Level 3 Task 2

Task: Votes Analysis

Identify the restaurants with the highest and lowest number of votes.

Analyze if there is a correlation between the number of votes and the rating of a restaurant.

Step 1: Import Necessary Libraries

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

Step 2: Load the Dataset

```
df = pd.read_csv("C:\\Users\\Narthana\\Downloads\\Dataset.csv")
```

Step 3: Explore the Dataset

```
# Display the first few rows of the dataset
print(df.head())

# Get basic statistics of the dataset
print(df.describe())
```

```
   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]
       Restaurant ID  Country Code    Longitude     Latitude  \
count   9.551000e+03   9551.000000  9551.000000  9551.000000
mean    9.051128e+06     18.365616    64.126574    25.854381
std     8.791521e+06     56.750546    41.467058    11.007935
min     5.300000e+01      1.000000  -157.948486   -41.330428
25%     3.019625e+05      1.000000    77.081343    28.478713
50%     6.004089e+06      1.000000    77.191964    28.570469
75%     1.835229e+07      1.000000    77.282006    28.642758
max     1.850065e+07    216.000000   174.832089    55.976980

       Average Cost for two  Price range  Aggregate rating
Votes
count           9551.000000  9551.000000       9551.000000
9551.000000
mean            1199.210763     1.804837          2.666370
156.909748
std            16121.183073     0.905609          1.516378
430.169145
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
131.000000
max           800000.000000     4.000000          4.900000
10934.000000
```

Step 4: Identify Restaurants with the Highest and Lowest Votes

```
# Restaurant with the highest number of votes
highest_votes_restaurant = df[df['Votes'] == df['Votes'].max()]
print("Restaurant with the highest number of votes:")
print(highest_votes_restaurant)

# Restaurant with the lowest number of votes
```

```
lowest_votes_restaurant = df[df['Votes'] == df['Votes'].min()]
print("\nRestaurant with the lowest number of votes:")
print(lowest_votes_restaurant)
```

```
Restaurant with the highest number of votes:
     Restaurant ID Restaurant Name  Country Code       City  \
728          51705            Toit             1  Bangalore

                                              Address     Locality  \
728  298, Namma Metro Pillar 62, 100 Feet Road, Ind...  Indiranagar

           Locality Verbose  Longitude   Latitude
Cuisines  \
728  Indiranagar, Bangalore  77.640709  12.979166  Italian, American,
Pizza

     ...             Currency Has Table booking Has Online delivery  \
728  ...  Indian Rupees(Rs.)                No                   No

    Is delivering now Switch to order menu Price range  Aggregate
rating  \
728                No                    No           4
4.8

     Rating color Rating text  Votes
728    Dark Green   Excellent  10934

[1 rows x 21 columns]

Restaurant with the lowest number of votes:
      Restaurant ID             Restaurant Name  Country Code
City  \
69          6710645           Cantinho da Gula            30  S��o
Paulo
874        18433852              The Chaiwalas             1
Faridabad
879        18465871          Fusion Food Corner             1
Faridabad
880        18472646              Punjabi Rasoi              1
Faridabad
887        18471268              Baskin Robbin              1
Faridabad
...             ...                        ...           ...
...
9044       18486858              6 Packs Momos              1
Noida
9098       18431152                  Cafe' Wow              1
Noida
9099       18439721  Chef's Basket Pop Up Caf��              1
Noida
```

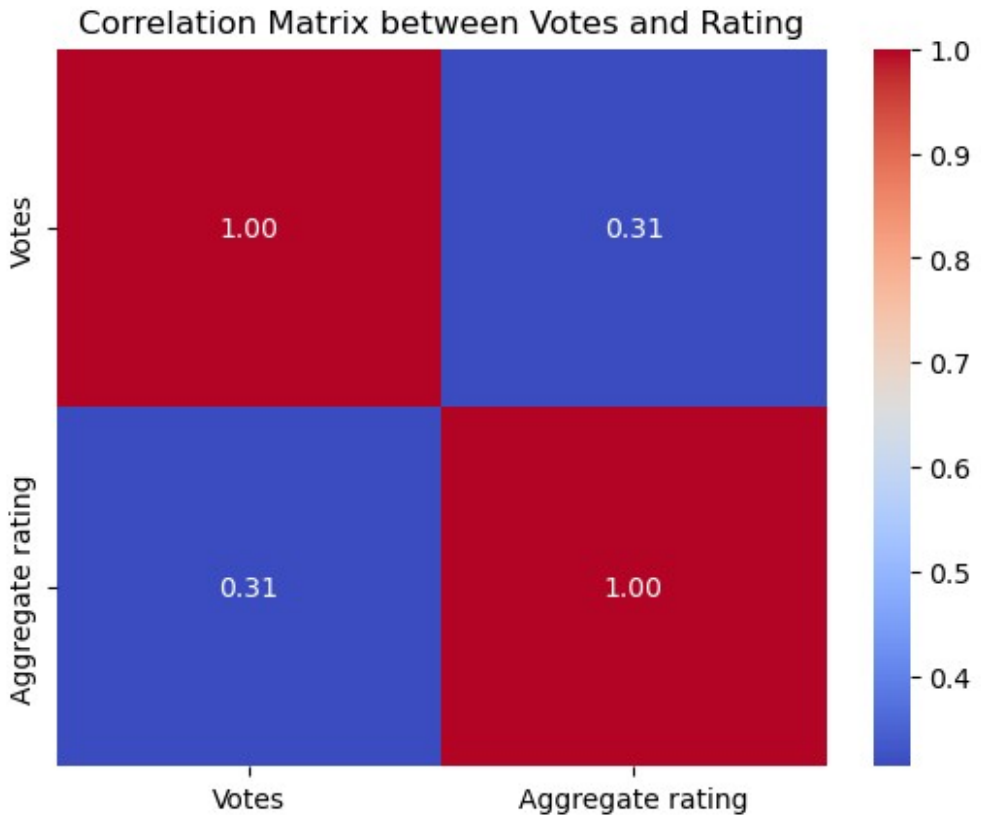
```
9103       18428504             The Hangout-Deli              1
Noida
9111       18254559                     Platters              1
Noida

                                                      Address  \
69    Rua Pedroso Alvarenga, 522, Itaim Bibi, S��o P...
874   Sector 21 A, Asian Hospital, Badhkal Chowk, Ba...
879   158/7, Opposite DDA Flat, Pul Pehlad Pur, Char...
880   1, Deepak Complex, Eros Charmwood Village, Far...
887   Ground Floor, Crown Interiorz Mall, Sector 35,...
...                                                 ...
9044                 Spice World Mall, Sector 25, Noida
9098  Food Court, 3rd Floor, The Great India Palace ...
9099  Inside Big Bazaar, The Great India Place, Sect...
9103  320-A, 3rd Floor, The Great India Place Mall, ...
9111  Shop 1, Tulip Mall, Near HDFC Bank, Sector 48,...

                                        Locality  \
69                                    Itaim Bibi
874                                  Badkal Lake
879                            Charmwood Village
880                            Charmwood Village
887   Crown Interiorz Mall, Sector 35, Faridabad
...                                          ...
9044                Spice World Mall, Sector 25
9098           The Great India Place, Sector 38
9099           The Great India Place, Sector 38
9103           The Great India Place, Sector 38
9111               Tulip Mall, Sector 48, Noida

                                        Locality Verbose  Longitude
Latitude  \
69                                Itaim Bibi, S��o Paulo -46.675667 -
23.581000
874                               Badkal Lake, Faridabad  77.300088
28.426284
879                          Charmwood Village, Faridabad   0.000000
0.000000
880                          Charmwood Village, Faridabad  77.292431
28.492325
887   Crown Interiorz Mall, Sector 35, Faridabad, Fa...  77.307448
28.469594
...                                                 ...        ...
...
9044                 Spice World Mall, Sector 25, Noida  77.340602
28.586000
9098           The Great India Place, Sector 38, Noida  77.325600
28.567514
9099           The Great India Place, Sector 38, Noida   0.000000
```

```
0.000000
9103            The Great India Place, Sector 38, Noida  77.323213
28.567751
9111                Tulip Mall, Sector 48, Noida, Noida  77.367322
28.557930

                             Cuisines  ...            Currency  \
69                         Brazilian  ...  Brazilian Real(R$)
874                            Cafe  ...  Indian Rupees(Rs.)
879            North Indian, Chinese  ...  Indian Rupees(Rs.)
880                    North Indian  ...  Indian Rupees(Rs.)
887                        Desserts  ...  Indian Rupees(Rs.)
...                              ...  ...                ...
9044                        Chinese  ...  Indian Rupees(Rs.)
9098                      Fast Food  ...  Indian Rupees(Rs.)
9099                Italian, Chinese  ...  Indian Rupees(Rs.)
9103  Continental, Lebanese, Mexican  ...  Indian Rupees(Rs.)
9111           North Indian, Chinese  ...  Indian Rupees(Rs.)

     Has Table booking Has Online delivery Is delivering now  \
69                  No                  No                 No
874                 No                  No                 No
879                 No                  No                 No
880                 No                  No                 No
887                 No                  No                 No
...                ...                 ...                ...
9044                No                  No                 No
9098                No                  No                 No
9099                No                  No                 No
9103               Yes                  No                 No
9111                No                  No                 No

     Switch to order menu Price range  Aggregate rating  Rating color
\
69                     No           2               0.0         White

874                    No           1               0.0         White

879                    No           1               0.0         White

880                    No           1               0.0         White

887                    No           1               0.0         White

...                   ...         ...               ...           ...

9044                   No           1               0.0         White

9098                   No           1               0.0         White
```

```
9099                    No            1                 0.0          White

9103                    No            3                 0.0          White

9111                    No            2                 0.0          White


     Rating text Votes
69     Not rated     0
874    Not rated     0
879    Not rated     0
880    Not rated     0
887    Not rated     0
...          ...   ...
9044   Not rated     0
9098   Not rated     0
9099   Not rated     0
9103   Not rated     0
9111   Not rated     0

[1094 rows x 21 columns]
```

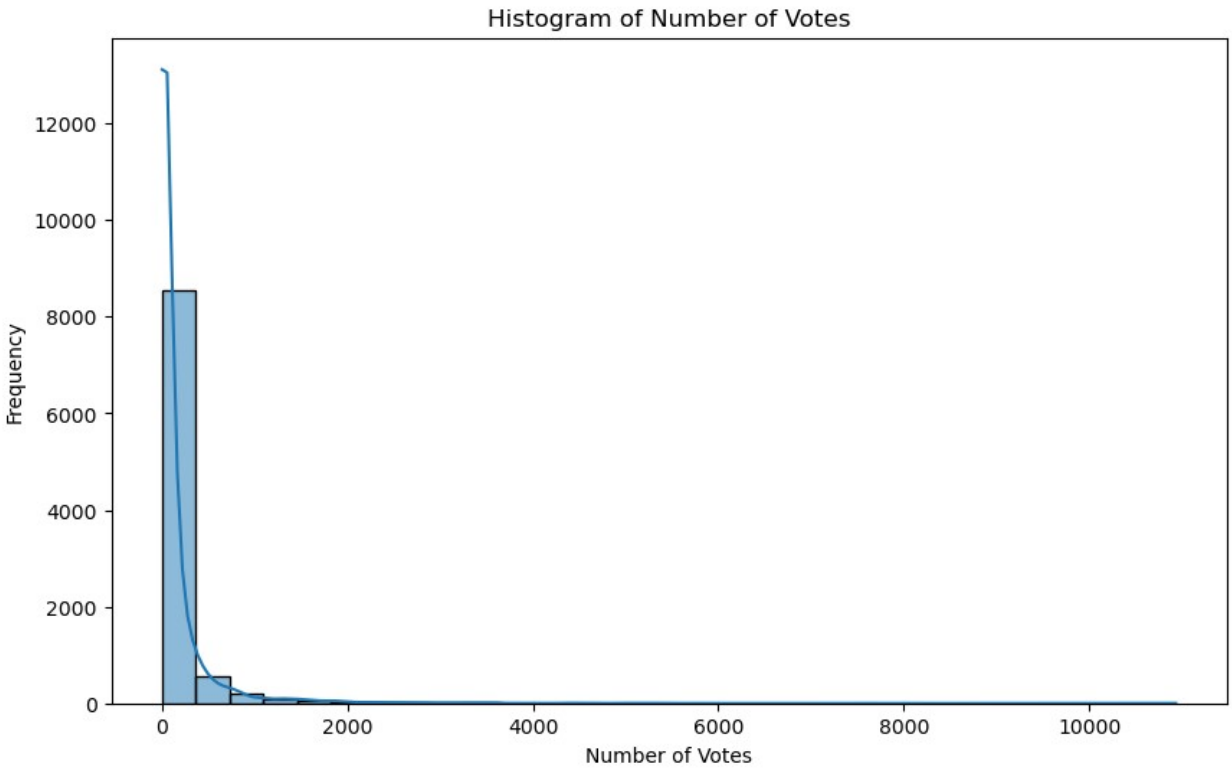
Step 5: Correlation Analysis

```
# Calculate the correlation matrix
correlation_matrix = df[['Votes', 'Aggregate rating']].corr()

# Visualize the correlation matrix using a heatmap
sns.heatmap(correlation_matrix, annot=True, cmap='coolwarm',
fmt=".2f")
plt.title("Correlation Matrix between Votes and Rating")
plt.show()
```

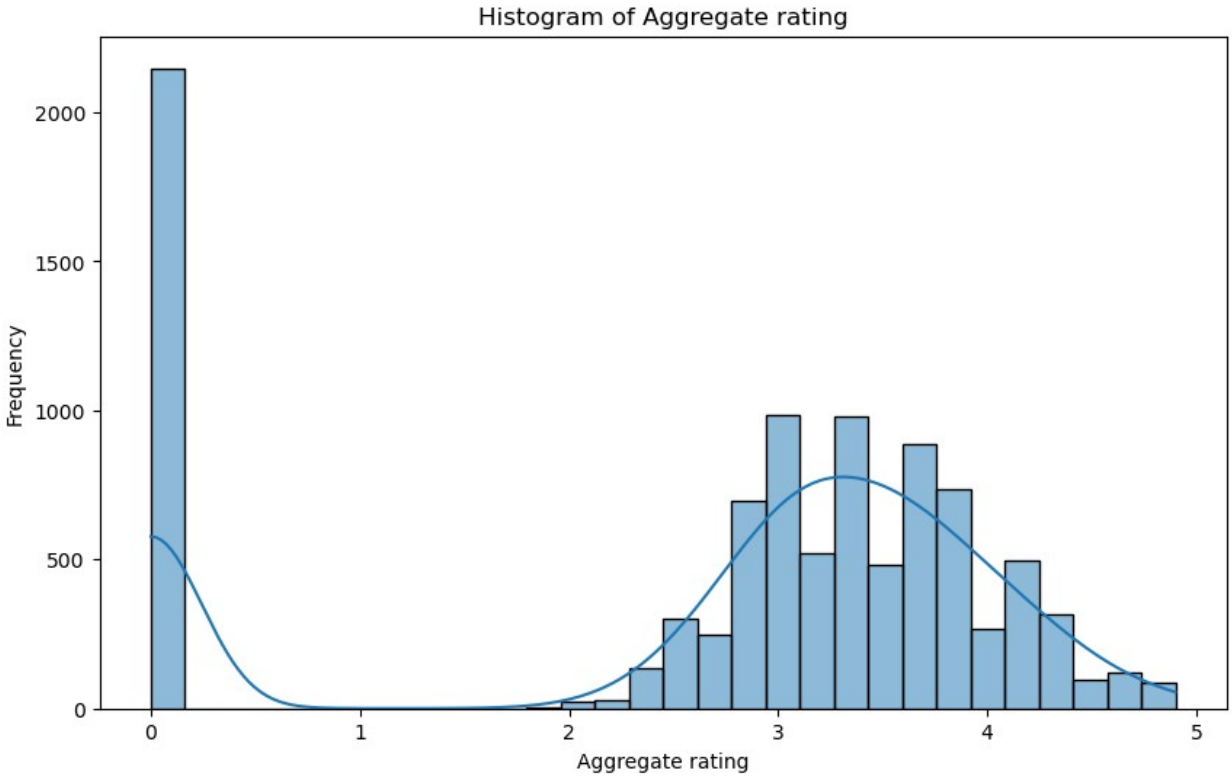


Step 6: Visualize the Data

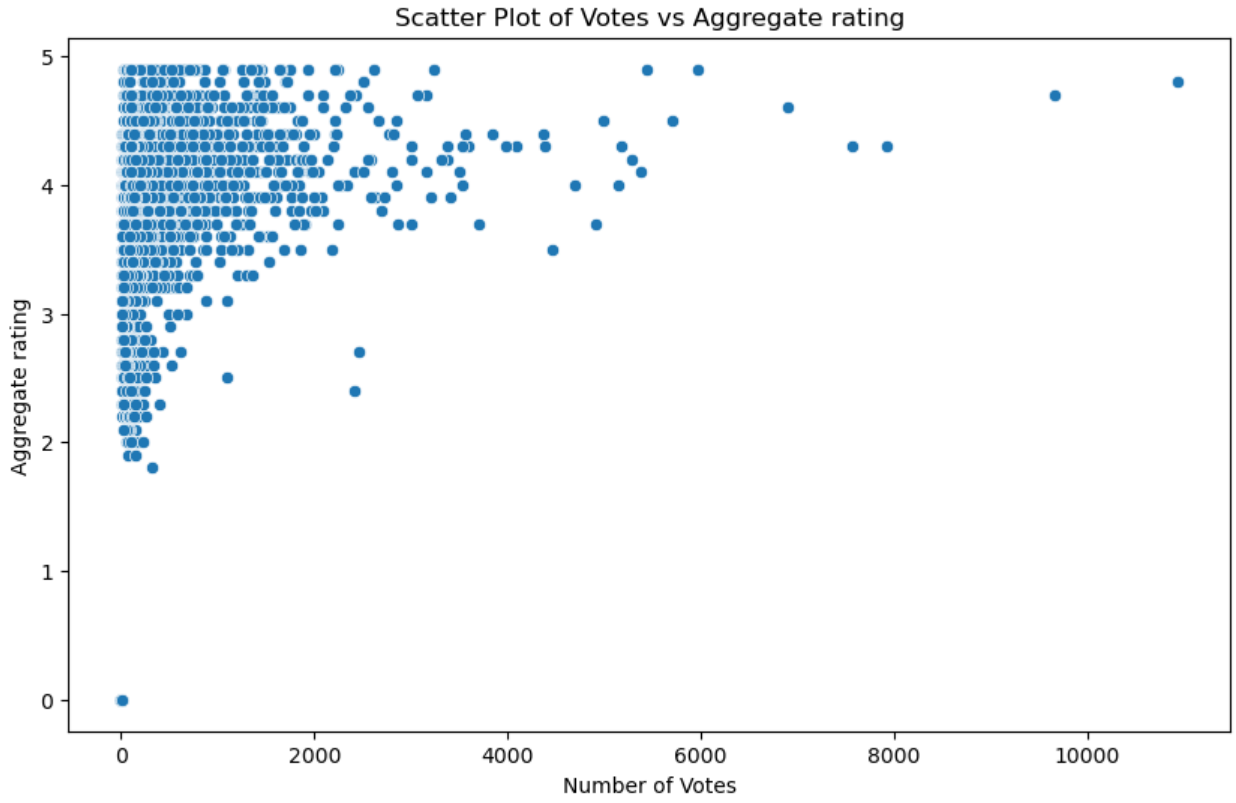
```
# Plot a histogram for the number of votes
plt.figure(figsize=(10, 6))
sns.histplot(df['Votes'], bins=30, kde=True)
plt.title('Histogram of Number of Votes')
plt.xlabel('Number of Votes')
plt.ylabel('Frequency')
plt.show()
```




```
# Plot a histogram for the ratings
plt.figure(figsize=(10, 6))
sns.histplot(df['Aggregate rating'], bins=30, kde=True)
plt.title('Histogram of Aggregate rating')
plt.xlabel('Aggregate rating')
plt.ylabel('Frequency')
plt.show()
```




```
# Scatter plot for Votes vs Ratings
plt.figure(figsize=(10, 6))
sns.scatterplot(x='Votes', y='Aggregate rating', data=df)
plt.title('Scatter Plot of Votes vs Aggregate rating')
plt.xlabel('Number of Votes')
plt.ylabel('Aggregate rating')
plt.show()
```



Inference:

Identifying Restaurants with Highest and Lowest Votes:

The highest_votes_restaurant and lowest_votes_restaurant DataFrames will contain the restaurant(s) with the highest and lowest number of votes, respectively. Correlation Analysis:

The heatmap will show the correlation between the number of votes and the rating. If the correlation coefficient is close to 1, it indicates a strong positive correlation, and if it's close to -1, it indicates a strong negative correlation.

Interpretation of the heatmap:

A positive correlation suggests that as the number of votes increases, the rating tends to increase. A negative correlation suggests that as the number of votes increases, the rating tends to decrease.

Histograms:

The histogram for the number of votes shows the distribution of votes across restaurants. You can observe if there are any common ranges or patterns.

The histogram for ratings provides insights into the distribution of ratings. This can help identify the most common ratings given by users.

Scatter Plot:

The scatter plot visualizes the relationship between the number of votes and the ratings for each restaurant. It allows you to see if there's a trend or pattern between these two variables.
Correlation Analysis:

The heatmap from the previous example gives a quantitative measure of the correlation between votes and ratings.