```python
import numpy as np
import pandas as pd
```

Dataset link

Zomato_Data_csv_format

```python
df=pd.read_csv(r'C:\Users\hp\Desktop\100DaysOfDataScience\Day 15\
zomato.csv')
df.head()
```

```
                                                url  \
0  https://www.zomato.com/bangalore/jalsa-banasha...
1  https://www.zomato.com/bangalore/spice-elephan...
2  https://www.zomato.com/SanchurroBangalore?cont...
3  https://www.zomato.com/bangalore/addhuri-udupi...
4  https://www.zomato.com/bangalore/grand-village...


                                             address               name  \
0  942, 21st Main Road, 2nd Stage, Banashankari, ...              Jalsa
1  2nd Floor, 80 Feet Road, Near Big Bazaar, 6th ...      Spice Elephant
2  1112, Next to KIMS Medical College, 17th Cross...     San Churro Cafe
3  1st Floor, Annakuteera, 3rd Stage, Banashankar...  Addhuri Udupi Bhojana
4  10, 3rd Floor, Lakshmi Associates, Gandhi Baza...      Grand Village
```

```
   online_order book_table   rate   votes                          phone  \
0          Yes          Yes  4.1/5    775    080 42297555\r\n+91 9743772233
1          Yes           No  4.1/5    787                       080 41714161
2          Yes           No  3.8/5    918                       +91 9663487993
3           No           No  3.7/5     88                       +91 9620009302
4           No           No  3.8/5    166   +91 8026612447\r\n+91 9901210005

       location             rest_type  \
0  Banashankari        Casual Dining
1  Banashankari        Casual Dining
2  Banashankari  Cafe, Casual Dining
3  Banashankari          Quick Bites
4  Basavanagudi        Casual Dining

                                          dish_liked  \
0  Pasta, Lunch Buffet, Masala Papad, Paneer Laja...
1  Momos, Lunch Buffet, Chocolate Nirvana, Thai G...
2  Churros, Cannelloni, Minestrone Soup, Hot Choc...
3                                        Masala Dosa
4                                 Panipuri, Gol Gappe

                          cuisines approx_cost(for two people)  \
0  North Indian, Mughlai, Chinese                          800
1     Chinese, North Indian, Thai                          800
2         Cafe, Mexican, Italian                           800
3       South Indian, North Indian                         300
4         North Indian, Rajasthani                         600

                                        reviews_list menu_item  \
0  [('Rated 4.0', 'RATED\n  A beautiful place to ...        []
1  [('Rated 4.0', 'RATED\n  Had been here for din...        []
2  [('Rated 3.0', "RATED\n  Ambience is not that ...        []
3  [('Rated 4.0', "RATED\n  Great food and proper...        []
4  [('Rated 4.0', 'RATED\n  Very good restaurant ...        []

  listed_in(type) listed_in(city)
0          Buffet    Banashankari
1          Buffet    Banashankari
2          Buffet    Banashankari
3          Buffet    Banashankari
4          Buffet    Banashankari
```

```python
print(f" Rows in dataset : {df.shape[0]}\n Columns in dataset : {df.shape[1]}")
```

```
 Rows in dataset : 51717
 Columns in dataset : 17
```

```python
print("Information about dataset :\n")
df.info()
```

```
Information about dataset :

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 51717 entries, 0 to 51716
Data columns (total 17 columns):
 #   Column                       Non-Null Count  Dtype
---  ------                       --------------  -----
 0   url                          51717 non-null  object
 1   address                      51717 non-null  object
 2   name                         51717 non-null  object
 3   online_order                 51717 non-null  object
 4   book_table                   51717 non-null  object
 5   rate                         43942 non-null  object
 6   votes                        51717 non-null  int64
 7   phone                        50509 non-null  object
 8   location                     51696 non-null  object
 9   rest_type                    51490 non-null  object
 10  dish_liked                   23639 non-null  object
 11  cuisines                     51672 non-null  object
 12  approx_cost(for two people)  51371 non-null  object
 13  reviews_list                 51717 non-null  object
 14  menu_item                    51717 non-null  object
 15  listed_in(type)              51717 non-null  object
 16  listed_in(city)              51717 non-null  object
dtypes: int64(1), object(16)
memory usage: 6.7+ MB
```

```python
print("Descriptive Statistics of dataset :\n",df.describe())
```

```
Descriptive Statistics of dataset :
               votes
count  51717.000000
mean     283.697527
std      803.838853
min        0.000000
25%        7.000000
50%       41.000000
75%      198.000000
max    16832.000000
```

```python
print('Number of unique values in each columns: ',df.nunique())
```

```
Number of unique values in each columns:  url
51717
address                          11495
name                              8792
online_order                         2
book_table                           2
rate                                64
votes                             2328
phone                            14926
location                            93
rest_type                           93
dish_liked                        5271
cuisines                          2723
approx_cost(for two people)         70
reviews_list                     22513
menu_item                         9098
listed_in(type)                      7
listed_in(city)                     30
dtype: int64
```

```python
print("Columns in dataset :\n",df.columns)
```

```
Columns in dataset :
 Index(['url', 'address', 'name', 'online_order', 'book_table',
'rate', 'votes',
       'phone', 'location', 'rest_type', 'dish_liked', 'cuisines',
       'approx_cost(for two people)', 'reviews_list', 'menu_item',
       'listed_in(type)', 'listed_in(city)'],
      dtype='object')
```

```python
df1 = df.copy()
```

```python
df1.drop(columns=['url','address','phone','reviews_list','menu_item','
location','dish_liked','cuisines'],inplace=True,axis=1)
df1.head()
```

```
                name online_order book_table   rate  votes  \
0               Jalsa          Yes        Yes  4.1/5    775
1       Spice Elephant          Yes         No  4.1/5    787
2      San Churro Cafe          Yes         No  3.8/5    918
3  Addhuri Udupi Bhojana           No         No  3.7/5     88
4        Grand Village           No         No  3.8/5    166


            rest_type approx_cost(for two people) listed_in(type)  \
0        Casual Dining                         800          Buffet
1        Casual Dining                         800          Buffet
2  Cafe, Casual Dining                         800          Buffet
3          Quick Bites                         300          Buffet
4        Casual Dining                         600          Buffet

   listed_in(city)
```

```
0     Banashankari
1     Banashankari
2     Banashankari
3     Banashankari
4     Banashankari

df1 = df1.rename(columns={"name":"restaurant_name","rate":"rating",
                          "approx_cost(for two
people)":"cost_for_two","listed_in(type)":"type",

"listed_in(city)":"location","book_table":"reservations","online_order
":"online"})
df1.head(10)

                                     restaurant_name online reservations
rating  \
0                                              Jalsa    Yes          Yes
4.1/5
1                                      Spice Elephant    Yes           No
4.1/5
2                                      San Churro Cafe    Yes          No
3.8/5
3                                 Addhuri Udupi Bhojana     No           No
3.7/5
4                                       Grand Village     No           No
3.8/5
5                                      Timepass Dinner    Yes           No
3.8/5
6   Rosewood International Hotel - Bar & Restaurant     No           No
3.6/5
7                                              Onesta    Yes          Yes
4.6/5
8                                      Penthouse Cafe    Yes           No
4.0/5
9                                            Smacznego    Yes           No
4.2/5

   votes           rest_type cost_for_two     type      location
0   775       Casual Dining          800   Buffet  Banashankari
1   787       Casual Dining          800   Buffet  Banashankari
2   918  Cafe, Casual Dining          800   Buffet  Banashankari
3    88          Quick Bites          300   Buffet  Banashankari
4   166       Casual Dining          600   Buffet  Banashankari
5   286       Casual Dining          600   Buffet  Banashankari
6     8       Casual Dining          800   Buffet  Banashankari
7  2556  Casual Dining, Cafe          600    Cafes  Banashankari
8   324                 Cafe          700    Cafes  Banashankari
9   504                 Cafe          550    Cafes  Banashankari
```

```
df1.columns = df1.columns.str.replace(" ","")
df1.head(7)
```

```
                                restaurant_name online reservations
rating  \
0                                        Jalsa    Yes          Yes
4.1/5
1                                Spice Elephant   Yes           No
4.1/5
2                                San Churro Cafe   Yes           No
3.8/5
3                          Addhuri Udupi Bhojana    No           No
3.7/5
4                                  Grand Village    No           No
3.8/5
5                                Timepass Dinner   Yes           No
3.8/5
6  Rosewood International Hotel - Bar & Restaurant   No           No
3.6/5

   votes              rest_type cost_for_two    type      location
0    775          Casual Dining          800  Buffet  Banashankari
1    787          Casual Dining          800  Buffet  Banashankari
2    918  Cafe, Casual Dining          800  Buffet  Banashankari
3     88            Quick Bites          300  Buffet  Banashankari
4    166          Casual Dining          600  Buffet  Banashankari
5    286          Casual Dining          600  Buffet  Banashankari
6      8          Casual Dining          800  Buffet  Banashankari
```

```
df1.shape
```

```
(51717, 9)
```

```
print("Number of duplicates values: ",df1.duplicated().sum())
df1.drop_duplicates(inplace=True)
print("Number of duplicates values: ",df1.duplicated().sum())
print(df1.shape)
```

```
Number of duplicates values:  127
Number of duplicates values:  0
(51590, 9)
```

```
df2 = df1.copy()
```

```
df2.dtypes
```

```
restaurant_name     object
online              object
reservations        object
rating              object
votes                int64
```

```
rest_type           object
cost_for_two        object
type                object
location            object
dtype: object
```

```
print("There are {} values that are unique in Online
Columns".format(len(df2["online"].unique())))
print("Number of unique values in Online Columns:
",df2['online'].unique())
print('----------------------------------------------------')
print("There are {} values that are unique in Reservations
Columns".format(len(df2["reservations"].unique())))
print("Number of unique values in Reservations Columns:
",df2['reservations'].unique())
```

```
There are 2 values that are unique in Online Columns
Number of unique values in Online Columns:  ['Yes' 'No']
--------------------------------------------------------
There are 2 values that are unique in Reservations Columns
Number of unique values in Reservations Columns:  ['Yes' 'No']
```

```
print("Number of values in online sorted uniquely:
",df2['online'].value_counts())
print('------------------------------------------------------------
--')
print("Number of values in reservations sorted uniquely:
",df2['reservations'].value_counts())
```

```
Number of values in online sorted uniquely:  online
Yes    30346
No     21244
Name: count, dtype: int64
------------------------------------------------------------------
Number of values in reservations sorted uniquely:  reservations
No     45174
Yes     6416
Name: count, dtype: int64
```

```
df2['rating'].unique()
```

```
array(['4.1/5', '3.8/5', '3.7/5', '3.6/5', '4.6/5', '4.0/5', '4.2/5',
       '3.9/5', '3.1/5', '3.0/5', '3.2/5', '3.3/5', '2.8/5', '4.4/5',
       '4.3/5', 'NEW', '2.9/5', '3.5/5', nan, '2.6/5', '3.8 /5',
'3.4/5',
       '4.5/5', '2.5/5', '2.7/5', '4.7/5', '2.4/5', '2.2/5', '2.3/5',
       '3.4 /5', '-', '3.6 /5', '4.8/5', '3.9 /5', '4.2 /5', '4.0 /5',
       '4.1 /5', '3.7 /5', '3.1 /5', '2.9 /5', '3.3 /5', '2.8 /5',
       '3.5 /5', '2.7 /5', '2.5 /5', '3.2 /5', '2.6 /5', '4.5 /5',
       '4.3 /5', '4.4 /5', '4.9/5', '2.1/5', '2.0/5', '1.8/5', '4.6
/5',
```

```
        '4.9 /5', '3.0 /5', '4.8 /5', '2.3 /5', '4.7 /5', '2.4 /5',
        '2.1 /5', '2.2 /5', '2.0 /5', '1.8 /5'], dtype=object)
```

```python
df2['rating'] = df2['rating'].str.split('/5').str[0].str.strip()
df2['rating'].unique()
```

```
array(['4.1', '3.8', '3.7', '3.6', '4.6', '4.0', '4.2', '3.9', '3.1',
        '3.0', '3.2', '3.3', '2.8', '4.4', '4.3', 'NEW', '2.9', '3.5',
nan,
        '2.6', '3.4', '4.5', '2.5', '2.7', '4.7', '2.4', '2.2', '2.3',
'-',
        '4.8', '4.9', '2.1', '2.0', '1.8'], dtype=object)
```

```python
df2.drop(df2[(df2['rating'] == 'NEW') | (df2['rating'] == '-')].index,
inplace=True)
df2['rating'].unique()
```

```
array(['4.1', '3.8', '3.7', '3.6', '4.6', '4.0', '4.2', '3.9', '3.1',
        '3.0', '3.2', '3.3', '2.8', '4.4', '4.3', '2.9', '3.5', nan,
'2.6',
        '3.4', '4.5', '2.5', '2.7', '4.7', '2.4', '2.2', '2.3', '4.8',
        '4.9', '2.1', '2.0', '1.8'], dtype=object)
```

```python
df2['rating'] = df2['rating'].astype(float)
df2['rating'].dtypes
```

```
dtype('float64')
```

```python
print("Number of Null Values in rating:
",df2['rating'].isnull().sum())
```

```
Number of Null Values in rating:  7738
```

```python
print(df2['rating'].describe())
print('----------------------------------------')
print("Mean of Rating: ",df2['rating'].mean())
print("Median of Rating: ",df2['rating'].median())
print("Mode of Rating: ",df2['rating'].mode())
```

```
count    41589.000000
mean         3.700151
std          0.440452
min          1.800000
25%          3.400000
50%          3.700000
75%          4.000000
max          4.900000
Name: rating, dtype: float64
----------------------------------------
Mean of Rating:  3.700151482363126
Median of Rating:  3.7
```

```
Mode of Rating:  0    3.9
Name: rating, dtype: float64

df2['rating'].fillna(df2['rating'].mean(), inplace = True)
print("Number of Null Values in rating:
",df2['rating'].isnull().sum())

Number of Null Values in rating:   0

print(df2['votes'].describe())
print('-------------------------------------')
print("Mean of Votes: ",df2['votes'].mean())
print("Median of Votes: ",df2['votes'].median())
print("Mode of Votes: ",df2['votes'].mode())

count    49327.000000
mean       296.388712
std        819.286948
min          0.000000
25%          9.000000
50%         47.000000
75%        212.000000
max      16832.000000
Name: votes, dtype: float64
-------------------------------------
Mean of Votes:  296.38871206438665
Median of Votes:  47.0
Mode of Votes:  0    0
Name: votes, dtype: int64

print("Number of Null Values in votes: ",df2['votes'].isnull().sum())

Number of Null Values in votes:   0

print("Number of values in rest_type sorted uniquely:
",df2['rest_type'].value_counts())

Number of values in rest_type sorted uniquely:   rest_type
Quick Bites                   17969
Casual Dining                 10047
Cafe                           3605
Delivery                       2490
Dessert Parlor                 2173
                               ...
Dessert Parlor, Kiosk             2
Food Court, Beverage Shop         2
Dessert Parlor, Food Court        2
Sweet Shop, Dessert Parlor        1
Quick Bites, Kiosk                1
Name: count, Length: 93, dtype: int64
```

```python
rest_type = df2["rest_type"].value_counts(ascending = False)
rest_less_than_500 = rest_type[rest_type < 500]
rest_less_than_500
```

```
rest_type
Sweet Shop                      462
Bar, Casual Dining              395
Lounge                          380
Pub                             351
Fine Dining                     345
                               ...
Dessert Parlor, Kiosk             2
Food Court, Beverage Shop         2
Dessert Parlor, Food Court        2
Sweet Shop, Dessert Parlor        1
Quick Bites, Kiosk                1
Name: count, Length: 82, dtype: int64
```

```python
def rest_type(data):
    if data in rest_less_than_500:
        return "Other"
    else:
        return data

df2["rest_type"] = df2["rest_type"].apply(rest_type)
print("Number of values in rest_type sorted uniquely:
",df2['rest_type'].value_counts())
```

```
Number of values in rest_type sorted uniquely:  rest_type
Quick Bites          17969
Casual Dining        10047
Other                 6693
Cafe                  3605
Delivery              2490
Dessert Parlor        2173
Takeaway, Delivery    1854
Casual Dining, Bar    1118
Bakery                1069
Beverage Shop          803
Bar                    687
Food Court             594
Name: count, dtype: int64
```

```python
print("Number of Null Values in rest_type:
",df2['rest_type'].isnull().sum())
```

```
Number of Null Values in rest_type:  225
```

```python
df2['rest_type'].fillna("Other", inplace = True)
print("Number of Null Values in rest_type:
",df2['rest_type'].isnull().sum())
```

```
Number of Null Values in rest_type:  0

print("Number of values in rest_type sorted uniquely:
",df2['rest_type'].value_counts())

Number of values in rest_type sorted uniquely:  rest_type
Quick Bites           17969
Casual Dining         10047
Other                  6918
Cafe                   3605
Delivery               2490
Dessert Parlor         2173
Takeaway, Delivery     1854
Casual Dining, Bar     1118
Bakery                 1069
Beverage Shop           803
Bar                     687
Food Court              594
Name: count, dtype: int64

df2['cost_for_two'].unique()

array(['800', '300', '600', '700', '550', '500', '450', '650', '400',
       '900', '200', '750', '150', '850', '100', '1,200', '350',
'250',
       '950', '1,000', '1,500', '1,300', '199', '1,100', '1,600',
'230',
       '130', '80', '50', '190', '1,700', nan, '180', '1,350',
'2,200',
       '1,400', '2,000', '1,800', '1,900', '330', '2,500', '2,100',
       '3,000', '2,800', '3,400', '40', '1,250', '3,500', '4,000',
       '2,400', '2,600', '120', '1,450', '469', '70', '3,200', '60',
       '240', '6,000', '1,050', '2,300', '4,100', '5,000', '3,700',
       '1,650', '2,700', '4,500', '140', '360'], dtype=object)

df2["cost_for_two"] = df2["cost_for_two"].str.replace(',','')
df2["cost_for_two"] = df2["cost_for_two"].astype(float)
df2['cost_for_two'].unique()

array([ 800.,  300.,  600.,  700.,  550.,  500.,  450.,  650.,  400.,
        900.,  200.,  750.,  150.,  850.,  100., 1200.,  350.,  250.,
        950., 1000., 1500., 1300.,  199., 1100., 1600.,  230.,  130.,
         80.,   50.,  190., 1700.,   nan,  180., 1350., 2200., 1400.,
       2000., 1800., 1900.,  330., 2500., 2100., 3000., 2800., 3400.,
         40., 1250., 3500., 4000., 2400., 2600.,  120., 1450.,  469.,
         70., 3200.,   60.,  240., 6000., 1050., 2300., 4100., 5000.,
       3700., 1650., 2700., 4500.,  140.,  360.])

print("Number of Null Values in cost_for_two:
",df2['cost_for_two'].isnull().sum())
```

```
Number of Null Values in cost_for_two:  339

print(df2['cost_for_two'].describe())
print('-------------------------------------')
print("Mean of Cost_for_two: ",df2['cost_for_two'].mean())
print("Median of Cost_for_two: ",df2['cost_for_two'].median())
print("Mode of Cost_for_two: ",df2['cost_for_two'].mode())

count     48988.000000
mean        561.046889
std         443.237529
min          40.000000
25%         300.000000
50%         400.000000
75%         700.000000
max        6000.000000
Name: cost_for_two, dtype: float64
-------------------------------------
Mean of Cost_for_two:  561.0468890340492
Median of Cost_for_two:  400.0
Mode of Cost_for_two:  0    300.0
Name: cost_for_two, dtype: float64

df2['cost_for_two'].fillna(df2['cost_for_two'].median(), inplace =
True)
print("Number of Null Values in cost_for_two:
",df2['cost_for_two'].isnull().sum())

Number of Null Values in cost_for_two:  0

print("Number of values in type sorted uniquely:
",df2['type'].value_counts())

Number of values in type sorted uniquely:  type
Delivery              24651
Dine-out              16988
Desserts               3449
Cafes                  1645
Drinks & nightlife     1066
Buffet                  862
Pubs and bars           666
Name: count, dtype: int64

df3 = df2.copy()

df3.iloc[2500:2700,]
```

	restaurant_name	online	reservations	rating	votes
2661	Cakewala	Yes	No	4.300000	659

2662	The Belgian Waffle Co.	Yes	No	3.800000	152
2663	Mystique Palate	Yes	No	4.100000	337
2664	Cake Paradise	Yes	No	3.700151	0
2665	UP Style North Indian Food	Yes	No	3.600000	46
...	...	...	...	...	...
2862	Mumbai Kulfi	Yes	No	3.700151	0
2863	Navya Foods	Yes	No	3.400000	7
2864	Cafe Vivacity	Yes	No	3.800000	90
2865	Eat Repeat Express	Yes	No	3.200000	20
2866	Shyvan Restaurant	Yes	No	3.600000	81

```
              rest_type  cost_for_two      type      location
2661        Dessert Parlor       500.0  Delivery  Basavanagudi
2662        Dessert Parlor       350.0  Delivery  Basavanagudi
2663           Quick Bites       300.0  Delivery  Basavanagudi
2664                Bakery       350.0  Delivery  Basavanagudi
2665     Takeaway, Delivery       100.0  Delivery  Basavanagudi
...                    ...         ...       ...           ...
2862        Dessert Parlor       200.0  Delivery  Basavanagudi
2863           Quick Bites       300.0  Delivery  Basavanagudi
2864                  Cafe       650.0  Delivery  Basavanagudi
2865         Casual Dining       700.0  Delivery  Basavanagudi
2866         Casual Dining       500.0  Delivery  Basavanagudi
```

[200 rows x 9 columns]

```
pd.crosstab(df3['type'],df3['location'], margins=True,
margins_name='Total')
```

```
location          BTM  Banashankari  Bannerghatta Road
Basavanagudi  \
type

Buffet             37             7                 16
14
Cafes              97            24                 38
44
Delivery         1688           446                847
607
Desserts          195            56                111
104
```

Dine-out	991	282	473 416
Drinks & nightlife	42	8	15 12
Pubs and bars	48	0	0 0
Total	3098	823	1500 1197

location	Bellandur	Brigade Road	Brookefield	Church Street \
type				
Buffet	29	57	32	60
Cafes	26	80	33	84
Delivery	623	668	798	628
Desserts	74	130	78	131
Dine-out	359	627	451	679
Drinks & nightlife	18	76	14	79
Pubs and bars	18	76	0	76
Total	1147	1714	1406	1737

location	Electronic City	Frazer Town	...	MG Road	Malleshwaram \
type			...		
Buffet	21	14	...	54	22
Cafes	20	45	...	76	29
Delivery	488	627	...	717	535
Desserts	66	83	...	137	83
Dine-out	467	348	...	634	355
Drinks & nightlife	20	11	...	73	23
Pubs and bars	20	16	...	74	20
Total	1102	1144	...	1765	1067

```
location           Marathahalli  New BEL Road  Old Airport Road  Rajajinagar  \
type
Buffet                       32             4                26           17
Cafes                        29            29                51           22
Delivery                    831           368               683          441
Desserts                     94            42               105          100
Dine-out                    596           268               423          431
Drinks & nightlife           22             7                38           20
Pubs and bars                 0             7                41           24
Total                      1604           725              1367         1055

location           Residency Road  Sarjapur Road  Whitefield  Total
type
Buffet                         59             26           0    862
Cafes                          75             28          37   1645
Delivery                      601            625         756  24651
Desserts                      127             82         108   3449
Dine-out                      648            419         597  16988
Drinks & nightlife             76             21          36   1066
Pubs and bars                   0             20          35    666
Total                        1586           1221        1569  49327

[8 rows x 31 columns]
```

```
pd.crosstab(df3['online'],df3['type'], margins=True,
margins_name='Total')
```

```
type    Buffet  Cafes  Delivery  Desserts  Dine-out  Drinks & nightlife  \
online
No         515    771      6577      1857      9037                 834
Yes        347    874     18074      1592      7951                 232
Total      862   1645     24651      3449     16988                1066

type    Pubs and bars  Total
```

```
online
No                 481  20072
Yes                185  29255
Total              666  49327
```

```
pd.crosstab(df3['reservations'],df3['type'], margins=True,
margins_name='Total')
```

```
type            Buffet  Cafes  Delivery  Desserts  Dine-out  Drinks &
nightlife  \
reservations

No                 315   1372     22754      3312     14578
427
Yes                547    273      1897       137      2410
639
Total              862   1645     24651      3449     16988
1066

type            Pubs and bars  Total
reservations
No                        278  43036
Yes                       388   6291
Total                     666  49327
```

```
df3.tail()
```

```
                                  restaurant_name online
reservations  \
51712  Best Brews - Four Points by Sheraton Bengaluru...      No
No
51713                        Vinod Bar And Restaurant      No
No
51714  Plunge - Sheraton Grand Bengaluru Whitefield H...      No
No
51715  Chime - Sheraton Grand Bengaluru Whitefield Ho...      No
Yes
51716                      The Nest - The Den Bengaluru      No
No

        rating  votes rest_type  cost_for_two          type
location
51712  3.600000     27       Bar        1500.0  Pubs and bars
Whitefield
51713  3.700151      0       Bar         600.0  Pubs and bars
Whitefield
51714  3.700151      0       Bar        2000.0  Pubs and bars
Whitefield
51715  4.300000    236       Bar        2500.0  Pubs and bars
Whitefield
```

```
51716  3.400000      13      Other          1500.0  Pubs and bars
Whitefield

rating_categories = df3['rating']
rating_categories = rating_categories.dropna()

bins = [1,2,3,4,5]
binlabels = ['Poor', 'Unsatisfactory', 'Satisfactory', 'Outstanding']

categories = pd.cut(rating_categories,bins,labels = binlabels)
categories.head(20)

0       Outstanding
1       Outstanding
2      Satisfactory
3      Satisfactory
4      Satisfactory
5      Satisfactory
6      Satisfactory
7       Outstanding
8      Satisfactory
9       Outstanding
10      Outstanding
11      Outstanding
12      Outstanding
13     Satisfactory
14     Satisfactory
15     Satisfactory
16     Satisfactory
17     Satisfactory
18     Satisfactory
19     Satisfactory
Name: rating, dtype: category
Categories (4, object): ['Poor' < 'Unsatisfactory' < 'Satisfactory' <
'Outstanding']

df3['rating_categories'] = categories
df3.tail(5)

                                    restaurant_name online
reservations  \
51712  Best Brews - Four Points by Sheraton Bengaluru...      No
No
51713                        Vinod Bar And Restaurant      No
No
51714  Plunge - Sheraton Grand Bengaluru Whitefield H...      No
No
51715  Chime - Sheraton Grand Bengaluru Whitefield Ho...      No
Yes
51716                   The Nest - The Den Bengaluru      No
```

No

```
        rating   votes  rest_type   cost_for_two              type  location  \
51712  3.600000      27        Bar        1500.0   Pubs and bars  Whitefield
51713  3.700151       0        Bar         600.0   Pubs and bars  Whitefield
51714  3.700151       0        Bar        2000.0   Pubs and bars  Whitefield
51715  4.300000     236        Bar        2500.0   Pubs and bars  Whitefield
51716  3.400000      13      Other        1500.0   Pubs and bars  Whitefield

      rating_categories
51712     Satisfactory
51713     Satisfactory
51714     Satisfactory
51715      Outstanding
51716     Satisfactory
```

```python
df3.to_csv('Updated_Zomato_Data.csv')
```