



Cognifyz intern Task - Colab

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DATA EXPLORATION STEPS

```
[ ] import numpy as np
# Get data dimensions (number of rows and columns)
print(df.shape)

(9551, 21)

# Check for missing values in each column
print(df.isnull().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

[ ] df.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')
```

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## RATING COUNTS TO EXAMINE CLASS IMBALANCES

```
[ ] import matplotlib.pyplot as plt

# Calculate the frequency of each rating
rating_counts = df['Aggregate rating'].value_counts().sort_index()

# Visualize the distribution of the target variable
plt.figure(figsize=(10, 6))
plt.bar(rating_counts.index, rating_counts.values, color='skyblue')
plt.title('Distribution of Aggregate Ratings')
plt.xlabel('Aggregate Rating')
plt.ylabel('Frequency')
plt.xticks(rotation=45) # Rotate the x-axis labels by 45 degrees
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.tight_layout() # Adjust layout to prevent overlapping
plt.show()

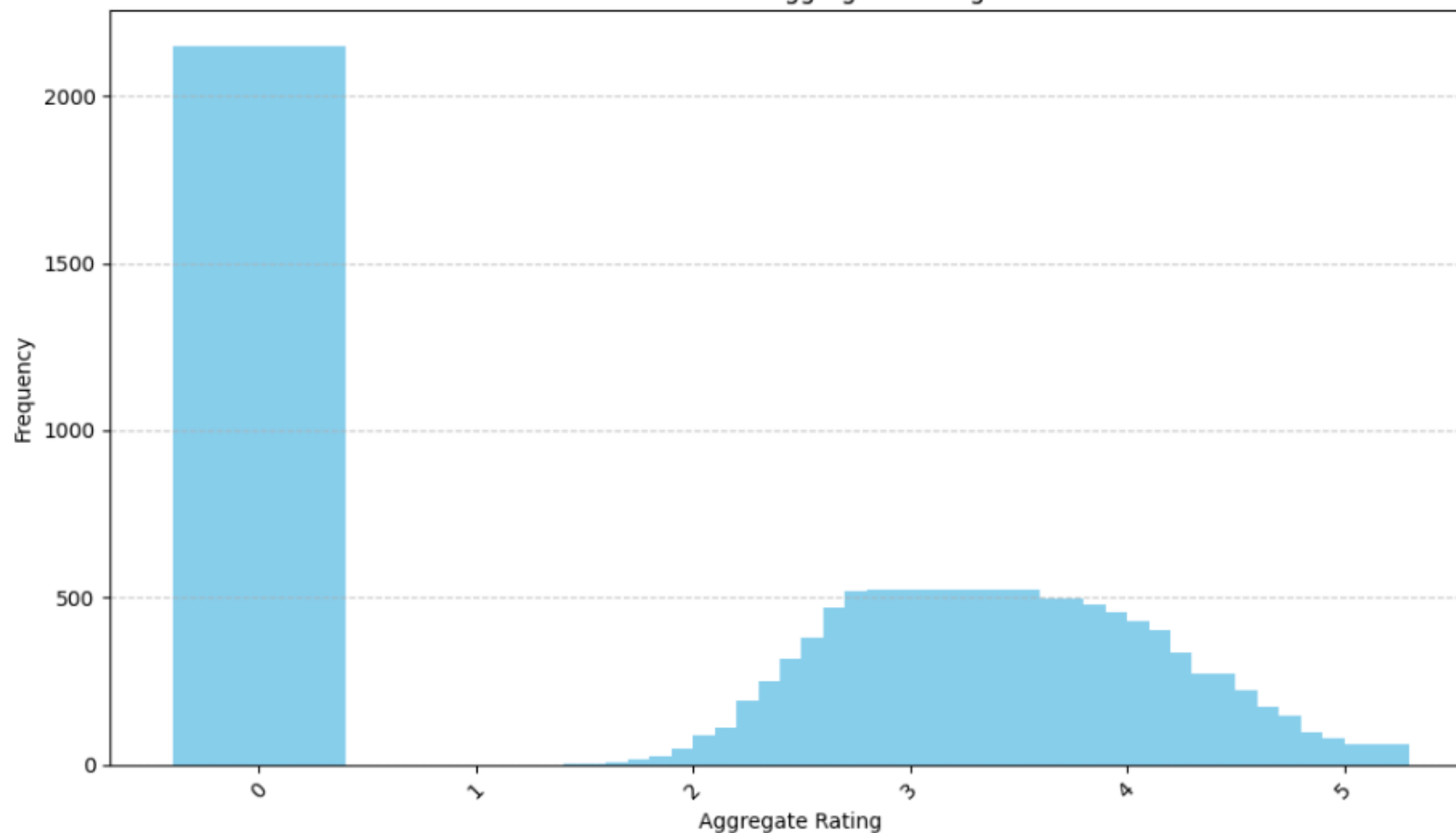
# Identify any class imbalances
# We can also print out the rating counts to examine class imbalances more closely
print("\nRating Counts:")
print(rating_counts)
```

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```
print(rating_counts)
```



Distribution of Aggregate Ratings



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[ ]

Rating Counts:  
Aggregate rating  
0.0 2148  
1.8 1  
1.9 2  
2.0 7  
2.1 15  
2.2 27  
2.3 47  
2.4 87  
2.5 110  
2.6 191  
2.7 250  
2.8 315  
2.9 381  
3.0 468  
3.1 519  
3.2 522  
3.3 483  
3.4 498  
3.5 480  
3.6 458  
3.7 427  
3.8 400  
3.9 335  
4.0 266  
4.1 274  
4.2 221  
4.3 174  
4.4 144  
4.5 95  
4.6 78  
4.7 42  
4.8 25  
4.9 61  
Name: count, dtype: int64

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LEVEL-1 TASK-2 -> Descriptive Analysis

```
[ ] # Calculate basic statistical measures for numerical columns
numerical_stats = df.describe()

# Display the calculated statistics
print("Basic Statistical Measures for Numerical Columns:")
print(numerical_stats)
```

	Restaurant ID	Longitude	Latitude	Average Cost for two \
count	9.551000e+03	9551.000000	9551.000000	9551.000000
mean	9.051128e+06	64.126574	25.854381	1199.210763
std	8.791521e+06	41.467058	11.007935	16121.183073
min	5.300000e+01	-157.948486	-41.330428	0.000000
25%	3.019625e+05	77.081343	28.478713	250.000000
50%	6.004089e+06	77.191964	28.570469	400.000000
75%	1.835229e+07	77.282006	28.642758	700.000000
max	1.850065e+07	174.832089	55.976980	800000.000000

	Aggregate rating	Votes
count	9551.000000	9551.000000
mean	2.666370	156.909748
std	1.516378	430.169145
min	0.000000	0.000000
25%	2.500000	5.000000
50%	3.200000	31.000000
75%	3.700000	131.000000
max	4.900000	10934.000000

- ✓ **LEVEL-1 TASK-3 ->> Geospatial Analysis**



```
[ ] # Visualize the distribution of "City"
plt.figure(figsize=(12, 6))
city_counts.head(20).plot(kind='bar', color='salmon')
plt.title('Distribution of City (Top 20)')
plt.xlabel('City')
plt.ylabel('Number of Restaurants')
plt.xticks(rotation=45)
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()

print("\t") # Add a tab space

# Visualize the distribution of "Cuisines" (Top 10)
plt.figure(figsize=(12, 6))
top_cuisines.plot(kind='bar', color='lightgreen')
plt.title('Top 10 Cuisines')
plt.xlabel('Cuisine')
plt.ylabel('Number of Restaurants')
plt.xticks(rotation=45)
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()

print("\t") # Add a tab space
```

### Distribution of Country Code:

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

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Distribution of City:

City

New Delhi	5473
Gurgaon	1118
Noida	1080
Faridabad	251
Ghaziabad	25
...	
Dicky Beach	1
Lorn	1
Quezon City	1
Lincoln	1
Lakeview	1

Name: count, Length: 141, dtype: int64

Distribution of Cuisines:

Cuisines

North Indian	936
North Indian, Chinese	511
Chinese	354
Fast Food	354
North Indian, Mughlai	334
...	
Continental, Italian, North Indian, Lebanese, Thai	1
Continental, Italian, North Indian, Lebanese	1
Continental, Italian, North Indian, Chinese, Lebanese	1
Continental, Italian, North Indian, Chinese	1
World Cuisine, Patisserie, Cafe	1

Name: count, Length: 1825, dtype: int64

Top 10 Cuisines:

Cuisines

North Indian	936
North Indian, Chinese	511
Chinese	354
Fast Food	354
North Indian, Mughlai	334
Cafe	299
Bakery	218
North Indian, Mughlai, Chinese	197
Bakery, Desserts	170
Street Food	149

Name: count, dtype: int64

Top 10 Cities with the Highest Number of Restaurants:

City

New Delhi	5473
Gurgaon	1118

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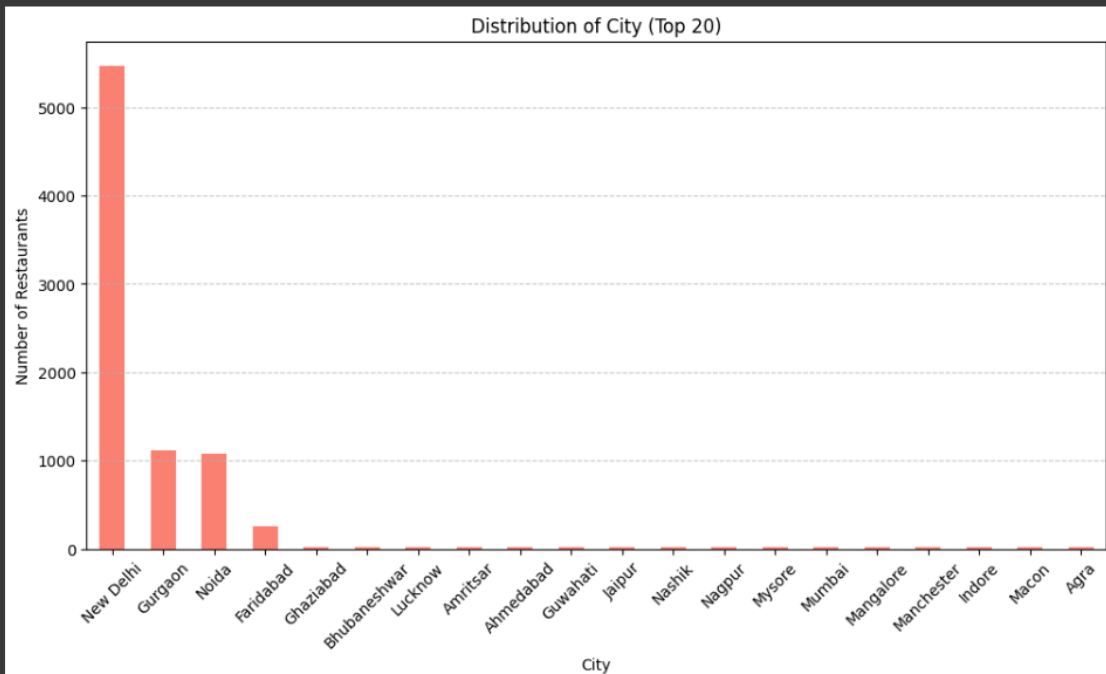
City

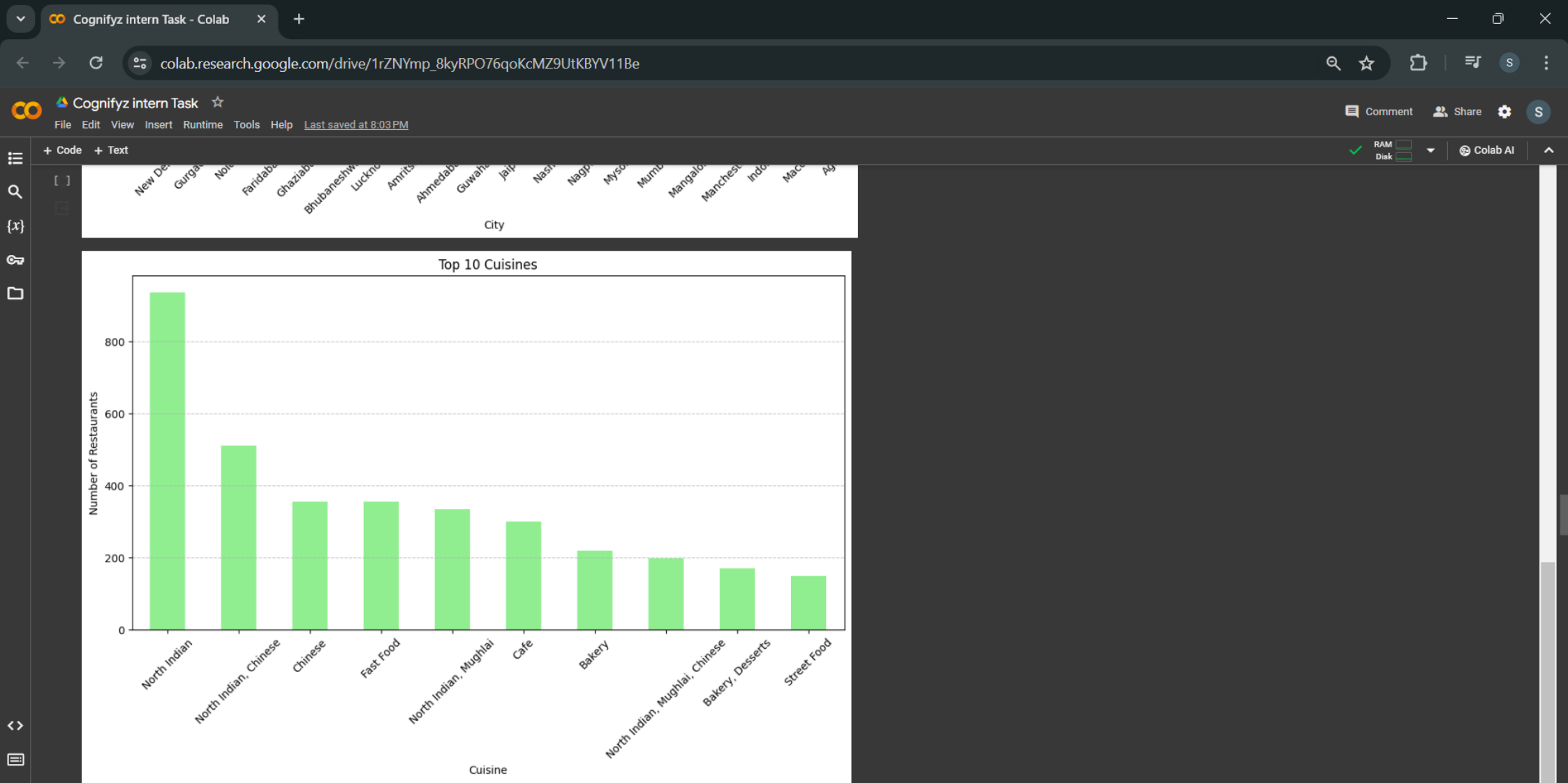
New Delhi	5473
Gurgaon	1118
Noida	1080
Faridabad	251
Ghaziabad	25
Bhubaneswar	21
Lucknow	21
Amritsar	21
Ahmedabad	21
Guwahati	21

Name: count, dtype: int64

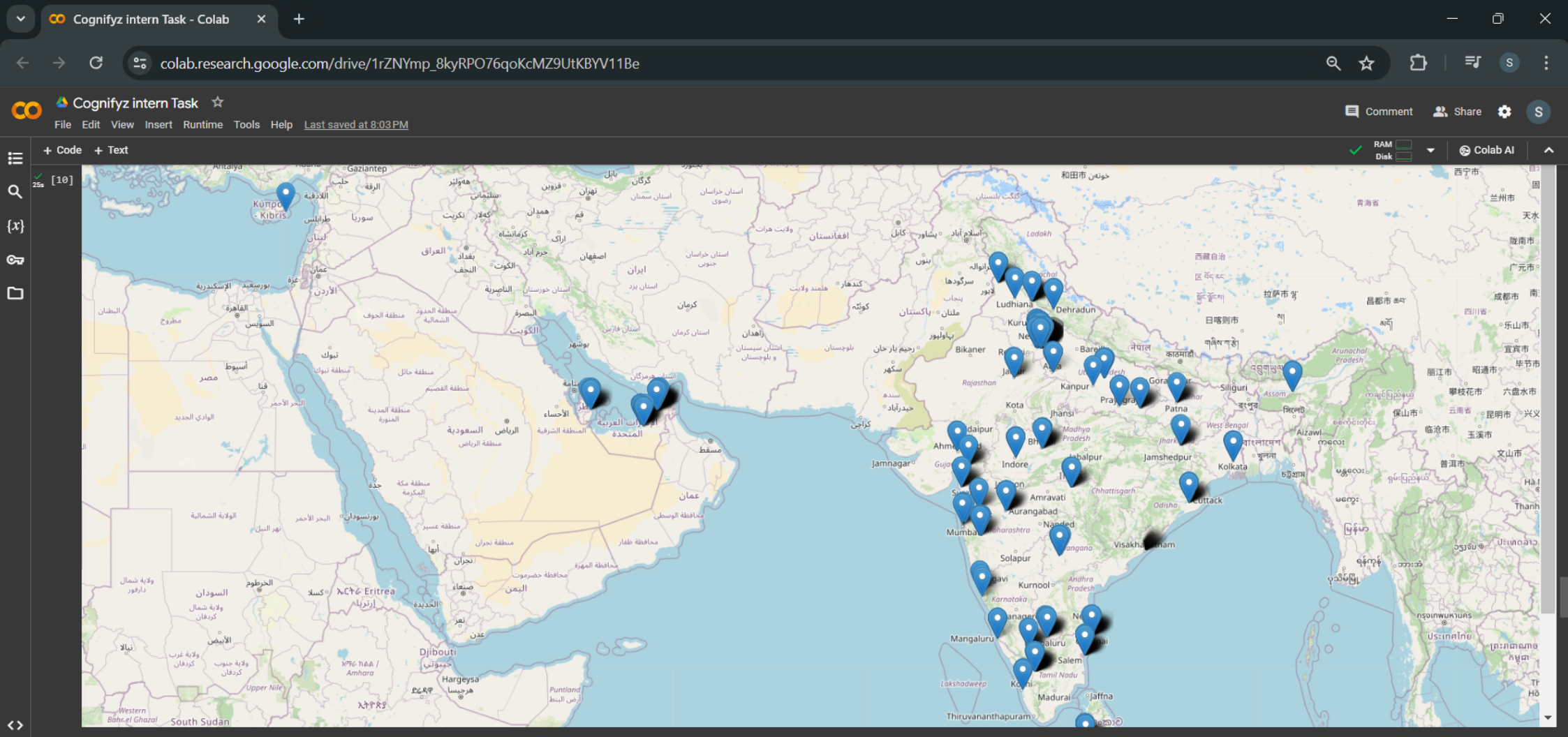
Distribution of Country Code

Country Code	Number of Restaurants
1	5473
216	1118
215	1080
30	251
189	25
214	21
148	21
208	21
14	21
162	21
94	21
166	21
184	21
191	21
37	21















✓ **LEVEL-2 TASK-2 -->> Price Range Analysis**

```
[ ] # Determine the most common price range among all the restaurants
most_common_price_range = df['Price range'].mode()[0]

# Print the result
print("The most common price range among all the restaurants:", most_common_price_range)
```

The most common price range among all the restaurants: 1

```
[ ] # Calculate the average rating for each price range
avg_rating_by_price_range = df.groupby('Price range')['Aggregate rating'].mean()

# Print the results
print("Average rating for each price range:")
print(avg_rating_by_price_range)
```

Average rating for each price range:

```
Price range
1    1.999887
2    2.941054
3    3.683381
4    3.817918
Name: Aggregate rating, dtype: float64
```

The color that represents the highest average rating among different price ranges: Green

- 
- 
- 

$\{x\}$





```
[ ] 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\ Mahallesi, R\ht'm ...
9547 Ko\uyolu Mahallesi, Muhittin \st\nda\ Cadd...
9548 Kuru\eme Mahallesi, Muallim Naci Caddesi, N...
9549 Kuru\eme Mahallesi, Muallim Naci Caddesi, N...
9550 Cafea\ 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\eme
9549 Kuru\eme
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
```

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9549

Kuruçeme, İstanbul

29.036019

[ ]

9550

Moda, İstanbul

29.026016

	Latitude	Cuisines	Has Online delivery
0	14.565443	French, Japanese, Desserts	NaN
1	14.553708	Japanese	NaN
2	14.581404	Seafood, Asian, Filipino, Indian	NaN
3	14.585318	Japanese, Sushi	NaN
4	14.584450	Japanese, Korean	NaN
...	...	...	...
9546	41.022793	Turkish	NaN
9547	41.009847	World Cuisine, Patisserie, Cafe	NaN
9548	41.055817	Italian, World Cuisine	NaN
9549	41.057979	Restaurant Cafe	NaN
9550	40.984776	Cafe	NaN

	Is delivering now	Switch to order menu	Price range	Aggregate rating
0	No	No	3	4.8
1	No	No	3	4.5
2	No	No	4	4.4
3	No	No	4	4.9
4	No	No	4	4.8
...	...	...	...	...
9546	No	No	3	4.1
9547	No	No	3	4.2
9548	No	No	4	3.7
9549	No	No	4	4.0
9550	No	No	2	4.0

	Rating color	Rating text	Votes	Restaurant Name	Length	Address Length
0	Dark Green	Excellent	314		16	71
1	Dark Green	Excellent	591		16	67
2	Green	Very Good	270		22	56
3	Dark Green	Excellent	365		4	70
4	Dark Green	Excellent	229		11	64
...	...	...	...		...	...
9546	Green	Very Good	788		11	103
9547	Green	Very Good	1034		12	77
9548	Yellow	Good	661		5	73
9549	Green	Very Good	901		11	75
9550	Green	Very Good	591		24	65

[9551 rows x 23 columns]