In [1]:

```python
import pandas as pd
import mysql.connector
import matplotlib.pyplot as plt
import seaborn as sns
import os


# To establish connection taing a variable as mydb.
mydb = mysql.connector.connect(host="localhost",
                               username="root",
                               password="7001340148",
                               database="ecommerce")

# Lets activate the cursor.
cur = mydb.cursor()
```

List all unique cities where customer are located.

In [13]:

```python
query = """select distinct(customer_city) from oldcustomers"""

# To execute the query
cur.execute(query)

# Creating a variable named data to fetch all the data from cursor
data = cur.fetchall()
df = pd.DataFrame(data)
df.head()
```

Out[13]:

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

Count the number of orders placed in 2017

In [3]:

```python
query = """ select count(order_id) from orders where year(order_purchase_
cur.execute(query)
data = cur.fetchall()
data[0][0]
"So total order placed in 2017",data[0][0]
```

Out[3]:

```
('So total order placed in 2017', 45101)
```

Find the total sale per category

In [4]:

```
query = """ SELECT products.product_category category, round(sum(payments
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()
df=pd.DataFrame(data, columns = ["Categoty","Sales"]) # Giving output col
df
```

Out[4]:

	Categoty	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 total percentage of orders that were paid in installments.

In [5]:

```
query = """ SELECT (sum(case when payment_installments>=1 then 1 else 0 e
"""
cur.execute(query)
data = cur.fetchall()
data
```

Out[5]:

```
[(Decimal('99.9981'),)]
```

Count the number of customer from each state

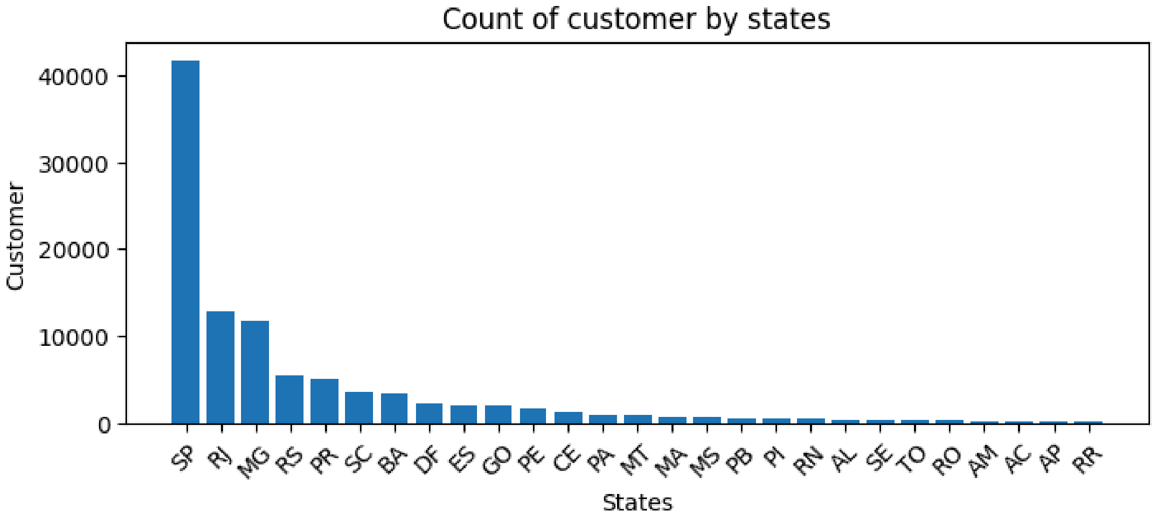
In [6]:

```
query = """ SELECT customer_state, count(customer_id) from  oldcustomers
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=(8,3))
plt.bar(df["State"],df["Customer_count"])
plt.xticks(rotation=45)
plt.xlabel("States")
plt.ylabel("Customer")
plt.title("Count of customer by states")
plt.show()
```



Calculate number of orders per month in the year 2018

In [7]:

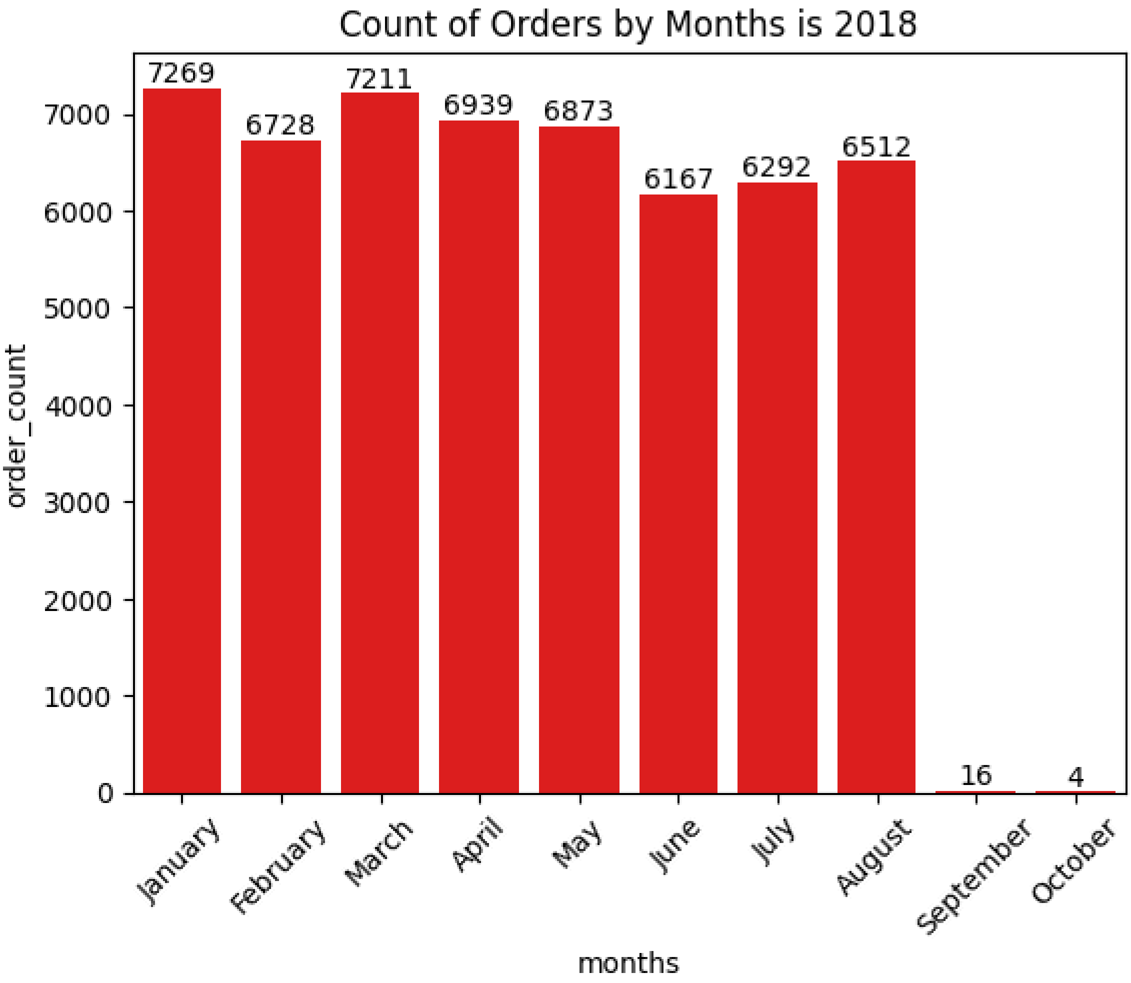
```
query = """ select monthname(order_purchase_timestamp) months, count(orde
from orders where year(order_purchase_timestamp) = 2018
group by months
"""

cur.execute(query)

data = cur.fetchall()
df = pd.DataFrame(data, columns = ["months", "order_count"])
o = ["January", "February","March","April","May","June","July","August","

ax = sns.barplot(x = df["months"],y =  df["order_count"],data = df, order
plt.xticks(rotation = 45)
ax.bar_label(ax.containers[0])
plt.title("Count of Orders by Months is 2018")

plt.show()
```



Find the average number of products per order, grouped by customer city.

In [8]:

```
Query="""
with count_per_order as
(select orders.order_id, orders.customer_id, count(order_items.order_id)
from orders join order_items
on orders.order_id = order_items.order_id
group by orders.order_id, orders.customer_id)

select oldcustomers.customer_city, round(avg(count_per_order.oc),2) avera
from oldcustomers join count_per_order
on oldcustomers.customer_id = count_per_order.customer_id
group by oldcustomers.customer_city order by average_orders desc
"""
cur.execute(Query)
data = cur.fetchall()
df=pd.DataFrame(data, columns =["City","Avg product/order"])
df.head(10)
```

Out[8]:

	City	Avg product/order
0	padre carvalho	7.00
1	celso ramos	6.50
2	datas	6.00
3	candido godoi	6.00
4	matias olimpio	5.00
5	cidelandia	4.00
6	picarra	4.00
7	morro de sao paulo	4.00
8	teixeira soares	4.00
9	curralinho	4.00

Calculate the percentage of total revenue contributed by each product catego

In [9]:

```
Query="""
SELECT upper(products.product_category) category, round((sum(payments.pay
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 order by percentage_distribution desc ;

"""
cur.execute(Query)
data = cur.fetchall()
df=pd.DataFrame(data)
df
```

Out[9]:

	0	1
0	BED TABLE BATH	10.70
1	HEALTH BEAUTY	10.35
2	COMPUTER ACCESSORIES	9.90
3	FURNITURE DECORATION	8.93
4	WATCHES PRESENT	8.93
...	...	...
69	HOUSE COMFORT 2	0.01
70	CDS MUSIC DVDS	0.01
71	PC GAMER	0.01
72	FASHION CHILDREN'S CLOTHING	0.00
73	INSURANCE AND SERVICES	0.00

74 rows × 2 columns

Calculate the total revenue generated by each seller, and rank them by revenue.

In [10]:

```
Query="""
select Sellers.Seller_id , round(sum(payments.payment_value),2) Revenue
from payments join order_items
on payments.order_id=order_items.order_id
join Sellers
on Sellers.Seller_id=order_items.Seller_id
group by Seller_id order by Revenue desc;
"""
cur.execute(Query)
data = cur.fetchall()
df=pd.DataFrame(data, columns =["Seller_id","Revenue"])
df.head(10)
```

Out[10]:

	Seller_id	Revenue
0	7c67e1448b00f6e969d365cea6b010ab	507166.91
1	1025f0e2d44d7041d6cf58b6550e0bfa	308222.04
2	4a3ca9315b744ce9f8e9374361493884	301245.27
3	1f50f920176fa81dab994f9023523100	290253.42
4	53243585a1d6dc2643021fd1853d8905	284903.08
5	da8622b14eb17ae2831f4ac5b9dab84a	272219.32
6	4869f7a5dfa277a7dca6462dcf3b52b2	264166.12
7	955fee9216a65b617aa5c0531780ce60	236322.30
8	fa1c13f2614d7b5c4749cbc52fecda94	206513.23
9	7e93a43ef30c4f03f38b393420bc753a	185134.21

In [ ]: