Exporting data to Sql

In [1]:
```
import pandas as pd
import mysql.connector
import os

# List of CSV files and their corresponding table names
csv_files = [
    ('customers.csv', 'customers'),
    ('orders.csv', 'orders'),
    ('sellers.csv', 'sellers'),
    ('products.csv', 'products'),
    ('geolocation.csv', 'geolocation'),
    ('payments.csv', 'payments'),
    ('order_items.csv', 'order_items') # Added payments.csv for specific har
]

# Connect to the MySQL database
conn = mysql.connector.connect(
    host='localhost',
    user='root',
    password='rushil',
    database='ecommerce'
)
cursor = conn.cursor()

# Folder containing the CSV files
folder_path = 'C:/Users/RUSHIL/OneDrive/Desktop/PROJECT/E-COMMERCE/NEWPROJEC

def get_sql_type(dtype):
    if pd.api.types.is_integer_dtype(dtype):
        return 'INT'
    elif pd.api.types.is_float_dtype(dtype):
        return 'FLOAT'
    elif pd.api.types.is_bool_dtype(dtype):
        return 'BOOLEAN'
    elif pd.api.types.is_datetime64_any_dtype(dtype):
        return 'DATETIME'
    else:
        return 'TEXT'

for csv_file, table_name in csv_files:
    file_path = os.path.join(folder_path, csv_file)

    # Read the CSV file into a pandas DataFrame
    df = pd.read_csv(file_path)

    # Replace NaN with None to handle SQL NULL
    df = df.where(pd.notnull(df), None)

    # Debugging: Check for NaN values
    print(f"Processing {csv_file}")
    print(f"NaN values before replacement:\n{df.isnull().sum()}\n")

    # Clean column names
    df.columns = [col.replace(' ', '_').replace('-', '_').replace('.', '_')

    # Generate the CREATE TABLE statement with appropriate data types
    columns = ', '.join([f'`{col}` {get_sql_type(df[col].dtype)}' for col ir
    create_table_query = f'CREATE TABLE IF NOT EXISTS `{table_name}` ({colum
    cursor.execute(create_table_query)

    # Insert DataFrame data into the MySQL table
    for _, row in df.iterrows():
        # Convert row to tuple and handle NaN/None explicitly
        values = tuple(None if pd.isna(x) else x for x in row)
        sql = f"INSERT INTO `{table_name}` ({', '.join(['`' + col + '`' for
        cursor.execute(sql, values)

    # Commit the transaction for the current CSV file
    conn.commit()

# Close the connection
conn.close()
```

```
Processing customers.csv
NaN values before replacement:
customer_id                 0
customer_unique_id          0
customer_zip_code_prefix    0
customer_city               0
customer_state              0
dtype: int64

Processing orders.csv
NaN values before replacement:
order_id                            0
customer_id                         0
order_status                        0
order_purchase_timestamp            0
order_approved_at                 160
order_delivered_carrier_date     1783
order_delivered_customer_date    2965
order_estimated_delivery_date       0
dtype: int64

Processing sellers.csv
NaN values before replacement:
seller_id                 0
seller_zip_code_prefix    0
seller_city               0
seller_state              0
dtype: int64

Processing products.csv
NaN values before replacement:
product_id                      0
product category              610
product_name_length           610
product_description_length    610
product_photos_qty            610
product_weight_g                2
product_length_cm               2
product_height_cm               2
product_width_cm                2
dtype: int64

Processing geolocation.csv
NaN values before replacement:
geolocation_zip_code_prefix    0
geolocation_lat                0
geolocation_lng                0
geolocation_city               0
geolocation_state              0
dtype: int64

Processing payments.csv
NaN values before replacement:
order_id                0
payment_sequential      0
payment_type            0
```

```
payment_installments    0
payment_value           0
dtype: int64

Processing order_items.csv
NaN values before replacement:
order_id               0
order_item_id          0
product_id             0
seller_id              0
shipping_limit_date    0
price                  0
freight_value          0
dtype: int64
```

Importing Libraries

In [5]:
```python
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 = "rushil",
                            database = "ecommerce")

cur = db.cursor()
```

List all unique cities where customers are located.

In [7]:
```python
query = """ select distinct customer_city from customers """

cur.execute(query)

data = cur.fetchall()

df = pd.DataFrame(data)
df.head()
```

Out[7]:

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

The number of orders placed in 2023

In [9]:
```
query = """ select count(order_id) from orders where year(order_purchase_tim

cur.execute(query)

data = cur.fetchall()

"total orders placed in 2017 are", data[0][0]
```

Out[9]:
```
('total orders placed in 2017 are', 45101)
```

The total sales per category.

In [11]:
```
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()

df = pd.DataFrame(data, columns = ["Category", "Sales"])
df
```

Out[11]:

	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

Percentage of orders that were paid in installments.

In [13]:
```
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 orders that were paid in installments is", data[0][0]
```

Out[13]:
```
('the percentage of orders that were paid in installments is',
 Decimal('99.9981'))
```

The year-over-year growth rate of total sales.

In [51]:
```
query = """with a as(select year(orders.order_purchase_timestamp) as years,
round(sum(payments.payment_value),2) as payment from orders join payments
on orders.order_id = payments.order_id
group by years order by years)

select years, ((payment - lag(payment, 1) over(order by years))/
lag(payment, 1) over(order by years)) * 100 from a"""

cur.execute(query)
data = cur.fetchall()
```

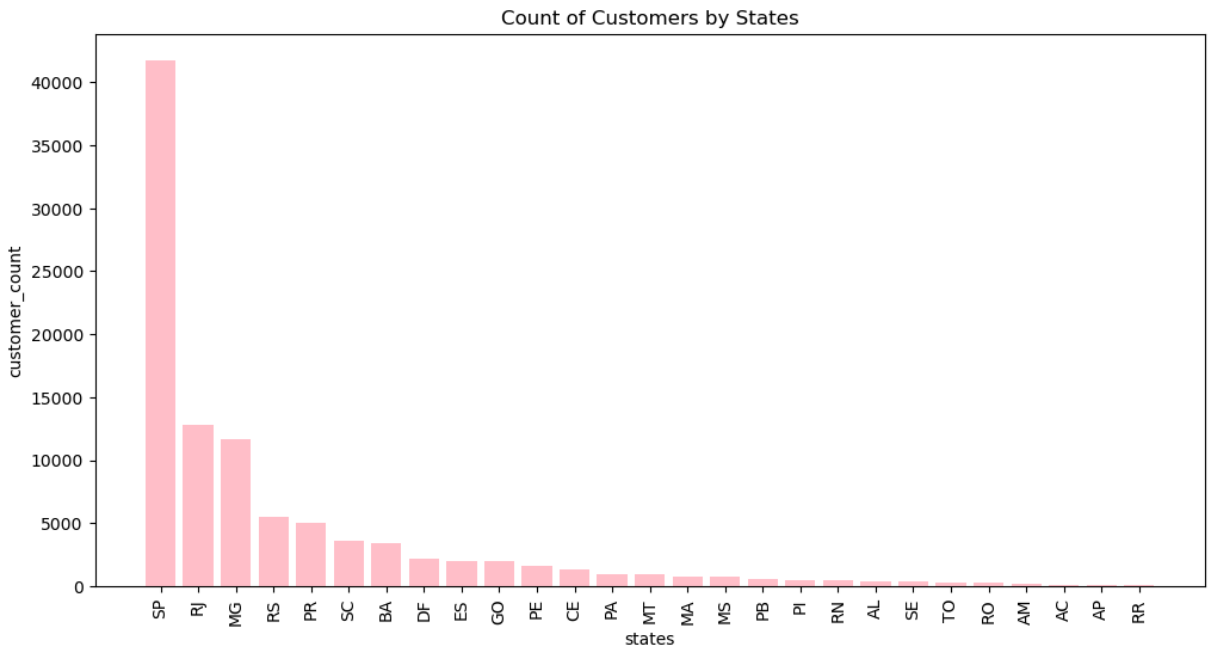
```
df = pd.DataFrame(data, columns = ["years", "yoy % growth"])
df
```

Out[51]:

	years	yoy % growth
0	2016	NaN
1	2017	12112.703761
2	2018	20.000924

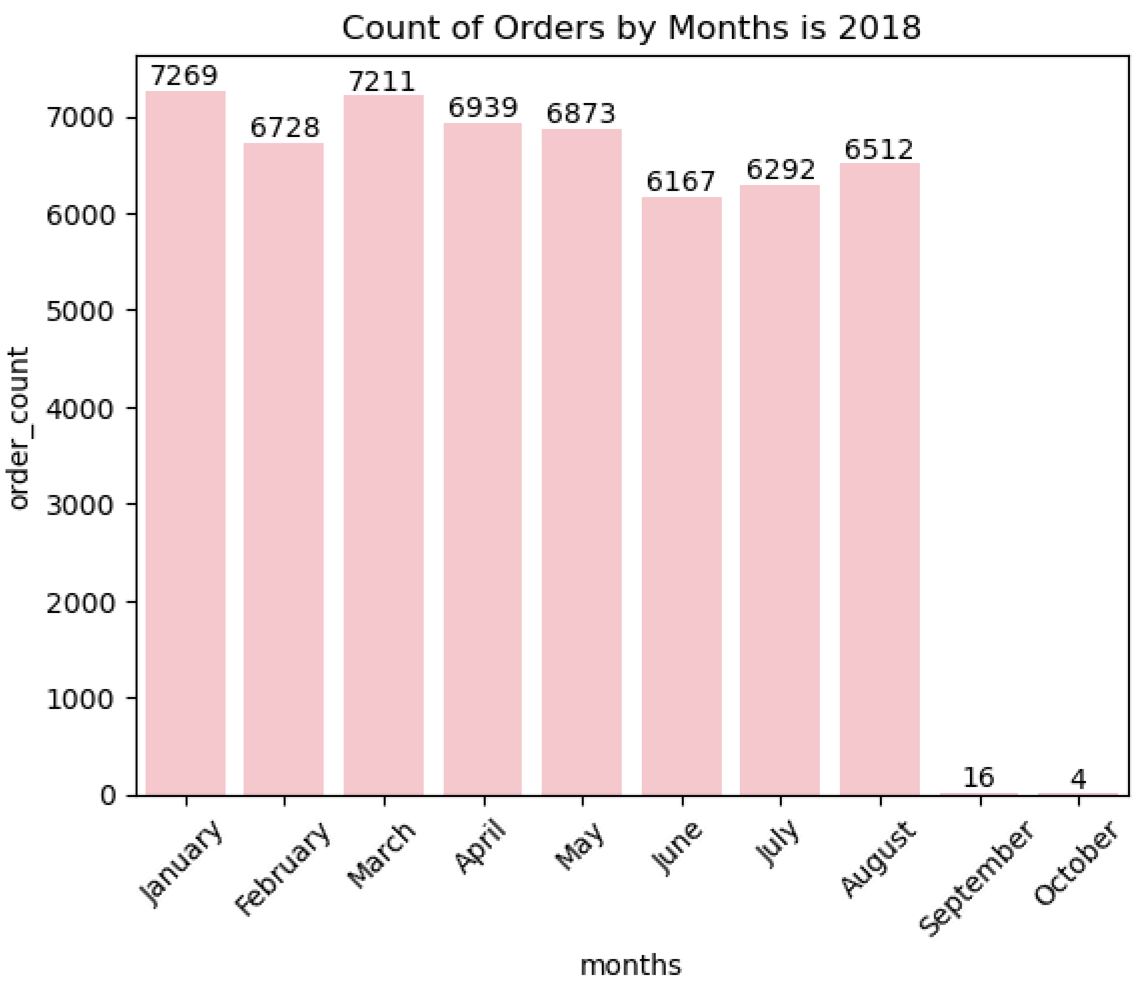
Number of customers from each state.

In [43]:
```
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 = (12,6))
plt.bar(df["state"], df["customer_count"] , color = 'pink')
plt.xticks(rotation = 90)
plt.xlabel("states")
plt.ylabel("customer_count")
plt.title("Count of Customers by States")
plt.show()
```



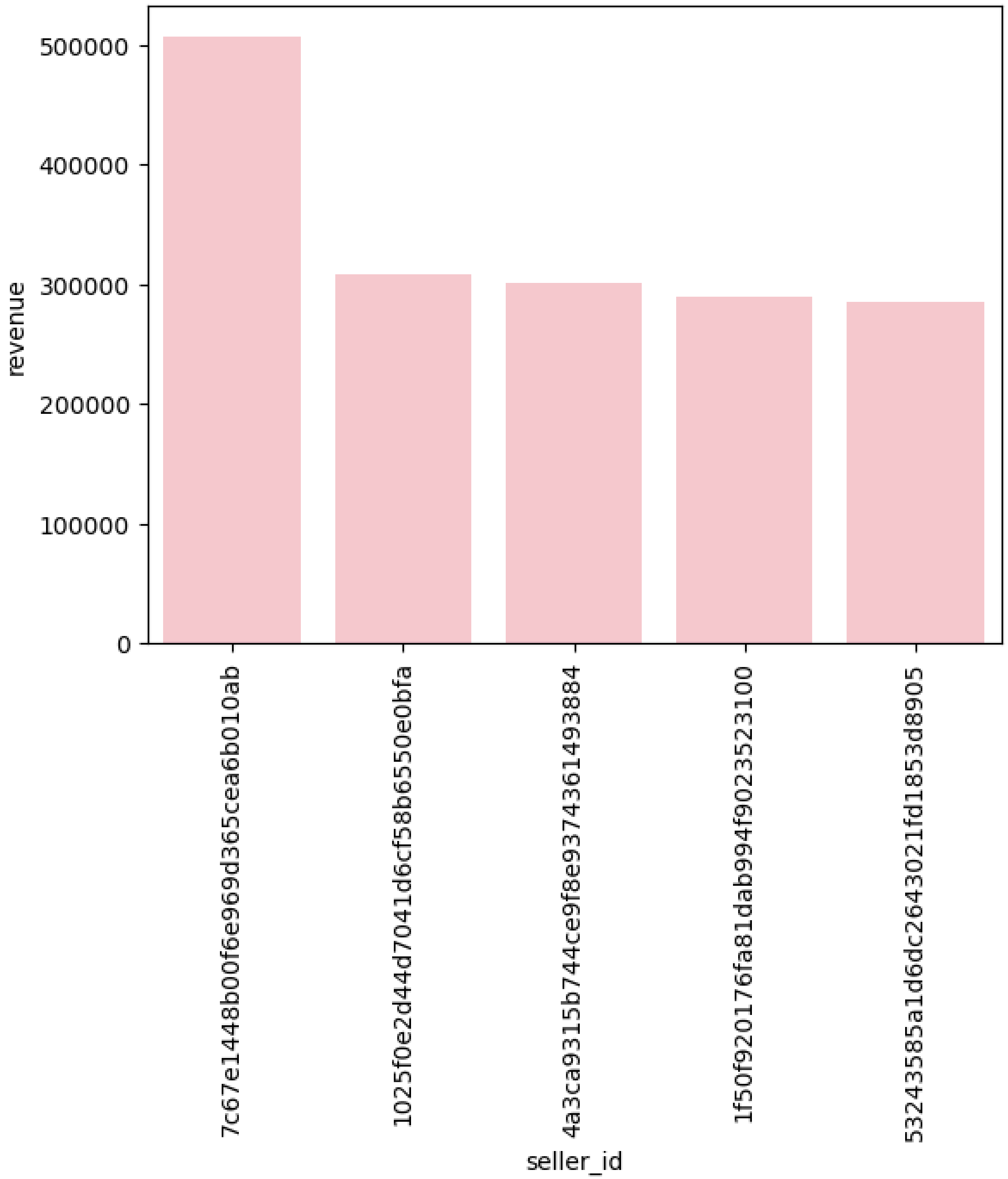
The number of orders per month in 2018.

```
In [39]: query = """ select monthname(order_purchase_timestamp) months, count(order_i
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","Sep

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()
```



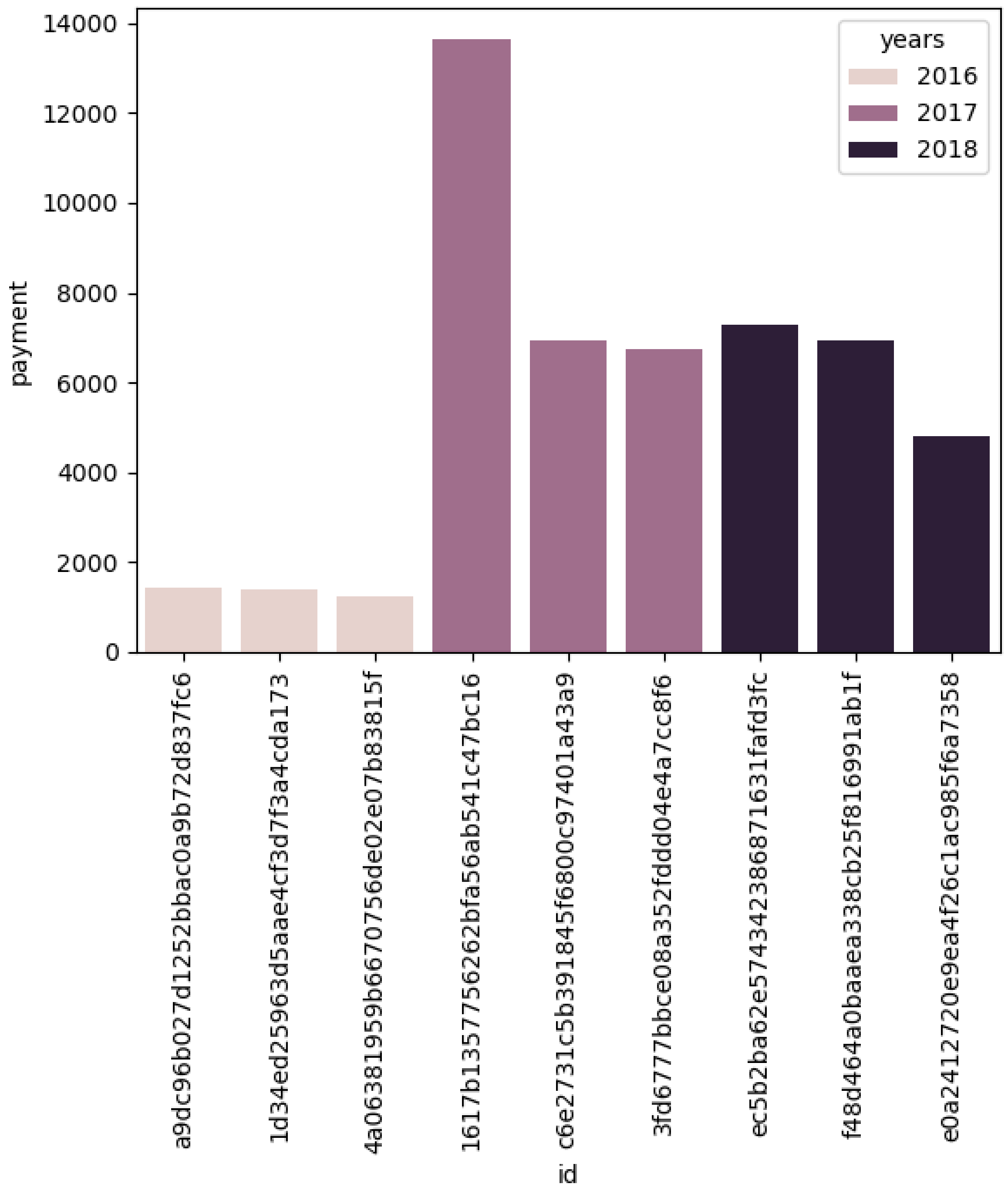
Total revenue generated by each seller, and rank them by revenue.

```
In [47]: query = """ select *, dense_rank() over(order by revenue desc) as rn from
(select order_items.seller_id, sum(payments.payment_value)
revenue from order_items join payments
on order_items.order_id = payments.order_id
group by order_items.seller_id) as a """

cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["seller_id", "revenue", "rank"])
df = df.head()
sns.barplot(x = "seller_id", y = "revenue", data = df , color = 'pink')
plt.xticks(rotation = 90)
plt.show()
```



Top 3 customers who spent the most money in each year.

In [27]:
```
query = """select years, customer_id, payment, d_rank
from
(select year(orders.order_purchase_timestamp) years,
orders.customer_id,
sum(payments.payment_value) payment,
dense_rank() over(partition by year(orders.order_purchase_timestamp)
order by sum(payments.payment_value) desc) d_rank
from orders join payments
on payments.order_id = orders.order_id
group by year(orders.order_purchase_timestamp),
orders.customer_id) as a
where d_rank <= 3 ;"""

cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["years","id","payment","rank"])
sns.barplot(x = "id", y = "payment", data = df, hue = "years")
plt.xticks(rotation = 90)
plt.show()
```


years
2016
2017
2018
payment
id
a9dc96b027d1252bbac0a9b72d837fc6
1d34ed25963d5aae4cf3d7f3a4cda173
4a06381959b6670756de02e07b83815f
1617b1357756262bfa56ab541c47bc16
c6e2731c5b391845f6800c97401a43a9
3fd6777bbce08a352fddd04e4a7cc8f6
ec5b2ba62e574342386871631fafd3fc
f48d464a0baaea338cb25f816991ab1f
e0a2412720e9ea4f26c1ac985f6a7358

```
In [ ]:
```