

```
In [49]: import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt

In [50]: zomato=pd.read_csv("zomato.csv")

In [51]: zomato

Out[51]:
```

	url	address	name	online_order	book_table	rate	votes	phone	
0	https://www.zomato.com/bangalore/jalsa-banasha...	942, 21st Main Road, 2nd Stage, Banashankari, ...	Jalsa	Yes	Yes	4.1/5	775	42297555\r\n+91 9743772233	Bana
1	https://www.zomato.com/bangalore/spice-elephan...	2nd Floor, 80 Feet Road, Near Big Bazaar, 6th ...	Spice Elephant	Yes	No	4.1/5	787	080 41714161	Bana
2	https://www.zomato.com/SanchurroBangalore?cont...	1112, Next to KIMS Medical College, 17th Cross...	San Churro Cafe	Yes	No	3.8/5	918	+91 9663487993	Bana
3	https://www.zomato.com/bangalore/addhuri-udupi...	1st Floor, Annakuteera, 3rd Stage, Banashankar...	Addhuri Udupi Bhojana	No	No	3.7/5	88	+91 9620009302	Bana
4	https://www.zomato.com/bangalore/grand-village...	10, 3rd Floor, Lakshmi Associates, Gandhi Baza...	Grand Village	No	No	3.8/5	166	8026612447\r\n+91 9901210005	Basav
...
51712	https://www.zomato.com/bangalore/best-bre...	Four Points by Sheraton Bengaluru, 43/3, White...	Best Brews - Four Points by Sheraton Bengaluru...	No	No	3.6/5	27	080 40301477	W
51713	https://www.zomato.com/bangalore/vinod-bar-and...	Number 10, Garudachar Palya, Mahadevapura, Whi...	Vinod Bar And Restaurant	No	No	NaN	0	+91 8197675843	W
51714	https://www.zomato.com/bangalore/plunge-she...	Sheraton Grand Bengaluru Whitefield Hotel & Co...	Plunge - Sheraton Grand Bengaluru Whitefield H...	No	No	NaN	0	NaN	W
51715	https://www.zomato.com/bangalore/chime-she...	Sheraton Grand Bengaluru Whitefield Hotel & Co...	Chime - Sheraton Grand Bengaluru Whitefield Ho...	No	Yes	4.3/5	236	080 49652769	IT W
51716	https://www.zomato.com/bangalore/the-nest-the-...	ITPL Main Road, KIADB Export Promotion Industr...	The Nest - The Den Bengaluru	No	No	3.4/5	13	+91 8071117272	IT W

51717 rows x 17 columns

```
In [52]: #to get top 5 data
zomato.head()
```

Out[52]:

	url	address	name	online_order	book_table	rate	votes	phone	location
0	https://www.zomato.com/bangalore/jalsa-banasha...	942, 21st Main Road, 2nd Stage, Banashankari, ...	Jalsa	Yes	Yes	4.1/5	775	080 42297555\r\n+91 9743772233	Banashankari
1	https://www.zomato.com/bangalore/spice-elephan...	2nd Floor, 80 Feet Road, Near Big Bazaar, 6th ...	Spice Elephant	Yes	No	4.1/5	787	080 41714161	Banashankari
2	https://www.zomato.com/SanchurroBangalore?cont...	1112, Next to KIMS Medical College, 17th Cross...	San Churro Cafe	Yes	No	3.8/5	918	+91 9663487993	Banashankari
3	https://www.zomato.com/bangalore/addhuri-udupi...	1st Floor, Annakuteera, 3rd Stage, Banashankar...	Addhuri Udupi Bhojana	No	No	3.7/5	88	+91 9620009302	Banashankari
4	https://www.zomato.com/bangalore/grand-village...	10, 3rd Floor, Lakshmi Associates, Gandhi Baza...	Grand Village	No	No	3.8/5	166	+91 8026612447\r\n+91 9901210005	Basavanagudi

```
In [53]: zomato.shape
Out[53]: (51717, 17)

In [54]: zomato.dtypes
Out[54]: url                object
address                object
name                   object
online_order           object
book_table             object
rate                   object
votes                  int64
phone                  object
location               object
rest_type              object
dish_liked             object
cuisines               object
approx_cost(for two people) object
reviews_list           object
menu_item              object
listed_in(type)        object
listed_in(city)        object
dtype: object

In [55]: zomato.rename(columns={'approx_cost(for two people)': 'cost', 'rate': 'rating', 'name': 'restaurants', 'listed_in(type)': 'location'})

In [56]: zomato
```

Out[56]:

	url	address	restaurants	online_order	book_table	rating	votes	phone	
0	https://www.zomato.com/bangalore/jalsa-banasha...	942, 21st Main Road, 2nd Stage, Banashankari, ...	Jalsa	Yes	Yes	4.1/5	775	42297555\\n+91 9743772233	080 Ban
1	https://www.zomato.com/bangalore/spice-elephan...	2nd Floor, 80 Feet Road, Near Big Bazaar, 6th ...	Spice Elephant	Yes	No	4.1/5	787	080 41714161	Ban
2	https://www.zomato.com/SanchurroBangalore?cont...	1112, Next to KIMS Medical College, 17th Cross...	San Churro Cafe	Yes	No	3.8/5	918	+91 9663487993	Ban
3	https://www.zomato.com/bangalore/addhuri-udupi...	1st Floor, Annakuteera, 3rd Stage, Banashankar...	Addhuri Udupi Bhojana	No	No	3.7/5	88	+91 9620009302	Ban
4	https://www.zomato.com/bangalore/grand-village...	10, 3rd Floor, Lakshmi Associates, Gandhi Baza...	Grand Village	No	No	3.8/5	166	8026612447\\n+91 9901210005	+91 Bas
...
51712	https://www.zomato.com/bangalore/best-bre...	Four Points by Sheraton Bengaluru, 43/3, White...	Best Brews - Four Points by Sheraton Bengaluru...	No	No	3.6 /5	27	080 40301477	
51713	https://www.zomato.com/bangalore/vinod-bar-and...	Number 10, Garudachar Palya, Mahadevapura, Whi...	Vinod Bar And Restaurant	No	No	NaN	0	+91 8197675843	
51714	https://www.zomato.com/bangalore/plunge-sherat...	Sheraton Grand Bengaluru Whitefield Hotel & Co...	Plunge - Sheraton Grand Bengaluru Whitefield H...	No	No	NaN	0	NaN	
51715	https://www.zomato.com/bangalore/chime-sherato...	Sheraton Grand Bengaluru Whitefield Hotel & Co...	Chime - Sheraton Grand Bengaluru Whitefield Ho...	No	Yes	4.3 /5	236	080 49652769	I
51716	https://www.zomato.com/bangalore/the-nest-the-...	ITPL Main Road, KIADB Export Promotion Industr...	The Nest - The Den Bengaluru	No	No	3.4 /5	13	+91 8071117272	I

51717 rows × 17 columns

In [57]:

```
zomato.isnull().sum()
zomato.isnull().sum()*100/len(zomato)
```

Out[57]:

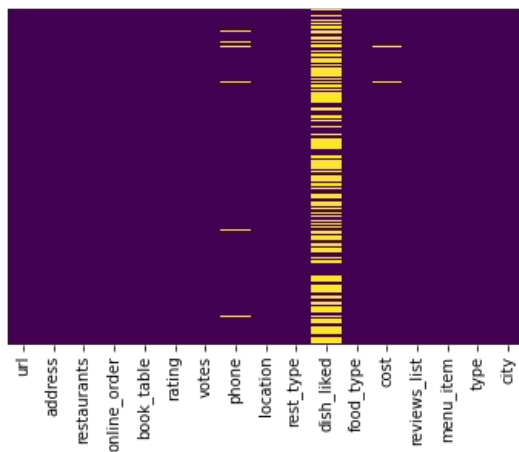
```
url          0.000000
address      0.000000
restaurants  0.000000
online_order 0.000000
book_table   0.000000
rating       15.033741
votes        0.000000
phone        2.335789
location     0.040606
rest_type    0.438927
dish_liked   54.291626
food_type    0.087012
cost         0.669026
reviews_list  0.000000
menu_item    0.000000
type         0.000000
city         0.000000
dtype: float64
```

In [58]:

```
zomato['rating'].fillna(zomato['rating'].mode()[0],inplace=True)
sns.heatmap(zomato.isnull(),cbar=False,yticklabels=False,cmap = 'viridis')
```

Out[58]:

```
<AxesSubplot:>
```



```
In [59]: zomato = zomato.dropna(subset=['cost'])
```

```
In [61]: zomato
```

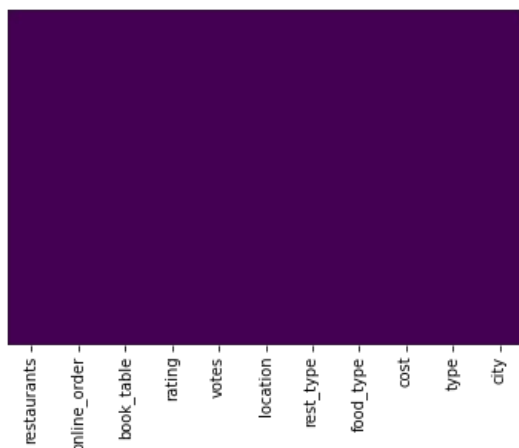
```
Out[61]:
```

	restaurants	online_order	book_table	rating	votes	location	rest_type	food_type	cost	type	city
0	Jalsa	Yes	Yes	4.1/5	775	Banashankari	Casual Dining	North Indian, Mughlai, Chinese	800	Buffet	Banashankari
1	Spice Elephant	Yes	No	4.1/5	787	Banashankari	Casual Dining	Chinese, North Indian, Thai	800	Buffet	Banashankari
2	San Churro Cafe	Yes	No	3.8/5	918	Banashankari	Cafe, Casual Dining	Cafe, Mexican, Italian	800	Buffet	Banashankari
3	Addhuri Udupi Bhojana	No	No	3.7/5	88	Banashankari	Quick Bites	South Indian, North Indian	300	Buffet	Banashankari
4	Grand Village	No	No	3.8/5	166	Basavanagudi	Casual Dining	North Indian, Rajasthani	600	Buffet	Banashankari
...
51712	Best Brews - Four Points by Sheraton Bengaluru...	No	No	3.6 /5	27	Whitefield	Bar	Continental	1,500	Pubs and bars	Whitefield
51713	Vinod Bar And Restaurant	No	No	NEW	0	Whitefield	Bar	Finger Food	600	Pubs and bars	Whitefield
51714	Plunge - Sheraton Grand Bengaluru Whitefield H...	No	No	NEW	0	Whitefield	Bar	Finger Food	2,000	Pubs and bars	Whitefield
51715	Chime - Sheraton Grand Bengaluru Whitefield Ho...	No	Yes	4.3 /5	236	ITPL Main Road, Whitefield	Bar	Finger Food	2,500	Pubs and bars	Whitefield
51716	The Nest - The Den Bengaluru	No	No	3.4 /5	13	ITPL Main Road, Whitefield	Bar, Casual Dining	Finger Food, North Indian, Continental	1,500	Pubs and bars	Whitefield

51371 rows × 11 columns

```
In [62]: #to see if there is any null values in the data using heatmap
sns.heatmap(zomato.isnull(),cbar=False,yticklabels=False,cmap = 'viridis')
```

```
Out[62]: <AxesSubplot:>
```



```
In [12]: zomato.cost.unique()
```

```
Out[12]: 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', '80', '1,100', '160',
        '1,600', '230', '130', '50', '190', '1,700', nan, '1,400', '180',
        '1,350', '2,200', '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', '560', '240', '360', '6,000', '1,050', '2,300', '4,100',
        '5,000', '3,700', '1,650', '2,700', '4,500', '140'], dtype=object)
```

```
In [29]: zomato.isnull().sum()
zomato.isnull().sum()*100/len(zomato)
```

```
Out[29]: restaurants    0.000000
online_order    0.000000
book_table    0.000000
rating    0.000000
votes    0.000000
location    0.040606
rest_type    0.438927
food_type    0.087012
cost    0.669026
type    0.000000
city    0.000000
dtype: float64
```

```
In [30]: #to get statistical information
zomato.describe()
```

```
Out[30]:
```

	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

```
In [31]: # Finding Distributionss
zomato['votes'].value_counts()
```

```
Out[31]: 0      10027
4       1140
6       992
7       872
9       738
...
3673      1
1862      1
3909      1
2155      1
843       1
Name: votes, Length: 2328, dtype: int64
```

```
In [32]: # Understanding categorical variables
categorical_variables=zomato.dtypes.loc[zomato.dtypes=='object'].index
print(categorical_variables)

Index(['restaurants', 'online_order', 'book_table', 'rating', 'location',
       'rest_type', 'food_type', 'cost', 'type', 'city'],
      dtype='object')
```

```
In [33]: # Finding the Distinct categories
zomato[categorical_variables].apply(lambda x: len(x.unique()))
```

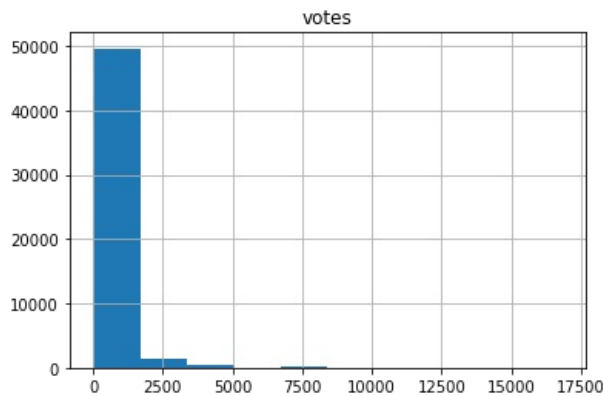
```
Out[33]: restaurants    8792
online_order      2
book_table      2
rating      64
location      94
rest_type      94
food_type    2724
cost      71
type      7
city      30
dtype: int64
```

```
In [34]: # to find central tendencies for any variables
votes = zomato['votes']
mean=votes.mean()
median=votes.median()
mode=votes.mode()
```

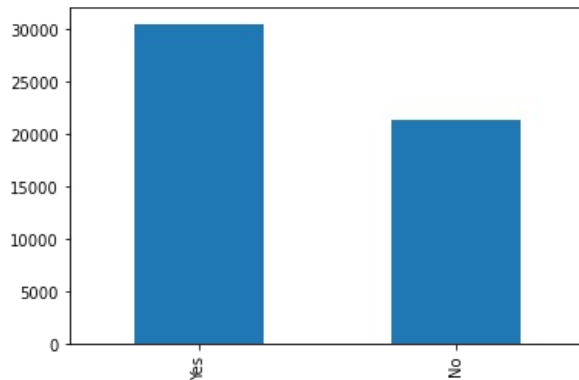
```
print(mean)
print(median)
```

```
283.69752692538236
41.0
```

```
In [35]: # For Univariate ( Box Plots, Density and Box whiskar)
# Histograms
zomato.hist()
plt.show()
```

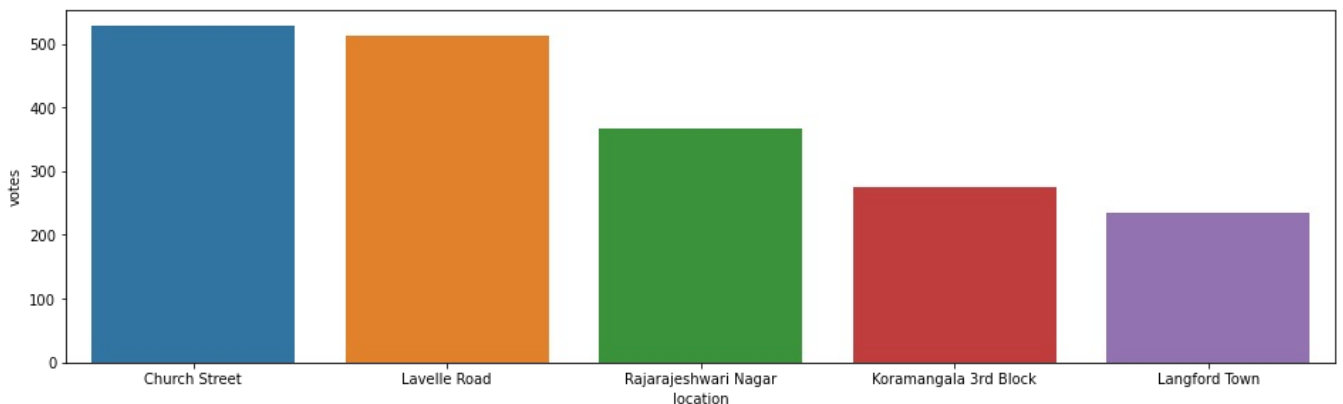


```
In [37]: #how many restaurants are accepting the online orders?
zomato['online_order'].value_counts().plot.bar()
#creating percentage for online orders
(zomato['online_order'].value_counts()/len(zomato['online_order'])).plot.bar()
plt.show()
```



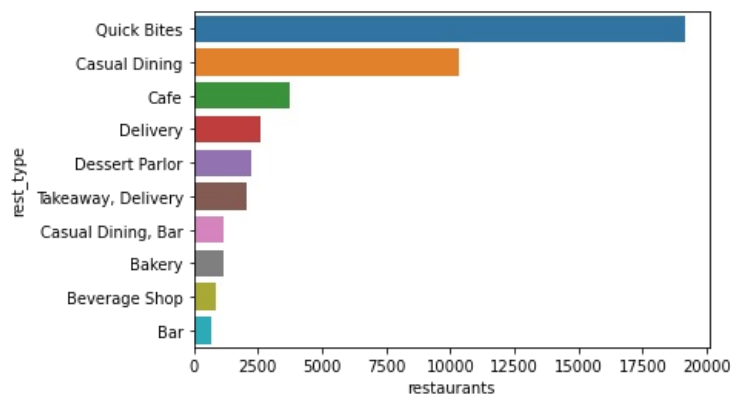
```
In [38]: # to see which location is the best by using avg of votes and rating
plt.figure(figsize=(16,10))
ax = plt.subplot(2,1,1)
location_votes=zomato.groupby('location').agg({'votes':'median'})
votes_sorted_loc=location_votes.sort_values('votes',ascending=False).head(5).reset_index()
sns.barplot(x='location',y='votes',data=votes_sorted_loc)
```

```
Out[38]: <AxesSubplot:xlabel='location', ylabel='votes'>
```

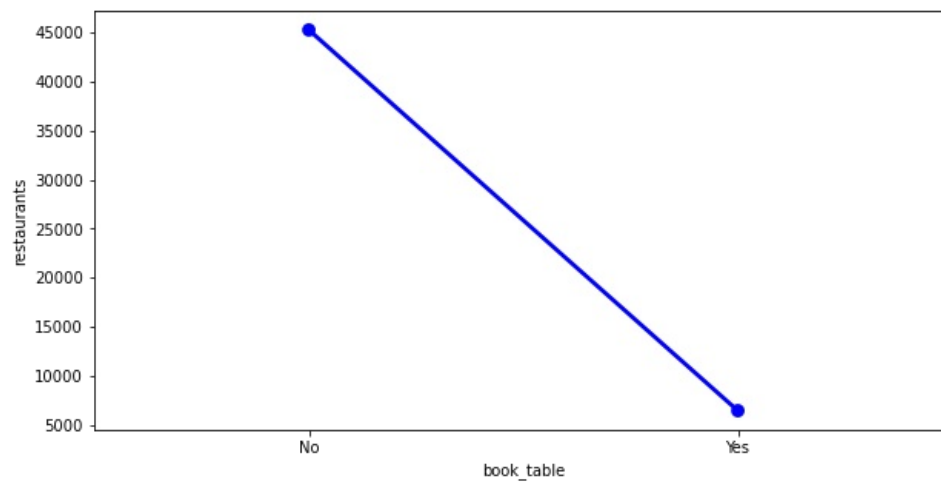


```
In [41]: # here quick bite restuarents are 17500 plus and remaining as follows
rest_types=zomato.groupby('rest_type')['restaurants'].count().reset_index()
sorted_rest_types=rest_types.sort_values('restaurants',ascending=False).head(10)
rest_types.rest_type.count(),sns.barplot(x='restaurants',y='rest_type',data=sorted_rest_types,orient='h')
```

```
Out[41]: (93, <AxesSubplot:xlabel='restaurants', ylabel='rest_type'>)
```



In [42]: *#only 7000 restaurants have table booking facility and 35000+ restaurants don't have facility of table booking.*
`plt.figure(figsize=(10,5))`
`table_booking= zomato.groupby('book_table')['restaurants'].count().reset_index()`
`sns.pointplot(x='book_table',y='restaurants',color='b',data=table_booking)`
`plt.show()`



In []:

Loading [MathJax]/jax/output/CommonHTML/fonts/TeX/fontdata.js