



Information Systems and Database Management

MySQL Database

Structure of a Logistics DBMS

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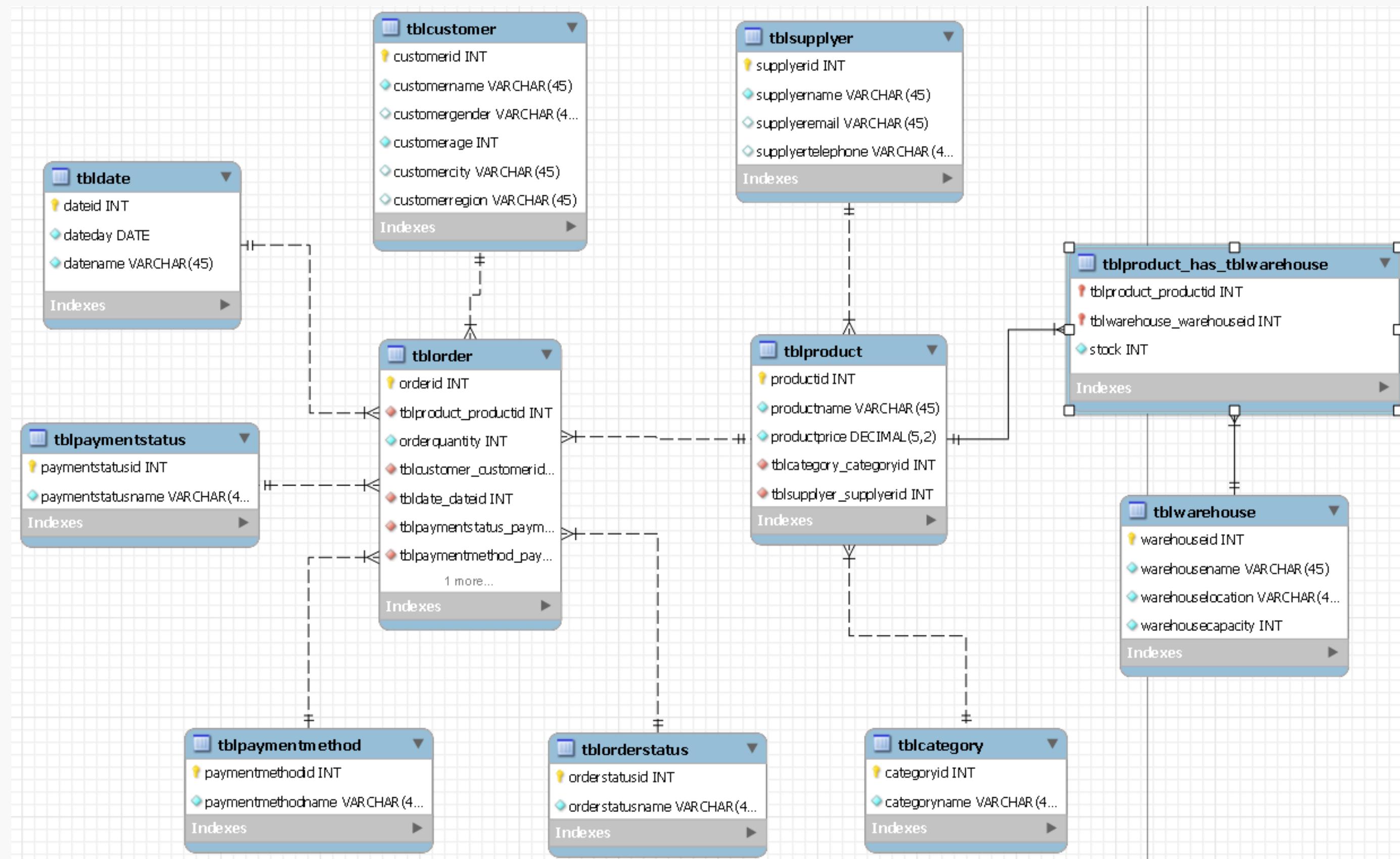
Amazon Logistics

Database tables :

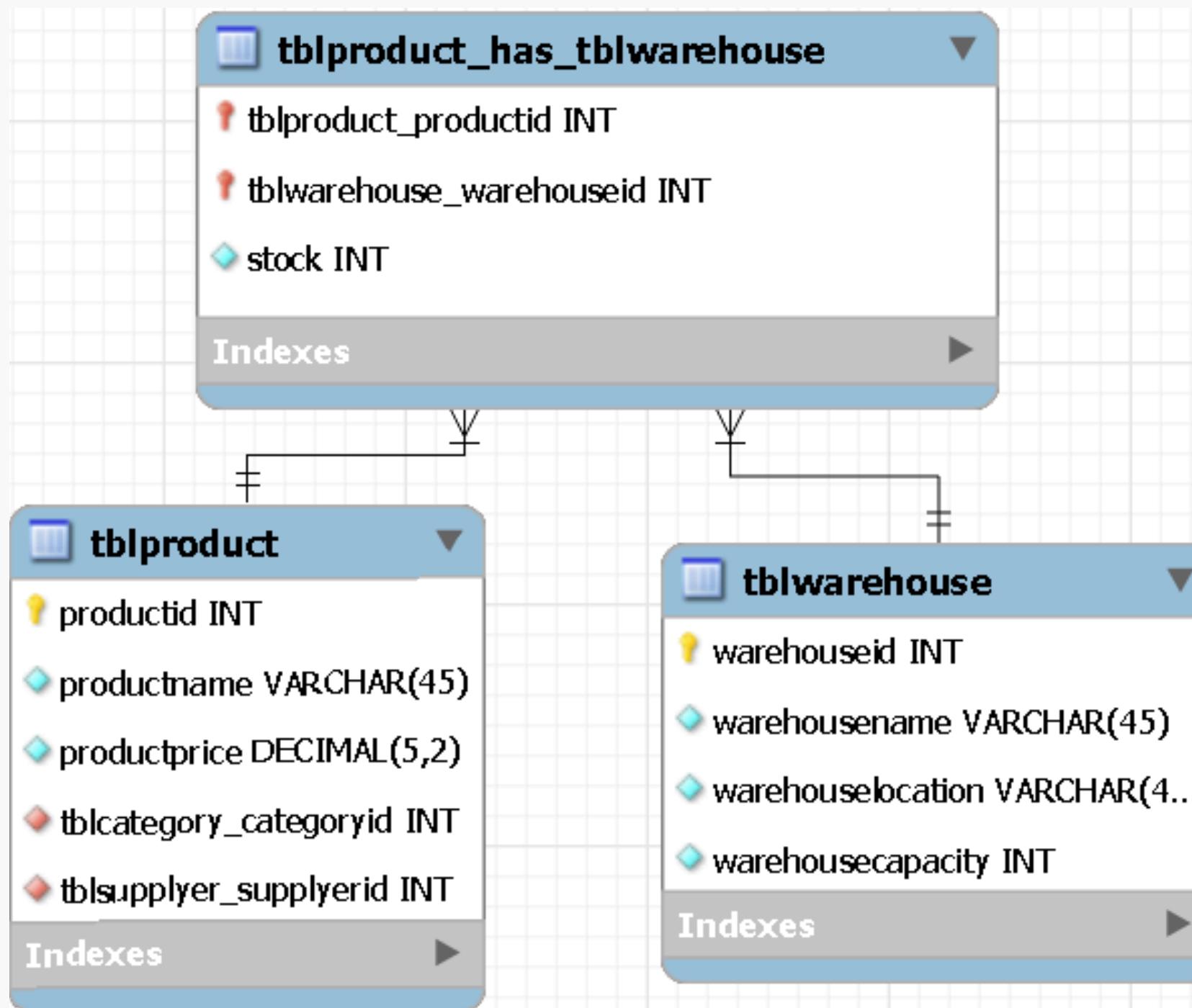
- Supplyer
- Warehouse
- Product
- Warehouse - Product
- Category
- Customer
- Order
- Order status
- Payment method
- Payment status
- Date



EER-Diagram

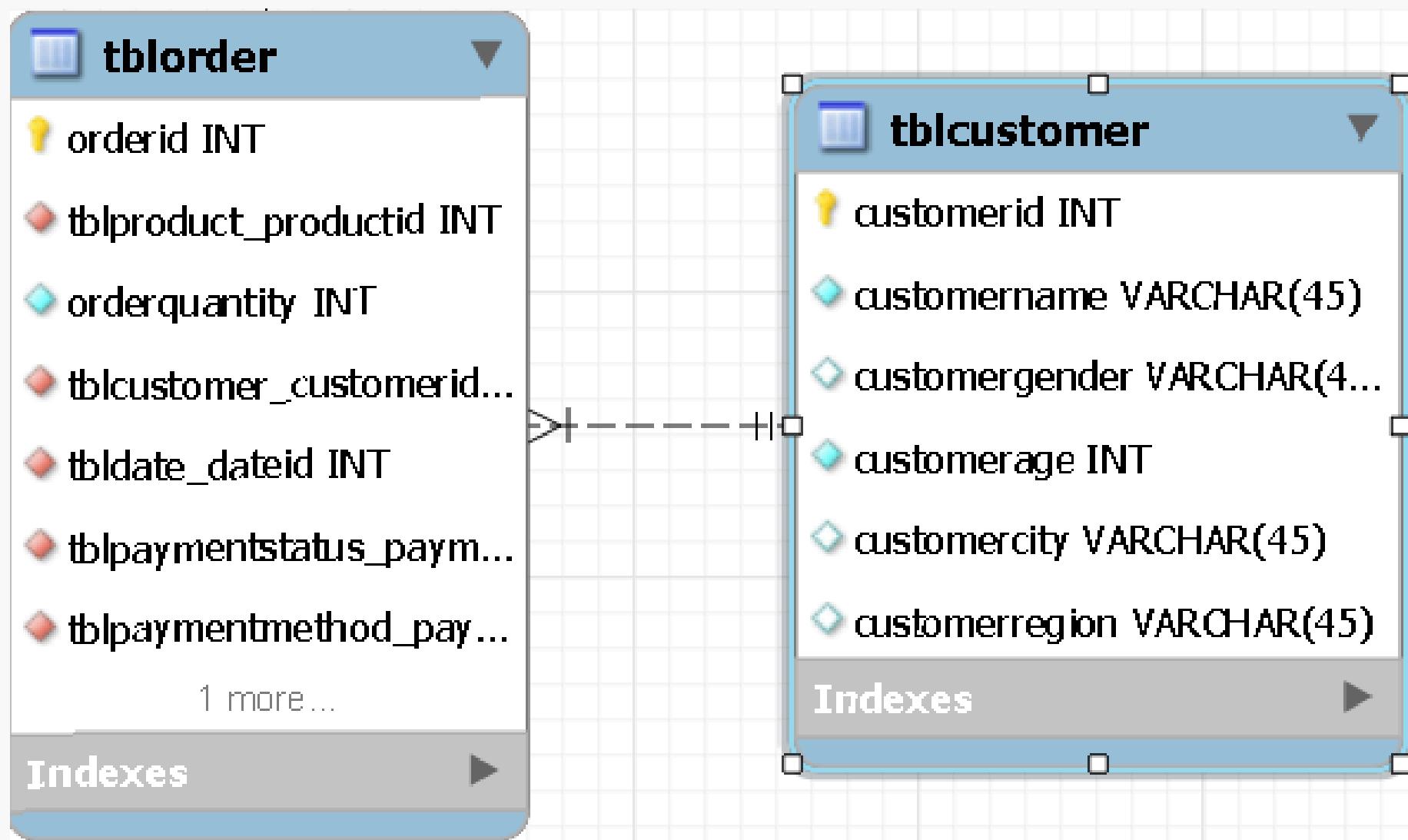


Non-Identifying Relationship



- The primary keys of the 'product' and 'warehouse' entities together form the compound key for the 'stock table'.

Identifying Relationship



- There is no ID-dependency between 'orderd' and 'costumer' entities
- One-to-many Binary Relationship



Queries



Payment methods count

```
SELECT tblpaymentmethod.paymentmethodname, COUNT(orderid) AS num_of_orders  
FROM tblorder  
JOIN tblpaymentmethod ON tblorder.tblpaymentmethod_paymentmethodid = tblpaymentmethod.paymentmethodid  
GROUP BY tblpaymentmethod.paymentmethodname;
```

paymentmethodname	num_of_orders
Credit Card	43
PayPal	34
Bank Transfer	23

Average spending per customer

```
SELECT
    AVG(total_spent) AS avg_spending
FROM
    (SELECT tblcustomer.customername, SUM(tblorder.orderquantity * tblproduct.productprice) AS total_spent
     FROM tblorder
     JOIN tblproduct ON tblorder.tblproduct_productid = tblproduct.productid
     JOIN tblcustomer ON tblorder.tblcustomer_customerid = tblcustomer.customerid
     GROUP BY tblcustomer.customername) AS customer_spending;
```

avg_spending
610.215763

Top 5 customers

```
SELECT tblcustomer.customername,  
       tblcustomer.customerage,  
       tblcustomer.customergender,  
       SUM(tblorder.orderquantity*tblproduct.productprice) AS totale_spesa  
FROM tblorder  
JOIN tblproduct ON tblorder.tblproduct_productid = tblproduct.productid  
JOIN tblcustomer ON tblorder.tblcustomer_customerid = tblcustomer.customerid  
GROUP BY tblcustomer.customerid  
ORDER BY totale_spesa DESC  
LIMIT 5;
```

customername	customerage	customergender	totale_spesa
Giorgia Conti	52	F	2933.15
Valerio Benedetti	81	M	1627.06
Camilla Grassi	66	F	1545.58
Pietro De Luca	74	M	1539.00
Matteo Gallo	51	M	1535.43

Orders per day of the week

```
SELECT DAYNAME(dateday) AS day_of_week, COUNT(orderid) AS total_orders  
FROM tblorder  
JOIN tbldate ON tblorder.tbldate_dateid = tbldate.dateid  
GROUP BY DAYNAME(dateday);
```

day_of_week	total_orders
Monday	10
Tuesday	16
Wednesday	15
Thursday	17
Friday	16
Saturday	9
Sunday	17

Supplier sales

```
SELECT tblsupplier.suppliername,  
SUM(tblorder.orderquantity) AS total_quantity,  
ROUND(SUM(tblorder.orderquantity * tblproduct.productprice),0) AS total_sold  
FROM tblorder  
JOIN tblproduct ON tblorder.tblproduct_productid = tblproduct.productid  
JOIN tblsupplier ON tblproduct.tblsupplier_supplierid = tblsupplier.supplierid  
GROUP BY tblsupplier.suppliername  
ORDER BY total_sold DESC;
```

suppliername	total_quantity	total_sold
Salas PLC	11	5941
Moore LLC	17	4407
Bell-Brewer	12	3420
Smith, Cordova and Jones	10	2945
Smith Ltd	11	2656
Barrett, Brown and Cole	7	2224
Mayer-Harvey	14	1911
Allen and Sons	12	1890
Gill-Krause	4	1859
Hernandez-Jones	4	1522
Phillips, Barnett and Noble	7	1497
Parker, Goodwin and Zavala	2	1462
Griffith-Sutton	8	1356
Olson, Ward and Scott	6	1119
Buck, Williams and Henderson	4	470
Davis, Schmitt and Harrison	6	363
Saunders, Vazquez and Medina	7	343
Drake-Webb	1	314
Wilson Inc	2	273
Wells Inc	1	31

Best selling products

```
SELECT tblproduct.productname,  
       SUM(tblorder.orderquantity) AS TotalQuantity  
  FROM tblorder  
 JOIN tblproduct ON tblorder.tblproduct_productid = tblproduct.productid  
 GROUP BY tblproduct.productname  
 ORDER BY TotalQuantity DESC  
 LIMIT 10;
```

productname	TotalQuantity
Televisore 4K	11
Puzzle 3D	8
Bicicletta da Corsa	7
Tapis Roulant	6
Pantaloni da Yoga	6
Set di Mazze da Golf	5
Orologio Smartwatch	5
Set LEGO	5
Tavoletta Grafica	5
Smartwatch Fitness	5

Preferred categories per age group

```
WITH RankedCategories AS (
    SELECT
        categoryname,
        CASE
            WHEN customerage BETWEEN 18 AND 30 THEN '18-30'
            WHEN customerage BETWEEN 31 AND 50 THEN '31-50'
            WHEN customerage BETWEEN 51 AND 65 THEN '51-65'
            ELSE '65+'
        END AS age_group,
        SUM(tblorder.orderquantity) AS orders_count,
        ROW_NUMBER() OVER (
            PARTITION BY
                CASE
                    WHEN customerage BETWEEN 18 AND 30 THEN '18-30'
                    WHEN customerage BETWEEN 31 AND 50 THEN '31-50'
                    WHEN customerage BETWEEN 51 AND 65 THEN '51-65'
                    ELSE '65+'
                END
            ORDER BY SUM(tblorder.orderquantity) DESC) AS ranking
    FROM tblorder
    JOIN tblproduct ON tblorder.tblproduct_productid = tblproduct.productid
    JOIN tblcategory ON tblproduct.tblcategory_categoryid = tblcategory.categoryid
    JOIN tblcustomer ON tblorder.tblcustomer_customerid = tblcustomer.customerid
    GROUP BY categoryname, age_group
)
SELECT categoryname, age_group, orders_count
FROM RankedCategories
WHERE ranking <= 2
ORDER BY age_group ASC, orders_count DESC;
```

categoryname	age_group	orders_count
Sport	18-30	5
House	18-30	5
Toys	31-50	16
Electronics	31-50	10
Electronics	51-65	12
Sport	51-65	7
Sport	65+	17
Electronics	65+	16

Top 10 identikits

```
SELECT
CASE
    WHEN customerregion IN ('Piemonte', 'Valle d'Aosta', 'Liguria', 'Lombardia') THEN 'Nord-Ovest'
    WHEN customerregion IN ('Trentino-Alto Adige', 'Veneto', 'Friuli Venezia Giulia', 'Emilia-Romagna') THEN 'Nord-Est'
    WHEN customerregion IN ('Toscana', 'Umbria', 'Marche', 'Lazio') THEN 'Centro'
    ELSE 'Sud e Isole'
END AS geographic_area,
CASE
    WHEN customerage BETWEEN 18 AND 30 THEN '18-30'
    WHEN customerage BETWEEN 31 AND 50 THEN '31-50'
    WHEN customerage BETWEEN 51 AND 65 THEN '51-65'
    ELSE '65+'
END AS age_group,
CASE
    WHEN customergender = 'M' THEN 'Male'
    ELSE 'Female'
END AS gender_category,
SUM(tblorder.orderquantity * tblproduct.productprice) AS total_spending
FROM tblorder
JOIN tblcustomer ON tblorder.tblcustomer_customerid = tblcustomer.customerid
JOIN tblproduct ON tblorder.tblproduct_productid = tblproduct.productid
GROUP BY
geographic_area,
age_group,
gender_category
ORDER BY total_spending DESC
LIMIT 10;
```

geographic_area	age_group	gender_category	total_spending
Sud e Isole	65+	Male	5379.86
Sud e Isole	65+	Female	5209.10
Sud e Isole	51-65	Female	5121.69
Sud e Isole	31-50	Male	3577.10
Nord-Est	31-50	Male	1871.39
Centro	18-30	Female	1833.35
Nord-Est	65+	Male	1627.06
Nord-Ovest	51-65	Male	1535.43
Nord-Est	31-50	Female	1516.73
Centro	31-50	Female	1115.76

Product variability per warehouse

```
SELECT tblwarehouse.warehousename,  
       COUNT(DISTINCT tblproduct_has_tblwarehouse.tblproduct_productid) AS product_count  
FROM tblproduct_has_tblwarehouse  
JOIN tblwarehouse ON tblwarehouse.warehouseid = tblproduct_has_tblwarehouse.tblwarehouse_warehouseid  
WHERE tblproduct_has_tblwarehouse.stock > 0  
GROUP BY tblwarehouse.warehousename;  
SELECT * FROM projectlubisco.tblcategory;
```

warehousename	product_count
Alpha	29
Beta	35
Delta	28
Epsilon	27
Gamma	33



Thank you

