importing python libraries

```
In [7]:  import pandas as pd
         import numpy as np
         import matplotlib.pyplot as plt
         import seaborn as sns
```

Improt csv file

```
In [12]:  dataframe = pd.read_csv("Zomato data .csv")
          print(dataframe)
```

```
                      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
..                     ...          ...        ...    ...    ...
143         Melting Melodies          No         No  3.3/5      0
144          New Indraprasta          No         No  3.3/5      0
145             Anna Kuteera         Yes         No  4.0/5    771
146                   Darbar          No         No  3.0/5     98
147            Vijayalakshmi         Yes         No  3.9/5     47

     approx_cost(for two people) listed_in(type)
0                            800          Buffet
1                            800          Buffet
2                            800          Buffet
3                            300          Buffet
4                            600          Buffet
..                           ...             ...
143                          100          Dining
144                          150          Dining
145                          450          Dining
146                          800          Dining
147                          200          Dining

[148 rows x 7 columns]
```

```
In [11]:  dataframe.head(10)
```

Out[11]:

	name	online_order	book_table	rate	votes	approx_cost(for two people)	listed_in(type)
0	Jalsa	Yes	Yes	4.1/5	775	800	Buffet
1	Spice Elephant	Yes	No	4.1/5	787	800	Buffet
2	San Churro Cafe	Yes	No	3.8/5	918	800	Buffet
3	Addhuri Udupi Bhojana	No	No	3.7/5	88	300	Buffet
4	Grand Village	No	No	3.8/5	166	600	Buffet
5	Timepass Dinner	Yes	No	3.8/5	286	600	Buffet
6	Rosewood International Hotel - Bar & Restaurant	No	No	3.6/5	8	800	Buffet
7	Onesta	Yes	Yes	4.6/5	2556	600	Cafes
8	Penthouse Cafe	Yes	No	4.0/5	324	700	other
9	Smacznego	Yes	No	4.2/5	504	550	Cafes

Removing /5 from rate table

```
In [18]:  def handleRate(value):
              value=str(value).split('/')
              value=value[0];
              return float(value)

          dataframe['rate'] = dataframe['rate'].apply(handleRate)
          print(dataframe.head())
```

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

   approx_cost(for two people) listed_in(type)
0                          800          Buffet
1                          800          Buffet
2                          800          Buffet
3                          300          Buffet
4                          600          Buffet
```

In [19]: `dataframe.isnull()`

Out[19]:

	name	online_order	book_table	rate	votes	approx_cost(for two people)	listed_in(type)
0	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False
...	...	...	...	...	...	...	...
143	False	False	False	False	False	False	False
144	False	False	False	False	False	False	False
145	False	False	False	False	False	False	False
146	False	False	False	False	False	False	False
147	False	False	False	False	False	False	False

148 rows × 7 columns

In [20]: `dataframe.info()`

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 148 entries, 0 to 147
Data columns (total 7 columns):
 #   Column                       Non-Null Count  Dtype
---  ------                       --------------  -----
 0   name                         148 non-null    object
 1   online_order                 148 non-null    object
 2   book_table                   148 non-null    object
 3   rate                         148 non-null    float64
 4   votes                        148 non-null    int64
 5   approx_cost(for two people)  148 non-null    int64
 6   listed_in(type)              148 non-null    object
dtypes: float64(1), int64(2), object(4)
memory usage: 8.2+ KB
```

Q What type of restaurant do the majority of customers order from?

In [21]:
```
sns.countplot(x=dataframe['listed_in(type)'])
plt.xlabel("type of resturant")
```

Out[21]: `Text(0.5, 0, 'type of resturant')`
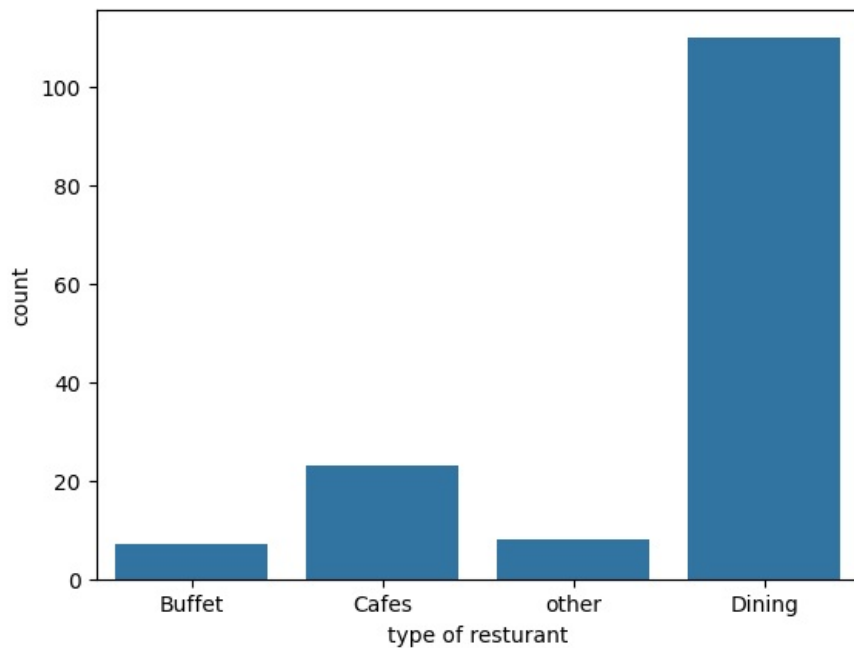
conlusion - Majority of the rsturant falls in dinning category

In [24]: `dataframe.head()`

Out[24]:

	name	online_order	book_table	rate	votes	approx_cost(for two people)	listed_in(type)
0	Jalsa	Yes	Yes	4.1	775	800	Buffet
1	Spice Elephant	Yes	No	4.1	787	800	Buffet
2	San Churro Cafe	Yes	No	3.8	918	800	Buffet
3	Addhuri Udupi Bhojana	No	No	3.7	88	300	Buffet
4	Grand Village	No	No	3.8	166	600	Buffet

How many votes has each type of restaurant received from customers?

In [32]:
```python
grouped_data = dataframe.groupby('listed_in(type)')['votes'].sum()
result = pd.DataFrame({'votes' : grouped_data})
plt.plot(result.index, result['votes'], c="green", marker="o")
plt.xlabel("Type of resturant", c="red", size=20)
plt.ylabel("votes", c="red", size=20)
plt.show()
```

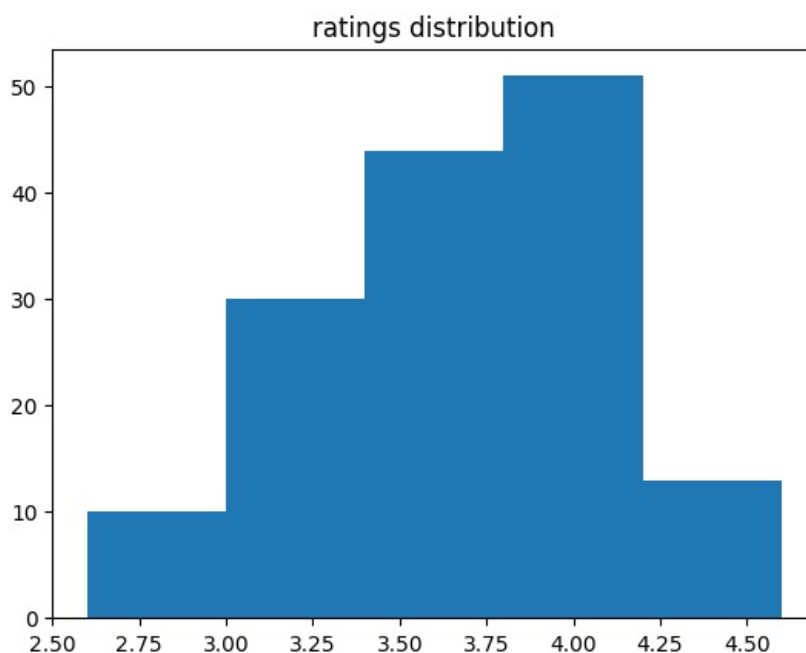conclusion - Dinning resturants had recieved maximum votes

```
In [36]: dataframe.head()
```

Out[36]:

	name	online_order	book_table	rate	votes	approx_cost(for two people)	listed_in(type)
0	Jalsa	Yes	Yes	4.1	775	800	Buffet
1	Spice Elephant	Yes	No	4.1	787	800	Buffet
2	San Churro Cafe	Yes	No	3.8	918	800	Buffet
3	Addhuri Udupi Bhojana	No	No	3.7	88	300	Buffet
4	Grand Village	No	No	3.8	166	600	Buffet

What are the ratings that the majority of restaurants have received?

```
In [38]: plt.hist(dataframe['rate'],bins=5)
         plt.title("ratings distribution")
         plt.show()
```


conclusion - the majoority reaturants received rating from 3.5 to 4
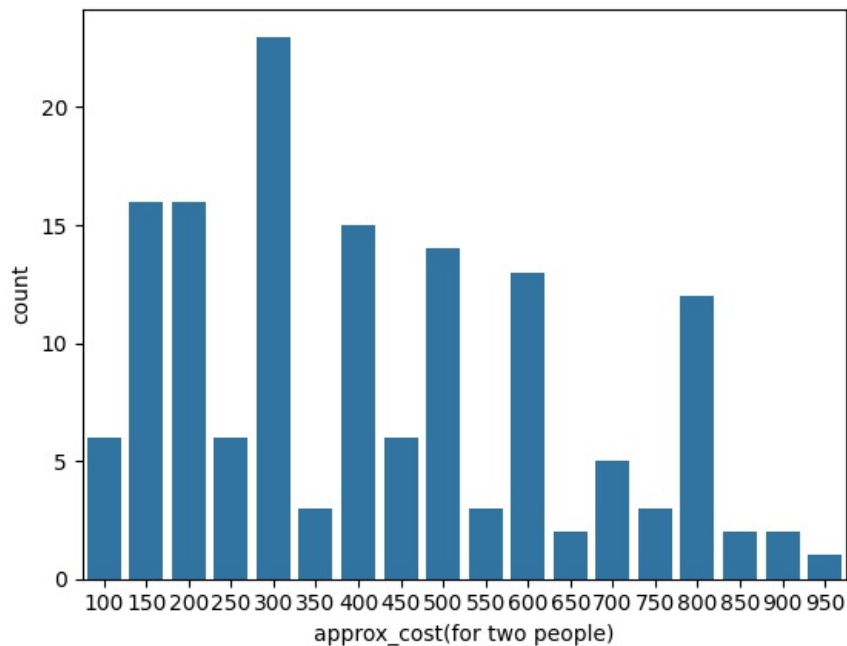
```
In [39]: dataframe.head()
```

Out[39]:

	name	online_order	book_table	rate	votes	approx_cost(for two people)	listed_in(type)
0	Jalsa	Yes	Yes	4.1	775	800	Buffet
1	Spice Elephant	Yes	No	4.1	787	800	Buffet
2	San Churro Cafe	Yes	No	3.8	918	800	Buffet
3	Addhuri Udupi Bhojana	No	No	3.7	88	300	Buffet
4	Grand Village	No	No	3.8	166	600	Buffet

Zomato has observed that most couples order most of their food online. What is their average spending on each order?

```
In [41]: couple_data=dataframe['approx_cost(for two people)']
         sns.countplot(x=couple_data)
```

Out[41]: <Axes: xlabel='approx_cost(for two people)', ylabel='count'>

conclusion - the majority of couples preffer resturants with approximate cost of 300 rupees

which mode recieves maximum rating

```
In [43]: dataframe.head()
```

Out[43]:

	name	online_order	book_table	rate	votes	approx_cost(for two people)	listed_in(type)
0	Jalsa	Yes	Yes	4.1	775	800	Buffet
1	Spice Elephant	Yes	No	4.1	787	800	Buffet
2	San Churro Cafe	Yes	No	3.8	918	800	Buffet
3	Addhuri Udupi Bhojana	No	No	3.7	88	300	Buffet
4	Grand Village	No	No	3.8	166	600	Buffet

## Which mode (online or offline) has received the maximum rating?

```
In [49]: plt.figure(figsize = (6,6))
         sns.boxplot(x = 'online_order', y = 'rate', data = dataframe)
         plt.show()
```
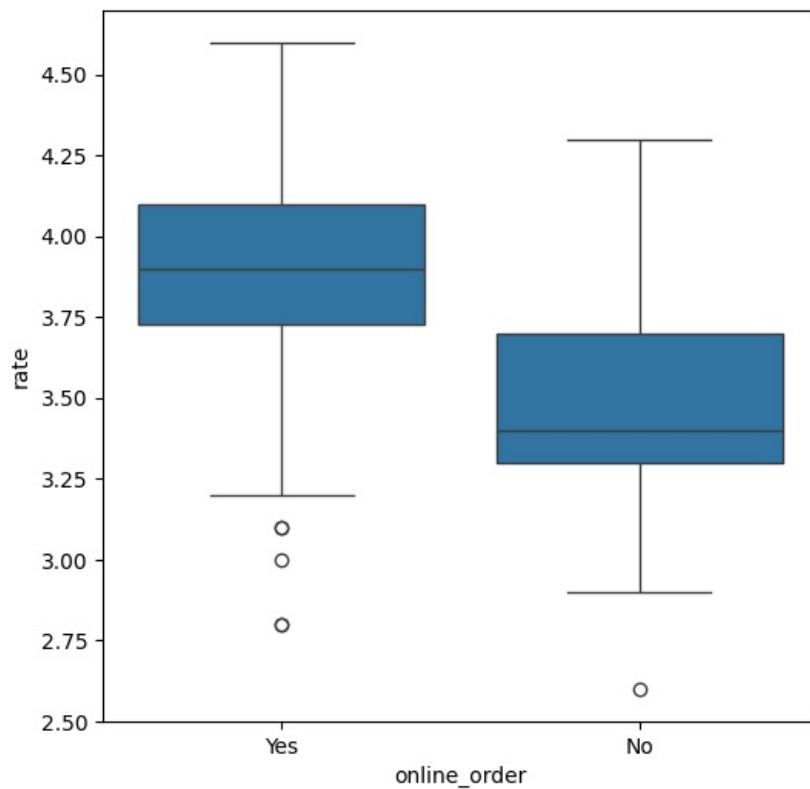
conclusion - offline order recived lower rating in comparison to offline order

Which type of restaurant received more offline orders, so that Zomato can provide those customers with some good offers?

```
In [56]:  pivot_table = dataframe.pivot_table(index='listed_in(type)', columns='online_order', aggfunc='size', fill_va
          sns.heatmap(pivot_table, annot=True, cmap="YlGnBu",fmt='d')
          plt.title("Heatmap")
          plt.xlabel("Online_order")
          plt.ylabel("Listed In (Type)")
          plt.show()
```
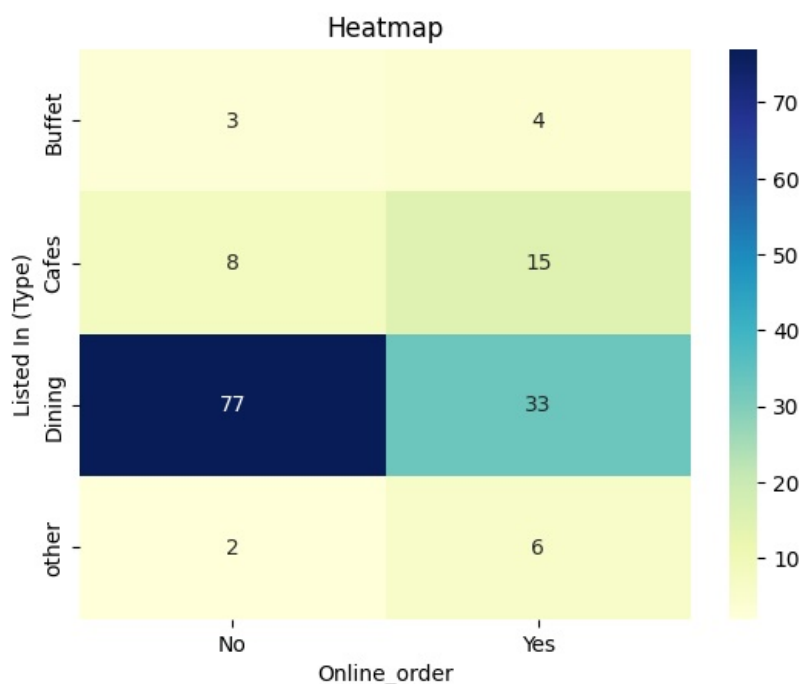

conclusion: Dinning resturant primarily accept offline orders, whereas cafes primarily receive online orders. This suggests that

clients preffer orders in person at resturants, but prefer online at cafes.

In [ ]:

In [ ]: