```
2]: import pandas as pd
    import matplotlib.pyplot as plt
    import seaborn as sns
    import mysql.connector
    db=mysql.connector.connect(host='localhost',
                               username='root',
                               password='Ganesh@22',
                               database='eCommerce'
                               )
    cur=db.cursor()
```

List all cities where customers are Located

```
4]: query=""" select distinct (customer_city) from customers"""
    cur.execute(query)
    data=cur.fetchall()
    df=pd.DataFrame(data)
    df.head()
```

4]:

	0
0	franca
1	sao bernardo do campo
2	sao paulo
3	mogi das cruzes

count the number of orders placed in 2017

```
]: query="""select count(order_id) from orders where year(order_purchase_timestamp)=2017"""
   cur.execute(query)
   data=cur.fetchall()
   data[0][0]
```

```
]: 45101
```

Find the total sales per category

```
]: query="""select upper(products.product_category) category,
            round(sum(payments.payment_value),2) sales
           from products
           join order_items on products.product_id=order_items.product_id
           join payments on payments.order_id=order_items.order_id
           group by category  """
   cur.execute(query)
   data=cur.fetchall()
   data
   df=pd.DataFrame(data,columns=["category","sales"])
   df
```

	category	sales
0	PERFUMERY	506738.66
1	FURNITURE DECORATION	1430176.39
2	TELEPHONY	486882.05
3	BED TABLE BATH	1712553.67
4	AUTOMOTIVE	852294.33
...	...	...
69	CDS MUSIC DVDS	1199.43
70	LA CUISINE	2913.53
71	FASHION CHILDREN'S CLOTHING	785.67
72	PC GAMER	2174.43
73	INSURANCE AND SERVICES	324.51

74 rows × 2 columns

Calculate the percentage of orders that were paid in installments

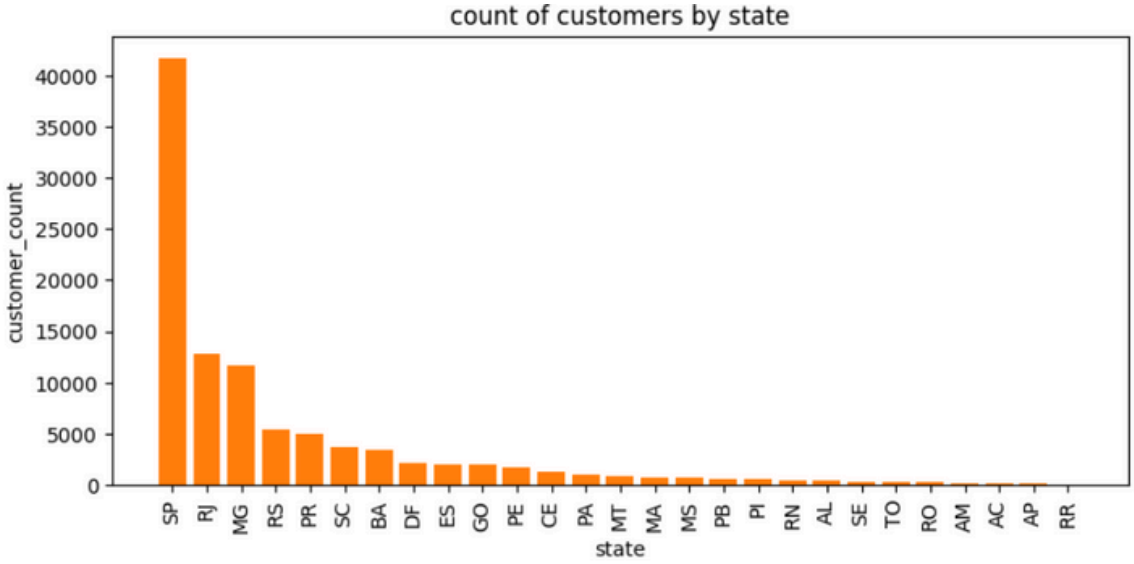
```
query= """select (sum(case when payment_installments >=1 then 1
else 0 end))/count(*)*100 from payments"""
cur.execute(query)
data=cur.fetchall()
"the percentage of order that were paid in installments is",data
```

```
('the percentage of order that were paid in installments is',
 [(Decimal('99.9981'),)])
```

Counting number of customers from each state

```
query= """select customer_state,count(customer_id)
from customers group by customer_state"""
cur.execute(query)
data=cur.fetchall()
df=pd.DataFrame(data,columns=["state","customer_count"])
df=df.sort_values(by ="customer_count",ascending=False)
plt.figure(figsize=(9,4))
sns.barplot(x=df["state"],y=df["customer_count"],data=df, )
plt.title("count of customers by state")


plt.bar(df["state"],df["customer_count"])
plt.xticks(rotation=90)
plt.show()
```



Calculate the number of orders per month in 2018

[55]:
```
query= """select monthname(order_purchase_timestamp) months,count(order_id) order_count
from orders where year(order_purchase_timestamp)=2018
group by months
"""
cur.execute(query)
data=cur.fetchall()
df=pd.DataFrame(data,columns=["months","order_count"])
o=["January","February","March","April","May","June","July","August","September","October"]
ax=sns.barplot(x=df["months"],y=df["order_count"],data=df, order=o)
ax.bar_label(ax.containers[0])
plt.xticks(rotation=90)
plt.title("Number of Orders per month")
plt.show()
```