DB Assignment 3

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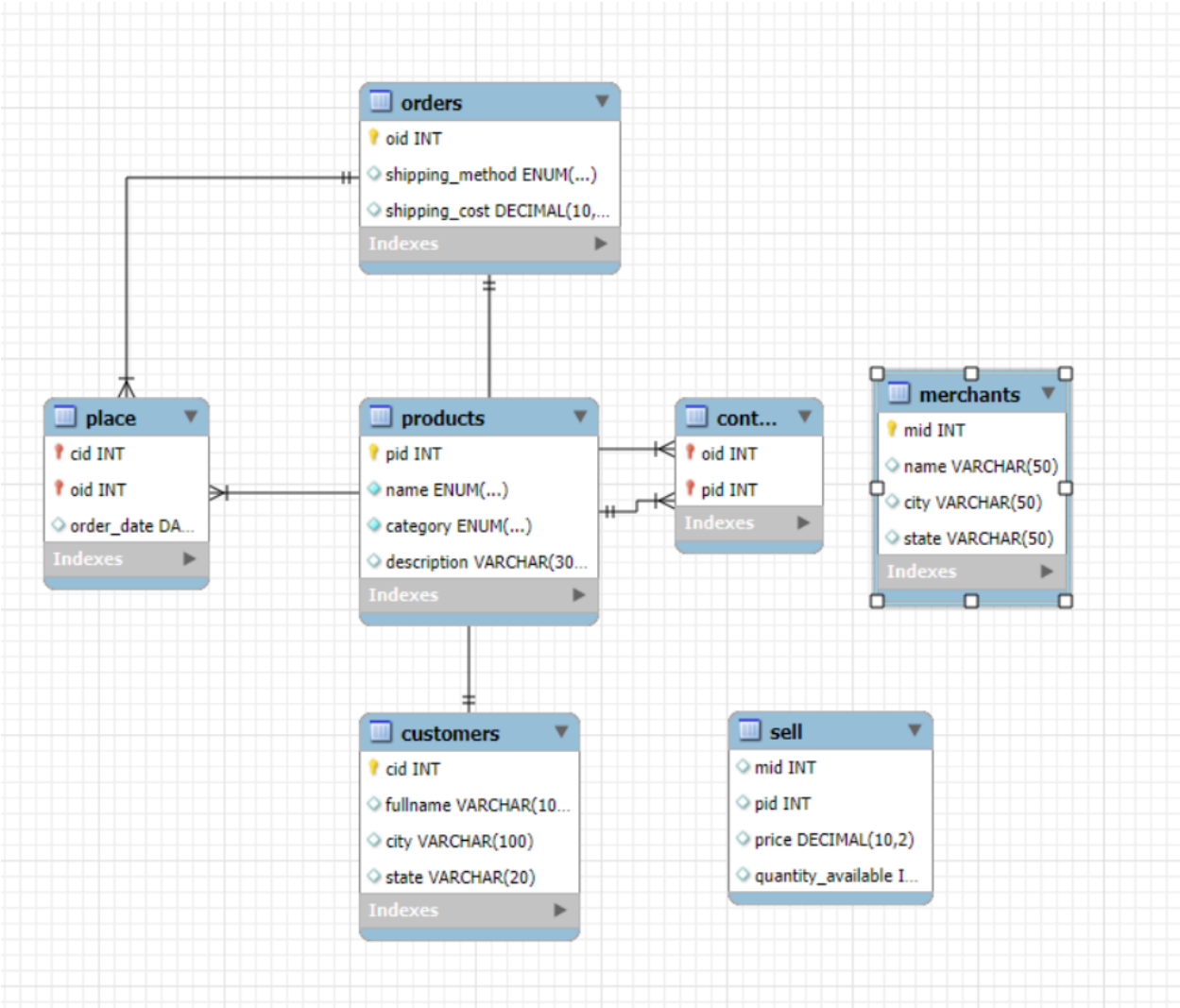
10/21/2025



1. List names and sellers of products that are no longer available (quantity=0)

```
select p.name AS product_name, m.name AS merchant_name
from products p
join sell s ON p.pid = s.pid
join merchants m ON s.mid = m.mid
where s.quantity_available = 0;
```

product_name	merchant_name
Router	Acer
Network Card	Acer
Printer	Apple
Router	Apple
Router	HP
Super Drive	HP
Laptop	HP
Router	Dell
Ethernet Adapter	Lenovo

This query retrieves the names of products and their sellers where the quantity available is 0.It joins the products table with sell to check the stock, and then joins merchants to get the seller's name.By filtering quantity_available = 0, it lists exactly the products that are no longer in stock and who sells them.

2. List names and descriptions of products that are not sold.

```
select p.name as product_name, p.description as product_description
from products p
left join sell s on p.pid = s.pid
where s.pid is null;
```

product_name	product_description
Super Drive	External CD/DVD/RW
Super Drive	UInternal CD/DVD/RW

This query counts customers who bought at least one SATA drive but never bought a router. First, it links customers to the products in their orders using place and contain. Then it groups data by customer.

3. How many customers bought SATA drives but not any routers?

```
select COUNT(*) AS num_customers
from (
    select pl.cid
    from place pl
    join contain co ON pl.oid = co.oid
    join products p ON co.pid = p.pid
    group by pl.cid
```

```
    having
    SUM(p.name LIKE '%SATA%') > 0
    AND SUM(p.name LIKE '%Router%') = 0
) AS subquery;
```

	num_customers
▶	0

Sums the sales for each company per year by joining merchants, products sold, and orders. Then it orders the results by total sales in descending order and selects the top row using limit 1.

4. HP has a 20% sale on all its Networking products.

```
update sell s
join merchants m ON s.mid = m.mid
join products p ON s.pid = p.pid
set s.price = s.price * 0.8
where m.name = 'HP'
  AND p.category = 'Networking';
```

(For this problem I just assumed that you were meant to update the prices of the HP Networking products) Joins merchants, sell, and products to ensure only HP networking products are updated.

5. What did Uriel Whitney order ~~from Acer~~? (make sure to at least retrieve product names and prices).

```
select
   p.name AS product_name,
   s.price AS price
from customers c
join place pl ON c.cid = pl.cid
join contain co ON pl.oid = co.oid
join products p ON co.pid = p.pid
join sell s ON s.pid = p.pid
where c.fullname = 'Uriel Whitney';
```

product_name	price
Hard Drive	836.99
Hard Drive	836.99
Hard Drive	836.99
Hard Drive	836.99
Network Card	837.12
Network Card	837.12
Network Card	837.12
Network Card	837.12
Network Card	837.12
Network Card	837.12
Super Drive	1124.26
Network Card	609.20
Network Card	609.20
Network Card	609.20

Lists all products and prices for orders placed by Uriel Whitney. Joins customers, place, contain, products, and sell to get the purchased items and prics.

6. List the annual total sales for each company (sort the results along the company and the year attributes).

```
select
    m.name AS company,
    YEAR(pl.order_date) AS order_year,
    SUM(s.price) AS total_sales
from merchants m
join sell s ON m.mid = s.mid
join contain co ON s.pid = co.pid
join place pl ON co.oid = pl.oid
group by m.name, YEAR(pl.order_date)
order by m.name, order_year;
```

company	order_year	total_sales
Acer	2011	152986.30
Acer	2016	60291.14
Acer	2017	176722.77
Acer	2018	262059.29
Acer	2019	208815.80
Acer	2020	182311.15
Apple	2011	166822.91
Apple	2016	64748.46
Apple	2017	179560.78
Apple	2018	300413.23
Apple	2019	231573.17
Apple	2020	216461.06
Dell	2011	181730.35
Dell	2016	71462.87

(for this problem I assumed we were looking for the annual total sales per year for each company) Joins merchants, sell, contain, place, and sum product prices grouped by company and year.

7. Which company had the highest annual revenue and in what year?

```
select company, order_year, total_sales
from (
    select
        m.name AS company,
        YEAR(pl.order_date) AS order_year,
        SUM(s.price) AS total_sales
    from merchants m
    join sell s ON m.mid = s.mid
    join contain co ON s.pid = co.pid
    join place pl ON co.oid = pl.oid
    group by m.name, YEAR(pl.order_date)
) AS annual_sales
order by total_sales desc
limit 1;
```

	company	order_year	total_sales
▶	Lenovo	2018	324291.59

This query uses the annual totals per company per year and selects the top revenue.

8. On average, what was the cheapest shipping method used ever?

```
select shipping_method, AVG(shipping_cost) AS avg_cost
from orders
group by shipping_method
order by avg_cost
limit 1;
```

	shipping_method	avg_cost
▶	USPS	7.455761

Identifies the shipping method with the lowest average cost across all orders.

9. What is the best sold ($) category for each company?

```
select
    m.name AS company,
    p.category,
    SUM(s.price) AS total_revenue
from merchants m
join sell s ON m.mid = s.mid
join contain co ON s.pid = co.pid
join place pl ON co.oid = pl.oid
join products p ON s.pid = p.pid
group by m.name, p.category;



select t1.company, t1.category, t1.total_revenue
from (
    select
        m.name AS company,
```

```
        p.category,
        SUM(s.price) AS total_revenue
    from merchants m
    join sell s ON m.mid = s.mid
    join contain co ON s.pid = co.pid
    join place pl ON co.oid = pl.oid
    join products p ON s.pid = p.pid
    group by m.name, p.category
) AS t1
where t1.total_revenue = (
    select MAX(t2.total_revenue)
    from (
        select
            m.name AS company,
            p.category,
            SUM(s.price) AS total_revenue
        from merchants m
        join sell s ON m.mid = s.mid
        join contain co ON s.pid = co.pid
        join place pl ON co.oid = pl.oid
        join products p ON s.pid = p.pid
        group by m.name, p.category
    ) AS t2
    where t2.company = t1.company
);
```

company	category	total_revenue
Acer	Peripheral	648729.57
Apple	Peripheral	613620.95
HP	Peripheral	340861.72
Dell	Peripheral	593504.38
Lenovo	Peripheral	608137.27

Finds the category that made the most money for each company. Sums prices per company per category and selects the category with the maximum total.

10. For each company find out which customers have spent the most and the least amounts.

```
with customer_totals AS (
    select
        m.name AS company,
        c.fullname AS customer,
        SUM(s.price) AS total_spent
    from merchants m
    join sell s ON m.mid = s.mid
    join contain co ON s.pid = co.pid
    join place pl ON co.oid = pl.oid
    join customers c ON pl.cid = c.cid
    group by m.name, c.cid
)
-- get the maximum spenders
select ct.company, ct.customer, ct.total_spent, 'max' AS type
from customer_totals ct
join (
    select company, MAX(total_spent) AS max_spent
    from customer_totals
    group by company
) AS mx
  ON ct.company = mx.company AND ct.total_spent = mx.max_spent

UNION ALL
```

```
-- get the minimum spenders
select ct2.company, ct2.customer, ct2.total_spent, 'min' AS type
from customer_totals ct2
join (
    select company, MIN(total_spent) AS min_spent
    from customer_totals
    group by company
) AS mn
  ON ct2.company = mn.company AND ct2.total_spent = mn.min_spent;
```

company	customer	total_spent	type
Acer	Dean Heath	75230.29	max
Apple	Clementine Travis	84551.11	max
HP	Clementine Travis	50951.78	max
Dell	Clementine Travis	85611.55	max
Lenovo	Haviva Stewart	83030.26	max
Acer	Inez Long	31901.02	min
Apple	Inez Long	32251.10	min
HP	Inez Long	19769.98	min
Dell	Inez Long	31135.74	min
Lenovo	Inez Long	33948.91	min

Lists customers who spent the most and least money for each company.