```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
plt.style.use('dark_background')
```

```
from google.colab import drive
drive.mount('/content/drive')

# Load the file from Google Drive
file_path = '/content/drive/My Drive/zomato.csv'
df = pd.read_csv(file_path)
df.head()
```

```
Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).
```

	url	address	name	online_order	book_table	rate	votes	phone	locat
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	Banashanl
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	Banashanl
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	Banashanl
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	Banashanl
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	Basavanag

```
df.shape
```

```
(51717, 17)
```

```
df.columns
```

```
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')
```

```
df = df.drop(['url', 'address', 'phone', 'menu_item', 'dish_liked', 'reviews_list'], axis = 1)
df.head()
```

	name	online_order	book_table	rate	votes	location	rest_type	cuisines	approx_cost(for two people)	listed_in(type)	listed_in(ci
0	Jalsa	Yes	Yes	4.1/5	775	Banashankari	Casual Dining	North Indian, Mughlai, Chinese	800	Buffet	Banashan
1	Spice Elephant	Yes	No	4.1/5	787	Banashankari	Casual Dining	Chinese, North Indian, Thai	800	Buffet	Banashan
	San						Cafe,	Cafe,			

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 51717 entries, 0 to 51716
Data columns (total 11 columns):
 #   Column                       Non-Null Count  Dtype
---  ------                       --------------  -----
 0   name                         51717 non-null  object
 1   online_order                 51717 non-null  object
 2   book_table                   51717 non-null  object
 3   rate                         43942 non-null  object
 4   votes                        51717 non-null  int64
 5   location                     51696 non-null  object
 6   rest_type                    51490 non-null  object
 7   cuisines                     51672 non-null  object
 8   approx_cost(for two people)  51371 non-null  object
 9   listed_in(type)              51717 non-null  object
 10  listed_in(city)              51717 non-null  object
dtypes: int64(1), object(10)
memory usage: 4.3+ MB
```

```
df.drop_duplicates(inplace = True)
df.shape
```

```
(51609, 11)
```

```
df['rate'].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)
```

```
def handlerate(value):
    if(value=='NEW' or value=='-'):
        return np.nan
    else:
        value = str(value).split('/')
        value = value[0]
        return float(value)

df['rate'] = df['rate'].apply(handlerate)
df['rate'].head()
```

	rate
0	4.1
1	4.1
2	3.8
3	3.7
4	3.8

```
df['rate'].fillna(df['rate'].mean(), inplace = True)
df['rate'].isnull().sum()
```

```
0
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 51609 entries, 0 to 51716
Data columns (total 11 columns):
 #   Column                       Non-Null Count  Dtype
---  ------                       --------------  -----
 0   name                         51609 non-null  object
 1   online_order                 51609 non-null  object
 2   book_table                   51609 non-null  object
 3   rate                         51609 non-null  float64
 4   votes                        51609 non-null  int64
 5   location                     51588 non-null  object
 6   rest_type                    51382 non-null  object
 7   cuisines                     51564 non-null  object
 8   approx_cost(for two people)  51265 non-null  object
 9   listed_in(type)              51609 non-null  object
```

```
 10  listed_in(city)              51609 non-null  object
dtypes: float64(1), int64(1), object(9)
memory usage: 4.7+ MB
```

```
df.dropna(inplace = True)
df.head()
```

	name	online_order	book_table	rate	votes	location	rest_type	cuisines	approx_cost(for two people)	listed_in(type)	listed_in(ci
0	Jalsa	Yes	Yes	4.1	775	Banashankari	Casual Dining	North Indian, Mughlai, Chinese	800	Buffet	Banashan
1	Spice Elephant	Yes	No	4.1	787	Banashankari	Casual Dining	Chinese, North Indian, Thai	800	Buffet	Banashan
2	San Churro	Yes	No	3.8	918	Banashankari	Cafe, Casual	Cafe, Mexican,	800	Buffet	Banashan

```
df.rename(columns = {'approx_cost(for two people)':'Cost2plates', 'listed_in(type)':'Type'}, inplace = True)
df.head()
```

	name	online_order	book_table	rate	votes	location	rest_type	cuisines	Cost2plates	Type	listed_in(city)
0	Jalsa	Yes	Yes	4.1	775	Banashankari	Casual Dining	North Indian, Mughlai, Chinese	800	Buffet	Banashankari
1	Spice Elephant	Yes	No	4.1	787	Banashankari	Casual Dining	Chinese, North Indian, Thai	800	Buffet	Banashankari
2	San Churro	Yes	No	3.8	918	Banashankari	Cafe, Casual	Cafe, Mexican,	800	Buffet	Banashankari

```
df['location'].unique()
```

```
array(['Banashankari', 'Basavanagudi', 'Mysore Road', 'Jayanagar',
       'Kumaraswamy Layout', 'Rajarajeshwari Nagar', 'Vijay Nagar',
       'Uttarahalli', 'JP Nagar', 'South Bangalore', 'City Market',
       'Nagarbhavi', 'Bannerghatta Road', 'BTM', 'Kanakapura Road',
       'Bommanahalli', 'CV Raman Nagar', 'Electronic City', 'HSR',
       'Marathahalli', 'Wilson Garden', 'Shanti Nagar',
       'Koramangala 5th Block', 'Koramangala 8th Block', 'Richmond Road',
       'Koramangala 7th Block', 'Jalahalli', 'Koramangala 4th Block',
       'Bellandur', 'Sarjapur Road', 'Whitefield', 'East Bangalore',
       'Old Airport Road', 'Indiranagar', 'Koramangala 1st Block',
       'Frazer Town', 'RT Nagar', 'MG Road', 'Brigade Road',
       'Lavelle Road', 'Church Street', 'Ulsoor', 'Residency Road',
       'Shivajinagar', 'Infantry Road', 'St. Marks Road',
       'Cunningham Road', 'Race Course Road', 'Commercial Street',
       'Vasanth Nagar', 'HBR Layout', 'Domlur', 'Ejipura',
       'Jeevan Bhima Nagar', 'Old Madras Road', 'Malleshwaram',
       'Seshadripuram', 'Kammanahalli', 'Koramangala 6th Block',
       'Majestic', 'Langford Town', 'Central Bangalore', 'Sanjay Nagar',
       'Brookefield', 'ITPL Main Road, Whitefield',
       'Varthur Main Road, Whitefield', 'KR Puram',
       'Koramangala 2nd Block', 'Koramangala 3rd Block', 'Koramangala',
       'Hosur Road', 'Rajajinagar', 'Banaswadi', 'North Bangalore',
       'Nagawara', 'Hennur', 'Kalyan Nagar', 'New BEL Road', 'Jakkur',
       'Rammurthy Nagar', 'Thippasandra', 'Kaggadasapura', 'Hebbal',
       'Kengeri', 'Sankey Road', 'Sadashiv Nagar', 'Basaveshwara Nagar',
       'Yeshwantpur', 'West Bangalore', 'Magadi Road', 'Yelahanka',
       'Sahakara Nagar', 'Peenya'], dtype=object)
```

```
df['listed_in(city)'].unique()
```

```
array(['Banashankari', 'Bannerghatta Road', 'Basavanagudi', 'Bellandur',
       'Brigade Road', 'Brookefield', 'BTM', 'Church Street',
       'Electronic City', 'Frazer Town', 'HSR', 'Indiranagar',
       'Jayanagar', 'JP Nagar', 'Kalyan Nagar', 'Kammanahalli',
       'Koramangala 4th Block', 'Koramangala 5th Block',
       'Koramangala 6th Block', 'Koramangala 7th Block', 'Lavelle Road',
       'Malleshwaram', 'Marathahalli', 'MG Road', 'New BEL Road',
       'Old Airport Road', 'Rajajinagar', 'Residency Road',
       'Sarjapur Road', 'Whitefield'], dtype=object)
```

```
df = df.drop(['listed_in(city)'], axis = 1)
```

```
df['Cost2plates'].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', '80', '1,100', '160',
       '1,600', '230', '130', '50', '190', '1,700', '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)
```

```
def handlecomma(value):
    value = str(value)
    if ',' in value:
        value = value.replace(',', '')
        return float(value)
    else:
        return float(value)

df['Cost2plates'] = df['Cost2plates'].apply(handlecomma)
df['Cost2plates'].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.,   80., 1100.,  160., 1600.,
        230.,  130.,   50.,  190., 1700., 1400.,  180., 1350., 2200.,
       2000., 1800., 1900.,  330., 2500., 2100., 3000., 2800., 3400.,
         40., 1250., 3500., 4000., 2400., 2600.,  120., 1450.,  469.,
         70., 3200.,   60.,  560.,  240.,  360., 6000., 1050., 2300.,
       4100., 5000., 3700., 1650., 2700., 4500.,  140.])
```

```
df.head()
```

	name	online_order	book_table	rate	votes	location	rest_type	cuisines	Cost2plates	Type
0	Jalsa	Yes	Yes	4.1	775	Banashankari	Casual Dining	North Indian, Mughlai, Chinese	800.0	Buffet
1	Spice Elephant	Yes	No	4.1	787	Banashankari	Casual Dining	Chinese, North Indian, Thai	800.0	Buffet
2	San Churro Cafe	Yes	No	3.8	918	Banashankari	Cafe, Casual Dining	Cafe, Mexican, Italian	800.0	Buffet

```
rest_types = df['rest_type'].value_counts(ascending  = False)
rest_types
```

rest_type	count
Quick Bites	19010
Casual Dining	10253
Cafe	3682
Delivery	2574
Dessert Parlor	2242
...	...
Dessert Parlor, Kiosk	2
Food Court, Beverage Shop	2
Dessert Parlor, Food Court	2
Quick Bites, Kiosk	1
Sweet Shop, Dessert Parlor	1

93 rows × 1 columns

```
rest_types_lessthan1000 = rest_types[rest_types<1000]
rest_types_lessthan1000
```

rest_type	count
Beverage Shop	863
Bar	686
Food Court	616
Sweet Shop	468
Bar, Casual Dining	411
...	...
Dessert Parlor, Kiosk	2
Food Court, Beverage Shop	2
Dessert Parlor, Food Court	2
Quick Bites, Kiosk	1
Sweet Shop, Dessert Parlor	1

85 rows × 1 columns

```
def handle_rest_type(value):
    if(value in rest_types_lessthan1000):
        return 'others'
    else:
        return value

df['rest_type'] = df['rest_type'].apply(handle_rest_type)
df['rest_type'].value_counts()
```

rest_type	count
Quick Bites	19010
Casual Dining	10253
others	9003
Cafe	3682
Delivery	2574
Dessert Parlor	2242
Takeaway, Delivery	2008
Bakery	1140
Casual Dining, Bar	1130

```
location = df['location'].value_counts(ascending  = False)

location_lessthan300 = location[location<300]



def handle_location(value):
    if(value in location_lessthan300):
        return 'others'
    else:
        return value

df['location'] = df['location'].apply(handle_location)
df['location'].value_counts()
```

location	count
BTM	5056
others	4954
HSR	2494
Koramangala 5th Block	2479
JP Nagar	2218
Whitefield	2105
Indiranagar	2026
Jayanagar	1916
Marathahalli	1805
Bannerghatta Road	1609
Bellandur	1268
Electronic City	1246
Koramangala 1st Block	1236
Brigade Road	1210
Koramangala 7th Block	1174
Koramangala 6th Block	1127
Sarjapur Road	1047
Koramangala 4th Block	1017
Ulsoor	1011
Banashankari	902
MG Road	893
Kalyan Nagar	841
Richmond Road	803
Malleshwaram	721
Frazer Town	714
Basavanagudi	684
Residency Road	671
Brookefield	656
New BEL Road	644
Banaswadi	640

```
cuisines = df['cuisines'].value_counts(ascending  = False)


cuisines_lessthan100 = cuisines[cuisines<100]



def handle_cuisines(value):
    if(value in cuisines_lessthan100):
        return 'others'
    else:
        return value

df['cuisines'] = df['cuisines'].apply(handle_cuisines)
df['cuisines'].value_counts()
```

cuisines	count
others	26159
North Indian	2852
North Indian, Chinese	2351
South Indian	1820
Biryani	903
...	...
South Indian, Chinese, North Indian	105
North Indian, Mughlai, Chinese	104
South Indian, Fast Food	104
Italian, Pizza	102
North Indian, Chinese, Seafood	102

70 rows × 1 columns

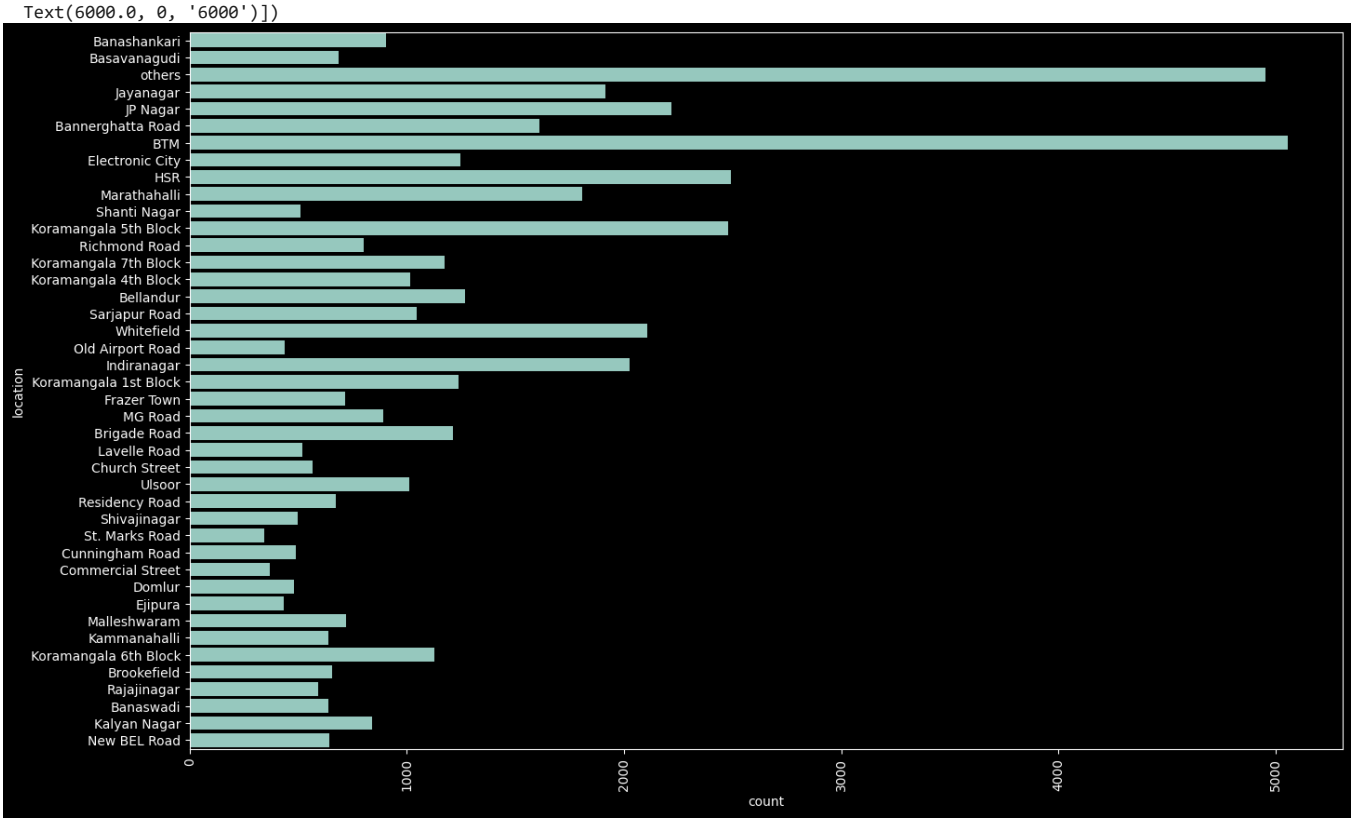
```
df.head()
```

	name	online_order	book_table	rate	votes	location	rest_type	cuisines	Cost2plates	Type
0	Jalsa	Yes	Yes	4.1	775	Banashankari	Casual Dining	North Indian, Mughlai, Chinese	800.0	Buffet
1	Spice Elephant	Yes	No	4.1	787	Banashankari	Casual Dining	others	800.0	Buffet
2	San Churro Cafe	Yes	No	3.8	918	Banashankari	others	others	800.0	Buffet
	Addhuri Udupi									

DATA IS CLEANED NOW IT IS READY FOR VISUALISATION

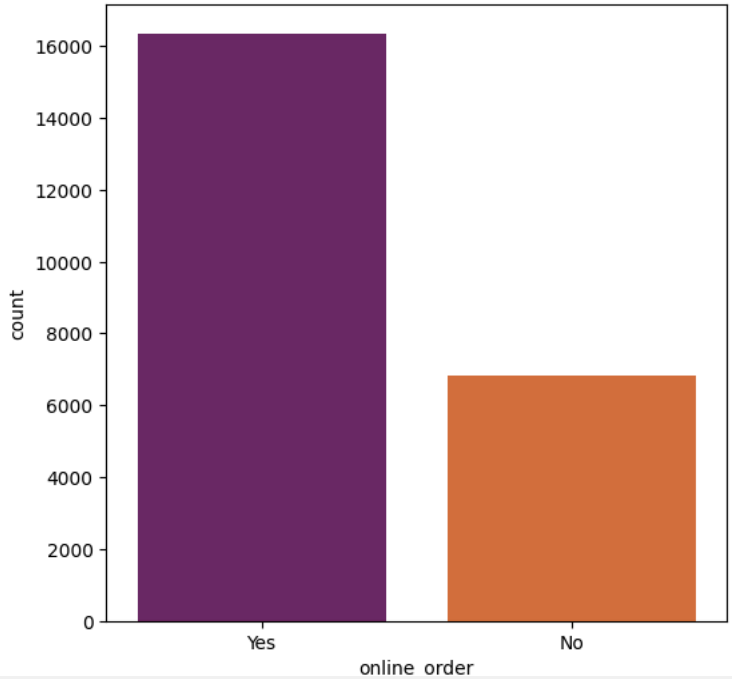
```
plt.figure(figsize = (16,10))
ax = sns.countplot(df['location'])
plt.xticks(rotation=90)
```

```
(array([   0., 1000., 2000., 3000., 4000., 5000., 6000.]),
 [Text(0.0, 0, '0'),
  Text(1000.0, 0, '1000'),
  Text(2000.0, 0, '2000'),
  Text(3000.0, 0, '3000'),
  Text(4000.0, 0, '4000'),
  Text(5000.0, 0, '5000'),
  Text(6000.0, 0, '6000')])
```



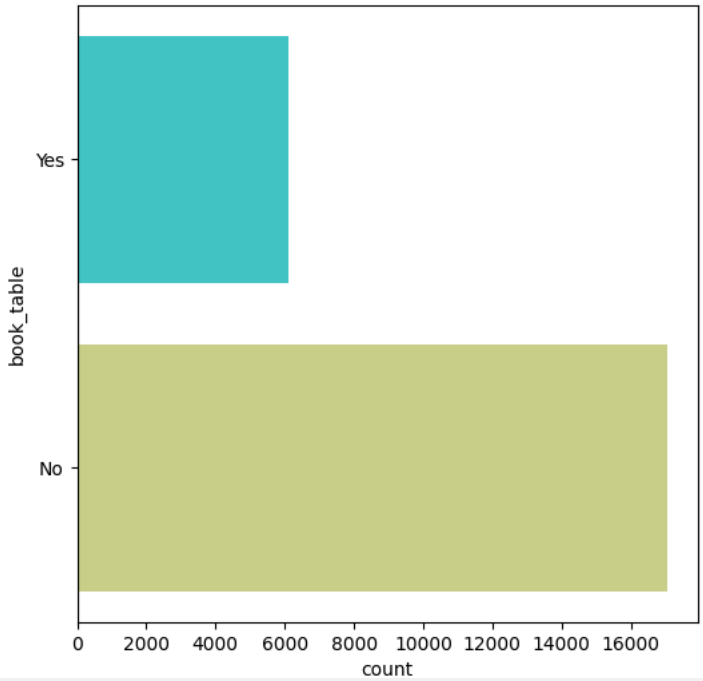

```
from google.colab import drive
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt

# Mount Google Drive
drive.mount('/content/drive')

# Load the file from Google Drive
file_path = '/content/drive/My Drive/zomato.csv'
df = pd.read_csv(file_path)

# Example of handling missing values
df.dropna(inplace=True)

# Example of removing duplicates
df.drop_duplicates(inplace=True)

# Plotting
plt.figure(figsize=(6, 6))
sns.countplot(data=df, x='online_order', palette='inferno')  # Corrected usage
plt.show()
```

```
Mounted at /content/drive
<ipython-input-5-902ee06faa23>:21: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `x` variable to `hue` and set `le

  sns.countplot(data=df, x='online_order', palette='inferno')  # Corrected usage
```



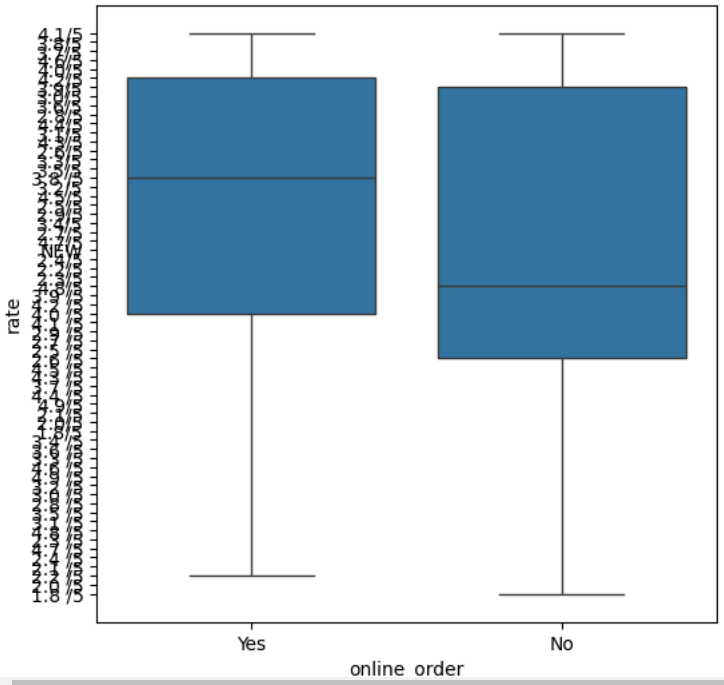

```
plt.figure(figsize = (6,6))
sns.countplot(df['book_table'], palette = 'rainbow')
```

```
<ipython-input-6-492bf8f2e297>:2: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `y` variable to `hue` and set `le

  sns.countplot(df['book_table'], palette = 'rainbow')
<Axes: xlabel='count', ylabel='book_table'>
```



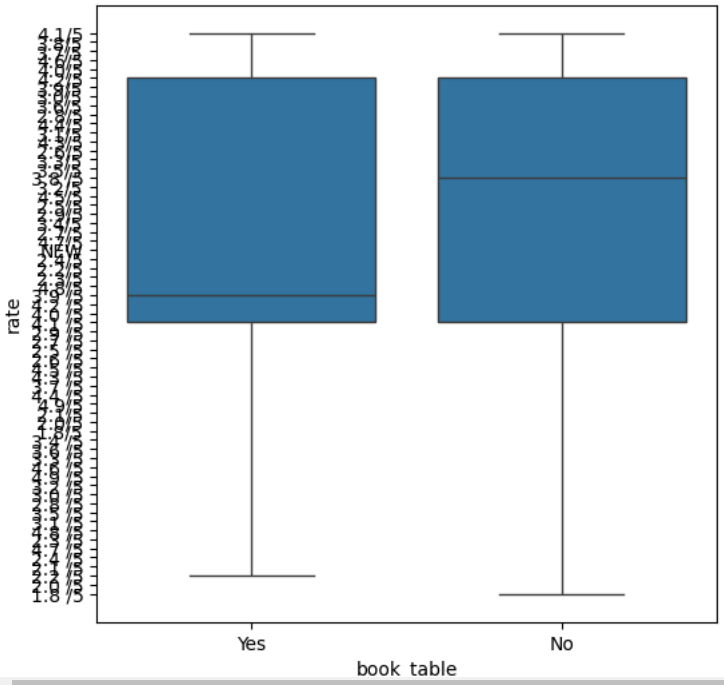

```
plt.figure(figsize = (6,6))
sns.boxplot(x = 'online_order', y = 'rate', data = df)
```

```
<Axes: xlabel='online_order', ylabel='rate'>
```




```
plt.figure(figsize = (6,6))
sns.boxplot(x = 'book_table', y = 'rate', data = df)
```

```
<Axes: xlabel='book_table', ylabel='rate'>
```




```
import numpy as np
df1 = df.groupby(['location','online_order'])['name'].count()
df1.to_csv('location_online.csv')
df1 = pd.read_csv('location_online.csv')
df1 = pd.pivot_table(df1, values=None, index=['location'], columns=['online_order'], fill_value=0, aggfunc=np.sum)
df1
```

```
<ipython-input-10-c698f43dca6e>:5: FutureWarning: The provided callable <function sum at 0x7c526491ee60> is currently using DataFram
  df1 = pd.pivot_table(df1, values=None, index=['location'], columns=['online_order'], fill_value=0, aggfunc=np.sum)
```

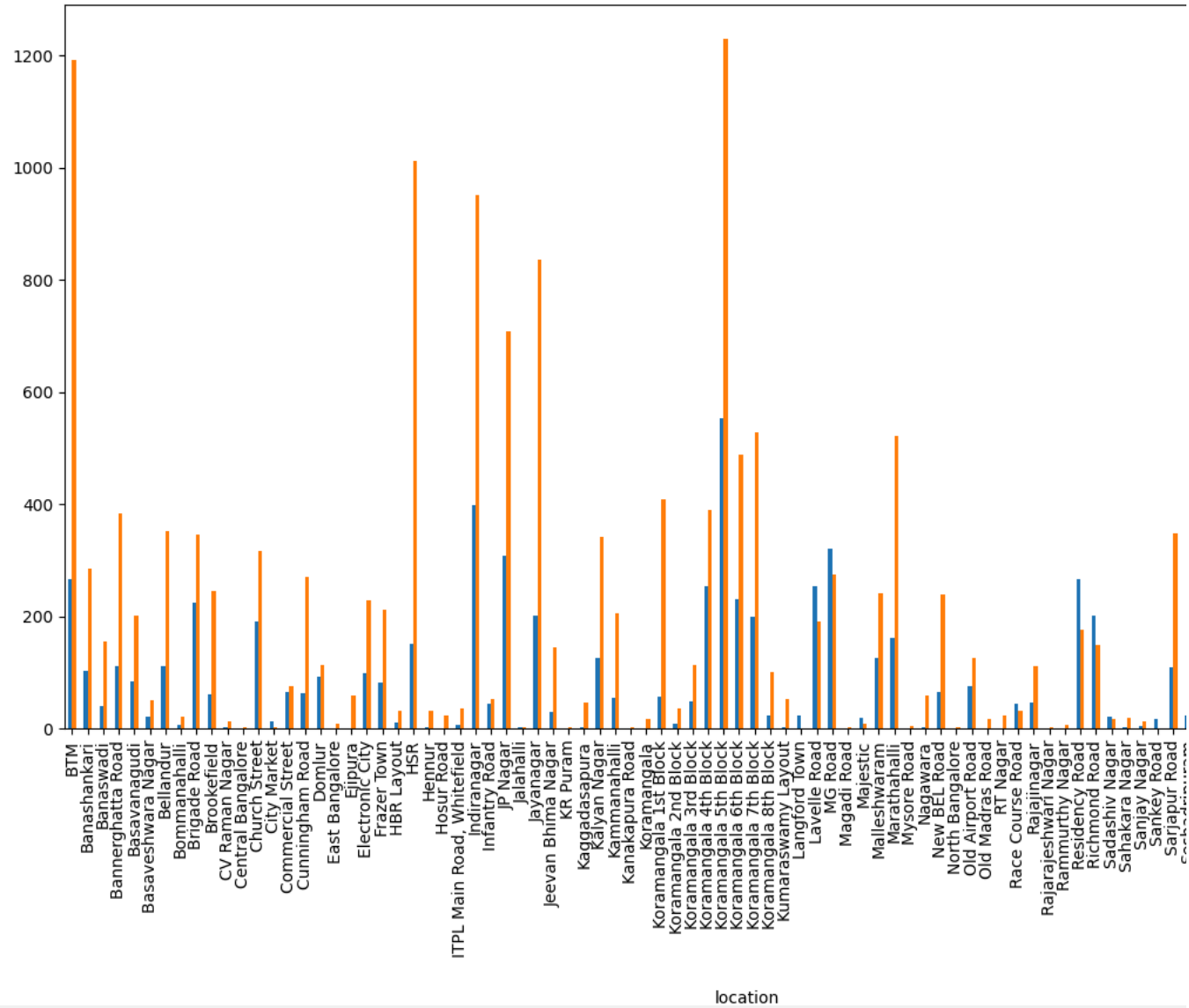
	name	
online_order	No	Yes
location		
BTM	265	1191
Banashankari	102	285
Banaswadi	40	156
Bannerghatta Road	112	384
Basavanagudi	84	202
...	...	...
West Bangalore	0	2
Whitefield	264	560
Wilson Garden	8	33
Yelahanka	0	2
Yeshwantpur	1	23

88 rows × 2 columns

Next steps: Generate code with df1 | View recommended plots | New interactive sheet

```
df1.plot(kind = 'bar', figsize = (15,8))
```

```
<Axes: xlabel='location'>
```



```
df2 = df.groupby(['location','book_table'])['name'].count()
df2.to_csv('location_booktable.csv')
df2 = pd.read_csv('location_booktable.csv')
df2 = pd.pivot_table(df2, values=None, index=['location'], columns=['book_table'], fill_value=0, aggfunc=np.sum)
df2
```

```
<ipython-input-12-c251a7a98699>:4: FutureWarning: The provided callable <function sum at 0x7c526491ee60> is currently using DataFram
  df2 = pd.pivot_table(df2, values=None, index=['location'], columns=['book_table'], fill_value=0, aggfunc=np.sum)
```

	name	
book_table	No	Yes
location		
BTM	1320	136
Banashankari	334	53