LEVEL1 -TASK2: CITY ANALYSIS

--2:1 Identify the city with the highest number of restaurant in the dataset.

--2:2 Calculate the average rating for restaurant in each city.

--2:3 Determine the city with the highest average rating.

2:1 IDENTIFY THE CITY WITH THE HIGHEST NUMBER OF RESTAURANT IN THE DATASET.

```
#import libraries
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px

#import data
dataset= pd.read_csv("dataset.csv")

#check data
dataset.head()
```

```
   Restaurant ID         Restaurant Name  Country Code
City  \
0        6317637        Le Petit Souffle           162       Makati
City
1        6304287        Izakaya Kikufuji           162       Makati
City
2        6300002  Heat - Edsa Shangri-La           162  Mandaluyong
City
3        6318506                    Ooma           162  Mandaluyong
City
4        6314302             Sambo Kojin           162  Mandaluyong
City

                                             Address  \
0  Third Floor, Century City Mall, Kalayaan Avenu...
1  Little Tokyo, 2277 Chino Roces Avenue, Legaspi...
2  Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...
3  Third Floor, Mega Fashion Hall, SM Megamall, O...
4  Third Floor, Mega Atrium, SM Megamall, Ortigas...

                                     Locality  \
0   Century City Mall, Poblacion, Makati City
1  Little Tokyo, Legaspi Village, Makati City
2  Edsa Shangri-La, Ortigas, Mandaluyong City
3      SM Megamall, Ortigas, Mandaluyong City
4      SM Megamall, Ortigas, Mandaluyong City

                                    Locality Verbose   Longitude
```

```
Latitude  \
0  Century City Mall, Poblacion, Makati City, Mak...  121.027535
14.565443
1  Little Tokyo, Legaspi Village, Makati City, Ma...  121.014101
14.553708
2  Edsa Shangri-La, Ortigas, Mandaluyong City, Ma...  121.056831
14.581404
3  SM Megamall, Ortigas, Mandaluyong City, Mandal...  121.056475
14.585318
4  SM Megamall, Ortigas, Mandaluyong City, Mandal...  121.057508
14.584450

                           Cuisines  ...          Currency Has Table
booking  \
0        French, Japanese, Desserts  ...  Botswana Pula(P)
Yes
1                          Japanese  ...  Botswana Pula(P)
Yes
2  Seafood, Asian, Filipino, Indian  ...  Botswana Pula(P)
Yes
3                   Japanese, Sushi  ...  Botswana Pula(P)
No
4                  Japanese, Korean  ...  Botswana Pula(P)
Yes

  Has Online delivery Is delivering now Switch to order menu Price
range  \
0                  No                No                    No
3
1                  No                No                    No
3
2                  No                No                    No
4
3                  No                No                    No
4
4                  No                No                    No
4

   Aggregate rating  Rating color Rating text Votes
0               4.8    Dark Green   Excellent   314
1               4.5    Dark Green   Excellent   591
2               4.4         Green   Very Good   270
3               4.9    Dark Green   Excellent   365
4               4.8    Dark Green   Excellent   229

[5 rows x 21 columns]

#check database shape
dataset.shape
```

```
(9551, 21)
```

```
#check dataset information
dataset.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9551 entries, 0 to 9550
Data columns (total 21 columns):
 #   Column                Non-Null Count  Dtype  
---  ------                --------------  -----  
 0   Restaurant ID         9551 non-null   int64  
 1   Restaurant Name       9551 non-null   object 
 2   Country Code          9551 non-null   int64  
 3   City                  9551 non-null   object 
 4   Address               9551 non-null   object 
 5   Locality              9551 non-null   object 
 6   Locality Verbose      9551 non-null   object 
 7   Longitude             9551 non-null   float64
 8   Latitude              9551 non-null   float64
 9   Cuisines              9542 non-null   object 
 10  Average Cost for two  9551 non-null   int64  
 11  Currency              9551 non-null   object 
 12  Has Table booking     9551 non-null   object 
 13  Has Online delivery   9551 non-null   object 
 14  Is delivering now     9551 non-null   object 
 15  Switch to order menu  9551 non-null   object 
 16  Price range           9551 non-null   int64  
 17  Aggregate rating      9551 non-null   float64
 18  Rating color          9551 non-null   object 
 19  Rating text           9551 non-null   object 
 20  Votes                 9551 non-null   int64  
dtypes: float64(3), int64(5), object(13)
memory usage: 1.5+ MB
```

```
#check daatset column names
dataset.columns
```

```
Index(['Restaurant ID', 'Restaurant Name', 'Country Code', 'City',
'Address',
       'Locality', 'Locality Verbose', 'Longitude', 'Latitude',
'Cuisines',
       'Average Cost for two', 'Currency', 'Has Table booking',
       'Has Online delivery', 'Is delivering now', 'Switch to order
menu',
       'Price range', 'Aggregate rating', 'Rating color', 'Rating
text',
       'Votes'],
      dtype='object')
```

Data Preprocessing

```
#check for null values
pd.isnull(dataset).sum()
```

```
Restaurant ID           0
Restaurant Name         0
Country Code            0
City                    0
Address                 0
Locality                0
Locality Verbose        0
Longitude               0
Latitude                0
Cuisines                9
Average Cost for two    0
Currency                0
Has Table booking       0
Has Online delivery     0
Is delivering now       0
Switch to order menu    0
Price range             0
Aggregate rating        0
Rating color            0
Rating text             0
Votes                   0
dtype: int64
```

```
#drop all null values
dataset.dropna(inplace=True)
```

```
#check database
dataset.shape
```

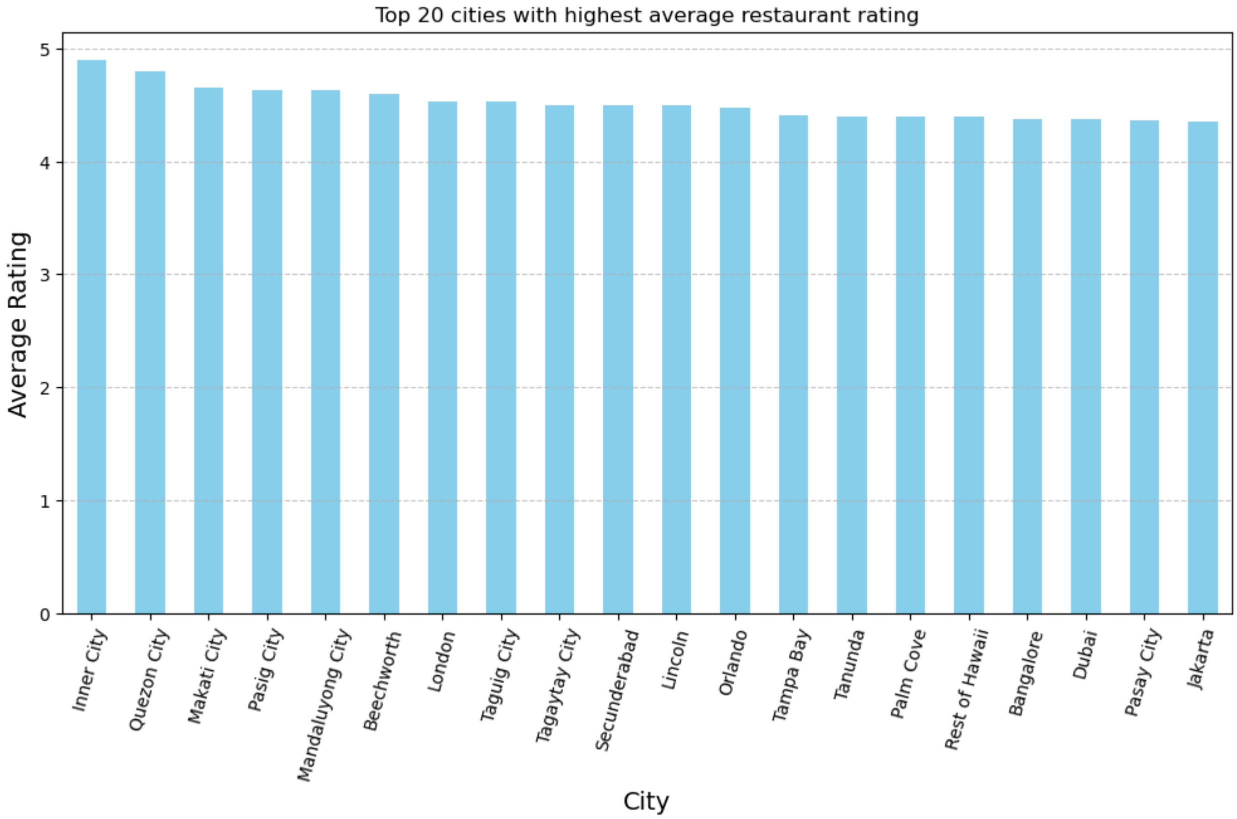
```
(9542, 21)
```

```
dataset.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 9542 entries, 0 to 9550
Data columns (total 21 columns):
 #   Column                Non-Null Count  Dtype  
---  ------                --------------  -----  
 0   Restaurant ID         9542 non-null   int64  
 1   Restaurant Name       9542 non-null   object 
 2   Country Code          9542 non-null   int64  
 3   City                  9542 non-null   object 
 4   Address               9542 non-null   object 
 5   Locality              9542 non-null   object 
 6   Locality Verbose      9542 non-null   object 
 7   Longitude             9542 non-null   float64
 8   Latitude              9542 non-null   float64
 9   Cuisines              9542 non-null   object 
 10  Average Cost for two  9542 non-null   int64
 11  Currency              9542 non-null   object
 12  Has Table booking     9542 non-null   object
 13  Has Online delivery   9542 non-null   object
 14  Is delivering now     9542 non-null   object
 15  Switch to order menu  9542 non-null   object
 16  Price range           9542 non-null   int64
 17  Aggregate rating      9542 non-null   float64
 18  Rating color          9542 non-null   object
 19  Rating text           9542 non-null   object
 20  Votes                 9542 non-null   int64
dtypes: float64(3), int64(5), object(13)
memory usage: 1.6+ MB

#check description of data
dataset[['Average Cost for two', 'Price range', 'Aggregate rating',
'Votes']].describe()

       Average Cost for two  Price range  Aggregate rating
Votes
count           9542.000000  9542.000000       9542.000000
9542.000000
mean            1200.326137     1.804968          2.665238
156.772060
std            16128.743876     0.905563          1.516588
430.203324
min                0.000000     1.000000          0.000000
0.000000
25%              250.000000     1.000000          2.500000
5.000000
50%              400.000000     2.000000          3.200000
31.000000
75%              700.000000     2.000000          3.700000
130.000000
max           800000.000000     4.000000          4.900000
10934.000000

#find the city wiht the highest number of resturants
city_counts= dataset["City"].value_counts()

#get city wiht maximumcount
top_city= city_counts.idxmax()
top_count= city_counts.max()
top_city, top_count

('New Delhi', 5473)
```

2:2 CALCULATE THE AVERAGE RATING FOR RESTAURANTS IN EACH CITY.

```
#group by city and calculate the average rating
average_rating_per_city= dataset.groupby('City')['Aggregate
rating'].mean()

#display the result
print(average_rating_per_city)

average_rating_per_city_sorted=
average_rating_per_city.sort_values(ascending=False)
print(average_rating_per_city_sorted)

City
Abu Dhabi          4.300000
Agra               3.965000
Ahmedabad          4.161905
Albany             3.552941
Allahabad          3.395000
                     ...
Weirton            3.900000
Wellington City    4.250000
Winchester Bay     3.200000
Yorkton            3.300000
��stanbul          4.292857
Name: Aggregate rating, Length: 140, dtype: float64
City
Inner City          4.900000
Quezon City         4.800000
Makati City         4.650000
Pasig City          4.633333
Mandaluyong City    4.625000
                      ...
New Delhi           2.438845
Montville           2.400000
Mc Millan           2.400000
Noida               2.036204
Faridabad           1.866932
Name: Aggregate rating, Length: 140, dtype: float64

#calculate the average rating
city_avg_rating= dataset.groupby('City')['Aggregate rating'].mean()

#sort the average rating in descending order
city_avg_rating= city_avg_rating.sort_values(ascending=False)

#plot the top 20 cities with the highest average rating
plt.figure(figsize=(12,6))
city_avg_rating.head(20).plot(kind="bar", color="skyblue")

plt.title("Top 20 cities with highest average restaurant rating")
plt.xlabel("City", fontsize=14)
plt.ylabel("Average Rating", fontsize=14)
plt.xticks(rotation=75,ha='center')
plt.grid(axis="y", linestyle="--", alpha=0.7)
plt.show()
```



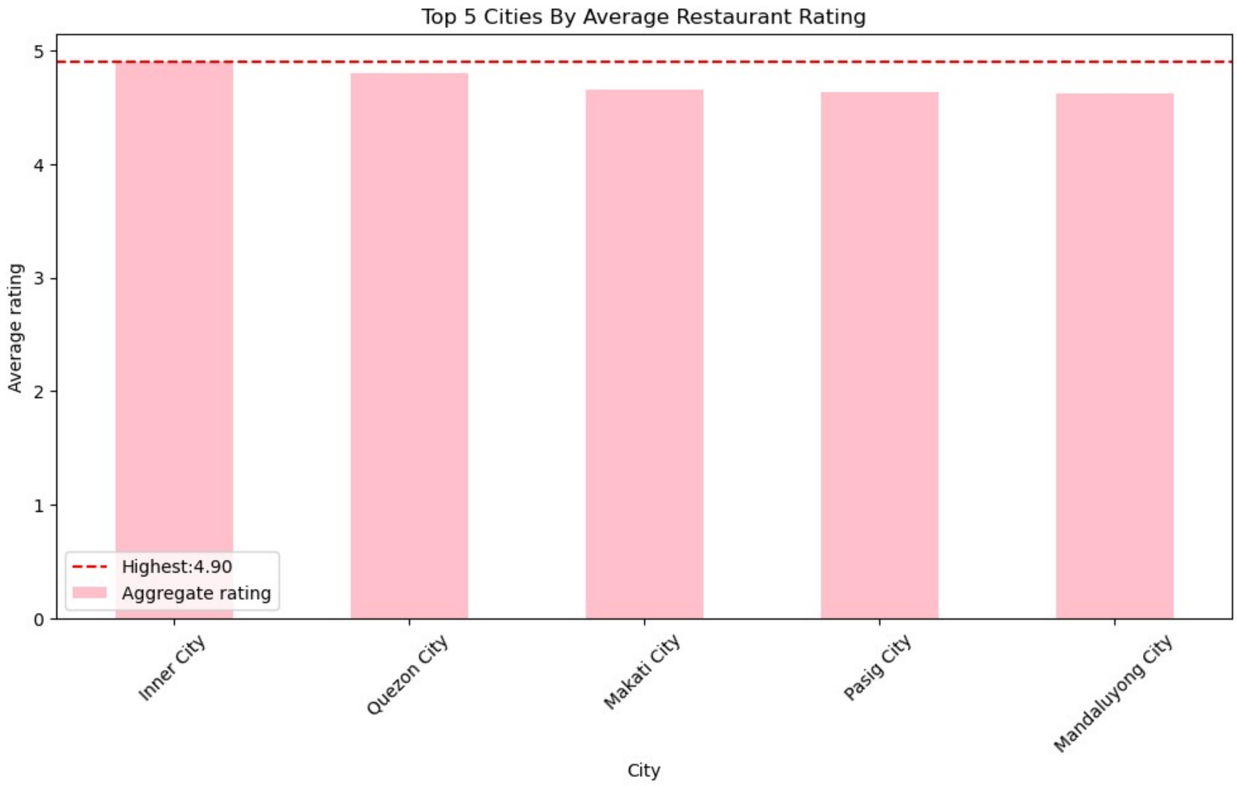
2:3 DETERMINE THE CITY WITH THE HIGHEST AVERAGE RATING.

```
#calculate the average rating for each city
city_avg_rating= dataset.groupby("City")["Aggregate rating"].mean()


#find the city with highet average rating
highest_avg_rating_city= city_avg_rating.idxmax()
highest_avg_rating= city_avg_rating.max()
print(f"The city with the highest average rating is
{highest_avg_rating_city} with an average rating of
{highest_avg_rating:.2f}.")
```

```
The city with the highest average rating is Inner City with an average
rating of 4.90.
```

```
#group by city and calculate the mean rating
city_avg_ratings= dataset.groupby("City")["Aggregate
rating"].mean().sort_values(ascending=False)
```

```
#get the top city
top_city=city_avg_ratings.idxmax()
top_rating= city_avg_ratings.max()

#plot the top 5 cities by average rating
plt.figure(figsize=(12,6))
city_avg_ratings.head(5).plot(kind="bar",color="pink")
plt.axhline(y=top_rating, color="r",linestyle='--',label=f'Highest:
{top_rating:.2f}')
plt.title("Top 5 Cities By Average Restaurant Rating")
plt.xlabel("City")
plt.ylabel("Average rating")
plt.xticks(rotation=45)
plt.legend()
plt.show()
```


Top 5 Cities By Average Restaurant Rating
Average rating
Highest:4.90
Aggregate rating
Inner City
Quezon City
Makati City
Pasig City
Mandaluyong City
City