Task 1 : *Top Cuisines*

- Determine the top three most common cuisines in the dataset. and Calculate the percentage of restaurants that serve each of the top cuisines.

In [9]:
```
import numpy as np
import pandas as pd
```

Read the File

In [11]:
```
data = pd.read_csv(r"C:\Users\Shree\OneDrive\Desktop\FSDS_omkar sir\Datafiles\resta
```

In [12]:
```
data
```

Out[12]:

	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

Check a all over data information

In [13]:
```
data.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
```

In [14]:
```
data.columns
```

Out[14]:
```
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')
```

In [15]:
```
data['Cuisines']
```

Out[15]:
```
0             French, Japanese, Desserts
1                                Japanese
2       Seafood, Asian, Filipino, Indian
3                         Japanese, Sushi
4                        Japanese, Korean
                        ...
9546                             Turkish
9547     World Cuisine, Patisserie, Cafe
9548               Italian, World Cuisine
9549                     Restaurant Cafe
9550                                Cafe
Name: Cuisines, Length: 9551, dtype: object
```

In [16]:
```
data['Cuisines'][0]
```

Out[16]:
```
'French, Japanese, Desserts'
```

Split the perticular Data Columns and count the values

In [17]:
```
Common_cuisines = data['Cuisines'].str.split(', ').explode('Cuisines').value_counts
Common_cuisines
```

Out[17]:
```
Cuisines
North Indian      3960
Chinese           2735
Fast Food         1986
Mughlai            995
Italian            764
                  ...
Cuisine Varies       1
Fish and Chips       1
Durban               1
D_ner                1
B_rek                1
Name: count, Length: 145, dtype: int64
```

Find the top three most common cuisines in the dataset

In [18]:
```
Total = Common_cuisines.head(3)
print('the top three most common cuisines in the dataset are = ',Total)
```

```
the top three most common cuisines in the dataset are =  Cuisines
North Indian    3960
Chinese         2735
Fast Food       1986
Name: count, dtype: int64
```

Count Common cuisines

In [19]:
```
data['Cuisines'].value_counts()
```

Out[19]:
```
Cuisines
North Indian                        936
North Indian, Chinese               511
Chinese                             354
Fast Food                           354
North Indian, Mughlai               334
                                   ...
Kebab, Izgara                         1
World Cuisine                         1
World Cuisine, Mexican, Italian       1
Kebab, Turkish Pizza, D�_ner          1
Turkish Pizza                         1
Name: count, Length: 1825, dtype: int64
```

percentage of restaurants that serve each of the top cuisines.

In [20]:
```
data['Cuisines'].value_counts(normalize = True)
```

Out[20]:
```
Cuisines
North Indian                        0.098093
North Indian, Chinese               0.053553
Chinese                             0.037099
Fast Food                           0.037099
North Indian, Mughlai               0.035003
                                      ...
Kebab, Izgara                       0.000105
World Cuisine                       0.000105
World Cuisine, Mexican, Italian     0.000105
Kebab, Turkish Pizza, D�_ner        0.000105
Turkish Pizza                       0.000105
Name: proportion, Length: 1825, dtype: float64
```

In [21]:
```
data['Cuisines'].value_counts(normalize = True).head()
```

Out[21]:
```
Cuisines
North Indian             0.098093
North Indian, Chinese    0.053553
Chinese                  0.037099
Fast Food                0.037099
North Indian, Mughlai    0.035003
Name: proportion, dtype: float64
```

Task - 2 : City Analysis

- Identify the city with the highest number of restaurants in the dataset.

In [22]:
```
data
```

Out[22]:

	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 [23]:
```
pd.DataFrame(data.groupby(['City', 'Aggregate rating']))[0]
```

Out[23]:
```
0      (Abu Dhabi, 3.6)
1      (Abu Dhabi, 4.0)
2      (Abu Dhabi, 4.1)
3      (Abu Dhabi, 4.2)
4      (Abu Dhabi, 4.3)
             ...
941    (��stanbul, 4.2)
942    (��stanbul, 4.3)
943    (��stanbul, 4.5)
944    (��stanbul, 4.7)
945    (��stanbul, 4.9)
Name: 0, Length: 946, dtype: object
```

In [24]:
```
print(data.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')
```

In [25]:
```
C_count = data['City'].value_counts()
C_count
```

Out[25]:
```
City
New Delhi         5473
Gurgaon           1118
Noida             1080
Faridabad          251
Ghaziabad           25
                  ...
Lakes Entrance       1
Mohali               1
Panchkula            1
Bandung              1
Randburg             1
Name: count, Length: 141, dtype: int64
```

In [26]:
```
C_restaurant = C_count.idxmax()
C_restaurant
```

Out[26]:
```
'New Delhi'
```

In [27]:
```
 Highest_restaurant_city = C_count.max()
Highest_restaurant_city
```

Out[27]:
```
np.int64(5473)
```

Calculate the average rating for restaurants in each city.

In [28]:
```
data.City
```

Out[28]:
```
0            Makati City
1            Makati City
2       Mandaluyong City
3       Mandaluyong City
4       Mandaluyong City
              ...
9546           ��stanbul
9547           ��stanbul
9548           ��stanbul
9549           ��stanbul
9550           ��stanbul
Name: City, Length: 9551, dtype: object
```

In [29]:
```
count_rating = data['Aggregate rating'].value_counts()
count_rating
```

Out[29]:
```
Aggregate rating
0.0    2148
3.2     522
3.1     519
3.4     498
3.3     483
3.5     480
3.0     468
3.6     458
3.7     427
3.8     400
2.9     381
3.9     335
2.8     315
4.1     274
4.0     266
2.7     250
4.2     221
2.6     191
4.3     174
4.4     144
2.5     110
4.5      95
2.4      87
4.6      78
4.9      61
2.3      47
4.7      42
2.2      27
4.8      25
2.1      15
2.0       7
1.9       2
1.8       1
Name: count, dtype: int64
```

Determine the city with the highest average rating.

In [30]:
```
count_rating = data['City'].value_counts()
count_rating
```

Out[30]:
```
City
New Delhi         5473
Gurgaon           1118
Noida             1080
Faridabad          251
Ghaziabad           25
                  ...
Lakes Entrance       1
Mohali               1
Panchkula            1
Bandung              1
Randburg             1
Name: count, Length: 141, dtype: int64
```

In [39]:
```
data['City'].value_counts().max()
```

Out[39]:
```
np.int64(5473)
```

****Task - 3 : Price Range Distribution****

Create a histogram or bar chart to visualize the distribution of price ranges among the restaurants.

In [29]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

In [30]:
```
data
```

Out[30]:

	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

Choose a Perticular Column

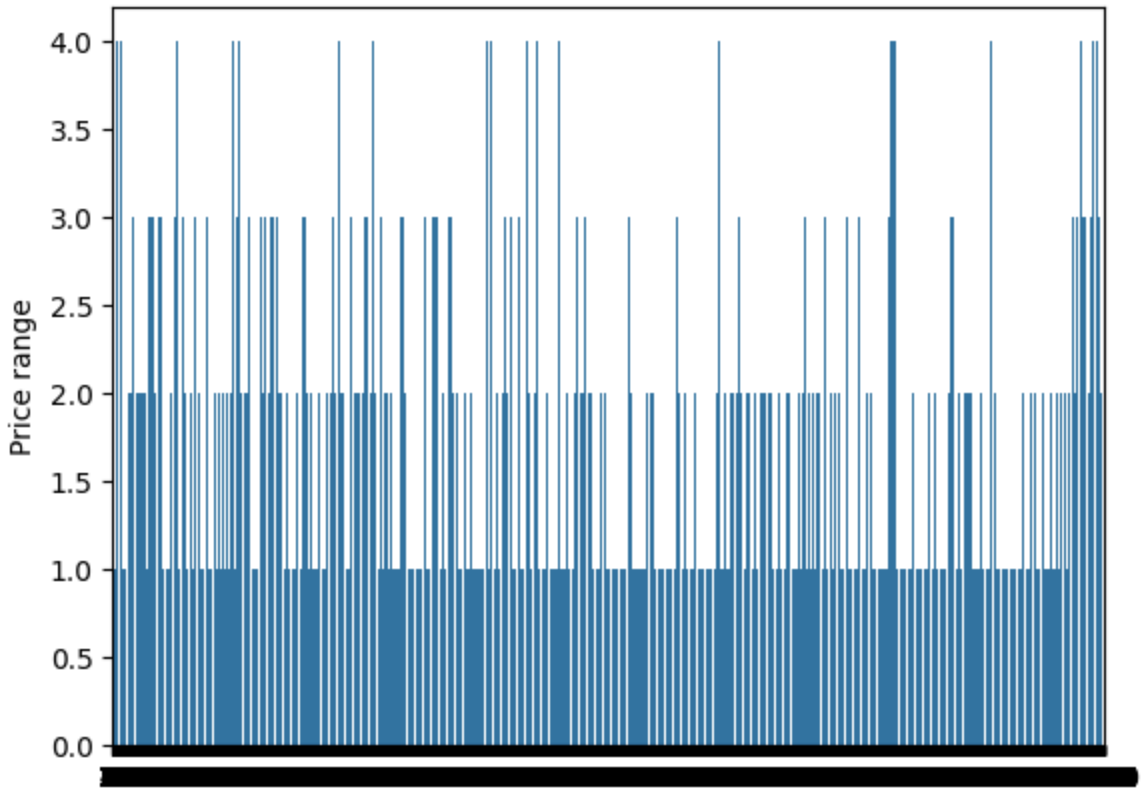
In [31]:
```
a = data['Price range']
a
```

Out[31]:
```
0       3
1       3
2       4
3       4
4       4
       ..
9546    3
9547    3
9548    4
9549    4
9550    2
Name: Price range, Length: 9551, dtype: int64
```

Create a Bar-Plot

In [32]:
```
import seaborn as sns
sns.barplot(a)
```

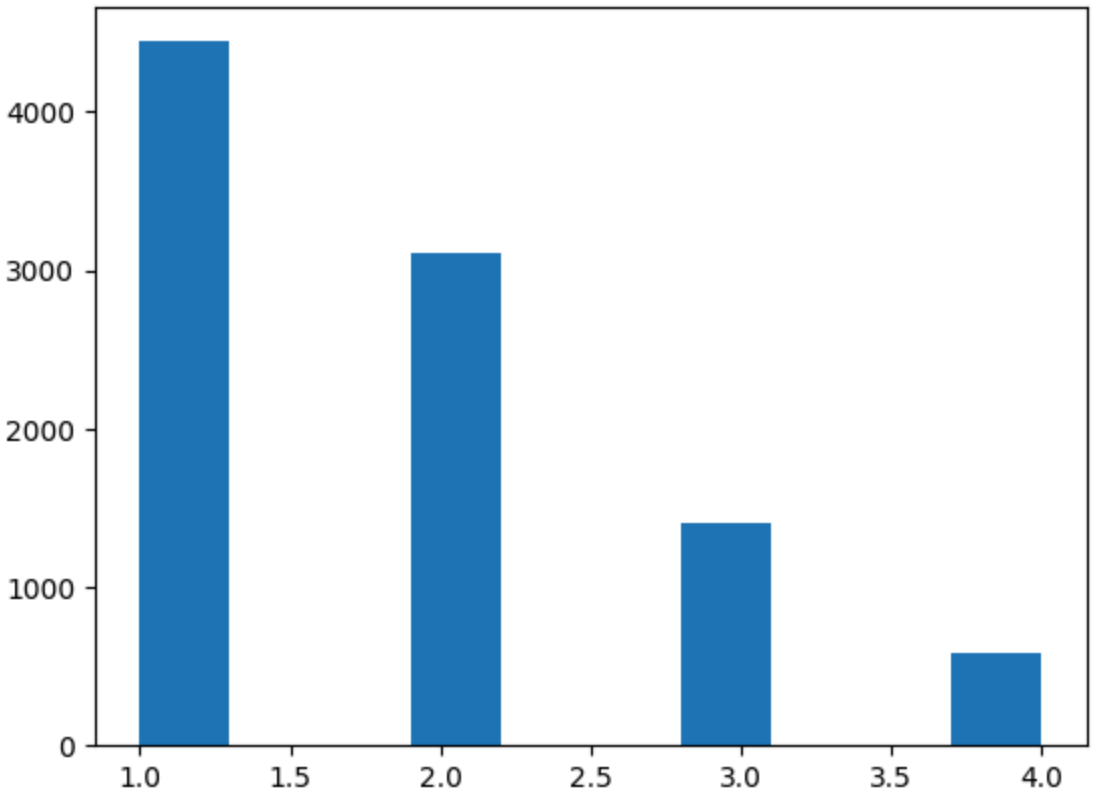
Out[32]:
```
<Axes: ylabel='Price range'>
```



Create a Histogram Plot

In [33]:
```
import matplotlib.pyplot as plt
plt.hist(a)
```

Out[33]:
```
(array([4444.,    0.,    0., 3113.,    0.,    0., 1408.,    0.,    0.,
         586.]),
 array([1. , 1.3, 1.6, 1.9, 2.2, 2.5, 2.8, 3.1, 3.4, 3.7, 4. ]),
 <BarContainer object of 10 artists>)
```



Calculate the percentage of restaurants in each price range category.

In [39]:
```
data['Price range'].value_counts(normalize = True)
```

Out[39]:
```
Price range
1    0.465292
2    0.325934
3    0.147419
4    0.061355
Name: proportion, dtype: float64
```

*****Task - 4 : Online Delivery*****

- Determine the percentage of restaurants that offer online delivery.

In [2]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

In [6]:
```
data
```

Out[6]:

	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
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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 [7]:
```
data['Has Online delivery'].value_counts(normalize = True)
```

Out[7]:
```
Has Online delivery
No     0.743378
Yes    0.256622
Name: proportion, dtype: float64
```

Compare the average ratings of restaurants with and without online deliver

In [18]:
```
import seaborn as sns
sns.barplot(data['Has Online delivery'].value_counts())
```

Out[18]:
```
<Axes: xlabel='Has Online delivery', ylabel='count'>
```