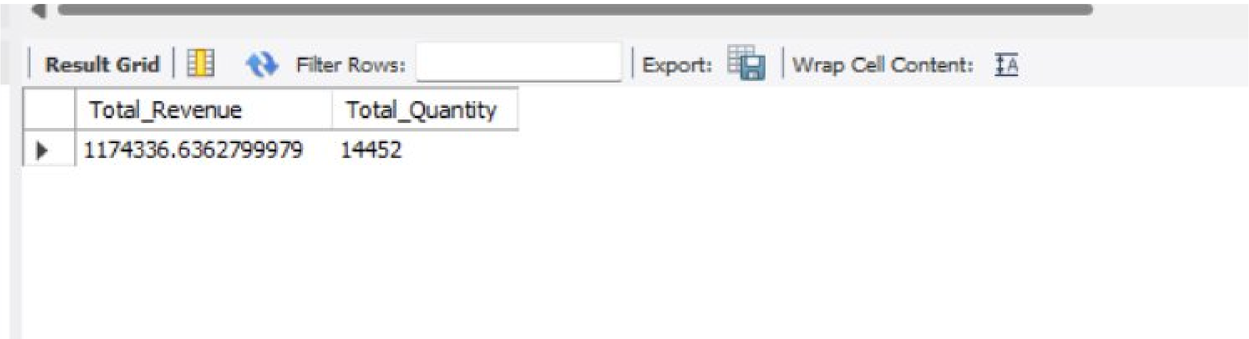
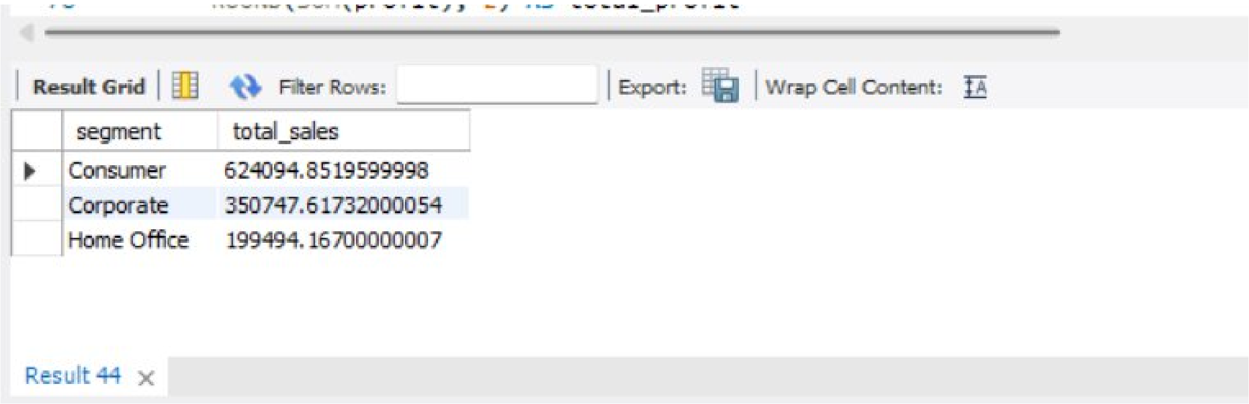
```
create database if not exists  indexing;
use indexing;
show tables;
rename table `global superstore 2018 _ csv format` to superstore;
show tables;

describe superstore;
alter table superstore rename column `ï»¿Row ID` to row_id;
select*from superstore
order by row_id;

-- 1)
explain analyze
select *from superstore
where row_id =21550;
-- ->  (cost=409 rows=385) (actual time=16.8..19.9 rows=1 loops=1)

create index idx_row_id on superstore(row_id);

explain analyze
select *from superstore
where row_id =21550;
-- -> (cost=0.35 rows=1) (actual time=0.0915..0.0995 rows=1 loops=1)
 show indexes from superstore;
describe superstore;
```

```
-- 2 ) find regionwise sales
explain analyze
select region,round(sum(sales),2)  as sale from superstore
group by region
order by sum(sales)desc;
-- ->  (actual time=20.1..20.1 rows=8 loops=1) (actual time=20..20 rows=8 loops=1)

create index idx_region


on superstore (region(50));
explain analyze
select region,round(sum(sales),2)  as sale from superstore
group by region
order by sum(sales)desc;

show indexes from superstore;

explain analyze
select*from superstore
where `customer id` ='ea-140355' and region =' south amrica';

-- 3) creating a composite index
 create index idx_cust_region
 on superstore (region(50),`customer id`(30));
 explain analyze
 select *from superstore
 where `customer id` ='ea-140355' and region =' south amrica';


 select *from superstore;

 show indexes from superstore;


 drop index idx_cust_region on superstore;




 -- exercise questions

 -- 1) find the total revenue , quantities genrated

SELECT

    SUM(Sales) AS Total_Revenue,

    SUM(Quantity) AS Total_Quantity

FROM superstore;
```



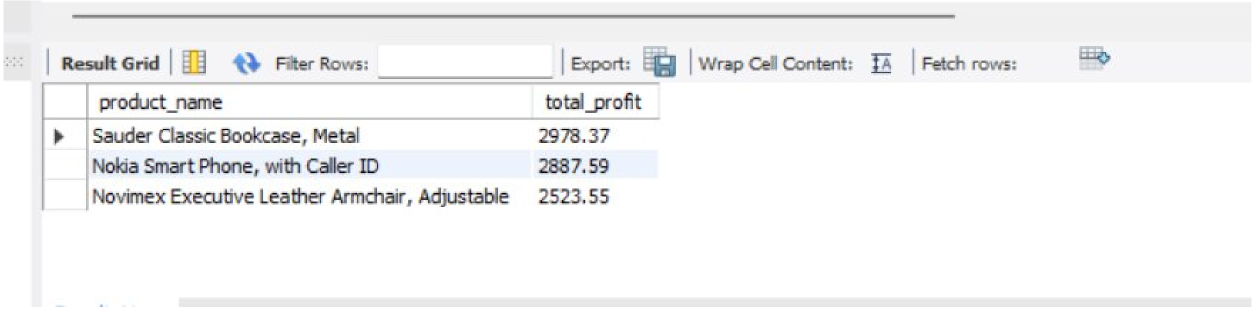
| Total_Revenue | Total_Quantity |
|---|---|
| 1174336.6362799979 | 14452 |

```
-- 2) find the segment wise distribution of the sales

SELECT segment,

(SUM(sales)) AS total_sales

FROM superstore

GROUP BY segment

ORDER BY total_sales DESC;
```



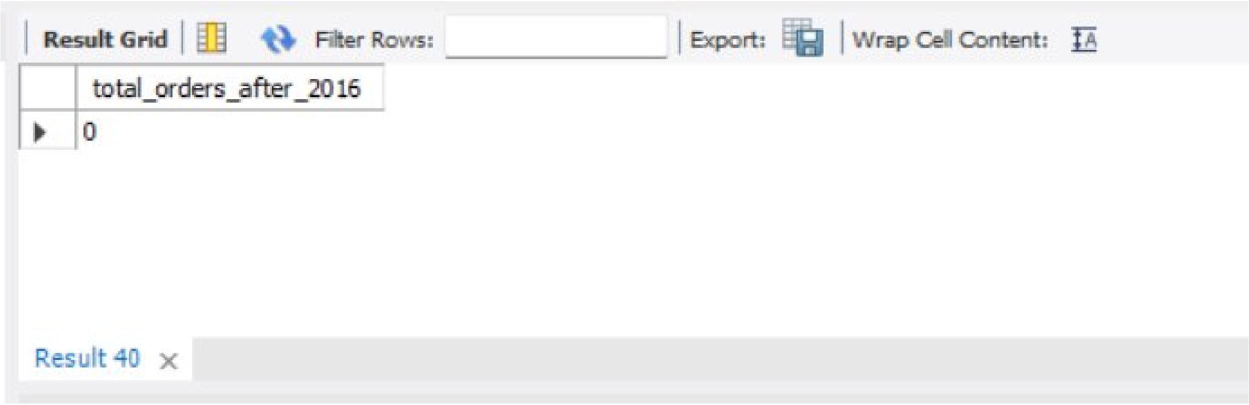
| segment | total_sales |
|---|---|
| Consumer | 624094.8519599998 |
| Corporate | 350747.61732000054 |
| Home Office | 199494.16700000007 |

```
-- 3)find the top 3 most profitable product

SELECT

   `Product Name` AS product_name,

   ROUND(SUM(profit), 2) AS total_profit

FROM superstore

GROUP BY `Product Name`

ORDER BY total_profit DESC

LIMIT 3;
```



| product_name | total_profit |
|---|---|
| Sauder Classic Bookcase, Metal | 2978.37 |
| Nokia Smart Phone, with Caller ID | 2887.59 |
| Novimex Executive Leather Armchair, Adjustable | 2523.55 |

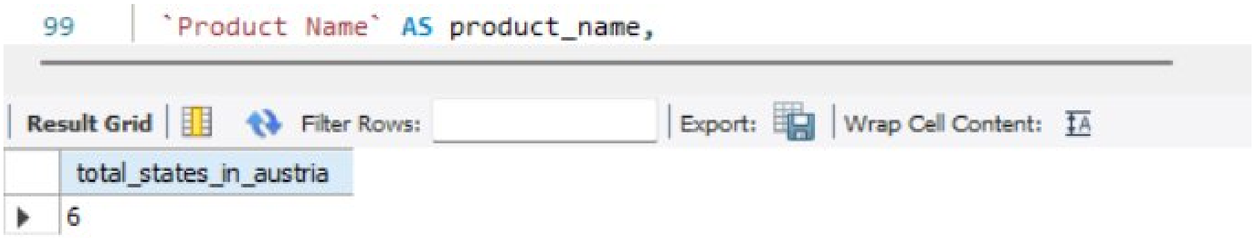
```
 -- 4) find how many ordeers are placed after 2016

 SELECT COUNT(*) AS total_orders_after_2016

 FROM superstore

WHERE YEAR(`Order Date`) >'31-1-2016';
```



| total_orders_after_2016 |
|---|
| 0 |

```
 -- 5) how many states from austria are under the roof of business ?

SELECT

   COUNT(DISTINCT state) AS total_states_in_austria
```

```
FROM superstore

WHERE country = 'Austria';
```

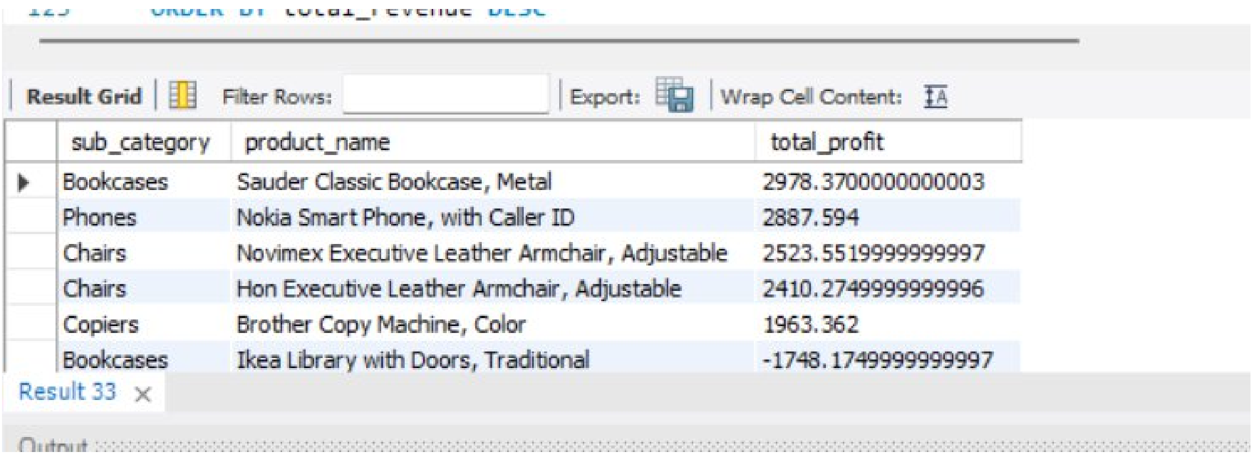


```
`Product Name` AS product_name,
```

```
total_states_in_austria
6
```

```
 -- 6) which products and and subcategories are most and least profitable

(SELECT

`Sub-Category` AS sub_category,

`Product Name` AS product_name,

 SUM(Profit) AS total_profit

FROM superstore

GROUP BY `Sub-Category`, `Product Name`

ORDER BY total_profit DESC

LIMIT 5

)

UNION ALL
```

```
(

SELECT

`Sub-Category` AS sub_category,

`Product Name` AS product_name,

SUM(Profit) AS total_profit

FROM superstore

GROUP BY `Sub-Category`, `Product Name`

ORDER BY total_profit ASC

 LIMIT 5

);
```

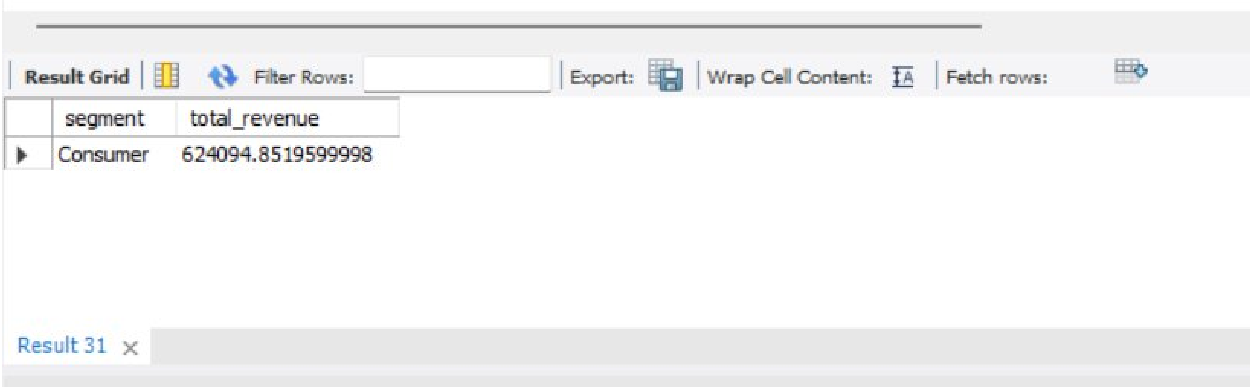


```
ORDER BY total_revenue DESC
```

| sub_category | product_name | total_profit |
|---|---|---|
| Bookcases | Sauder Classic Bookcase, Metal | 2978.3700000000003 |
| Phones | Nokia Smart Phone, with Caller ID | 2887.594 |
| Chairs | Novimex Executive Leather Armchair, Adjustable | 2523.5519999999997 |
| Chairs | Hon Executive Leather Armchair, Adjustable | 2410.2749999999996 |
| Copiers | Brother Copy Machine, Color | 1963.362 |
| Bookcases | Ikea Library with Doors, Traditional | -1748.1749999999997 |

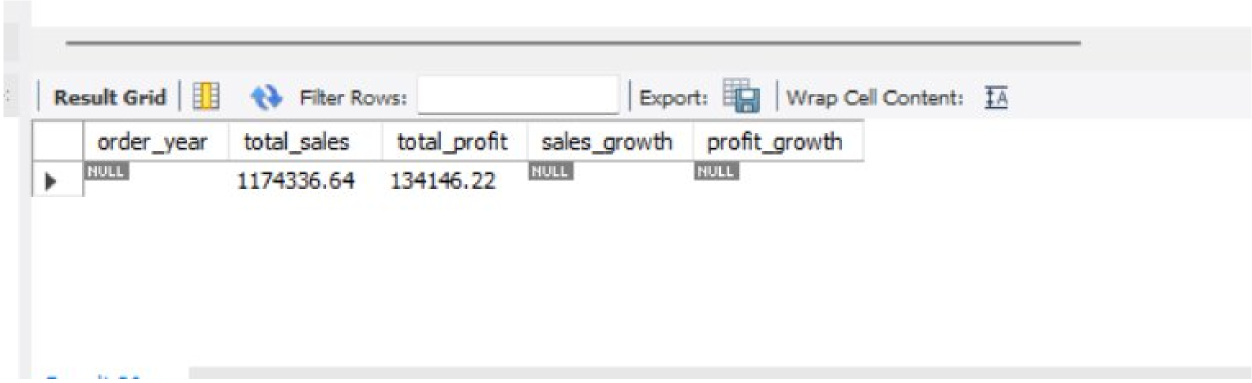
```
  -- 7) which coustomer segment contributes the most to the total revenue

SELECT segment,

SUM(sales) AS total_revenue

FROM superstore

GROUP BY segment
```

```
ORDER BY total_revenue DESC

LIMIT 1;
```



| segment | total_revenue |
|---|---|
| Consumer | 624094.8519599998 |

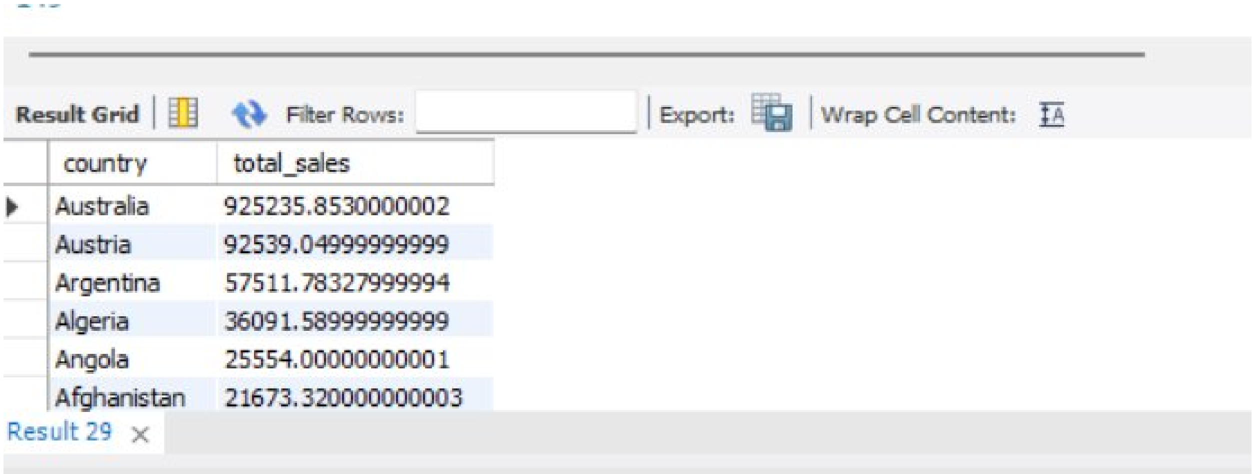
```
 -- 8) what is the year-over-year growth in sales and profit

 SELECT

  YEAR(`Order Date`) AS order_year,

  ROUND(SUM(Sales), 2) AS total_sales,

  ROUND(SUM(Profit), 2) AS total_profit,

  ROUND(

    SUM(Sales) - LAG(SUM(Sales)) OVER (ORDER BY YEAR(`Order Date`)), 2

  ) AS sales_growth,

  ROUND(

    SUM(Profit) - LAG(SUM(Profit)) OVER (ORDER BY YEAR(`Order Date`)), 2

  ) AS profit_growth

FROM superstore

GROUP BY YEAR(`Order Date`)

ORDER BY order_year;
```



| order_year | total_sales | total_profit | sales_growth | profit_growth |
|---|---|---|---|---|
| NULL | 1174336.64 | 134146.22 | NULL | NULL |

-- 9) Which countries and cities are driving the highest sales?

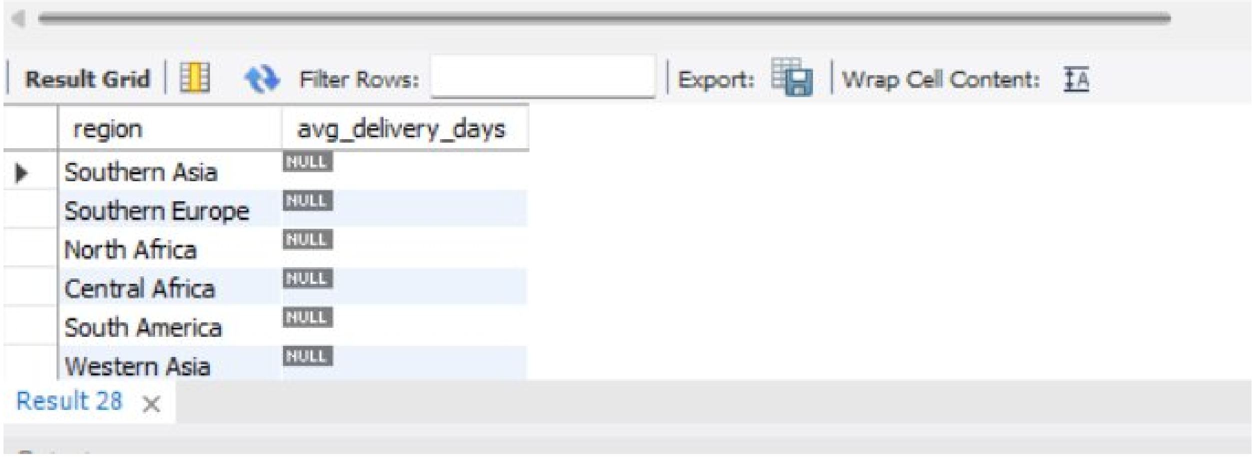
```
 SELECT
   country,
   SUM(sales) AS total_sales
FROM superstore
GROUP BY country
ORDER BY total_sales DESC;
```



| country | total_sales |
|---|---|
| Australia | 925235.8530000002 |
| Austria | 92539.04999999999 |
| Argentina | 57511.78327999994 |
| Algeria | 36091.58999999999 |
| Angola | 25554.00000000001 |
| Afghanistan | 21673.320000000003 |

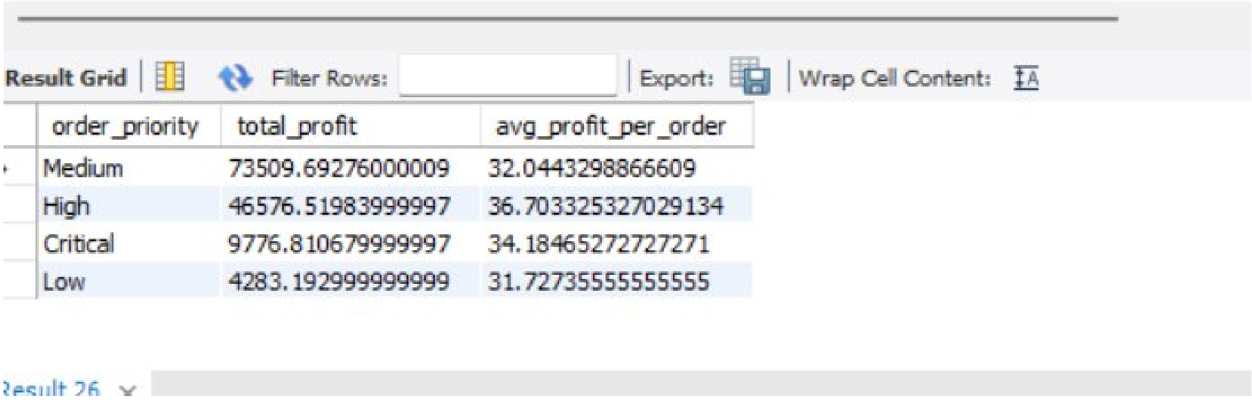
-- 10. What is the average delivery time from order to ship date across regions?

```
SELECT
   region,
   ROUND(AVG(DATEDIFF(`Ship Date`, `Order Date`)), 2) AS avg_delivery_days
FROM superstore
GROUP BY region
ORDER BY avg_delivery_days;
```



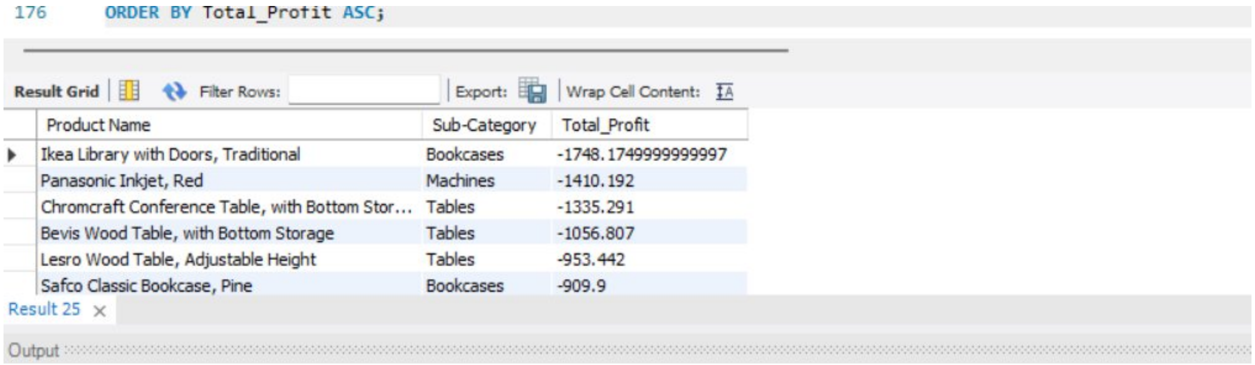
| region | avg_delivery_days |
|---|---|
| Southern Asia | NULL |
| Southern Europe | NULL |
| North Africa | NULL |
| Central Africa | NULL |
| South America | NULL |
| Western Asia | NULL |

```
-- 11. what is the profit distribution across order priority?
SELECT
   `Order Priority` AS order_priority,
   SUM(profit) AS total_profit,
   AVG(profit) AS avg_profit_per_order
FROM superstore
GROUP BY `Order Priority`
ORDER BY total_profit DESC;
```



| order_priority | total_profit | avg_profit_per_order |
|---|---|---|
| Medium | 73509.69276000009 | 32.0443298866609 |
| High | 46576.51983999997 | 36.703325327029134 |
| Critical | 9776.810679999997 | 34.18465272727271 |
| Low | 4283.192999999999 | 31.7273555555555 |

```
-- 12. Suggest data-driven recommendations for improving profit and reducing losses.

SELECT

    `Product Name`,

    `Sub-Category`,

    SUM(Profit)as Total_Profit

FROM superstore

GROUP BY `Product Name`, `Sub-Category`

HAVING SUM(Profit) < 0

ORDER BY Total_Profit ASC;
```



```
ORDER BY Total_Profit ASC;
```

| Product Name | Sub-Category | Total_Profit |
|---|---|---|
| Ikea Library with Doors, Traditional | Bookcases | -1748.1749999999997 |
| Panasonic Inkjet, Red | Machines | -1410.192 |
| Chromcraft Conference Table, with Bottom Stor... | Tables | -1335.291 |
| Bevis Wood Table, with Bottom Storage | Tables | -1056.807 |
| Lesro Wood Table, Adjustable Height | Tables | -953.442 |
| Safco Classic Bookcase, Pine | Bookcases | -909.9 |