restaurant-data

February 22, 2024

0.0.1 Level 1

0.0.2 Task 1

```
[45]: ###importing the libraries
      import pandas as pd
      import numpy as np
      import matplotlib.pyplot as plt
      import seaborn as sns
```

```
[46]: import warnings
      warnings.filterwarnings('ignore')
```

```
[47]: Dataset = pd.read_csv(r"C:\Users\nachi\Downloads\Dataset  (1).csv")
      ↪###importing the file
      Dataset
```

```
[47]:      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
      …                …                      …            …               …
      9546         5915730             Naml  Gurme           208          stanbul
      9547         5908749             Ceviz A ac            208          stanbul
      9548         5915807                    Huqqa         208          stanbul
      9549         5916112               A  k Kahve          208          stanbul
      9550         5927402  Walter's Coffee Roastery         208          stanbul

                                            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…
      …                                           …
      9546   Kemanke  Karamustafa Pa a Mahallesi, R ht m …
```

1

```
9547  Ko uyolu Mahallesi, Muhittin  st _nda  Cadd…
9548  Kuru _e me Mahallesi, Muallim Naci Caddesi, N…
9549  Kuru _e me Mahallesi, Muallim Naci Caddesi, N…
9550  Cafea a Mahallesi, Bademalt  Sokak, No 21/B, …

                                       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
…                                             …
9546                                    Karak _y
9547                                    Ko uyolu
9548                                   Kuru _e me
9549                                   Kuru _e me
9550                                        Moda

                                Locality Verbose    Longitude  \
0       Century City Mall, Poblacion, Makati City, Mak…  121.027535
1       Little Tokyo, Legaspi Village, Makati City, Ma…  121.014101
2       Edsa Shangri-La, Ortigas, Mandaluyong City, Ma…  121.056831
3       SM Megamall, Ortigas, Mandaluyong City, Mandal…  121.056475
4       SM Megamall, Ortigas, Mandaluyong City, Mandal…  121.057508
…                                           …           …
9546                          Karak _y,  stanbul   28.977392
9547                          Ko uyolu,  stanbul   29.041297
9548                         Kuru _e me,  stanbul   29.034640
9549                         Kuru _e me,  stanbul   29.036019
9550                               Moda,  stanbul   29.026016

          Latitude                           Cuisines  …             Currency  \
0        14.565443          French, Japanese, Desserts  …     Botswana Pula(P)
1        14.553708                            Japanese  …     Botswana Pula(P)
2        14.581404  Seafood, Asian, Filipino, Indian   …     Botswana Pula(P)
3        14.585318                     Japanese, Sushi  …     Botswana Pula(P)
4        14.584450                    Japanese, Korean  …     Botswana Pula(P)
…              …                                   … …                    …
9546   41.022793                             Turkish   …     Turkish Lira(TL)
9547   41.009847  World Cuisine, Patisserie, Cafe   …     Turkish Lira(TL)
9548   41.055817           Italian, World Cuisine   …     Turkish Lira(TL)
9549   41.057979                     Restaurant Cafe   …     Turkish Lira(TL)
9550   40.984776                                Cafe   …     Turkish Lira(TL)

      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
...                     ...                  ...                  ...
9546                     No                   No                   No
9547                     No                   No                   No
9548                     No                   No                   No
9549                     No                   No                   No
9550                     No                   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
...                     ...          ...               ...          ...
9546                     No            3               4.1        Green
9547                     No            3               4.2        Green
9548                     No            4               3.7       Yellow
9549                     No            4               4.0        Green
9550                     No            2               4.0        Green

       Rating text Votes
0        Excellent   314
1        Excellent   591
2        Very Good   270
3        Excellent   365
4        Excellent   229
...            ...   ...
9546     Very Good   788
9547     Very Good  1034
9548          Good   661
9549     Very Good   901
9550     Very Good   591

[9551 rows x 21 columns]
```

```python
[48]: print(f"Number of rows: {Dataset.shape[0]}")
      print(f"Number of columns: {Dataset.shape[1]}")
```

```
Number of rows: 9551
Number of columns: 21
```

```python
[49]: Dataset.head()
```

```
[49]:    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]
```

[50]: `Dataset.tail()`

[50]:
```
      Restaurant ID              Restaurant Name  Country Code       City  \
9546        5915730                   Naml  Gurme           208    stanbul
9547        5908749                   Ceviz A ac           208    stanbul
9548        5915807                         Huqqa           208     stanbul
9549        5916112                     A  k Kahve          208     stanbul
9550        5927402  Walter's Coffee Roastery           208     stanbul


                                          Address     Locality  \
9546  Kemanke  Karamustafa Pa a Mahallesi, R ht m …     Karak _y
9547  Ko uyolu Mahallesi, Muhittin  st _nda  Cadd…    Ko uyolu
9548  Kuru _e me Mahallesi, Muallim Naci Caddesi, N…  Kuru _e me
9549  Kuru _e me Mahallesi, Muallim Naci Caddesi, N…  Kuru _e me
9550  Cafea a Mahallesi, Bademalt  Sokak, No 21/B, …        Moda


           Locality Verbose  Longitude   Latitude  \
9546     Karak _y,  stanbul  28.977392  41.022793
9547     Ko uyolu,  stanbul  29.041297  41.009847
9548  Kuru _e me,  stanbul  29.034640  41.055817
9549  Kuru _e me,  stanbul  29.036019  41.057979
9550        Moda,  stanbul  29.026016  40.984776


                              Cuisines  …          Currency  \
9546                           Turkish  …  Turkish Lira(TL)
9547  World Cuisine, Patisserie, Cafe  …  Turkish Lira(TL)
9548          Italian, World Cuisine  …  Turkish Lira(TL)
9549                 Restaurant Cafe  …  Turkish Lira(TL)
9550                            Cafe  …  Turkish Lira(TL)


     Has Table booking Has Online delivery Is delivering now  \
9546                No                  No                No
9547                No                  No                No
9548                No                  No                No
9549                No                  No                No
9550                No                  No                No


     Switch to order menu Price range  Aggregate rating  Rating color  \
9546                   No           3               4.1         Green
9547                   No           3               4.2         Green
9548                   No           4               3.7        Yellow
9549                   No           4               4.0         Green
9550                   No           2               4.0         Green
```

```
      Rating text  Votes
9546    Very Good    788
9547    Very Good   1034
9548         Good    661
9549    Very Good    901
9550    Very Good    591

[5 rows x 21 columns]
```

[52]: `Dataset.shape`

[52]: (9551, 21)

[53]: `Dataset.size`

[53]: 200571

[54]: `Dataset.info`

[54]:
```
<bound method DataFrame.info of        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
...               ...                       ...            ...               ...
9546          5915730                Naml  Gurme            208           stanbul
9547          5908749                Ceviz A ac            208           stanbul
9548          5915807                      Huqqa            208           stanbul
9549          5916112                  A  k Kahve            208           stanbul
9550          5927402  Walter's Coffee Roastery            208           stanbul

                                      Address  \
0        Third Floor, Century City Mall, Kalayaan Avenu…
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3        Third Floor, Mega Fashion Hall, SM Megamall, O…
4        Third Floor, Mega Atrium, SM Megamall, Ortigas…
...                                               …
9546   Kemanke  Karamustafa Pa a Mahallesi, R ht m …
9547   Ko uyolu Mahallesi, Muhittin  st _nda  Cadd…
9548   Kuru _e me Mahallesi, Muallim Naci Caddesi, N…
9549   Kuru _e me Mahallesi, Muallim Naci Caddesi, N…
9550   Cafea a Mahallesi, Bademalt  Sokak, No 21/B, …
```

```
                                                    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
…                                              …
9546                                        Karak _y
9547                                        Ko uyolu
9548                                       Kuru _e me
9549                                       Kuru _e me
9550                                            Moda


                                         Locality Verbose    Longitude  \
0            Century City Mall, Poblacion, Makati City, Mak…  121.027535
1            Little Tokyo, Legaspi Village, Makati City, Ma…  121.014101
2         Edsa Shangri-La, Ortigas, Mandaluyong City, Ma…  121.056831
3         SM Megamall, Ortigas, Mandaluyong City, Mandal…  121.056475
4         SM Megamall, Ortigas, Mandaluyong City, Mandal…  121.057508
…                                              …            …
9546                                Karak _y,  stanbul   28.977392
9547                                Ko uyolu,  stanbul   29.041297
9548                              Kuru _e me,  stanbul   29.034640
9549                              Kuru _e me,  stanbul   29.036019
9550                                    Moda,  stanbul   29.026016


        Latitude                           Cuisines  …          Currency  \
0      14.565443       French, Japanese, Desserts   …  Botswana Pula(P)
1      14.553708                         Japanese   …  Botswana Pula(P)
2      14.581404  Seafood, Asian, Filipino, Indian   …  Botswana Pula(P)
3      14.585318                 Japanese, Sushi   …  Botswana Pula(P)
4      14.584450                 Japanese, Korean   …  Botswana Pula(P)
…           …                                …  …                …
9546   41.022793                          Turkish   …  Turkish Lira(TL)
9547   41.009847  World Cuisine, Patisserie, Cafe   …  Turkish Lira(TL)
9548   41.055817          Italian, World Cuisine   …  Turkish Lira(TL)
9549   41.057979                  Restaurant Cafe   …  Turkish Lira(TL)
9550   40.984776                             Cafe   …  Turkish Lira(TL)


      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
…                     …                    …                 …
9546                 No                   No                No
```

```
9547                    No                  No                  No
9548                    No                  No                  No
9549                    No                  No                  No
9550                    No                  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
...                     ...          ...               ...           ...
9546                     No            3               4.1         Green
9547                     No            3               4.2         Green
9548                     No            4               3.7        Yellow
9549                     No            4               4.0         Green
9550                     No            2               4.0         Green

       Rating text Votes
0        Excellent   314
1        Excellent   591
2        Very Good   270
3        Excellent   365
4        Excellent   229
...            ...   ...
9546     Very Good   788
9547     Very Good  1034
9548          Good   661
9549     Very Good   901
9550     Very Good   591

[9551 rows x 21 columns]>
```

[55]: `Dataset.describe()`

```
[55]:        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
```

[56]: `Dataset['Aggregate rating'].describe()`

[56]:
```
count    9551.000000
mean        2.666370
std         1.516378
min         0.000000
25%         2.500000
50%         3.200000
75%         3.700000
max         4.900000
Name: Aggregate rating, dtype: float64
```

[57]: `Dataset['Aggregate rating'].hist(bins=20)`

`plt.title('Distribution of Aggregate rate')`

[57]: `Text(0.5, 1.0, 'Distribution of Aggregate rate')`

Distribution of Aggregate rate
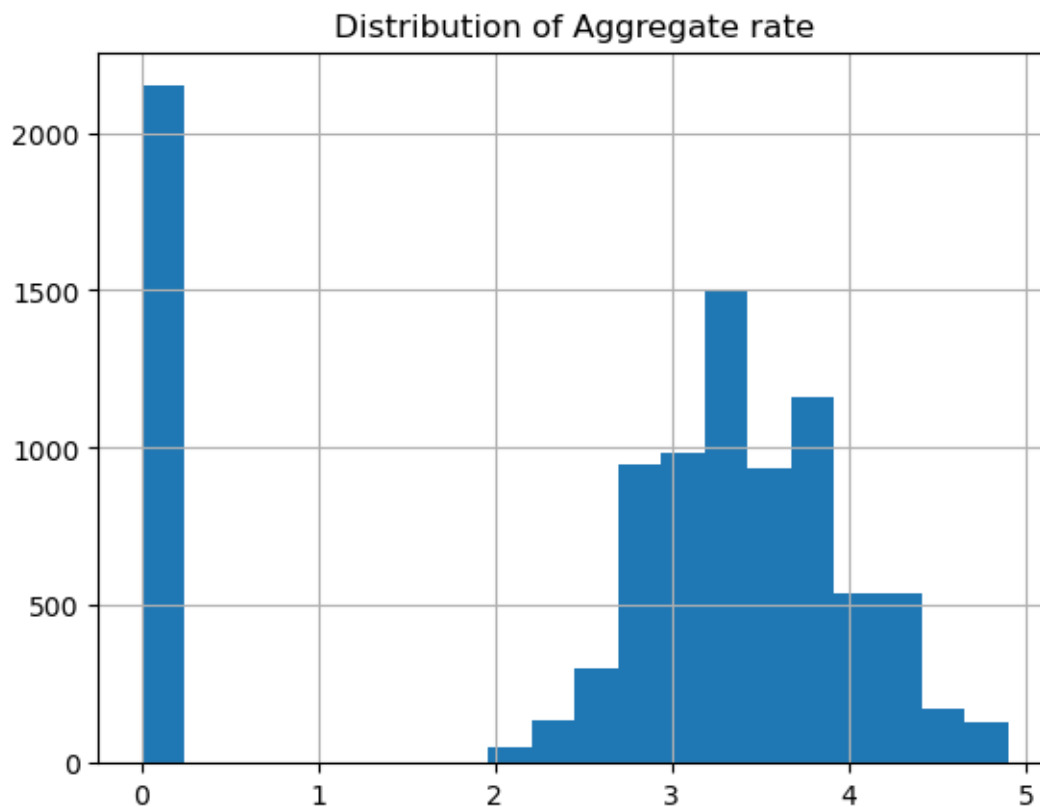
```
[58]:  Dataset['Aggregate rating'].value_counts(normalize=True)
```

```
[58]:  Aggregate rating
       0.0    0.224898
       3.2    0.054654
       3.1    0.054340
       3.4    0.052141
       3.3    0.050571
       3.5    0.050257
       3.0    0.049000
       3.6    0.047953
       3.7    0.044707
       3.8    0.041880
       2.9    0.039891
       3.9    0.035075
       2.8    0.032981
       4.1    0.028688
       4.0    0.027850
       2.7    0.026175
       4.2    0.023139
       2.6    0.019998
```

```
4.3    0.018218
4.4    0.015077
2.5    0.011517
4.5    0.009947
2.4    0.009109
4.6    0.008167
4.9    0.006387
2.3    0.004921
4.7    0.004397
2.2    0.002827
4.8    0.002618
2.1    0.001571
2.0    0.000733
1.9    0.000209
1.8    0.000105
Name: proportion, dtype: float64
```

[59]:
```python
Dataset['Aggregate rating'].value_counts().plot(kind='bar')
plt.title('Class Distribution')
plt.xlabel('Rating')
plt.ylabel('Count')
```

[59]: `Text(0, 0.5, 'Count')`

Class Distribution
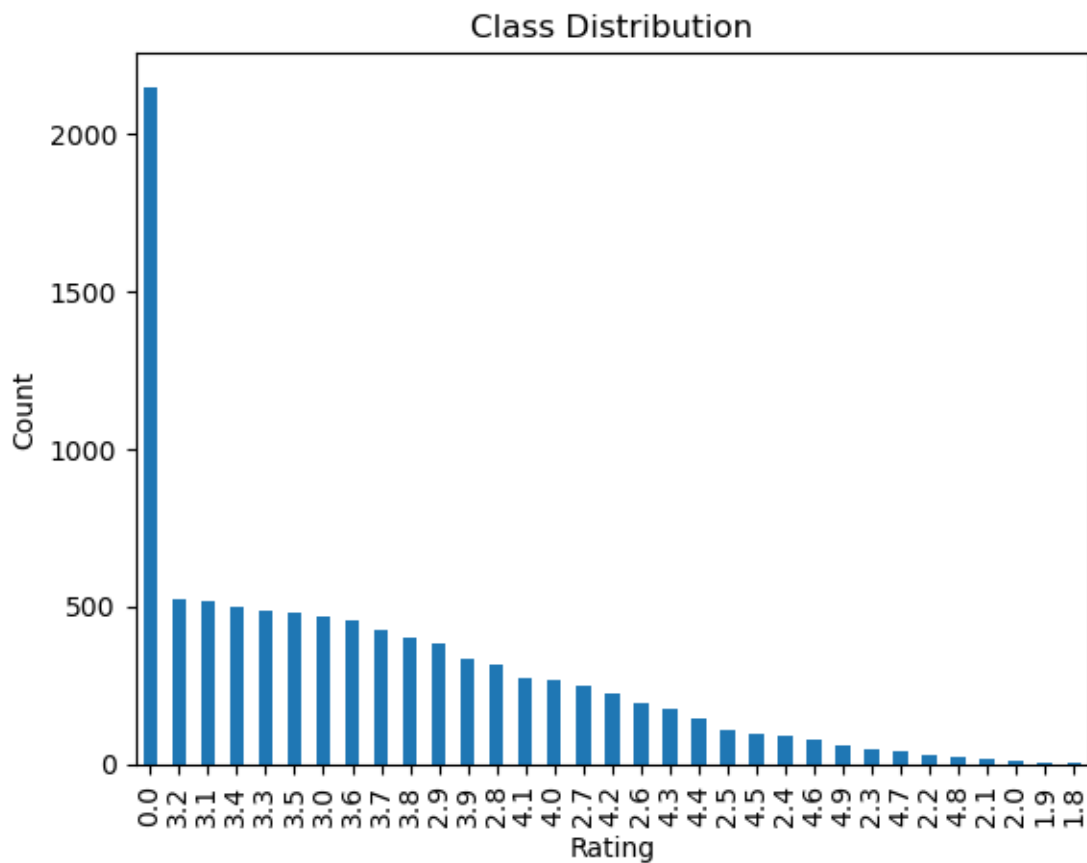
0.0.3 Task 2

```
[60]: Dataset.dtypes
```

```
[60]: Restaurant ID          int64
      Restaurant Name        object
      Country Code           int64
      City                   object
      Address                object
      Locality               object
      Locality Verbose       object
      Longitude              float64
      Latitude               float64
      Cuisines               object
      Average Cost for two   int64
      Currency               object
      Has Table booking      object
      Has Online delivery    object
      Is delivering now      object
```

```
Switch to order menu        object
Price range                  int64
Aggregate rating           float64
Rating color                object
Rating text                 object
Votes                        int64
dtype: object
```

[61]: `Dataset.describe()`

[61]:
```
        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
```

[62]: `Dataset['Country Code'].value_counts().sort_index()`

[62]:
```
Country Code
1       8652
14        24
30        60
37         4
94        21
148       40
162       22
166       20
184       20
189       60
191       20
208       34
214       60
215       80
```

```
216      434
Name: count, dtype: int64
```

[63]: `Dataset['Country Code'].value_counts().sort_index()`

[63]:
```
Country Code
1       8652
14        24
30        60
37         4
94        21
148       40
162       22
166       20
184       20
189       60
191       20
208       34
214       60
215       80
216      434
Name: count, dtype: int64
```

[64]: `Dataset['City'].value_counts().sort_index()`

[64]:
```
City
Abu Dhabi         20
Agra              20
Ahmedabad         21
Albany            20
Allahabad         20
                  ..
Weirton            1
Wellington City   20
Winchester Bay     1
Yorkton            1
 stanbul          14
Name: count, Length: 141, dtype: int64
```

[ ]:

[65]:
```
country_code_distribution= Dataset['Country Code'].value_counts()
print('Country Code Distribution:\n',country_code_distribution)
```

```
Country Code Distribution:
 Country Code
1       8652
```

```
216      434
215       80
30        60
214       60
189       60
148       40
208       34
14        24
162       22
94        21
184       20
166       20
191       20
37         4
Name: count, dtype: int64
```

[66]:
```python
city_distribution= Dataset['City'].value_counts()
print('\nCity Distribution:\n',city_distribution)
```

```
City Distribution:
 City
New Delhi           5473
Gurgaon             1118
Noida               1080
Faridabad            251
Ghaziabad             25
                     ...
Panchkula              1
Mc Millan              1
Mayfield               1
Macedon                1
Vineland Station       1
Name: count, Length: 141, dtype: int64
```

[67]:
```python
cuisines_distribution= Dataset['Cuisines'].value_counts()
print('\nCuisines Distribution:\n',cuisines_distribution)
```

```
Cuisines Distribution:
 Cuisines
North Indian                     936
North Indian, Chinese            511
Chinese                          354
Fast Food                        354
North Indian, Mughlai            334
                                 ...
Bengali, Fast Food                 1
```

```
North Indian, Rajasthani, Asian                       1
Chinese, Thai, Malaysian, Indonesian                  1
Bakery, Desserts, North Indian, Bengali, South Indian 1
Italian, World Cuisine                                1
Name: count, Length: 1825, dtype: int64
```

[68]:
```python
sns.countplot(data=Dataset, x='Country Code')
plt.title('country Code Distribution')
plt.show()
```
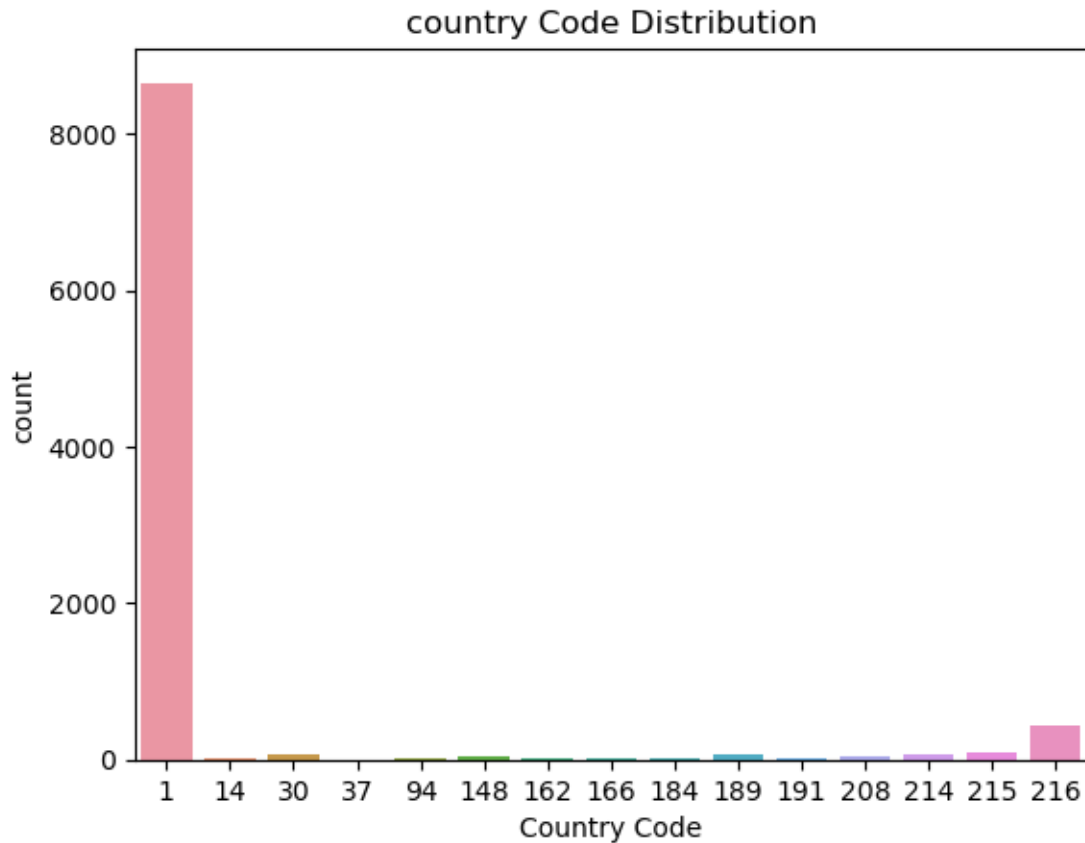

0.0.4 TOP CITY

[69]:
```python
top_city=Dataset['City'].value_counts().reset_index()

top_city.head()
```

[69]:
```
        City  count
0  New Delhi   5473
1    Gurgaon   1118
2      Noida   1080
```

```
3  Faridabad    251
4  Ghaziabad     25
```

[70]:
```
top_city.columns=['City','Number of City']
top_city.head()
```

[70]:
```
        City  Number of City
0  New Delhi            5473
1    Gurgaon            1118
2      Noida            1080
3  Faridabad             251
4  Ghaziabad              25
```

[71]:
```
top_City= Dataset['City'].value_counts().head()
top_City.plot(kind='bar')
plt.title('Top City Distribution')
plt.xticks(rotation=45)
plt.show()
```
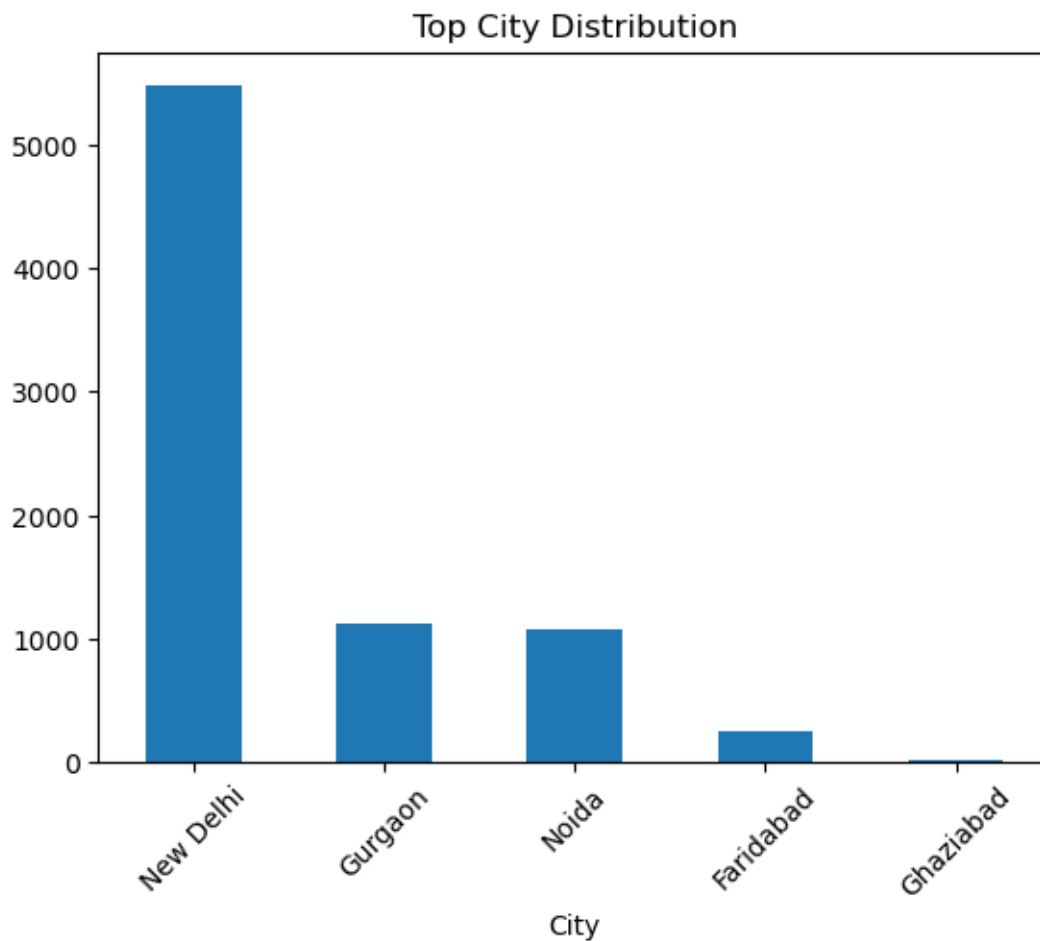
0.0.5 Top Cuisine

```
[72]: top_cuisine= Dataset['Cuisines'].value_counts().reset_index()
```

```
[73]: top_cuisine.columns=['Cuisine','Number of Restaurants']
      top_cuisine.head()
```

```
[73]:                    Cuisine  Number of Restaurants
      0            North Indian                    936
      1  North Indian, Chinese                    511
      2                 Chinese                    354
      3               Fast Food                    354
      4  North Indian, Mughlai                    334
```

```
[74]: top_cuisine=Dataset['Cuisines'].value_counts().head()
      top_cuisine.plot(kind='bar')
      plt.title('top Cuisines Distribution')

      plt.show()
```

top Cuisines Distribution
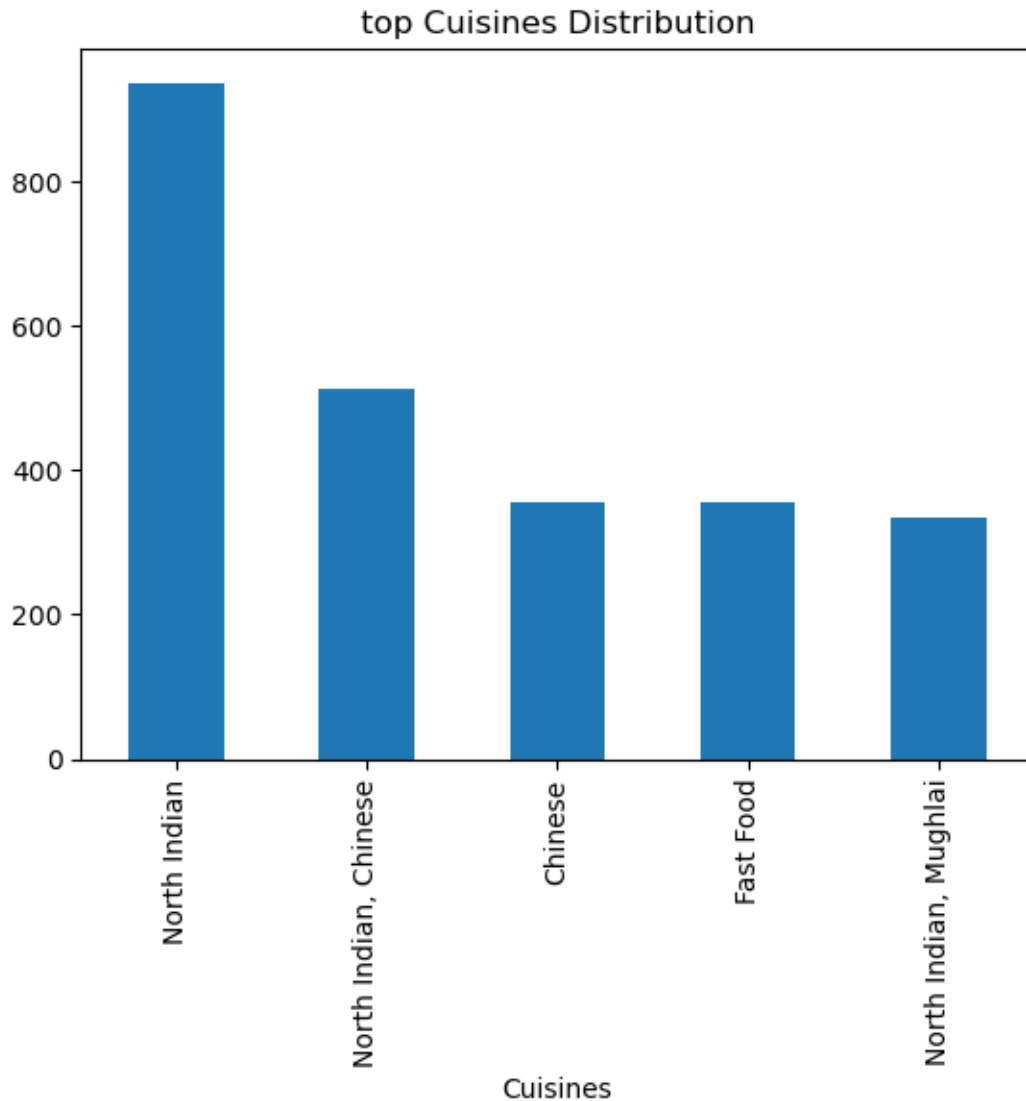
0.0.6 Task 3

0.0.7 Geospatial Analysis

```
[75]: conda install -c conda-forge mapbox
```

```
Collecting package metadata (current_repodata.json): …working… done
Note: you may need to restart the kernel to use updated packages.


==> WARNING: A newer version of conda exists. <==
  current version: 23.7.4
  latest version: 24.1.2
```

Please update conda by running

    $ conda update -n base -c defaults conda

Or to minimize the number of packages updated during conda update use

    conda install conda=24.1.2

Solving environment: …working… done

All requested packages already installed.

```python
import plotly.express as px
import mapbox
fig = px.scatter_mapbox(
    Dataset,
    lat='Latitude',
    lon='Longitude',
    hover_name='Restaurant Name',
    zoom=10
)

fig.update_layout(
    mapbox_style='carto-position',
    mapbox_zoom=10,
    mapbox_center_lat=Dataset['Latitude'].mean(),
    mapbox_center_lon=Dataset['Longitude'].mean(),
    margin=dict(l=0, r=0,t=0, b=0)
)

fig.show()
```

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