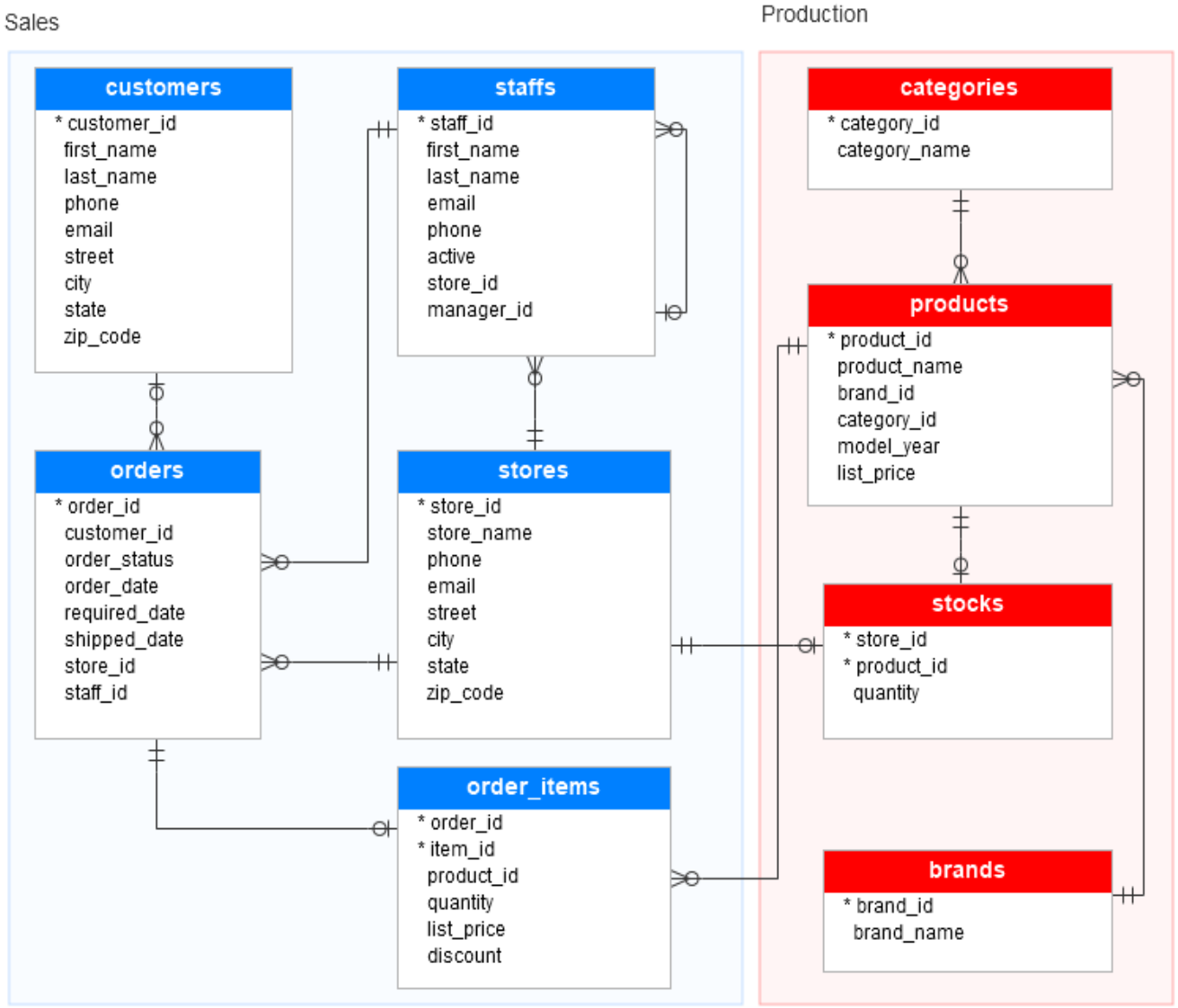
Bike Store Database Analysis and Insights

Database Diagram

The **Bike Stores Database Schema** consists of two main sections:

- **Sales**: Tracks customer orders, staff, and store details. It includes customers, orders, staff management, and individual order items for each transaction.
- **Production**: Manages product inventory with categories, brands, and stock levels. It includes products, their categories, brands, and inventory per store.

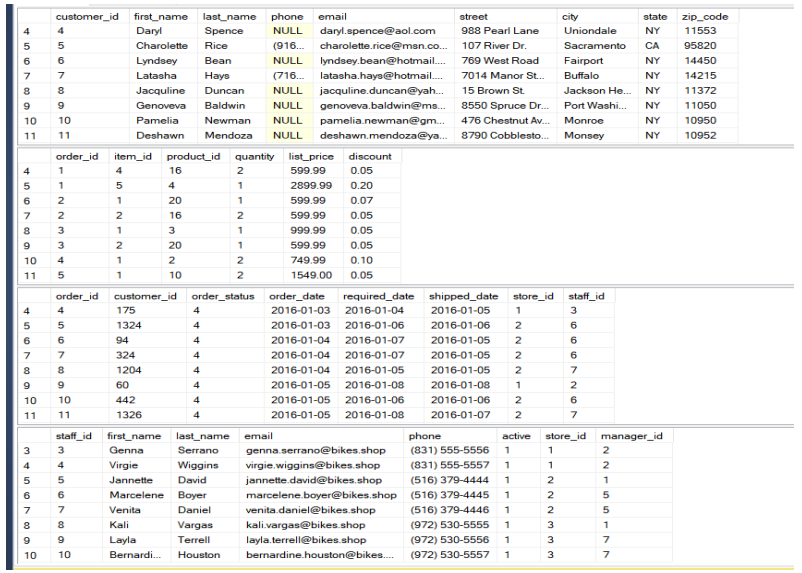
This schema efficiently handles both the sales process and inventory management for a bike store system.



Data Exploration

Exploring Tables:

- **Goal**: Understanding the structure and relationships of key tables.
- Identified relationships between orders, products, and customers.

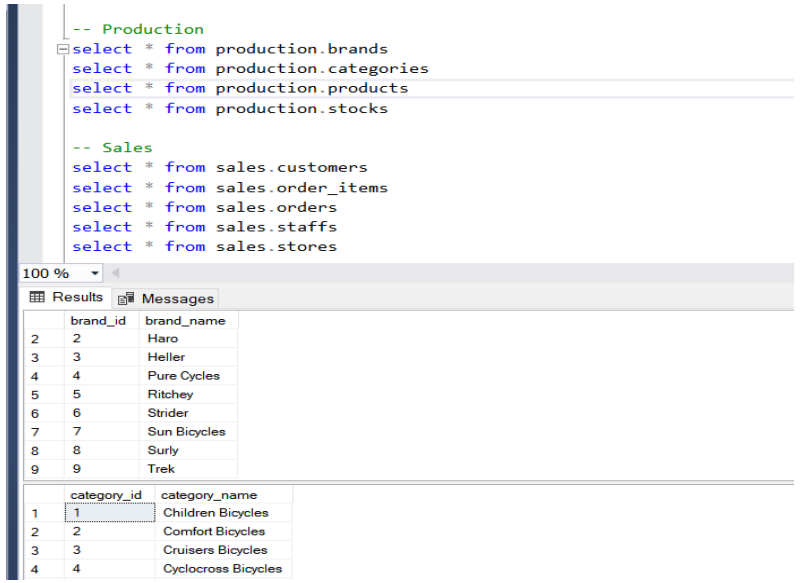


	customer_id	first_name	last_name	phone	email	street	city	state	zip_code
4	4	Daryl	Spence	NULL	daryl.spence@aol.com	988 Pearl Lane	Uniondale	NY	11553
5	5	Charolette	Rice	(916...	charolette.rice@msn.co...	107 River Dr.	Sacramento	CA	95820
6	6	Lyndsey	Bean	NULL	lyndsey.bean@hotmail....	769 West Road	Fairport	NY	14450
7	7	Latasha	Hays	(716...	latasha.hays@hotmail....	7014 Manor St...	Buffalo	NY	14215
8	8	Jacquline	Duncan	NULL	jacquline.duncan@yah...	15 Brown St.	Jackson He...	NY	11372
9	9	Genoveva	Baldwin	NULL	genoveva.baldwin@ms...	8550 Spruce Dr...	Port Washi...	NY	11050
10	10	Pamelia	Newman	NULL	pamelia.newman@gm...	476 Chestnut Av...	Monroe	NY	10950
11	11	Deshawn	Mendoza	NULL	deshawn.mendoza@ya...	8790 Cobblesto...	Monsey	NY	10952

	order_id	item_id	product_id	quantity	list_price	discount
4	1	4	16	2	599.99	0.05
5	1	5	4	1	2899.99	0.20
6	2	1	20	1	599.99	0.07
7	2	2	16	2	599.99	0.05
8	3	1	3	1	999.99	0.05
9	3	2	20	1	599.99	0.05
10	4	1	2	2	749.99	0.10
11	5	1	10	2	1549.00	0.05

	order_id	customer_id	order_status	order_date	required_date	shipped_date	store_id	staff_id
4	4	175	4	2016-01-03	2016-01-04	2016-01-05	1	3
5	5	1324	4	2016-01-03	2016-01-06	2016-01-06	2	6
6	6	94	4	2016-01-04	2016-01-07	2016-01-05	2	6
7	7	324	4	2016-01-04	2016-01-07	2016-01-05	2	6
8	8	1204	4	2016-01-04	2016-01-05	2016-01-05	2	7
9	9	60	4	2016-01-05	2016-01-08	2016-01-08	1	2
10	10	442	4	2016-01-05	2016-01-06	2016-01-06	2	6
11	11	1326	4	2016-01-05	2016-01-08	2016-01-07	2	7

	staff_id	first_name	last_name	email	phone	active	store_id	manager_id
3	3	Genna	Serrano	genna.serrano@bikes.shop	(831) 555-5556	1	1	2
4	4	Virgie	Wiggins	virgie.wiggins@bikes.shop	(831) 555-5557	1	1	2
5	5	Jannette	David	jannette.david@bikes.shop	(516) 379-4444	1	2	1
6	6	Marcelene	Boyer	marcelene.boyer@bikes.shop	(516) 379-4445	1	2	5
7	7	Venita	Daniel	venita.daniel@bikes.shop	(516) 379-4446	1	2	5
8	8	Kali	Vargas	kali.vargas@bikes.shop	(972) 530-5555	1	3	1
9	9	Layla	Terrell	layla.terrell@bikes.shop	(972) 530-5556	1	3	7
10	10	Bernardi...	Houston	bernardine.houston@bikes....	(972) 530-5557	1	3	7



```
-- Production
select * from production.brands
select * from production.categories
select * from production.products
select * from production.stocks

-- Sales
select * from sales.customers
select * from sales.order_items
select * from sales.orders
select * from sales.staffs
select * from sales.stores
```

100 %

Results | Messages

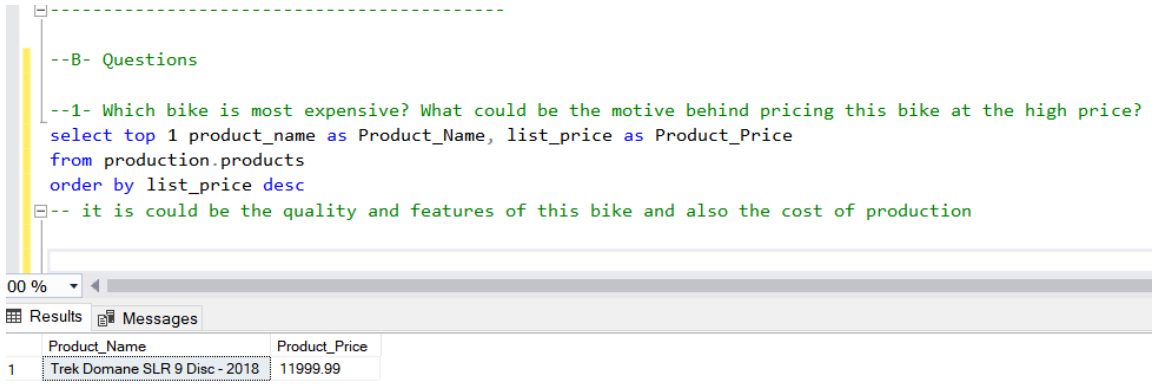
	brand_id	brand_name
2	2	Haro
3	3	Heller
4	4	Pure Cycles
5	5	Ritchey
6	6	Strider
7	7	Sun Bicycles
8	8	Surly
9	9	Trek

	category_id	category_name
1	1	Children Bicycles
2	2	Comfort Bicycles
3	3	Cruisers Bicycles
4	4	Cyclocross Bicycles

Key Analytical Queries

Key Insights:

- **Most Expensive Bike**: Identified high-value products and the rationale behind premium pricing.
- **Customer Count**: Total customers and differentiation between active and inactive ones.
- **Store Performance**: Which stores are performing the best in terms of revenue.
- **Category Analysis**: Most sold and rejected product categories.



```
----------------------------------------------

--B- Questions

--1- Which bike is most expensive? What could be the motive behind pricing this bike at the high price?
select top 1 product_name as Product_Name, list_price as Product_Price
from production.products
order by list_price desc
-- it is could be the quality and features of this bike and also the cost of production
```

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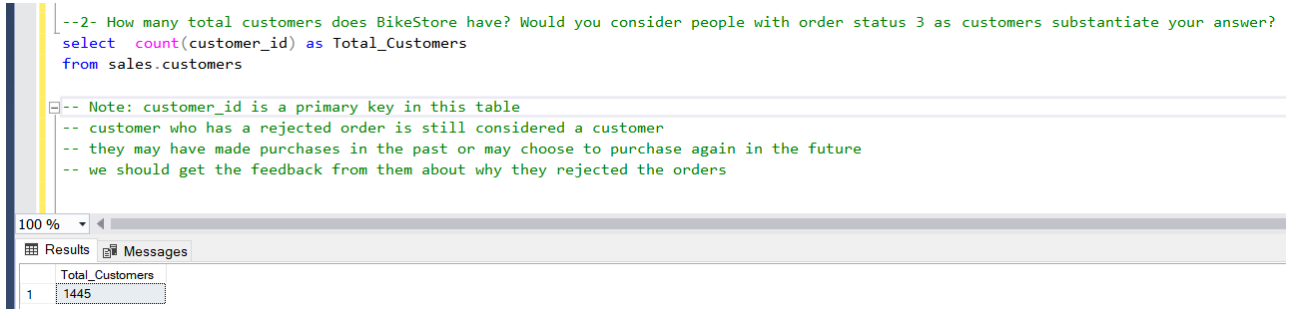
Results | Messages

	Product_Name	Product_Price
1	Trek Domane SLR 9 Disc - 2018	11999.99



```
--2- How many total customers does BikeStore have? Would you consider people with order status 3 as customers substantiate your answer?
select  count(customer_id) as Total_Customers
from sales.customers

-- Note: customer_id is a primary key in this table
-- customer who has a rejected order is still considered a customer
-- they may have made purchases in the past or may choose to purchase again in the future
-- we should get the feedback from them about why they rejected the orders
```

100 %

Results | Messages

	Total_Customers
1	1445

Business Insights

Sales/Revenue Analysis:

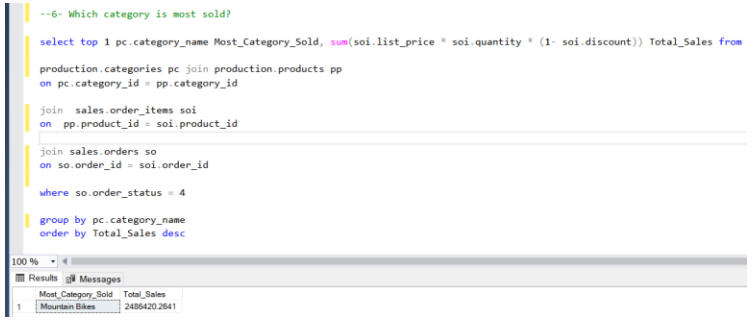
- Calculated sales revenue per store using list price, quantity, and discounts.

Category Popularity:

- Most popular product categories based on sales data.

Order Status Tracking:

- Monitoring order statuses (e.g., pending, completed, rejected).



```
--6- Which category is most sold?

select top 1 pc.category_name Most_Category_Sold, sum(soi.list_price * soi.quantity * (1- soi.discount)) Total_Sales from

production.categories pc join production.products pp
on pc.category_id = pp.category_id

join  sales.order_items soi
on  pp.product_id = soi.product_id

join sales.orders so
on so.order_id = soi.order_id

where so.order_status = 4

group by pc.category_name
order by Total_Sales desc
```

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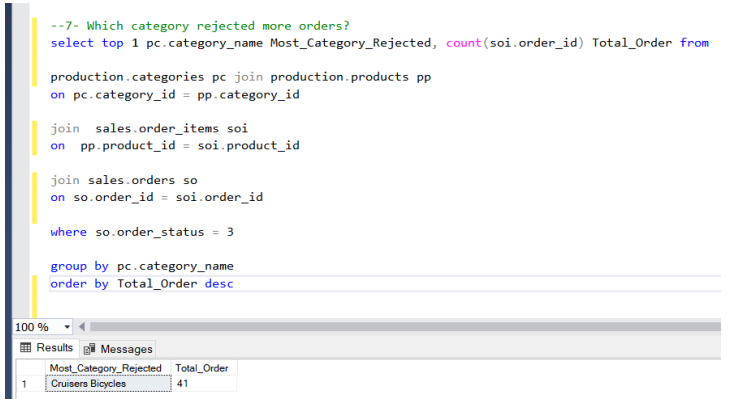
Results | Messages

	Most_Category_Sold	Total_Sales
1	Mountain Bikes	2486420.2641



```
--7- Which category rejected more orders?
select top 1 pc.category_name Most_Category_Rejected, count(soi.order_id) Total_Order from

production.categories pc join production.products pp
on pc.category_id = pp.category_id

join  sales.order_items soi
on  pp.product_id = soi.product_id

join sales.orders so
on so.order_id = soi.order_id

where so.order_status = 3

group by pc.category_name
order by Total_Order desc
```

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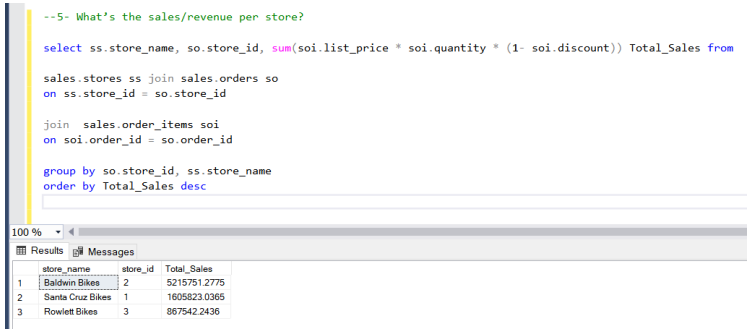
Results | Messages

	Most_Category_Rejected	Total_Order
1	Cruisers Bicycles	41



```
--5- What's the sales/revenue per store?

select ss.store_name, so.store_id, sum(soi.list_price * soi.quantity * (1- soi.discount)) Total_Sales from

sales.stores ss join sales.orders so
on ss.store_id = so.store_id

join  sales.order_items soi
on soi.order_id = so.order_id

group by so.store_id, ss.store_name
order by Total_Sales desc
```

100 %

Results | Messages

	store_name	store_id	Total_Sales
1	Baldwin Bikes	2	5215751.2775
2	Santa Cruz Bikes	1	1605823.0365
3	Rowlett Bikes	3	867542.2436

Stores and Staff Management

Staff Insights:

- Total staff count, identifying the lead staff based on hierarchy.
- Staff-to-store assignments and performance tracking.
- store still have more products of the most liked brand

```sql
--15- Which store still have more products of the most liked brand?
with MostLikedBrand as (
   select top 1 pb.brand_id from

    production.brands pb join production.products pp
    on pb.brand_id = pp.brand_id

    join sales.order_items soi
    on pp.product_id = soi.product_id

    group by pb.brand_id
    order by sum(soi.quantity) desc
)

select top 1 st.store_name,  sum(ps.quantity) as total_products from

production.stocks ps join  production.products pp
on ps.product_id = pp.product_id

join MostLikedBrand mlb
on pp.brand_id = mlb.brand_id

join sales.stores st
on ps.store_id = st.store_id

group by st.store_name
order by total_products desc
```

100 %

Results | Messages

	store_name	total_products
1	Santa Cruz Bikes	1715

```sql
--11- Which staff processed the order of customer 259? And from which store?
select ss.staff_id , ss.first_name, ss.store_id from sales.staffs ss join sales.orders so
on ss.store_id = so.store_id
where so.customer_id = 259


--12- How many staff does BikeStore have? Who seems to be the lead Staff at BikeStore?
select count(*) Total_Staff from sales.staffs
select * from sales.staffs
where manager_id  is null
```

100 %

Results | Messages

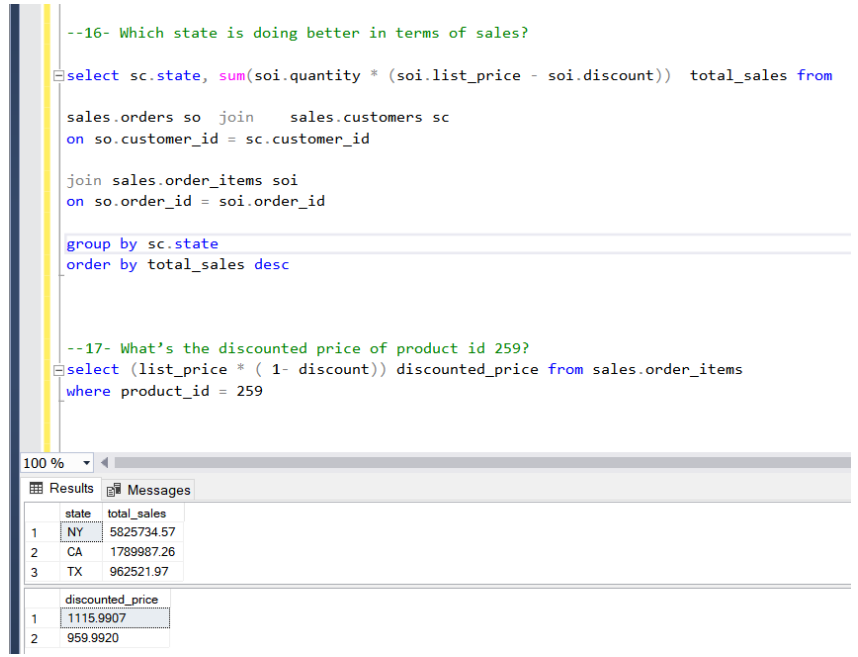
	staff_id	first_name	store_id
1	1	Fabiola	1
2	2	Mireya	1
3	3	Genna	1
4	4	Virgie	1

	Total_Staff
1	10

	staff_id	first_name	last_name	email	phone	active	store_id	manager_id
1	1	Fabiola	Jackson	fabiola.jackson@bikes.shop	(831) 555-5554	1	1	NULL

Regional and Products Analysis

- The analysis shows which state is performing the best in sales, identifies the specific discounted price for a product, and provides detailed insights about a particular product. Additionally, it clarifies the zip code for stores in California. This allows a clearer understanding of sales patterns and product details across regions.



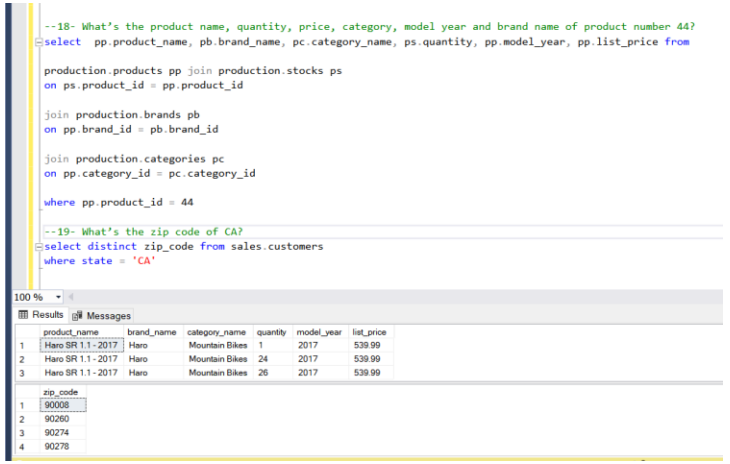
```sql
--16- Which state is doing better in terms of sales?

select sc.state, sum(soi.quantity * (soi.list_price - soi.discount))  total_sales from

sales.orders so  join    sales.customers sc
on so.customer_id = sc.customer_id

join sales.order_items soi
on so.order_id = soi.order_id

group by sc.state
order by total_sales desc



--17- What's the discounted price of product id 259?
select (list_price * ( 1- discount)) discounted_price from sales.order_items
where product_id = 259
```

100 %

Results | Messages

	state	total_sales
1	NY	5825734.57
2	CA	1789987.26
3	TX	962521.97

	discounted_price
1	1115.9907
2	959.9920



```sql
--18- What's the product name, quantity, price, category, model year and brand name of product number 44?
select  pp.product_name, pb.brand_name, pc.category_name, ps.quantity, pp.model_year, pp.list_price from

production.products pp join production.stocks ps
on ps.product_id = pp.product_id

join production.brands pb
on pp.brand_id = pb.brand_id

join production.categories pc
on pp.category_id = pc.category_id

where pp.product_id = 44

--19- What's the zip code of CA?
select distinct zip_code from sales.customers
where state = 'CA'
```

100 %

Results | Messages

	product_name	brand_name	category_name	quantity	model_year	list_price
1	Haro SR 1.1 - 2017	Haro	Mountain Bikes	1	2017	539.99
2	Haro SR 1.1 - 2017	Haro	Mountain Bikes	24	2017	539.99
3	Haro SR 1.1 - 2017	Haro	Mountain Bikes	26	2017	539.99

	zip_code
1	90008
2	90260
3	90274
4	90278


Thank you