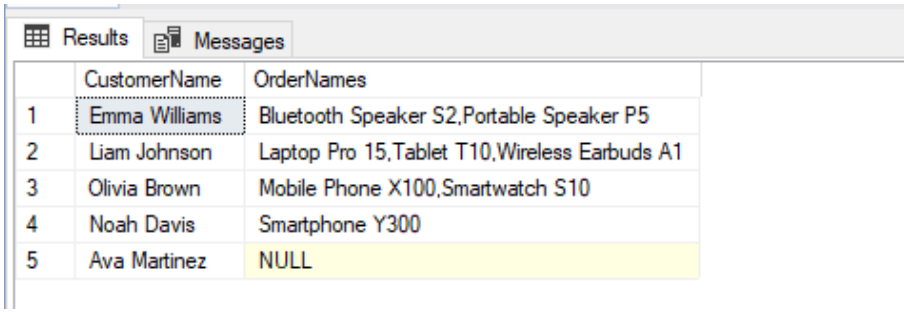
	OrderDetailsID	OrderID	ProductID	Quantity
1	1	1	2	2
2	2	1	4	1
3	3	2	1	1
4	4	2	11	1
5	5	3	5	1
6	6	4	7	1
7	7	4	9	1
8	8	4	6	1

1. Fetch all customers and display if there are any order names

Query:

```
SELECT c.CustomerName, STRING_AGG(p.ProductName, ',') as OrderNames FROM Customers c
LEFT JOIN Orders o ON c.CustomerID = o.CustomerID
LEFT JOIN OrderDetails d ON o.OrderID = d.OrderID
LEFT JOIN Products p ON d.ProductID = p.ProductID
GROUP BY c.CustomerID, c.CustomerName;
```

Result:



Results | Messages

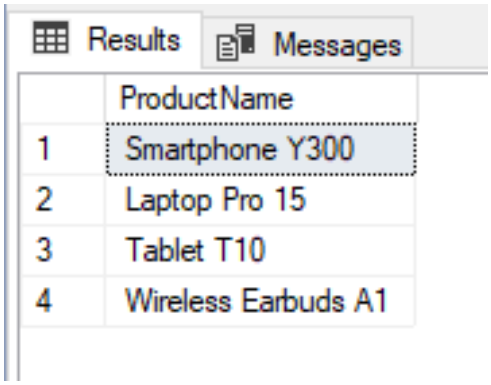
	CustomerName	OrderNames
1	Emma Williams	Bluetooth Speaker S2,Portable Speaker P5
2	Liam Johnson	Laptop Pro 15,Tablet T10,Wireless Earbuds A1
3	Olivia Brown	Mobile Phone X100,Smartwatch S10
4	Noah Davis	Smartphone Y300
5	Ava Martinez	NULL

2. Fetch all the order names placed from particular location

Query:

```
SELECT p.ProductName FROM Orders o
JOIN OrderDetails d ON o.OrderID = d.OrderID
JOIN Customers c ON c.CustomerID = o.CustomerID
JOIN Products p ON p.ProductID = d.ProductID
where c.CustomerLocation = 'Seattle';
```

Result:



Results | Messages

	ProductName
1	Smartphone Y300
2	Laptop Pro 15
3	Tablet T10
4	Wireless Earbuds A1

3. What is the max price of products from particular category.

Query:

```
SELECT MAX(Price) as MaxPrice FROM Products WHERE Category = 'Audio';
```

Result:

Results | Messages

	MaxPrice
1	599.99

4. Display any product with the product name as like mobile, speaker

Query:

```
SELECT * FROM Products where ProductName
LIKE '%mobile%'
OR ProductName LIKE '%speaker%';
```

Result:

Results | Messages

	ProductID	ProductName	Category	Price
1	1	Mobile Phone X100	Electronics	699.99
2	2	Bluetooth Speaker S2	Audio	229.99
3	3	Mobile Phone Z200	Electronics	799.99
4	4	Portable Speaker P5	Audio	189.99

5. Create a function that calculate 10%gst from original price

Query:

```
CREATE OR ALTER FUNCTION CalculateGST(@price Decimal(10,2))
RETURNS Decimal(10,2)
AS
BEGIN
    RETURN @price * 0.10
END;

SELECT dbo.CalculateGST(5460.00) as GST;
```

Result:

Results | Messages

	GST
1	546.00

6. Create stored procedure that increases all the product prices by 100. Ensure Atomicity.

Query:

```
CREATE OR ALTER PROCEDURE UpdatePrice
AS
BEGIN
    BEGIN TRY
        BEGIN TRANSACTION;
        UPDATE Products SET Price = Price + 100;
        COMMIT TRANSACTION;
    END TRY
    BEGIN CATCH
        IF @@TRANCOUNT > 0
        BEGIN
            ROLLBACK TRANSACTION;
        END
        SELECT ERROR_MESSAGE(), ERROR_STATE();
    END CATCH
END;

dbo.UpdatePrice;
```

Result:

	ProductID	ProductName	Category	Price
1	1	Mobile Phone X100	Electronics	799.99
2	2	Bluetooth Speaker S2	Audio	329.99
3	3	Mobile Phone Z200	Electronics	899.99
4	4	Portable Speaker P5	Audio	289.99
5	5	Smartphone Y300	Electronics	999.99
6	6	Wireless Earbuds A1	Audio	259.99
7	7	Laptop Pro 15	Computers	1499...
8	8	Gaming Console GX	Gaming	599.99
9	9	Tablet T10	Electronics	499.99
10	10	Home Theater Syst...	Audio	699.99
11	11	Smartwatch S10	Wearables	399.99
12	12	Digital Camera D5	Photogra...	749.99