LEVEL 2 - TASK 4: RESTAURANT CHAINS

--4:1 Identify if there are any restaurants chains present in the dataset.

--4:2 Analyze the ratings and popularity of different restaurant chains.

4:1 IDENTIFY IF THERE ARE ANY RESTAURANTS CHAINS PRSENT 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(10)
```

```
   Restaurant ID                         Restaurant Name  Country
Code  \
0        6317637                        Le Petit Souffle
162
1        6304287                        Izakaya Kikufuji
162
2        6300002                Heat - Edsa Shangri-La
162
3        6318506                                  Ooma
162
4        6314302                           Sambo Kojin
162
5       18189371                          Din Tai Fung
162
6        6300781                            Buffet 101
162
7        6301290                              Vikings
162
8        6300010  Spiral - Sofitel Philippine Plaza Manila
162
9        6314987                             Locavore
162

               City                                              Address
\
0       Makati City  Third Floor, Century City Mall, Kalayaan Avenu...

1       Makati City  Little Tokyo, 2277 Chino Roces Avenue, Legaspi...

2  Mandaluyong City  Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...
```

```
3  Mandaluyong City  Third Floor, Mega Fashion Hall, SM Megamall, O...

4  Mandaluyong City  Third Floor, Mega Atrium, SM Megamall, Ortigas...

5  Mandaluyong City  Ground Floor, Mega Fashion Hall, SM Megamall, ...

6        Pasay City  Building K, SM By The Bay, Sunset Boulevard, M...

7        Pasay City  Building B, By The Bay, Seaside Boulevard, Mal...

8        Pasay City  Plaza Level, Sofitel Philippine Plaza Manila, ...

9        Pasig City  Brixton Technology Center, 10 Brixton Street, ...


                                          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
5           SM Megamall, Ortigas, Mandaluyong City
6  SM by the Bay, Mall of Asia Complex, Pasay City
7  SM by the Bay, Mall of Asia Complex, Pasay City
8      Sofitel Philippine Plaza Manila, Pasay City
9                                        Kapitolyo

                                    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
5  SM Megamall, Ortigas, Mandaluyong City, Mandal...  121.056314
14.583764
6  SM by the Bay, Mall of Asia Complex, Pasay Cit...  120.979667
14.531333
7  SM by the Bay, Mall of Asia Complex, Pasay Cit...  120.979333
14.540000
8  Sofitel Philippine Plaza Manila, Pasay City, P...  120.980090
14.552990
9                              Kapitolyo, Pasig City  121.056532
14.572041
```

```
                              Cuisines  ...          Currency  \
0          French, Japanese, Desserts  ...  Botswana Pula(P)
1                              Japanese  ...  Botswana Pula(P)
2    Seafood, Asian, Filipino, Indian  ...  Botswana Pula(P)
3                     Japanese, Sushi  ...  Botswana Pula(P)
4                    Japanese, Korean  ...  Botswana Pula(P)
5                             Chinese  ...  Botswana Pula(P)
6                      Asian, European  ...  Botswana Pula(P)
7  Seafood, Filipino, Asian, European  ...  Botswana Pula(P)
8              European, Asian, Indian  ...  Botswana Pula(P)
9                             Filipino  ...  Botswana Pula(P)

  Has Table booking Has Online delivery Is delivering now  \
0               Yes                  No                No
1               Yes                  No                No
2               Yes                  No                No
3                No                  No                No
4               Yes                  No                No
5                No                  No                No
6               Yes                  No                No
7               Yes                  No                No
8               Yes                  No                No
9               Yes                  No                No

  Switch to order menu Price range  Aggregate rating  Rating color  \
0                   No           3               4.8    Dark Green
1                   No           3               4.5    Dark Green
2                   No           4               4.4         Green
3                   No           4               4.9    Dark Green
4                   No           4               4.8    Dark Green
5                   No           3               4.4         Green
6                   No           4               4.0         Green
7                   No           4               4.2         Green
8                   No           4               4.9    Dark Green
9                   No           3               4.8    Dark Green

  Rating text Votes
0   Excellent   314
1   Excellent   591
2   Very Good   270
3   Excellent   365
4   Excellent   229
5   Very Good   336
6   Very Good   520
7   Very Good   677
8   Excellent   621
9   Excellent   532

[10 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 dataset 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
```

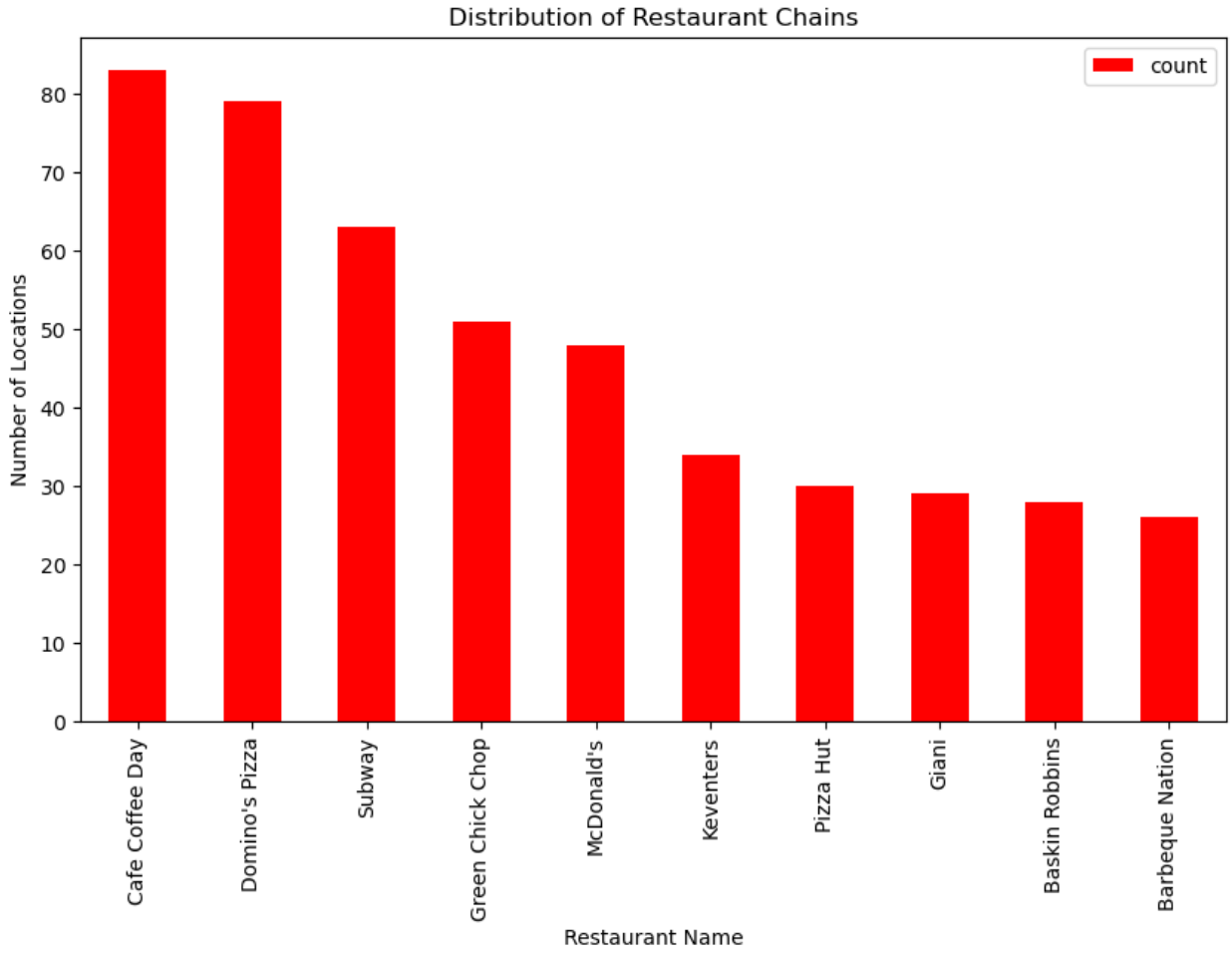
```
 4   Address               9542 non-null   object
 5   Locality              9542 non-null   object
 6   Locality Verbose      9542 non-null   object
 7   Longitude             9542 non-null   float64
 8   Latitude              9542 non-null   float64
 9   Cuisines              9542 non-null   object
 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
```

```
#count the occurence of each restaurant names
restaurant_counts= dataset["Restaurant Name"].value_counts()

#filter for restaurant chains(appearing in more than one location)
chains= restaurant_counts[restaurant_counts>1]

#plot the distribution of restaurant chains
```

```
plt.figure(figsize=(10,6))
chains.head(10).plot(kind="bar", color="red")
plt.title("Distribution of Restaurant Chains")
plt.xlabel("Restaurant Name")
plt.ylabel("Number of Locations")
plt.xticks(rotation=90)
plt.legend()
plt.show()

#display the top restaurant chains
chains
```




```
Restaurant Name
Cafe Coffee Day                   83
Domino's Pizza                    79
Subway                            63
Green Chick Chop                  51
McDonald's                        48
                                  ..
Zaika Kathi Rolls                  2
```

```
The Night Owl                          2
The Cheesecake Factory                 2
New Kadimi                             2
Ceviche Tapas Bar & Restaurant         2
Name: count, Length: 734, dtype: int64
```

4:2 ANALYZE THE RATINGS AND POPULARITY OF DIFFERENT RESTAURANT CHAINS.

```
#group by restaurant name to find average rating and total votes per
restaurant chsin
restaurant_analysis= dataset.groupby("Restaurant Name").agg(
    avg_rating= ("Aggregate rating","mean"),
    total_votes= ("Votes","sum"),
    count= ("Restaurant ID","count")   #count occurence of restaurant
name
).reset_index()

#sort by average rating and votes
top_rated=restaurant_analysis.sort_values(by=["avg_rating","total_vote
s"],ascending=[False, False])
top_rated.head(10)  #display top 10 rated restaurant
```

```
                                 Restaurant Name  avg_rating
total_votes  \
6255                            Talaga Sampireun         4.9
5514
4175                             Mirchi And Mime         4.9
3244
4071               McGuire's Irish Pub & Brewery         4.9
2238
3110                    Indian Accent - The Manor         4.9
1934
4987         Pom Pom's Teahouse and Sandwicheria         4.9
1457
4068                     Mazzaro's Italian Market         4.9
1424
4323  Mr. Dunderbak's Biergarten and Marketplatz         4.9
1413
6970               Tresind - Nassima Royal Hotel         4.9
1352
3986                           Mama's Fish House         4.9
1343
7330                             Yellow Dog Eats         4.9
1252

      count
6255      3
4175      1
4071      1
```

```
3110      1
4987      1
4068      1
4323      1
6970      1
3986      1
7330      1
```

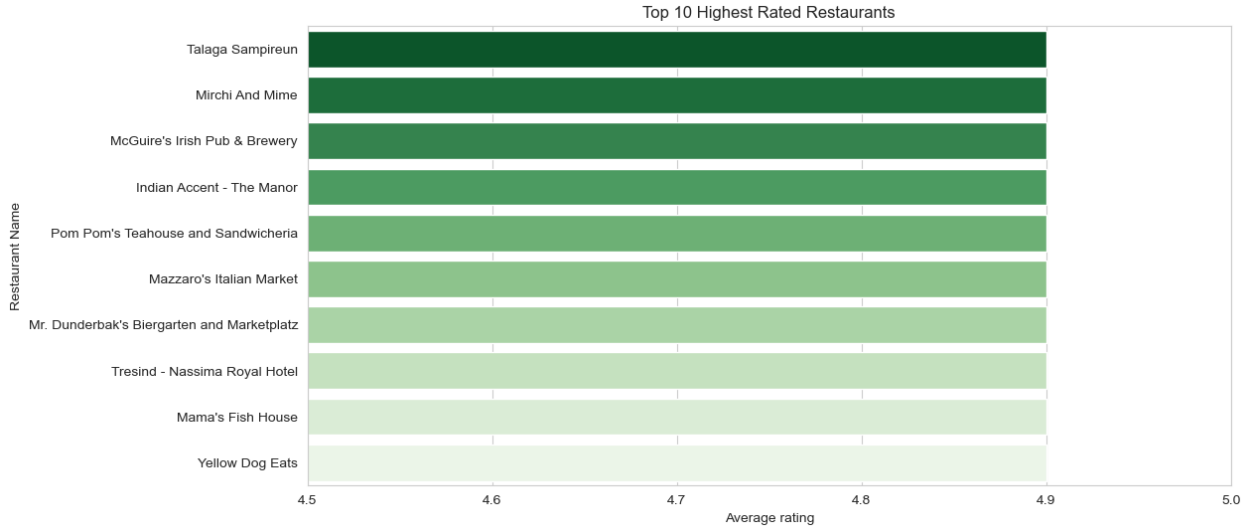
```
#find the most popular restaurant chain by count(number of locations) and total votes
popular_chains= restaurant_analysis.sort_values(by=["count","total_votes"],ascending=[False, False])
popular_chains.head(10)  #display top 10 most popular restaurant chains
```

	Restaurant Name	avg_rating	total_votes	count
1098	Cafe Coffee Day	2.419277	2428	83
2096	Domino's Pizza	2.740506	6643	79
6098	Subway	2.907937	6124	63
2713	Green Chick Chop	2.672549	964	51
4070	McDonald's	3.339583	5291	48
3472	Keventers	2.870588	1263	34
4953	Pizza Hut	3.320000	4961	30
2616	Giani	2.689655	854	29
680	Baskin Robbins	1.860714	428	28
663	Barbeque Nation	4.353846	28142	26

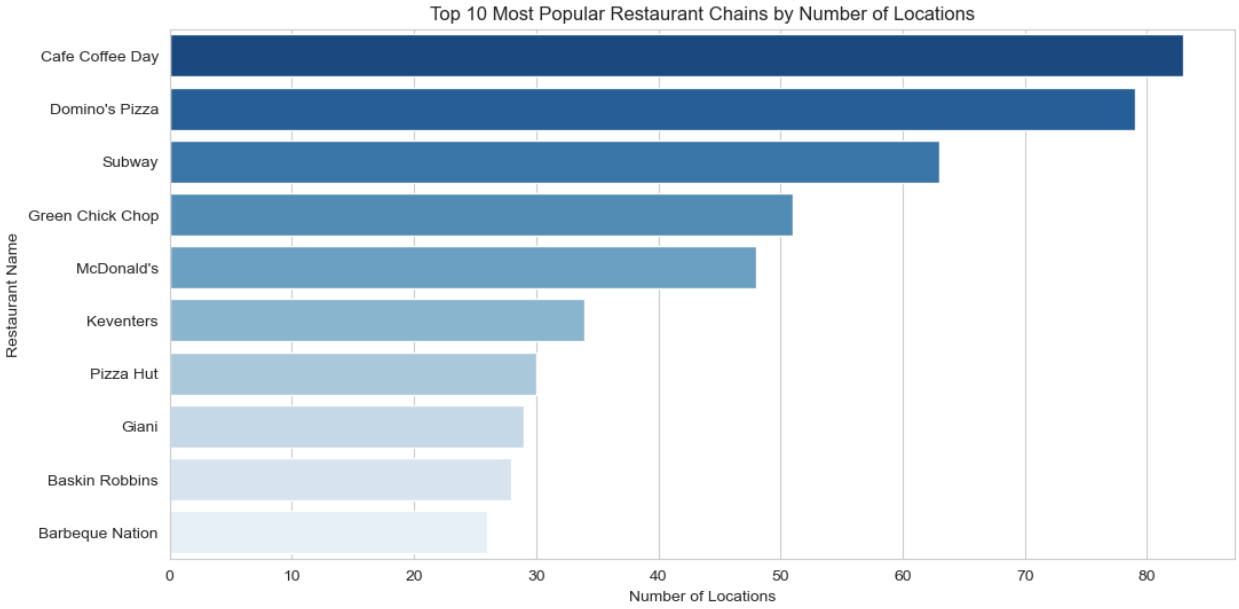
```
#set plot style
sns.set_style("whitegrid")

#plot top-rated restaurants
plt.figure(figsize=(12,6))
sns.barplot(
    y=top_rated.head(10)["Restaurant Name"],
    x=top_rated.head(10)["avg_rating"],
    palette="Greens_r"
)
plt.xlabel("Average rating")
plt.ylabel("Restaurant Name")
plt.title("Top 10 Highest Rated Restaurants")
plt.xlim(4.5,5)  #focus on high ratings
plt.show()

#plot most popular restaurant chains
plt.figure(figsize=(12,6))
sns.barplot(
    y=popular_chains.head(10)["Restaurant Name"],
    x=popular_chains.head(10)["count"],
    palette="Blues_r"
```

```
)
plt.xlabel("Number of Locations")
plt.ylabel("Restaurant Name")
plt.title("Top 10 Most Popular Restaurant Chains by Number of
Locations")
plt.show()
```

```
C:\Users\Dimpi\AppData\Local\Temp\ipykernel_9000\1964931883.py:6:
FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be
removed in v0.14.0. Assign the `y` variable to `hue` and set
`legend=False` for the same effect.

  sns.barplot(
```




```
C:\Users\Dimpi\AppData\Local\Temp\ipykernel_9000\1964931883.py:19:
FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be
removed in v0.14.0. Assign the `y` variable to `hue` and set
`legend=False` for the same effect.

  sns.barplot(
```


Top 10 Most Popular Restaurant Chains by Number of Locations
Cafe Coffee Day
Domino's Pizza
Subway
Green Chick Chop
McDonald's
Keventers
Pizza Hut
Giani
Baskin Robbins
Barbeque Nation
Restaurant Name
0
10
20
30
40
50
60
70
80
Number of Locations