Level : 2

Task - 1 : Restaurant Ratings

Analyze the distribution of aggregate ratings and determine the most common rating range.

In [3]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [4]:
```
data_set = pd.read_csv(r"C:\Users\Shree\OneDrive\Desktop\FSDS_omkar sir\Datafiles\r
```

In [5]:
```
data_set
```

Out[5]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	
0	6317637	Le Petit Souffle	162	Makati City	Third Floor, Century City Mall, Kalayaan Avenu...	Century City Mall, Poblacion, Makati City	Ma
1	6304287	Izakaya Kikufuji	162	Makati City	Little Tokyo, 2277 Chino Roces Avenue, Legaspi...	Little Tokyo, Legaspi Village, Makati City	Le
2	6300002	Heat - Edsa Shangri-La	162	Mandaluyong City	Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...	Edsa Shangri-La, Ortigas, Mandaluyong City	Eds
3	6318506	Ooma	162	Mandaluyong City	Third Floor, Mega Fashion Hall, SM Megamall, O...	SM Megamall, Ortigas, Mandaluyong City	S
4	6314302	Sambo Kojin	162	Mandaluyong City	Third Floor, Mega Atrium, SM Megamall, Ortigas...	SM Megamall, Ortigas, Mandaluyong City	S
...	...	...	...	...	...	...	
9546	5915730	Naml\ Gurme	208	��stanbul	Kemanke�� Karamustafa Pa��a Mahallesi, Rlhtlm ...	Karak�_y	
9547	5908749	Ceviz A��acl	208	��stanbul	Ko��uyolu Mahallesi, Muhittin ��st�_nda�� Cadd...	Ko��uyolu	
9548	5915807	Huqqa	208	��stanbul	Kuru�_e��me Mahallesi, Muallim Naci Caddesi, N...	Kuru�_e��me	Kur
9549	5916112	A���k Kahve	208	��stanbul	Kuru�_e��me Mahallesi, Muallim Naci Caddesi, N...	Kuru�_e��me	Kur
9550	5927402	Walter's Coffee Roastery	208	��stanbul	Cafea��a Mahallesi, Bademaltl	Moda	

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality
					Sokak, No 21/B, ...	

9551 rows × 21 columns

In [6]:
```
data_set['Aggregate rating']
```

Out[6]:
```
0       4.8
1       4.5
2       4.4
3       4.9
4       4.8
       ...
9546    4.1
9547    4.2
9548    3.7
9549    4.0
9550    4.0
Name: Aggregate rating, Length: 9551, dtype: float64
```

In [7]:
```
print(data_set['Aggregate rating'].describe())
```

```
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
```

In [8]:
```
data_set['Aggregate rating'].unique()
```

Out[8]:
```
array([4.8, 4.5, 4.4, 4.9, 4. , 4.2, 4.3, 3.6, 4.7, 3. , 3.8, 3.7, 3.2,
       3.1, 0. , 4.1, 3.3, 4.6, 3.9, 3.4, 3.5, 2.2, 2.9, 2.4, 2.6, 2.8,
       2.1, 2.7, 2.5, 1.8, 2. , 2.3, 1.9])
```

In [16]:
```
def distribution_rating(rating,bins):
    fig, axes = plt.subplots(1, 2, figsize=(14, 6))

    axes[0].hist(data_set[rating], bins=bins, color='skyblue', edgecolor='black')
    axes[0].set_xlabel('Ratings Value')
    axes[0].set_ylabel('Frequency')
    axes[0].set_title('Restaurant Ratings Histogram')

    sns.histplot(data=data_set, x=rating, bins=bins, kde=True, color='orange', edge
    axes[1].set_xlabel('Ratings Value')
    axes[1].set_ylabel('Density')
```

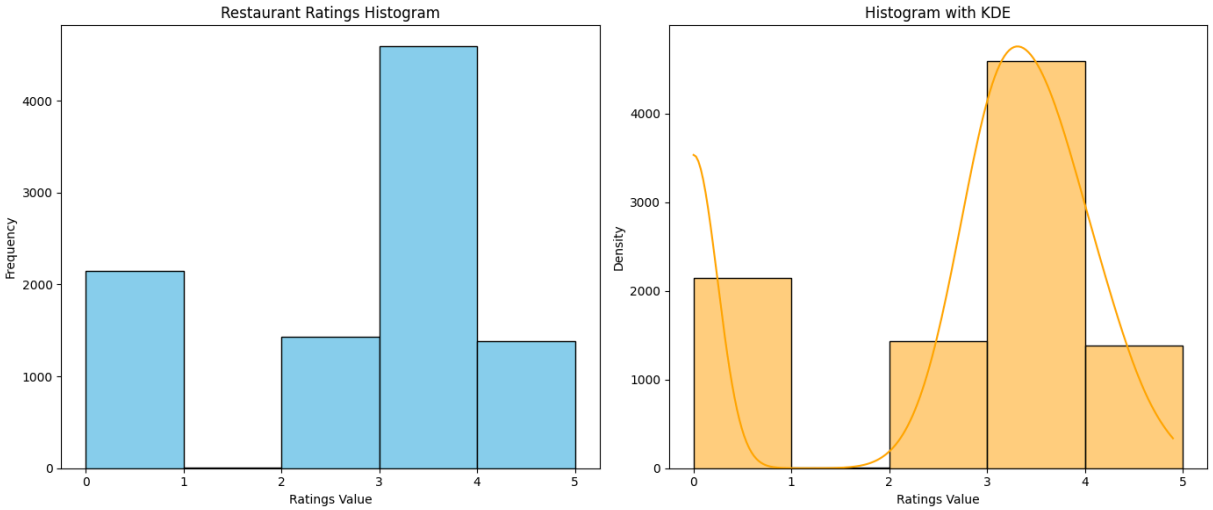
```
    axes[1].set_title('Histogram with KDE')

# Adjust layout
    plt.tight_layout()
    plt.show()
```

In [17]:
```
print("Rating Max Count -", data_set["Aggregate rating"].max())
print("Rating Min Count - ", data_set["Aggregate rating"].min())
```

```
Rating Max Count - 4.9
Rating Min Count -  0.0
```

In [18]:
```
bins = [x for x in range(0,6,1)]
distribution_rating("Aggregate rating",bins)
```



Observation

- Ratings Range
    1. 0-1
    2. 1-2 - Min
    3. 2-3
    4. 3-4 - Max
    5. 4-5

Calculate the average number of votes received by restaurants.

In [9]:
```
data_set['Votes'].mean()
```

Out[9]:
```
np.float64(156.909747670401)
```

Task - 2 : Cuisine Combination

- ***Identify the most common combinations of cuisines in the dataset.***

In [10]:
```
data_set['Cuisines'].unique()
```

Out[10]:
```
array(['French, Japanese, Desserts', 'Japanese',
       'Seafood, Asian, Filipino, Indian', ..., 'Burger, Izgara',
       'World Cuisine, Patisserie, Cafe', 'Italian, World Cuisine'],
      dtype=object)
```

Determine if certain cuisine combinations tend to have higher ratings.

In [11]:
```
data_set.head()
```

Out[11]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose
0	6317637	Le Petit Souffle	162	Makati City	Third Floor, Century City Mall, Kalayaan Avenu...	Century City Mall, Poblacion, Makati City	Century City Mall, Poblacion, Makati City, Mak...
1	6304287	Izakaya Kikufuji	162	Makati City	Little Tokyo, 2277 Chino Roces Avenue, Legaspi...	Little Tokyo, Legaspi Village, Makati City	Little Tokyo, Legaspi Village, Makati City, Ma...
2	6300002	Heat - Edsa Shangri-La	162	Mandaluyong City	Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...	Edsa Shangri-La, Ortigas, Mandaluyong City	Edsa Shangri-La, Ortigas, Mandaluyong City, Ma...
3	6318506	Ooma	162	Mandaluyong City	Third Floor, Mega Fashion Hall, SM Megamall, O...	SM Megamall, Ortigas, Mandaluyong City	SM Megamall, Ortigas, Mandaluyong City, Mandal...
4	6314302	Sambo Kojin	162	Mandaluyong City	Third Floor, Mega Atrium, SM Megamall, Ortigas...	SM Megamall, Ortigas, Mandaluyong City	SM Megamall, Ortigas, Mandaluyong City, Mandal...

5 rows × 21 columns

In [12]:
```
higher_ratings = data_set.groupby('Cuisines')['Aggregate rating'].count().sort_valu
higher_ratings
```

Out[12]:
```
Cuisines
North Indian                                                          936
North Indian, Chinese                                                 511
Fast Food                                                             354
Chinese                                                               354
North Indian, Mughlai                                                 334
                                                                     ...
Cafe, Continental, North Indian, Chinese                                1
Cafe, Continental, North Indian, Chinese, Mexican                       1
Tea, Beverages, Fast Food                                               1
Tea, Cafe                                                               1
North Indian, Street Food, Fast Food, Chinese, South Indian, Mithai     1
Name: Aggregate rating, Length: 1825, dtype: int64
```

Task - 3 : Geographic Analysis

Plot the locations of restaurants on a map using longitude and latitude coordinates Identify any patterns or clusters of restaurants in specific areas.

In [13]:
```
# Display the first few rows
print(data_set[['Restaurant Name', 'Longitude', 'Latitude']].head())
```

```
         Restaurant Name   Longitude   Latitude
0        Le Petit Souffle  121.027535  14.565443
1        Izakaya Kikufuji  121.014101  14.553708
2  Heat - Edsa Shangri-La  121.056831  14.581404
3                    Ooma  121.056475  14.585318
4             Sambo Kojin  121.057508  14.584450
```

Task - 4 : : Restaurant Chains

- **Identify if there are any restaurant chains present in the datase**

In [37]:
```
data_set.head(2)
```

Out[37]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude	I
0	6317637	Le Petit Souffle	162	Makati City	Third Floor, Century City Mall, Kalayaan Avenu...	Century City Mall, Poblacion, Makati City	Century City Mall, Poblacion, Makati City, Mak...	121.027535	14
1	6304287	Izakaya Kikufuji	162	Makati City	Little Tokyo, 2277 Chino Roces Avenue, Legaspi...	Little Tokyo, Legaspi Village, Makati City	Little Tokyo, Legaspi Village, Makati City, Ma...	121.014101	14

2 rows × 21 columns

In [38]:
```
res_count=data_set['Restaurant Name'].value_counts()
potential_chains=res_count[res_count > 10].index
print("Potential restaurant chains:")
for chain in potential_chains:
    print(f"--{chain}")
```

```
Potential restaurant chains:
--Cafe Coffee Day
--Domino's Pizza
--Subway
--Green Chick Chop
--McDonald's
--Keventers
--Pizza Hut
--Giani
--Baskin Robbins
--Barbeque Nation
--Barista
--Giani's
--Dunkin' Donuts
--Pind Balluchi
--Costa Coffee
--Pizza Hut Delivery
--Wah Ji Wah
--Sagar Ratna
--Twenty Four Seven
--Republic of Chicken
--Chaayos
--KFC
--Starbucks
--Burger King
--Haldiram's
--Shree Rathnam
--Moti Mahal Delux
--Bikanervala
--Aggarwal Sweets
--Frontier
--Behrouz Biryani
--Bikaner Sweets
--Karim's
--Chicago Pizza
--Apni Rasoi
--34, Chowringhee Lane
--Madras Cafe
--Wow! Momo
--Burger Point
```

In [35]:
```
Restaurant  = data_set['Restaurant Name'].value_counts()
Restaurant_chains =  Restaurant [Restaurant > 1]
Restaurant_chains
```

Out[35]:
```
Restaurant Name
Cafe Coffee Day     83
Domino's Pizza      79
Subway              63
Green Chick Chop    51
McDonald's          48
                    ..
San Carlo            2
Gymkhana             2
Dishoom              2
Timboo Cafe          2
D_vero__lu           2
Name: count, Length: 734, dtype: int64
```

- ***Analyze the ratings and popularity of different restaurant chains***

In [40]:
```
restaurant_chain_stats=data_set.groupby('Restaurant Name').agg({
    'Aggregate rating':'mean',
    'Votes':'sum',
}).reset_index()

restaurant_chain_stats.columns=['Restaurant Name','Average rating','Total Votes']
restaurant_chain_stats=restaurant_chain_stats.sort_values(by='Total Votes',ascendin
print("Restaurant Chain Rating and Popularity Analysis (Sorted by Total Votes):")
print(restaurant_chain_stats.head(20))
```

```
Restaurant Chain Rating and Popularity Analysis (Sorted by Total Votes):
               Restaurant Name  Average rating  Total Votes
663             Barbeque Nation        4.353846        28142
101   AB's - Absolute Barbecues        4.825000        13400
6943                      Toit        4.800000        10934
785                 Big Chill        4.475000        10853
2297               Farzi Cafe        4.366667        10098
6988                 Truffles        3.950000         9682
1510                  Chili's        4.580000         8156
2879          Hauz Khas Social        4.300000         7931
3261              Joey's Pizza        4.250000         7807
4902                 Peter Cat        4.300000         7574
796             Big Yellow Door        4.266667         7511
5571            Saravana Bhavan        4.133333         7238
6080                  Starbucks        3.805556         7139
4941          Pirates of Grill        4.025000         7091
3405                   Karim's        3.030769         6878
2098            Domino's Pizza        2.740506         6643
6106                    Subway        2.907937         6124
2145            Dunkin' Donuts        3.136364         5974
783                Big Brewsky        4.500000         5705
4924             Pind Balluchi        2.630000         5582
```