

Cataschevastica

An Online Transaction
Processing Database

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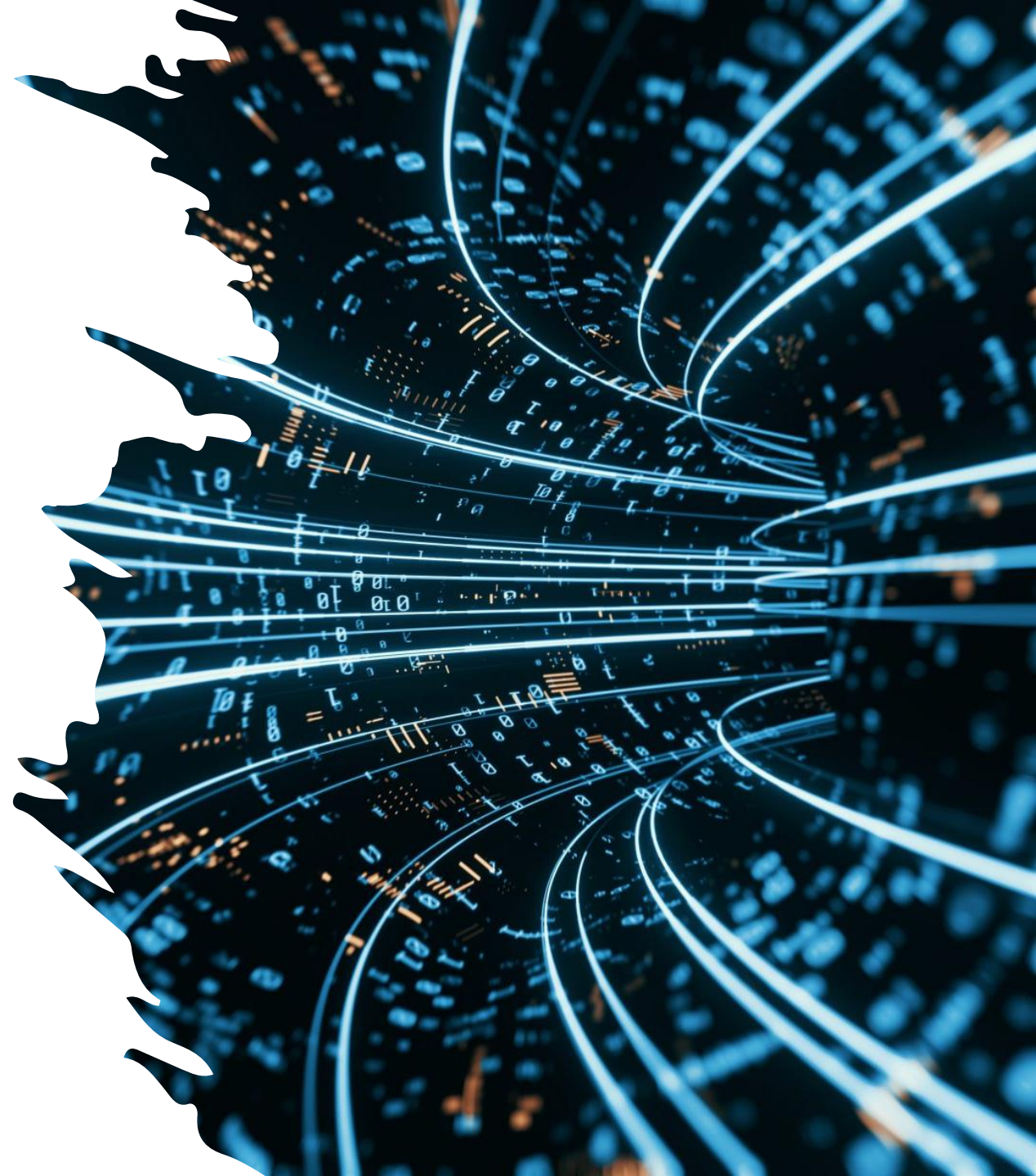


Project Scope

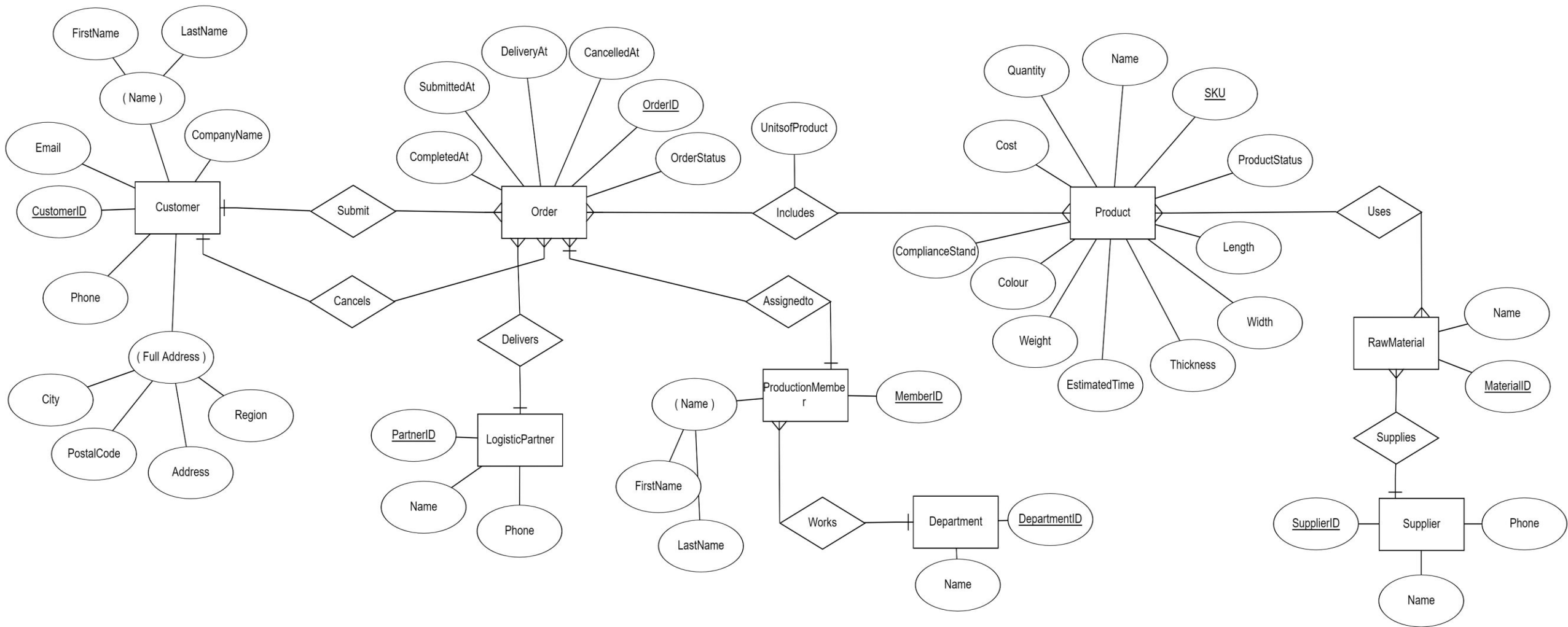
The implementation of an Online Transactional Processing (OLTP) Database to track and assist the end-to-end manufacturing process of Cataschevastica company.

Steps

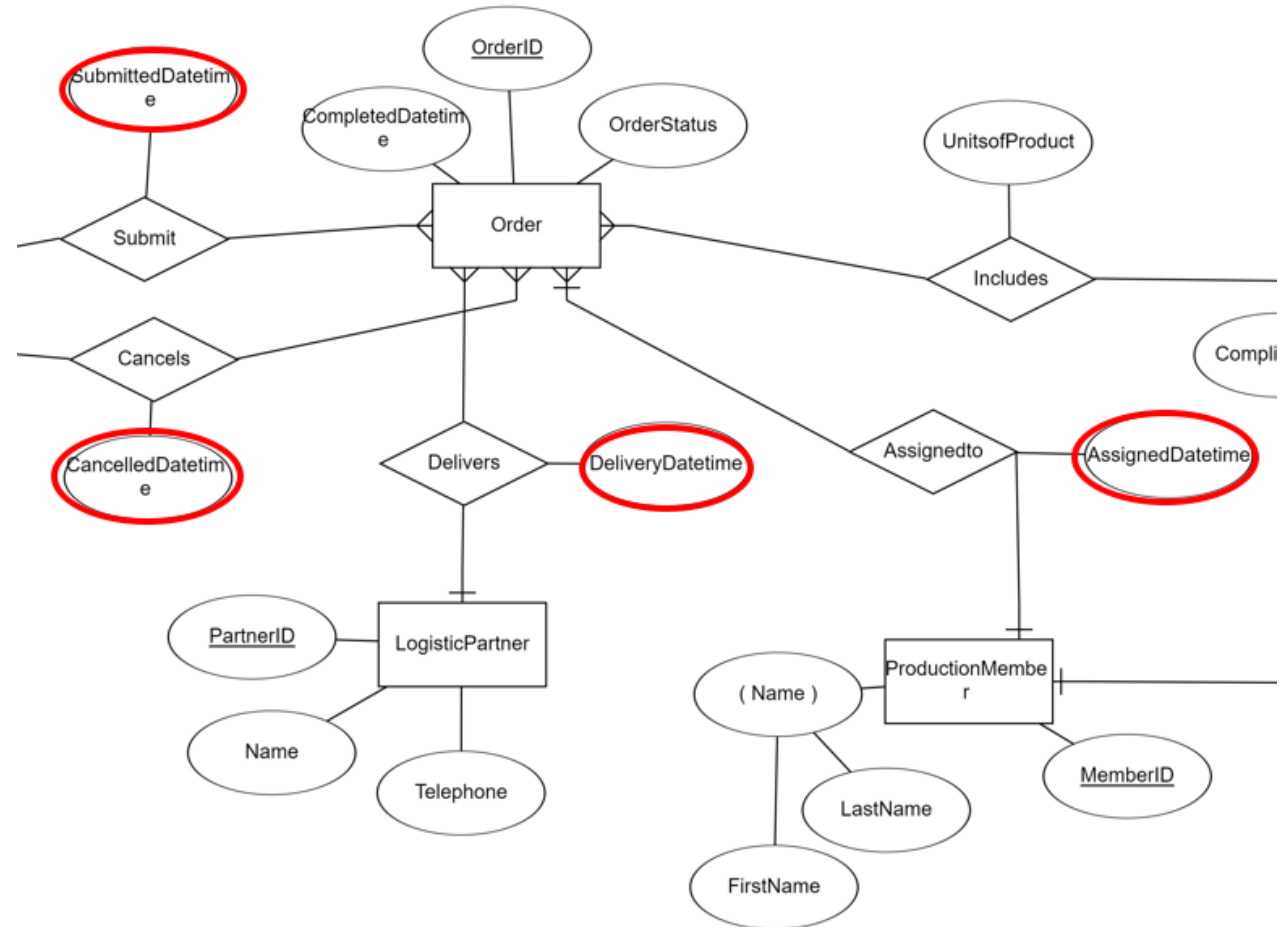
- Analysis and Conceptual Diagram Design (ERD)
- From ERD to RS
- SQL script database creation
- Data population
- Usage simulation (testing)



Analysis and Conceptual Diagram Design (ERD)



Initial ERD



3NF Normalization

- **First Normal Form (1NF):**
 - All tables have a primary key.
 - All columns contain atomic (indivisible) values.
 - There are no repeating groups or arrays.
- **Second Normal Form (2NF):**
 - It meets all the requirements of 1NF.
 - All non-key attributes are fully functional dependent on the primary key (i.e., there are no partial dependencies).
- **Third Normal Form (3NF):**
 - It meets all the requirements of 2NF.
 - All attributes are functionally dependent only on the primary key (i.e., there are no transitive dependencies).

Fully normalized to 3NF

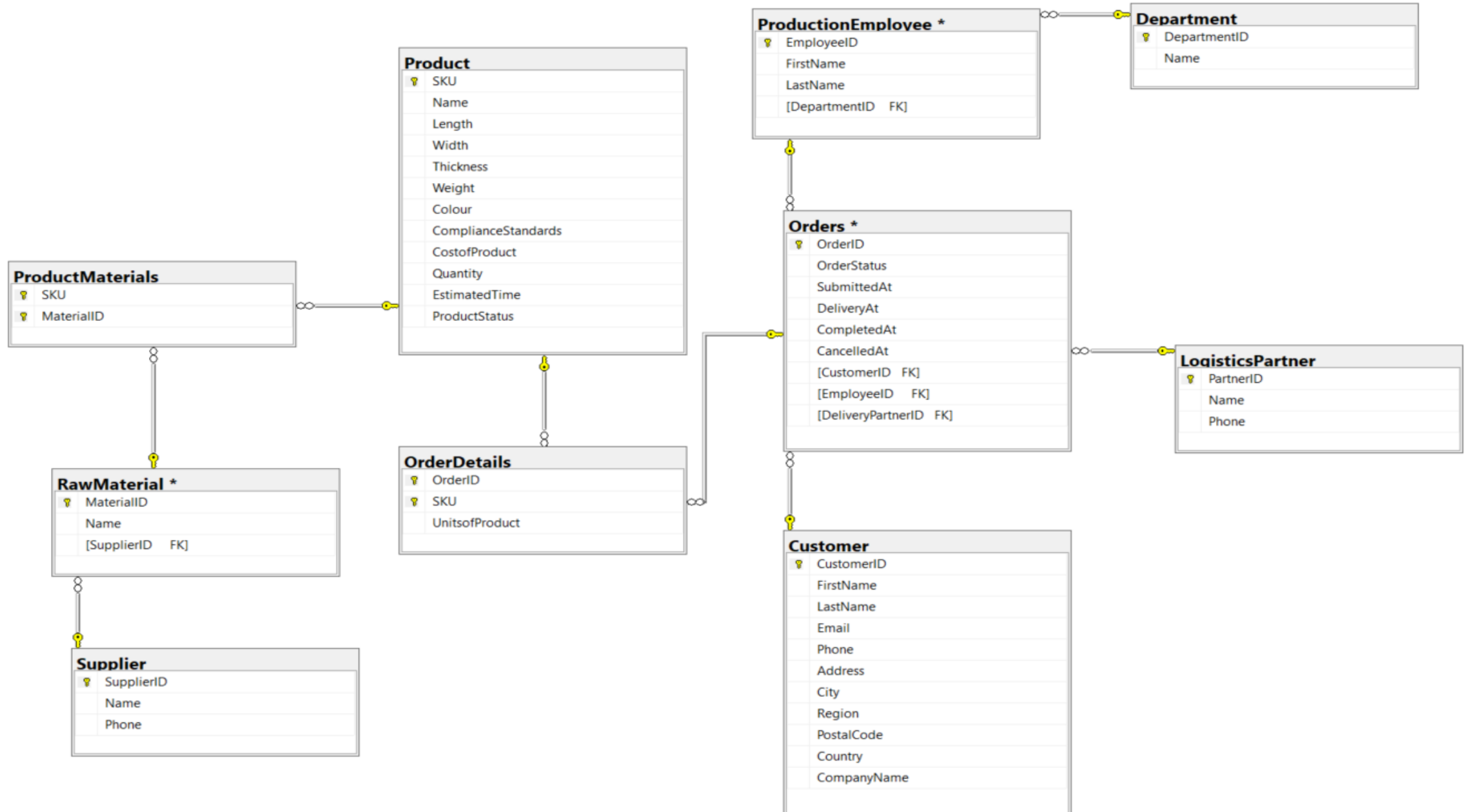
```
CREATE TABLE Address
```

```
(  
  AddressID INT IDENTITY,  
  Street NVARCHAR(60) NOT NULL,  
  City NVARCHAR(20) NOT NULL,  
  Region NVARCHAR(20) NOT NULL,  
  PostalCode INT NOT NULL,  
  Country NVARCHAR(24) NOT NULL,  
  PRIMARY KEY (AddressID)  
);
```

```
CREATE TABLE Customer
```


```
(  
  CustomerID INT IDENTITY,  
  FirstName NVARCHAR(50) NOT NULL,  
  LastName NVARCHAR(50) NOT NULL,  
  Email VARCHAR(30) UNIQUE NOT NULL,  
  Phone VARCHAR(20) UNIQUE NOT NULL,  
  AddressID INT NOT NULL,  
  CompanyName VARCHAR(50) NULL,  
  PRIMARY KEY (CustomerID),  
  FOREIGN KEY (AddressID) REFERENCES Address(AddressID)  
);
```

ERD to RS



SQL script database creation

```
CREATE TABLE Product
(
    SKU VARCHAR(50) NOT NULL,
    Name NVARCHAR(50) NOT NULL,
    Length DECIMAL(12, 4) NOT NULL,
    Width DECIMAL(12, 4) NOT NULL,
    Thickness DECIMAL(12, 4) NOT NULL,
    Weight DECIMAL(12, 4) NOT NULL,
    Colour VARCHAR(20) NOT NULL,
    ComplianceStandards VARCHAR(255) NOT NULL,
    CostofProduct DECIMAL(10, 2) NOT NULL,
    Quantity INT NOT NULL DEFAULT 1,
    EstimatedTime INT NOT NULL,
    ProductStatus VARCHAR(20) NOT NULL,
    PRIMARY KEY (SKU),
    CONSTRAINT CHK_ProductStatus CHECK (ProductStatus IN ('in production',
    'available', 'not available'))
);
```


Product	
	SKU
	Name
	Length
	Width
	Thickness
	Weight
	Colour
	ComplianceStandards
	CostofProduct
	Quantity
	EstimatedTime
	ProductStatus


```
CREATE TABLE Customer
(
  CustomerID INT IDENTITY,
  FirstName NVARCHAR(50) NOT NULL,
  LastName NVARCHAR(50) NOT NULL,
  Email VARCHAR(30) UNIQUE NOT NULL,
  Phone VARCHAR(20) UNIQUE NOT NULL,
  Address NVARCHAR(60) NOT NULL,
  City NVARCHAR(20) NOT NULL,
  Region NVARCHAR(20) NOT NULL,
  PostalCode INT NOT NULL,
  Country NVARCHAR(24) NOT NULL,
  CompanyName VARCHAR(50) NULL,
  PRIMARY KEY (CustomerID)
);
```

Customer	
	CustomerID
	FirstName
	LastName
	Email
	Phone
	Address
	City
	Region
	PostalCode
	Country
	CompanyName

```
CREATE TABLE Orders
```

```
(  
  OrderID INT IDENTITY,  
  OrderStatus VARCHAR(20) NOT NULL,  
  SubmittedAt DATETIME2 NOT NULL,  
  DeliveryAt DATETIME2 NULL,  
  CompletedAt DATETIME2 NULL,  
  CancelledAt DATETIME2 NULL,  
  CustomerID INT NOT NULL,  
  EmployeeID INT NOT NULL,  
  DeliveryPartnerID INT NOT NULL,  
  PRIMARY KEY (OrderID),  
  FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID),  
  FOREIGN KEY (EmployeeID) REFERENCES ProductionEmployee(EmployeeID),  
  FOREIGN KEY (DeliveryPartnerID) REFERENCES LogisticsPartner(PartnerID),  
  CONSTRAINT CHK_OrderStatus CHECK (OrderStatus IN ('in process', 'in delivery', 'completed', 'cancelled'))  
);
```

Orders	
	OrderID
	OrderStatus
	SubmittedAt
	DeliveryAt
	CompletedAt
	CancelledAt
	CustomerID
	EmployeeID
	DeliveryPartnerID

```
CREATE TABLE OrderDetails
(
  OrderID INT NOT NULL,
  SKU VARCHAR(50) NOT NULL,
  UnitsofProduct INT NOT NULL,
  PRIMARY KEY (OrderID, SKU),
  FOREIGN KEY (OrderID) REFERENCES Orders(OrderID),
  FOREIGN KEY (SKU) REFERENCES Product(SKU)
);
```

OrderDetails	
	OrderID
	SKU
	UnitsofProduct

- Every time a customer places a new order, new records are inserted in the OrderDetails Table.
- Each new record, represents the unique product (SKU) and the units of product that are included in a unique order.
- Every (OrderID, SKU) combination must be unique.

Production pipeline of Cataschevastica

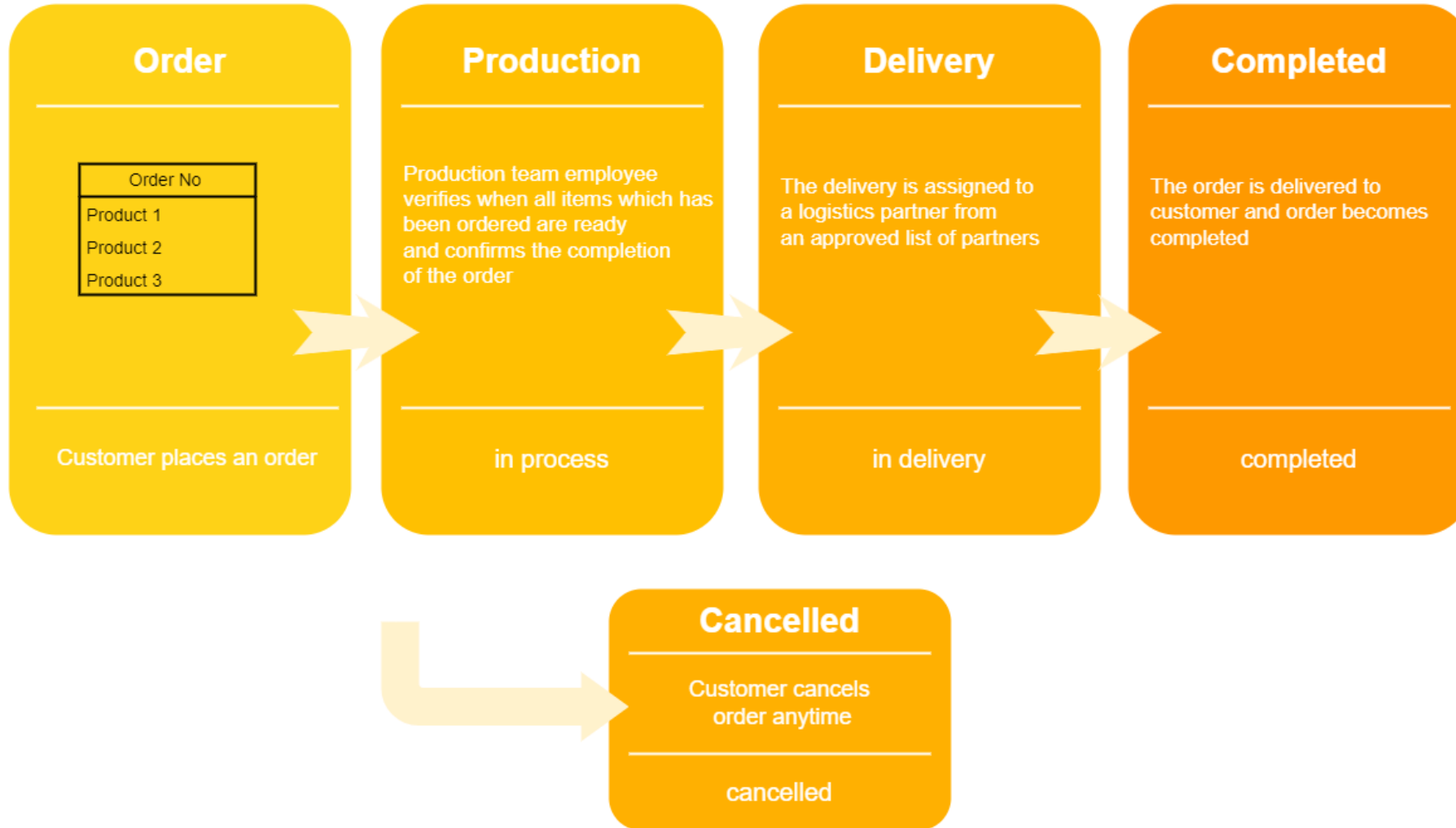


Table Population (Orders)

	OrderID	OrderStatus	SubmittedAt	DeliveryAt	CompletedAt	CancelledAt	CustomerID	EmployeeID	DeliveryPartnerID
1	1	completed	2024-02-10 10:00:00.0000000	2024-02-12 11:00:00.0000000	2024-02-13 13:00:00.0000000	NULL	15	7	15
2	2	in process	2024-02-22 17:00:00.0000000	NULL	NULL	NULL	3	9	10
3	3	in process	2024-03-01 14:00:00.0000000	NULL	NULL	NULL	3	13	9
4	4	in process	2024-03-02 09:00:00.0000000	NULL	NULL	NULL	6	6	6
5	5	cancelled	2024-03-05 14:00:00.0000000	NULL	NULL	2024-03-06 09:00:00.0000000	4	12	8
6	6	completed	2024-03-21 10:00:00.0000000	2024-03-24 11:00:00.0000000	2024-03-26 13:00:00.0000000	NULL	15	7	12
7	7	in delivery	2024-04-01 13:00:00.0000000	2024-04-03 11:00:00.0000000	NULL	NULL	7	8	1
8	8	in process	2024-04-10 10:00:00.0000000	NULL	NULL	NULL	9	2	9
9	9	completed	2024-04-12 09:00:00.0000000	2024-04-16 09:00:00.0000000	2024-04-16 18:00:00.0000000	NULL	12	2	6
10	10	in delivery	2024-04-25 09:00:00.0000000	2024-05-01 09:00:00.0000000	NULL	NULL	2	4	6
11	11	cancelled	2024-04-27 08:00:00.0000000	NULL	NULL	2024-04-27 16:00:00.0000000	8	7	6
12	12	completed	2024-04-30 15:00:00.0000000	2024-05-02 10:00:00.0000000	2024-05-04 12:00:00.0000000	NULL	5	5	5
13	13	in process	2024-05-01 10:00:00.0000000	NULL	NULL	NULL	1	5	7
14	14	in delivery	2024-05-01 11:00:00.0000000	2024-05-03 10:00:00.0000000	NULL	NULL	3	3	3
15	15	cancelled	2024-05-08 12:00:00.0000000	NULL	NULL	2024-05-09 10:00:00.0000000	10	1	5
16	16	in delivery	2024-05-15 11:00:00.0000000	2024-05-18 13:00:00.0000000	NULL	NULL	11	11	11
17	17	in delivery	2024-05-20 15:00:00.0000000	2024-05-22 09:00:00.0000000	NULL	NULL	14	4	14
18	18	in process	2024-05-22 09:30:00.0000000	NULL	NULL	NULL	4	5	2
19	19	in delivery	2024-05-22 09:30:00.0000000	2024-05-23 12:30:00.0000000	NULL	NULL	3	7	11
20	20	completed	2024-05-19 22:28:11.7533333	2024-05-22 22:28:11.7533333	2024-05-23 22:28:11.7533333	NULL	11	2	6
21	21	completed	2024-05-20 22:28:11.7533333	2024-05-21 22:28:11.7533333	2024-05-23 22:28:11.7533333	NULL	15	7	15
22	22	in delivery	2024-05-21 22:28:11.7533333	2024-05-23 22:28:11.7533333	NULL	NULL	12	9	11
23	23	in delivery	2024-05-22 22:28:11.7533333	2024-05-23 22:28:11.7533333	NULL	NULL	10	3	8
24	24	cancelled	2024-05-22 22:28:11.7533333	NULL	NULL	2024-05-23 22:28:11.7533333	1	8	12
25	25	in process	2024-05-23 22:28:11.7533333	NULL	NULL	NULL	8	7	15



QUERY RESULTS

a) List of all products ordered yesterday (so that production can start)

```
SELECT Name, P.SKU, SUM(UnitsofProduct) AS TotalUnitsOrdered
FROM Orders O
INNER JOIN OrderDetails OD
ON O.OrderID = OD.OrderID
INNER JOIN Product P ON P.SKU = OD.SKU
WHERE CAST(O.SubmittedAt AS DATE) = CAST(DATEADD(DAY, -1, GETDATE()) AS DATE)
AND O.OrderStatus <> 'cancelled'
GROUP BY P.SKU, NAME;
```

Results Messages									
	OrderID	SKU	UnitsofProduct	OrderStatus	SubmittedAt	DeliveryAt	CompletedAt	CancelledAt	
1	23	SKU015	100	in delivery	2024-05-22 22:28:11.7533333	2024-05-23 22:28:11.7533333	NULL	NULL	
2	24	SKU007	135	cancelled	2024-05-22 22:28:11.7533333	NULL	NULL	2024-05-23 22:28:11.7533333	
3	18	SKU002	70	in process	2024-05-22 09:30:00.0000000	NULL	NULL	NULL	
4	18	SKU012	80	in process	2024-05-22 09:30:00.0000000	NULL	NULL	NULL	
5	19	SKU002	130	in delivery	2024-05-22 09:30:00.0000000	2024-05-23 12:30:00.0000000	NULL	NULL	
6	19	SKU011	111	in delivery	2024-05-22 09:30:00.0000000	2024-05-23 12:30:00.0000000	NULL	NULL	

	Name	SKU	TotalUnitsOrdered
1	Steel Beam	SKU002	200
2	Ceramic Tile	SKU011	111
3	Fiber Cement Board	SKU012	80
4	Copper Wire	SKU015	100

b) List of all finished orders ready to deliver

```
SELECT OrderID, OrderStatus, SubmittedAt, DeliveryAt, CustomerID
FROM Orders
WHERE OrderStatus = 'in delivery'
GROUP BY OrderID, OrderStatus, SubmittedAt, DeliveryAt, CustomerID
```

100 %					
Results Messages					
	OrderID	OrderStatus	SubmittedAt	DeliveryAt	CustomerID
1	7	in delivery	2024-04-01 13:00:00.0000000	2024-04-03 11:00:00.0000000	7
2	10	in delivery	2024-04-25 09:00:00.0000000	2024-05-01 09:00:00.0000000	2
3	14	in delivery	2024-05-01 11:00:00.0000000	2024-05-03 10:00:00.0000000	3
4	16	in delivery	2024-05-15 11:00:00.0000000	2024-05-18 13:00:00.0000000	11
5	17	in delivery	2024-05-20 15:00:00.0000000	2024-05-22 09:00:00.0000000	14
6	19	in delivery	2024-05-22 09:30:00.0000000	2024-05-23 12:30:00.0000000	3
7	22	in delivery	2024-05-21 22:28:11.7533333	2024-05-23 22:28:11.7533333	12
8	23	in delivery	2024-05-22 22:28:11.7533333	2024-05-23 22:28:11.7533333	10

c) List of all orders per customer, completed, pending, cancelled

```
SELECT
    Orders.CustomerID,
    Customer.FirstName,
    Customer.LastName,
    Customer.Email,
    Orders.SubmittedAt AS 'Time Of Submission',
    Orders.OrderStatus,
    Orders.OrderID
FROM Orders
INNER JOIN Customer
ON Orders.CustomerID = Customer.CustomerID
ORDER BY CustomerID, OrderStatus
```

Results		Messages					
	CustomerID	FirstName	LastName	Email	Time Of Submission	OrderStatus	OrderID
1	1	Alice	Wright	alice.wright@example.com	2024-05-22 22:28:11.7533333	cancelled	24
2	1	Alice	Wright	alice.wright@example.com	2024-05-01 10:00:00.0000000	in process	13
3	2	Bob	Green	bob.green@example.com	2024-04-25 09:00:00.0000000	in delivery	10
4	3	Charlie	Black	charlie.black@example.com	2024-05-01 11:00:00.0000000	in delivery	14
5	3	Charlie	Black	charlie.black@example.com	2024-05-22 09:30:00.0000000	in delivery	19
6	3	Charlie	Black	charlie.black@example.com	2024-02-22 17:00:00.0000000	in process	2
7	3	Charlie	Black	charlie.black@example.com	2024-03-01 14:00:00.0000000	in process	3
8	4	Diana	Brown	diana.brown@example.com	2024-03-05 14:00:00.0000000	cancelled	5
9	4	Diana	Brown	diana.brown@example.com	2024-05-22 09:30:00.0000000	in process	18
10	5	Eve	White	eve.white@example.com	2024-04-30 15:00:00.0000000	completed	12
11	6	Frank	Gray	frank.gray@example.com	2024-03-02 09:00:00.0000000	in process	4
12	7	Grace	Blue	grace.blue@example.com	2024-04-01 13:00:00.0000000	in delivery	7
13	8	Henry	Red	henry.red@example.com	2024-04-27 08:00:00.0000000	cancelled	11
14	8	Henry	Red	henry.red@example.com	2024-05-23 22:28:11.7533333	in process	25
15	9	Ivy	Yellow	ivy.yellow@example.com	2024-04-10 10:00:00.0000000	in process	8
16	10	Jack	Purple	jack.purple@example.com	2024-05-08 12:00:00.0000000	cancelled	15
17	10	Jack	Purple	jack.purple@example.com	2024-05-22 22:28:11.7533333	in delivery	23
18	11	Kara	Pink	kara.pink@example.com	2024-05-19 22:28:11.7533333	completed	20
19	11	Kara	Pink	kara.pink@example.com	2024-05-15 11:00:00.0000000	in delivery	16

d) List of all products with quantities, ordered and delivered, ordered and pending, cancelled

```
SELECT Name, OD.SKU, SUM(UnitsofProduct) AS  
TotalUnitsOrdered, OrderStatus  
FROM Orders O  
INNER JOIN OrderDetails OD ON O.OrderID = OD.OrderID  
INNER JOIN Product P ON P.SKU = OD.SKU  
GROUP BY OD.SKU, Name, OrderStatus  
ORDER BY Name
```

	Name	SKU	TotalUnitsOrdered	OrderStatus
1	Aluminum Sheet	SKU013	20	cancelled
2	Aluminum Sheet	SKU013	50	in delivery
3	Aluminum Sheet	SKU013	170	in process
4	Brick	SKU007	250	in process
5	Brick	SKU007	205	cancelled
6	Brick	SKU007	90	completed
7	Cement Bag	SKU005	150	in process
8	Ceramic Tile	SKU011	111	in delivery
9	Ceramic Tile	SKU011	400	completed
10	Concrete Block	SKU001	10	in delivery
11	Concrete Block	SKU001	100	completed
12	Concrete Block	SKU001	50	in process
13	Copper Wire	SKU015	150	in delivery
14	Copper Wire	SKU015	70	in process
15	Fiber Cement Board	SKU012	50	in delivery
16	Fiber Cement Board	SKU012	340	completed
17	Fiber Cement Board	SKU012	80	in process
18	Glass Pane	SKU014	200	in delivery
19	Gravel	SKU009	50	in delivery
20	Gravel	SKU009	300	cancelled
21	Insulation Roll	SKU004	120	in delivery
22	Insulation Roll	SKU004	75	in process
23	Plywood	SKU008	120	in process
24	Plywood	SKU008	20	cancelled

e) List of orders per production team employee, completed, pending, cancelled

```
SELECT e.EmployeeID, e.FirstName, e.LastName, o.OrderID, o.OrderStatus,  
o.SubmittedAt, o.DeliveryAt, o.CompletedAt, o.CancelledAt  
FROM ProductionEmployee e  
INNER JOIN Orders o ON e.EmployeeID = o.EmployeeID  
ORDER BY e.EmployeeID, o.OrderStatus, o.SubmittedAt;
```

Results		Messages							
	EmployeeID	FirstName	LastName	OrderID	OrderStatus	SubmittedAt	DeliveryAt	CompletedAt	CancelledAt
1	1	John	Doe	15	cancelled	2024-05-08 12:00:00.0000000	NULL	NULL	2024-05-09 10:00:00.0000000
2	2	Jane	Smith	9	completed	2024-04-12 09:00:00.0000000	2024-04-16 09:00:00.0000000	2024-04-16 18:00:00.0000000	NULL
3	2	Jane	Smith	20	completed	2024-05-19 22:28:11.7533333	2024-05-22 22:28:11.7533333	2024-05-23 22:28:11.7533333	NULL
4	2	Jane	Smith	8	in process	2024-04-10 10:00:00.0000000	NULL	NULL	NULL
5	3	James	Johnson	14	in delivery	2024-05-01 11:00:00.0000000	2024-05-03 10:00:00.0000000	NULL	NULL
6	3	James	Johnson	23	in delivery	2024-05-22 22:28:11.7533333	2024-05-23 22:28:11.7533333	NULL	NULL
7	4	Emily	Brown	10	in delivery	2024-04-25 09:00:00.0000000	2024-05-01 09:00:00.0000000	NULL	NULL
8	4	Emily	Brown	17	in delivery	2024-05-20 15:00:00.0000000	2024-05-22 09:00:00.0000000	NULL	NULL
9	5	Michael	Davis	12	completed	2024-04-30 15:00:00.0000000	2024-05-02 10:00:00.0000000	2024-05-04 12:00:00.0000000	NULL
10	5	Michael	Davis	13	in process	2024-05-01 10:00:00.0000000	NULL	NULL	NULL
11	5	Michael	Davis	18	in process	2024-05-22 09:30:00.0000000	NULL	NULL	NULL
12	6	Sarah	Miller	4	in process	2024-03-02 09:00:00.0000000	NULL	NULL	NULL
13	7	David	Wilson	11	cancelled	2024-04-27 08:00:00.0000000	NULL	NULL	2024-04-27 16:00:00.0000000
14	7	David	Wilson	1	completed	2024-02-10 10:00:00.0000000	2024-02-12 11:00:00.0000000	2024-02-13 13:00:00.0000000	NULL
15	7	David	Wilson	6	completed	2024-03-21 10:00:00.0000000	2024-03-24 11:00:00.0000000	2024-03-26 13:00:00.0000000	NULL
16	7	David	Wilson	21	completed	2024-05-20 22:28:11.7533333	2024-05-21 22:28:11.7533333	2024-05-23 22:28:11.7533333	NULL
17	7	David	Wilson	19	in delivery	2024-05-22 09:30:00.0000000	2024-05-23 12:30:00.0000000	NULL	NULL
18	7	David	Wilson	25	in process	2024-05-23 22:28:11.7533333	NULL	NULL	NULL
19	8	Laura	Moore	24	cancelled	2024-05-22 22:28:11.7533333	NULL	NULL	2024-05-23 22:28:11.7533333
20	8	Laura	Moore	7	in delivery	2024-04-01 13:00:00.0000000	2024-04-03 11:00:00.0000000	NULL	NULL
21	9	Daniel	Taylor	22	in delivery	2024-05-21 22:28:11.7533333	2024-05-23 22:28:11.7533333	NULL	NULL
22	9	Daniel	Taylor	2	in process	2024-02-22 17:00:00.0000000	NULL	NULL	NULL
23	11	Paul	McArthur	16	in delivery	2024-05-15 11:00:00.0000000	2024-05-18 13:00:00.0000000	NULL	NULL
24	12	Anna	Jackson	5	cancelled	2024-03-05 14:00:00.0000000	NULL	NULL	2024-03-06 09:00:00.0000000
25	13	Mark	White	3	in process	2024-03-01 14:00:00.0000000	NULL	NULL	NULL

f) Daily order and production report

```
SELECT CAST(GETDATE() AS DATE) AS OrderDate,
       COUNT(o.OrderID) AS TotalOrders,
       SUM(CASE WHEN o.OrderStatus = 'completed' THEN 1 ELSE 0 END) AS CompletedOrders,
       SUM(CASE WHEN o.OrderStatus = 'in process' OR o.OrderStatus = 'in delivery' THEN 1 ELSE 0 END) AS PendingOrders,
       SUM(CASE WHEN o.OrderStatus = 'cancelled' THEN 1 ELSE 0 END) AS CancelledOrders
FROM Orders o
WHERE CAST(o.SubmittedAt AS DATE) = CAST(GETDATE() AS DATE)
      OR CAST(o.CompletedAt AS DATE) = CAST(GETDATE() AS DATE)
      OR CAST(o.DeliveryAt AS DATE) = CAST(GETDATE() AS DATE)
      OR CAST(o.CancelledAt AS DATE) = CAST(GETDATE() AS DATE);

SELECT o.OrderID, SKU, UnitsofProduct, OrderStatus, CAST(SubmittedAt AS DATE) AS SubmittedAt,
       CAST(DeliveryAt AS DATE) AS DeliveryAt, CAST(CompletedAt AS DATE) AS CompletedAt, CAST(CancelledAt AS DATE) AS CancelledAt
FROM Orders o
INNER JOIN OrderDetails od
ON o.OrderID = od.OrderID
WHERE CAST(o.SubmittedAt AS DATE) = CAST(GETDATE() AS DATE)
      OR CAST(o.CompletedAt AS DATE) = CAST(GETDATE() AS DATE)
      OR CAST(o.DeliveryAt AS DATE) = CAST(GETDATE() AS DATE)
      OR CAST(o.CancelledAt AS DATE) = CAST(GETDATE() AS DATE)
ORDER BY OrderID;
```

Results

Messages

	OrderDate	TotalOrders	CompletedOrders	PendingOrders	CancelledOrders
1	2024-05-23	7	2	4	1

	OrderID	SKU	UnitsofProduct	OrderStatus	SubmittedAt	DeliveryAt	CompletedAt	CancelledAt
1	19	SKU002	130	in delivery	2024-05-22	2024-05-23	NULL	NULL
2	19	SKU011	111	in delivery	2024-05-22	2024-05-23	NULL	NULL
3	20	SKU010	20	completed	2024-05-19	2024-05-22	2024-05-23	NULL
4	21	SKU003	30	completed	2024-05-20	2024-05-21	2024-05-23	NULL
5	22	SKU006	100	in delivery	2024-05-21	2024-05-23	NULL	NULL
6	22	SKU012	50	in delivery	2024-05-21	2024-05-23	NULL	NULL
7	23	SKU015	100	in delivery	2024-05-22	2024-05-23	NULL	NULL
8	24	SKU007	135	cancelled	2024-05-22	NULL	NULL	2024-05-23
9	25	SKU013	170	in process	2024-05-23	NULL	NULL	NULL

g) List of new orders per week and month

```
SELECT DATEPART(YEAR, SubmittedAt) AS OrderYear,  
       DATEPART(MONTH, SubmittedAt) AS OrderMonth,  
       DATEPART(WEEK, SubmittedAt) AS OrderWeek, OrderID, SubmittedAt  
FROM Orders  
WHERE Orders.OrderStatus = 'in process'  
ORDER BY DATEPART(YEAR, SubmittedAt), DATEPART(MONTH, SubmittedAt), DATEPART(WEEK, SubmittedAt)
```

Results Messages					
	OrderYear	OrderMonth	OrderWeek	OrderID	SubmittedAt
1	2024	2	8	2	2024-02-22 17:00:00.0000000
2	2024	3	9	3	2024-03-01 14:00:00.0000000
3	2024	3	9	4	2024-03-02 09:00:00.0000000
4	2024	4	15	8	2024-04-10 10:00:00.0000000
5	2024	5	18	13	2024-05-01 10:00:00.0000000
6	2024	5	21	18	2024-05-22 09:30:00.0000000
7	2024	5	21	25	2024-05-23 22:28:11.7533333

h) List of completed orders per week and month

```
SELECT
DATEPART(year, Orders.CompletedAt) AS Year,
DATEPART(month, CompletedAt) AS Month,
DATEPART(week, Orders.CompletedAt) AS Week,
Orders.OrderID,
Orders.CompletedAt
FROM Orders
WHERE Orders.OrderStatus = 'completed'
ORDER BY DATEPART(year, Orders.CompletedAt), DATEPART(week, Orders.CompletedAt),
DATEPART(month, CompletedAt), Orders.CompletedAt
```

Results Messages					
	Year	Month	Week	OrderID	CompletedAt
1	2024	2	7	1	2024-02-13 13:00:00.0000000
2	2024	3	13	6	2024-03-26 13:00:00.0000000
3	2024	4	16	9	2024-04-16 18:00:00.0000000
4	2024	5	18	12	2024-05-04 12:00:00.0000000
5	2024	5	21	20	2024-05-23 22:28:11.7533333
6	2024	5	21	21	2024-05-23 22:28:11.7533333

5.a) Create an Order

```
--Step 1
-- Enter Details of Order
DECLARE @CustomerID INT = 5;           -- Replace with actual CustomerID
DECLARE @EmployeeID INT = 7;           -- Replace with actual EmployeeID (must belong to the production department)
DECLARE @DeliveryPartnerID INT = 4;    -- Replace with actual DeliveryPartnerID
DECLARE @OrderID INT;

-- Calculate how many orders exist and increase by 1
SET @OrderID = (SELECT COUNT(*) FROM Orders) + 1;

-- Create a new order with the current_timestamp
INSERT INTO Orders (OrderStatus, SubmittedAt, DeliveryAt, CompletedAt, CancelledAt, CustomerID, EmployeeID, DeliveryPartnerID) VALUES
('in process', GETDATE(), NULL, NULL, NULL, @CustomerID, @EmployeeID, @DeliveryPartnerID);

-- Step 2
-- Insert Products into Order
DECLARE @SKU VARCHAR(50) = 'SKU007';   -- Replace with actual product's SKU
DECLARE @UnitsofProduct INT = 20;      -- Replace with actual product's ordered amount
DECLARE @OrderDetailID INT;

-- Calculate how many orders exist and increase by 1
SET @OrderDetailID = (SELECT COUNT(*) FROM Orders)
INSERT INTO OrderDetails (OrderID, SKU, UnitsofProduct) VALUES
(@OrderDetailID, @SKU, @UnitsofProduct);
```

```
1 SELECT TOP(5) *
2 FROM Orders
3 ORDER BY Orders.OrderID DESC
```

100 %

Results Messages

	OrderID	OrderStatus	SubmittedAt	DeliveryAt	CompletedAt	CancelledAt	CustomerID	EmployeeID	DeliveryPartnerID
1	26	in process	2024-05-24 19:54:01.6266667	NULL	NULL	NULL	5	7	4
2	25	in process	2024-05-23 21:17:13.3666667	NULL	NULL	NULL	8	7	15
3	24	cancelled	2024-05-22 21:17:13.3666667	NULL	NULL	2024-05-23 21:17:13.3666667	1	8	12
4	23	in delivery	2024-05-22 21:17:13.3666667	2024-05-23 21:17:13.3666667	NULL	NULL	10	3	8
5	22	in delivery	2024-05-21 21:17:13.3666667	2024-05-23 21:17:13.3666667	NULL	NULL	12	9	11

```
1 SELECT TOP(5) *
2 FROM OrderDetails
3 ORDER BY OrderDetails.OrderID DESC
4
```

100 %

Results Messages

	OrderID	SKU	UnitsofProduct
1	26	SKU007	20
2	25	SKU013	170
3	24	SKU007	135
4	23	SKU015	100
5	22	SKU012	50

5.b) Finalize production

```
DECLARE @SKUproduction VARCHAR(50) = 'SKU001'; -- Replace with actual product's SKU
```

```
UPDATE Product
```

```
SET ProductStatus = 'available'
```

```
WHERE SKU = @SKUproduction;
```

	SKU	Name	ProductStatus
1	SKU001	Concrete Block	in production
2	SKU002	Steel Beam	available
3	SKU003	Roofing Tile	available
4	SKU004	Insulation Roll	in production
5	SKU005	Cement Bag	available
6	SKU006	Rebar	in production
7	SKU007	Brick	available
8	SKU008	Plywood	available
9	SKU009	Gravel	in production
10	SKU010	Sand	in production
11	SKU011	Ceramic Tile	in production
12	SKU012	Fiber Cement Board	available
13	SKU013	Aluminum Sheet	in production
14	SKU014	Glass Pane	available
15	SKU015	Copper Wire	available

	SKU	Name	ProductStatus
1	SKU001	Concrete Block	available
2	SKU002	Steel Beam	available
3	SKU003	Roofing Tile	available
4	SKU004	Insulation Roll	in production
5	SKU005	Cement Bag	available
6	SKU006	Rebar	in production
7	SKU007	Brick	available
8	SKU008	Plywood	available
9	SKU009	Gravel	in production
10	SKU010	Sand	in production
11	SKU011	Ceramic Tile	in production
12	SKU012	Fiber Cement Board	available
13	SKU013	Aluminum Sheet	in production
14	SKU014	Glass Pane	available
15	SKU015	Copper Wire	available

5.c) Finalize an order and delivery

```
DECLARE @Order_id INT = 2;          -- Replace with actual OrderID
DECLARE @DeliveryPartner INT = 7;   -- Replace with actual DeliveryPartnerID if selection is set to manually

-- Finalise an order from production, set the DeliveryAt timestamp
UPDATE Orders
SET OrderStatus = 'in delivery', DeliveryAt = GETDATE(), DeliveryPartnerID = @DeliveryPartner
WHERE OrderID = @Order_id;

-- Finalise an order after it delivered successfully
-- Update the order status to 'completed' and set the CompletedAt timestamp
UPDATE Orders
SET OrderStatus = 'completed', CompletedAt = GETDATE()
WHERE OrderID = @Order_id;

-- Finalise order if cancelled
UPDATE Orders
SET OrderStatus = 'cancelled', CancelledAt = GETDATE()
WHERE OrderID = @Order_id;
```

Results Messages										
	OrderID	OrderStatus	SubmittedAt	DeliveryAt	CompletedAt	CancelledAt	CustomerID	EmployeeID	DeliveryPartnerID	
1	1	completed	2024-02-10 10:00:00.0000000	2024-05-24 22:07:14.9366667	2024-05-24 22:09:24.7000000	NULL	15	7	4	
2	2	in process	2024-02-22 17:00:00.0000000	NULL	NULL	NULL	3	9	10	
3	3	in process	2024-03-01 14:00:00.0000000	NULL	NULL	NULL	3	13	9	
4	4	in process	2024-03-02 09:00:00.0000000	NULL	NULL	NULL	6	6	6	
5	5	cancelled	2024-03-05 14:00:00.0000000	NULL	NULL	2024-03-06 09:00:00.0000000	4	12	8	
6	6	completed	2024-03-21 10:00:00.0000000	2024-03-24 11:00:00.0000000	2024-03-26 13:00:00.0000000	NULL	15	7	12	
7	7	in delivery	2024-04-01 13:00:00.0000000	2024-04-03 11:00:00.0000000	NULL	NULL	7	8	1	
8	8	in process	2024-04-10 10:00:00.0000000	NULL	NULL	NULL	9	2	9	
9	9	completed	2024-04-12 09:00:00.0000000	2024-04-16 09:00:00.0000000	2024-04-16 18:00:00.0000000	NULL	12	2	6	
10	10	in delivery	2024-04-25 09:00:00.0000000	2024-05-01 09:00:00.0000000	NULL	NULL	2	4	6	

Results Messages										
	OrderID	OrderStatus	SubmittedAt	DeliveryAt	CompletedAt	CancelledAt	CustomerID	EmployeeID	DeliveryPartnerID	
1	1	completed	2024-02-10 10:00:00.0000000	2024-05-24 22:07:14.9366667	2024-05-24 22:09:24.7000000	NULL	15	7	4	
2	2	in delivery	2024-02-22 17:00:00.0000000	2024-05-24 22:11:18.9333333	NULL	NULL	3	9	7	
3	3	in process	2024-03-01 14:00:00.0000000	NULL	NULL	NULL	3	13	9	
4	4	in process	2024-03-02 09:00:00.0000000	NULL	NULL	NULL	6	6	6	
5	5	cancelled	2024-03-05 14:00:00.0000000	NULL	NULL	2024-03-06 09:00:00.0000000	4	12	8	
6	6	completed	2024-03-21 10:00:00.0000000	2024-03-24 11:00:00.0000000	2024-03-26 13:00:00.0000000	NULL	15	7	12	
7	7	in delivery	2024-04-01 13:00:00.0000000	2024-04-03 11:00:00.0000000	NULL	NULL	7	8	1	
8	8	in process	2024-04-10 10:00:00.0000000	NULL	NULL	NULL	9	2	9	
9	9	completed	2024-04-12 09:00:00.0000000	2024-04-16 09:00:00.0000000	2024-04-16 18:00:00.0000000	NULL	12	2	6	
10	10	in delivery	2024-04-25 09:00:00.0000000	2024-05-01 09:00:00.0000000	NULL	NULL	2	4	6	

Results Messages										
	OrderID	OrderStatus	SubmittedAt	DeliveryAt	CompletedAt	CancelledAt	CustomerID	EmployeeID	DeliveryPartnerID	
1	1	completed	2024-02-10 10:00:00.0000000	2024-05-24 22:07:14.9366667	2024-05-24 22:09:24.7000000	NULL	15	7	4	
2	2	completed	2024-02-22 17:00:00.0000000	2024-05-24 22:11:18.9333333	2024-05-24 22:12:04.1100000	NULL	3	9	7	
3	3	in process	2024-03-01 14:00:00.0000000	NULL	NULL	NULL	3	13	9	
4	4	in process	2024-03-02 09:00:00.0000000	NULL	NULL	NULL	6	6	6	
5	5	cancelled	2024-03-05 14:00:00.0000000	NULL	NULL	2024-03-06 09:00:00.0000000	4	12	8	
6	6	completed	2024-03-21 10:00:00.0000000	2024-03-24 11:00:00.0000000	2024-03-26 13:00:00.0000000	NULL	15	7	12	
7	7	in delivery	2024-04-01 13:00:00.0000000	2024-04-03 11:00:00.0000000	NULL	NULL	7	8	1	
8	8	in process	2024-04-10 10:00:00.0000000	NULL	NULL	NULL	9	2	9	
9	9	completed	2024-04-12 09:00:00.0000000	2024-04-16 09:00:00.0000000	2024-04-16 18:00:00.0000000	NULL	12	2	6	
10	10	in delivery	2024-04-25 09:00:00.0000000	2024-05-01 09:00:00.0000000	NULL	NULL	2	4	6	



Thank You!