

```
In [1]: 1 import requests
        2 from bs4 import BeautifulSoup
        3 import re
        4 import pandas as pd
        5 import numpy as np
```

```
In [2]: 1 HotelName = []
        2 Address = []
        3 CurrentPrice = []
        4 ActualPrice = []
        5 Discount = []
        6
```

## Scrapping data from OYO website

```
In [4]: 1 url = 'https://www.oyorooms.com/hotels-in-hyderabad/'
        2 page = requests.get(url,headers = {'User-Agent':'Mozilla/5.0'})
        3 page
```

```
Out[4]: <Response [200]>
```

```
In [17]: 1 cities = ['pune','mumbai','hyderabad','bangalore','chennai','delhi','shimla','goa','manali','mahabaleshwar']
2 for i in cities:
3     for j in range(1,16):
4         url = 'https://www.oyorooms.com/hotels-in-{}/?page={}'.format(i,j)
5         print('Getting data from page ', i)
6         page = requests.get(url,headers = {'User-Agent':'Mozilla/5.0'})
7         page_context = page.text
8         soup = BeautifulSoup(page_context)
9         for data in soup.find_all('div' , attrs={'class' : 'oyo-row oyo-row--no-spacing listingHotelDescription'})
10             hname = data.find('h3' , attrs={'class' : 'listingHotelDescription__hotelName d-textEllipsis'})
11             address = data.find('div' , attrs={'class' : 'd-body-lg listingHotelDescription__hotelAddress'})
12             curprice = data.find('span' , attrs={'class' : 'listingPrice__finalPrice'})
13             actprice = data.find('span' , attrs={'class' : 'listingPrice__slashedPrice d-body-lg'})
14             dis = data.find('span',attrs={'class' : 'listingPrice__percentage'})
15
16
17             if hname is None:
18                 HotelName.append(np.NaN)
19             else:
20                 HotelName.append(hname.text)
21
22             if address is None:
23                 Address.append(np.NaN)
24             else:
25                 Address.append(address.text)
26
27             if curprice is None:
28                 CurrentPrice.append(np.NaN)
29             else:
30                 CurrentPrice.append(curprice.text)
31
32             if actprice is None:
33                 ActualPrice.append(np.NaN)
34             else:
35                 ActualPrice.append(actprice.text)
36
37             if dis is None:
38                 Discount.append(np.NaN)
39             else:
40                 Discount.append(dis.text)
41
42
```

...

```
In [18]: 1 Rating = []
2
3 for i in cities:
4     for j in range(1,16):
5         url = 'https://www.oyorooms.com/hotels-in-{}/?page={}'.format(i,j)
6         print('Getting data from page ', i)
7         page = requests.get(url,headers = {'User-Agent':'Mozilla/5.0'})
8         page_context = page.text
9         soup = BeautifulSoup(page_context)
10        for data in soup.find_all('div' , attrs={'class' : 'oyo-cell--12-col listingHotelDescription__conter
11            rat = data.find('div' , attrs={'class' : 'hotelRating'})
12
13            if rat is None:
14                Rating.append(np.NaN)
15            else:
16                Rating.append(rat.text)
17
18
```

...

```
In [94]: 1 print(len(HotelName), ' ', len(Address), ' ', len(ActualPrice), ' ', len(CurrentPrice), ' ', len(Discount), ' ', len(I
1359 1359 1359 1359 1359 1359
```

```
In [38]: 1 Facility = []
2         for i in cities:
3             for j in range(1,16):
4                 url = 'https://www.oyorooms.com/hotels-in-{}/?page={}'.format(i,j)
5                 print('Getting data from page ', i)
6                 page = requests.get(url,headers = {'User-Agent':'Mozilla/5.0'})
7                 page_context = page.text
8                 soup = BeautifulSoup(page_context)
9                 for data in soup.find_all('div' , attrs={'class' : 'oyo-cell--12-col listingHotelDescription__conter
10                    fac = data.find('div' , attrs={'class' : 'amenityWrapper'})
11                    if fac is None:
12                        Facility.append(np.NaN)
13                    else:
14                        Facility.append(fac.text)
```

...

```
In [50]: 1 len(Facility)
2
```

Out[50]: 1359

## Creating the Data frame of Scraped data

```
In [95]: 1 OYO = pd.DataFrame({
2         'HotelName' : HotelName ,
3         'Address':Address,
4         'OriginalRentNight': ActualPrice,
5         'Discount': Discount,
6         'AmountPayableNight': CurrentPrice,
7         'Rating' : Rating,
8         'Facility' : Facility
9     })
10
```

In [96]:

1 OYO

Out[96]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune · 1....	₹4148	71% off	₹1199	4.3 (1029 Ratings) · Very Good	Private Entrance Parking Facility Window +...
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	₹3937	67% off	₹1299	4.1 (996 Ratings) · Very Good	Parking Facility Reception Free Wifi + 11 ...
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune · 1.2 km	₹3582	47% off	₹1881	4.6 (1741 Ratings) · Excellent	Parking Facility Private Entrance Reception...
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park, Pune · ...	₹3569	47% off	₹1874	4.5 (1413 Ratings) · Excellent	Parking Facility Free Wifi Geyser + 8 more
4	Collection O 86505 Vardhan Executive	India, Pune · 8.0 km	₹3587	74% off	₹899	4.7 (76 Ratings) · Excellent	Parking Facility Free Wifi Geyser + 6 more
...	...	...	...	...	...	...	...
1354	OYO 27730 Pawna Lake House	Near Maval Dhabha, Pavananagar-Kamshet Rd, Lon...	₹3142	47% off	₹1650	NEW	Reception Balcony Caretaker + 15 more
1355	POP 87742 Ekvira Nivas	Lonavala, Lonavala · 6.8 km	₹2315	47% off	₹1216	2.2 (23 Ratings) · Fair	Reception Caretaker Power backup + 24 more

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility
1356	SPOT ON 77844 Shahani Wellness Retreat	India, Lonavala · 0.5 km	₹2865	47% off	₹1504	4.2 (194 Ratings) · Very Good	Elevator Free Wifi Geyser + 7 more
1357	SPOT ON 65135 Hotel Suvarna Samrat Lodge	Near Pavana Dam, Sawantwadi, Lonavala · 1...	₹1669	46% off	₹899	2.8 (9 Ratings) · Fair	Parking Facility Reception Free Wifi + 19 ...
1358	Collection O 85518 Hotel Gulab Paradise	India, Lonavala · 8.0 km	₹3097	47% off	₹1626	4.3 (83 Ratings) · Very Good	Private Entrance Parking Facility Reception...

1359 rows × 7 columns

## Applying some Regular expression to clean out some data in proper format

```
In [97]: 1 regex = r'[0-9][0-9]+'
2 OYO['ReviewRating'] = OYO['Rating'].apply(lambda x: re.compile(regex).findall(x))
3 OYO['ReviewRating'] = OYO['ReviewRating'].apply(lambda x: ''.join(x))
```

```
In [98]: 1 regex = r'Good|Very Good|Fabulous|Excellent|NEW'
2 OYO['RoomQuality'] = OYO['Rating'].apply(lambda x: re.compile(regex).findall(x))
3 OYO['RoomQuality'] = OYO['RoomQuality'].apply(lambda x: ''.join(x))
```

```
In [99]: 1 regex = r'[0-5].+(['
2 OYO['Rating'] = OYO['Rating'].apply(lambda x: re.compile(regex).findall(x))
3 OYO['Rating'] = OYO['Rating'].apply(lambda x: ''.join(x))
4 OYO['Rating'] = OYO['Rating'].apply(lambda x: x.replace('(', ''))
```

```
In [100]: 1 regex = r'Pune|pune|Mumbai|mumbai|Goa|goa|Hyderabad|hyderabad|Bangalore|bangalore|Chennai|chennai|Delhi|delhi'
2 OYO['Location'] = OYO['Address'].apply(lambda x: re.compile(regex).findall(x))
3 OYO['Location'] = OYO['Location'].apply(lambda x: ''.join(x))
```

```
In [ ]:
```

```
1
```

```
In [ ]:
```

```
1 Downloads/
```

```
In [101]:
```

```
1 OYO.to_excel('oyo.xlsx', sheet_name='oyo_data', index=False)
```

```
In [102]: 1 oyo = pd.read_excel('oyo.xlsx', sheet_name='oyo_data')
          2 oyo
```

Out[102]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune· 1....	₹4148	71% off	₹1199	4.3	Private Entrance Parking Facility Window +...	1029.0	Very Good
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	₹3937	67% off	₹1299	4.1	Parking Facility Reception Free Wifi + 11 ...	996.0	Very Good
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune· 1.2 km	₹3582	47% off	₹1881	4.6	Parking Facility Private Entrance Reception...	1741.0	Excellent
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune· ...	₹3569	47% off	₹1874	4.5	Parking Facility Free Wifi Geyser + 8 more	1413.0	Excellent
4	Collection O 86505 Vardhan Executive	India, Pune· 8.0 km	₹3587	74% off	₹899	4.7	Parking Facility Free Wifi Geyser + 6 more	76.0	Excellent
...	...	...	...	...	...	...	...	...	...
1354	OYO 27730 Pawna Lake House	Near Maval Dhabha, Pavananagar- Kamshet Rd, Lon...	₹3142	47% off	₹1650	NaN	Reception Balcony Caretaker + 15 more	NaN	NEW
1355	POP 87742 Ekvira Nivas	Lonavala, Lonavala· 6.8 km	₹2315	47% off	₹1216	2.2	Reception Caretaker Power backup + 24 more	23.0	NaN Lonav



	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
1356	SPOT ON 77844 Shahani Wellness Retreat	India, Lonavala· 0.5 km	₹2865	47% off	₹1504	4.2	Elevator Free Wifi Geyser + 7 more	194.0	Very Good
1357	SPOT ON 65135 Hotel Suvarna Samrat Lodge	Near Pavana Dam, Sawantwadi, Lonavala· 1...	₹1669	46% off	₹899	2.8	Parking Facility Reception Free Wifi + 19 ...	NaN	NaN
1358	Collection O 85518 Hotel Gulab Paradise	India, Lonavala· 8.0 km	₹3097	47% off	₹1626	4.3	Private Entrance Parking Facility Reception...	83.0	Very Good

1359 rows × 10 columns



In [ ]:

1

## Creating excel file for storing the clean data for future working

In [103]:

```
1 oyo.to_excel('oyo2.xlsx', sheet_name='oyo_data', index=False)
```

```
In [104]: 1 df = pd.read_excel('oyo2.xlsx', sheet_name='oyo_data')
          2 df
```

Out[104]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune· 1....	₹4148	71% off	₹1199	4.3	Private Entrance Parking Facility Window +...	1029.0	Very Good
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	₹3937	67% off	₹1299	4.1	Parking Facility Reception Free Wifi + 11 ...	996.0	Very Good
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune· 1.2 km	₹3582	47% off	₹1881	4.6	Parking Facility Private Entrance Reception...	1741.0	Excellent
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune· ...	₹3569	47% off	₹1874	4.5	Parking Facility Free Wifi Geyser + 8 more	1413.0	Excellent
4	Collection O 86505 Vardhan Executive	India, Pune· 8.0 km	₹3587	74% off	₹899	4.7	Parking Facility Free Wifi Geyser + 6 more	76.0	Excellent
...	...	...	...	...	...	...	...	...	...
1354	OYO 27730 Pawna Lake House	Near Maval Dhabha, Pavananagar- Kamshet Rd, Lon...	₹3142	47% off	₹1650	NaN	Reception Balcony Caretaker + 15 more	NaN	NEW
1355	POP 87742 Ekvira Nivas	Lonavala, Lonavala· 6.8 km	₹2315	47% off	₹1216	2.2	Reception Caretaker Power backup + 24 more	23.0	NaN Lonav

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
1356	SPOT ON 77844 Shahani Wellness Retreat	India, Lonavala· 0.5 km	₹2865	47% off	₹1504	4.2	Elevator Free Wifi Geyser + 7 more	194.0	Very Good
1357	SPOT ON 65135 Hotel Suvarna Samrat Lodge	Near Pavana Dam, Sawantwadi, Lonavala· 1...	₹1669	46% off	₹899	2.8	Parking Facility Reception Free Wifi + 19 ...	NaN	NaN
1358	Collection O 85518 Hotel Gulab Paradise	India, Lonavala· 8.0 km	₹3097	47% off	₹1626	4.3	Private Entrance Parking Facility Reception...	83.0	Very Good

1359 rows × 10 columns



In [ ]:

1

In [1]:

```
1 import pandas as pd
2 import numpy as np
```

```
In [2]: 1 oyo = pd.read_excel('oyo2.xlsx', sheet_name='oyo_data')
        2 oyo
```

Out[2]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune· 1....	₹4148	71% off	₹1199	4.3	Private Entrance Parking Facility Window +...	1029.0	Very Good
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	₹3937	67% off	₹1299	4.1	Parking Facility Reception Free Wifi + 11 ...	996.0	Very Good
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune· 1.2 km	₹3582	47% off	₹1881	4.6	Parking Facility Private Entrance Reception...	1741.0	Excellent
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune· ...	₹3569	47% off	₹1874	4.5	Parking Facility Free Wifi Geyser + 8 more	1413.0	Excellent
4	Collection O 86505 Vardhan Executive	India, Pune· 8.0 km	₹3587	74% off	₹899	4.7	Parking Facility Free Wifi Geyser + 6 more	76.0	Excellent
...	...	...	...	...	...	...	...	...	...
1354	OYO 27730 Pawna Lake House	Near Maval Dhabha, Pavananagar- Kamshet Rd, Lon...	₹3142	47% off	₹1650	NaN	Reception Balcony Caretaker + 15 more	NaN	NEW
1355	POP 87742 Ekvira Nivas	Lonavala, Lonavala· 6.8 km	₹2315	47% off	₹1216	2.2	Reception Caretaker Power backup + 24 more	23.0	NaN

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
1356	SPOT ON 77844 Shahani Wellness Retreat	India, Lonavala· 0.5 km	₹2865	47% off	₹1504	4.2	Elevator Free Wifi Geyser + 7 more	194.0	Very Good
1357	SPOT ON 65135 Hotel Suvarna Samrat Lodge	Near Pavana Dam, Sawantwadi, Lonavala· 1...	₹1669	46% off	₹899	2.8	Parking Facility Reception Free Wifi + 19 ...	NaN	NaN
1358	Collection O 85518 Hotel Gulab Paradise	India, Lonavala· 8.0 km	₹3097	47% off	₹1626	4.3	Private Entrance Parking Facility Reception...	83.0	Very Good

1359 rows × 10 columns

```
In [3]: 1 oyo['Address'] = oyo.Address.apply(lambda x:x.replace('\n',''))
```

```
In [4]: 1 # oyo.Rating.agg(np.median)
2 # oyo.Rating.mode()
3 oyo.Rating.fillna(4, inplace=True)
4 oyo.Rating.isna().sum()
```

Out[4]: 0

```
In [4]: 1 oyo['Discount'] = oyo.Discount.apply(lambda x:str(x).replace('% off',''))
```

```
In [5]: 1 oyo['Discount'] = oyo.Discount.astype("float")
```

```
In [6]: 1 oyo['AmountPayableNight'] = oyo.AmountPayableNight.apply(lambda x:str(x).replace('₹','')).astype('float')
```

```
In [7]: 1 oyo['OriginalRentNight'] = oyo["OriginalRentNight"].apply(lambda x:str(x).replace('₹','')).astype('float')
```

In [8]:

1 oyo.head()

Out[8]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality	Location
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune- 1....	4148.0	71.0	1199.0	4.3	Private Entrance Parking Facility Window +...	1029.0	Very Good	Pune
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	3937.0	67.0	1299.0	4.1	Parking Facility Reception Free Wifi + 11 ...	996.0	Very Good	Pune
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune- 1.2 km	3582.0	47.0	1881.0	4.6	Parking Facility Private Entrance Reception...	1741.0	Excellent	Pune
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune- ...	3569.0	47.0	1874.0	4.5	Parking Facility Free Wifi Geyser + 8 more	1413.0	Excellent	Pune
4	Collection O 86505 Vardhan Executive	India, Pune- 8.0 km	3587.0	74.0	899.0	4.7	Parking Facility Free Wifi Geyser + 6 more	76.0	Excellent	Pune

In [9]: 1 oyo.RoomQuality.fillna('very good', inplace= True)

In [10]: 1 oyo.ReviewRating.fillna(0, inplace=True)

In [11]: 1 oyo.ReviewRating.isna().sum()

Out[11]: 0

```
In [21]: 1 oyo.Discount.isna().sum()
```

```
Out[21]: 39
```

```
In [22]: 1 oyo.Discount.agg(np.median)
```

```
Out[22]: 47.0
```

```
In [23]: 1 oyo.Discount.fillna(47.0, inplace=True)
```

```
In [24]: 1 oyo.Discount.isna().sum()
```

```
Out[24]: 0
```

```
In [27]: 1 oyo.Facility.isna().sum()
```

```
Out[27]: 9
```

```
In [29]: 1 oyo.Facility.mode()
```

```
Out[29]: 0    AC  TV  
dtype: object
```

```
In [32]: 1 oyo.Facility.fillna('AC,TV' , inplace=True)
```

```
In [34]: 1 oyo.Facility.isna().sum()
```

```
Out[34]: 0
```

```
In [35]: 1 oyo.to_excel('oyo3.xlsx', sheet_name='oyo_data', index=False)
```



```
In [36]: 1 df = pd.read_excel('oyo3.xlsx', sheet_name='oyo_data')
        2 df
```

Out[36]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune· 1....	4148.0	71	1199.0	4.3	Private Entrance Parking Facility Window +...	1029	Very Good
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	3937.0	67	1299.0	4.1	Parking Facility Reception Free Wifi + 11 ...	996	Very Good
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune· 1.2 km	3582.0	47	1881.0	4.6	Parking Facility Private Entrance Reception...	1741	Excellent
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune· ...	3569.0	47	1874.0	4.5	Parking Facility Free Wifi Geyser + 8 more	1413	Excellent
4	Collection O 86505 Vardhan Executive	India, Pune· 8.0 km	3587.0	74	899.0	4.7	Parking Facility Free Wifi Geyser + 6 more	76	Excellent
...	...	...	...	...	...	...	...	...	...
1354	OYO 27730 Pawna Lake House	Near Maval Dhabha, Pavananagar- Kamshet Rd, Lon...	3142.0	47	1650.0	NaN	Reception Balcony Caretaker + 15 more	0	NEW
1355	POP 87742 Ekvira Nivas	Lonavala, Lonavala· 6.8 km	2315.0	47	1216.0	2.2	Reception Caretaker Power backup + 24 more	23	very good Lonav

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
1356	SPOT ON 77844 Shahani Wellness Retreat	India, Lonavala· 0.5 km	2865.0	47	1504.0	4.2	Elevator Free Wifi Geyser + 7 more	194	Very Good
1357	SPOT ON 65135 Hotel Suvarna Samrat Lodge	Near Pavana Dam, Sawantwadi, Lonavala· 1...	1669.0	46	899.0	2.8	Parking Facility Reception Free Wifi + 19 ...	0	very good
1358	Collection O 85518 Hotel Gulab Paradise	India, Lonavala· 8.0 km	3097.0	47	1626.0	4.3	Private Entrance Parking Facility Reception...	83	Very Good

1359 rows × 10 columns



In [ ]:

1

In [ ]:

1

In [37]:

```
1 df.to_excel('oyo_dataset.xlsx', sheet_name='oyo_dataset', index=False) # files get crashed due to malware or
2 # that's why i need to create xlsx and csv file many times to get the copu of dataset
```

```
In [38]: 1 oyo = pd.read_excel('oyo_dataset.xlsx', sheet_name='oyo_dataset')
        2 oyo
```

Out[38]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune· 1....	4148.0	71	1199.0	4.3	Private Entrance Parking Facility Window +...	1029	Very Good
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	3937.0	67	1299.0	4.1	Parking Facility Reception Free Wifi + 11 ...	996	Very Good
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune· 1.2 km	3582.0	47	1881.0	4.6	Parking Facility Private Entrance Reception...	1741	Excellent
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune· ...	3569.0	47	1874.0	4.5	Parking Facility Free Wifi Geyser + 8 more	1413	Excellent
4	Collection O 86505 Vardhan Executive	India, Pune· 8.0 km	3587.0	74	899.0	4.7	Parking Facility Free Wifi Geyser + 6 more	76	Excellent
...	...	...	...	...	...	...	...	...	...
1354	OYO 27730 Pawna Lake House	Near Maval Dhabha, Pavananagar- Kamshet Rd, Lon...	3142.0	47	1650.0	NaN	Reception Balcony Caretaker + 15 more	0	NEW
1355	POP 87742 Ekvira Nivas	Lonavala, Lonavala· 6.8 km	2315.0	47	1216.0	2.2	Reception Caretaker Power backup + 24 more	23	very good Lonav

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
1356	SPOT ON 77844 Shahani Wellness Retreat	India, Lonavala· 0.5 km	2865.0	47	1504.0	4.2	Elevator Free Wifi Geyser + 7 more	194	Very Good
1357	SPOT ON 65135 Hotel Suvarna Samrat Lodge	Near Pavana Dam, Sawantwadi, Lonavala· 1...	1669.0	46	899.0	2.8	Parking Facility Reception Free Wifi + 19 ...	0	very good
1358	Collection O 85518 Hotel Gulab Paradise	India, Lonavala· 8.0 km	3097.0	47	1626.0	4.3	Private Entrance Parking Facility Reception...	83	Very Good

1359 rows × 10 columns



```
In [40]: 1 df.to_csv('oyo_dataset.csv', index=False)
```

```
In [41]: 1 cs = pd.read_csv('oyo_dataset.csv')
```

In [42]:

1 cs

Out[42]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune· 1....	4148.0	71	1199.0	4.3	Private Entrance Parking Facility Window +...	1029	Very Good
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	3937.0	67	1299.0	4.1	Parking Facility Reception Free Wifi + 11 ...	996	Very Good
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune· 1.2 km	3582.0	47	1881.0	4.6	Parking Facility Private Entrance Reception...	1741	Excellent
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune· ...	3569.0	47	1874.0	4.5	Parking Facility Free Wifi Geyser + 8 more	1413	Excellent
4	Collection O 86505 Vardhan Executive	India, Pune· 8.0 km	3587.0	74	899.0	4.7	Parking Facility Free Wifi Geyser + 6 more	76	Excellent
...	...	...	...	...	...	...	...	...	...
1354	OYO 27730 Pawna Lake House	Near Maval Dhabha, Pavananagar- Kamshet Rd, Lon...	3142.0	47	1650.0	NaN	Reception Balcony Caretaker + 15 more	0	NEW
1355	POP 87742 Ekvira Nivas	Lonavala, Lonavala· 6.8 km	2315.0	47	1216.0	2.2	Reception Caretaker Power backup + 24 more	23	very good Lonav

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
1356	SPOT ON 77844 Shahani Wellness Retreat	India, Lonavala· 0.5 km	2865.0	47	1504.0	4.2	Elevator Free Wifi Geyser + 7 more	194	Very Good
1357	SPOT ON 65135 Hotel Suvarna Samrat Lodge	Near Pavana Dam, Sawantwadi, Lonavala· 1...	1669.0	46	899.0	2.8	Parking Facility Reception Free Wifi + 19 ...	0	very good
1358	Collection O 85518 Hotel Gulab Paradise	India, Lonavala· 8.0 km	3097.0	47	1626.0	4.3	Private Entrance Parking Facility Reception...	83	Very Good

1359 rows × 10 columns



```
In [ ]: 1
```

In [48]:

```
1 import pandas as pd
2 import numpy as np
3 import seaborn as sns
4 import matplotlib.pyplot as plt
5 %matplotlib inline
6 import warnings
7 warnings.filterwarnings('ignore')
8
```

## Reading dataset from excel file for analysis

```
In [49]: 1 oyo = pd.read_csv('oyo_dataset.csv')
        2 oyo.head()
```

Out[49]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality	Location
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune- 1....	4148.0	71	1199.0	4.3	Private Entrance Parking Facility Window +...	1029	Very Good	Pune
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	3937.0	67	1299.0	4.1	Parking Facility Reception Free Wifi + 11 ...	996	Very Good	Pune
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune- 1.2 km	3582.0	47	1881.0	4.6	Parking Facility Private Entrance Reception...	1741	Excellent	Pune
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune- ...	3569.0	47	1874.0	4.5	Parking Facility Free Wifi Geyser + 8 more	1413	Excellent	Pune
4	Collection O 86505 Vardhan Executive	India, Pune- 8.0 km	3587.0	74	899.0	4.7	Parking Facility Free Wifi Geyser + 6 more	76	Excellent	Pune



In [50]: 1 oyo.describe().T

Out[50]:

	count	mean	std	min	25%	50%	75%	max
<b>OriginalRentNight</b>	1320.0	3052.334091	988.931008	1137.0	2481.75	2862.5	3447.25	12024.0
<b>Discount</b>	1359.0	52.961001	9.095911	33.0	47.00	47.0	60.00	88.0
<b>AmountPayableNight</b>	1320.0	1411.833333	561.432687	499.0	999.00	1299.0	1672.50	6313.0
<b>Rating</b>	1298.0	3.764484	0.655522	0.0	3.40	3.8	4.20	5.0
<b>ReviewRating</b>	1359.0	459.931567	640.930256	0.0	56.00	227.0	591.00	4837.0

**Checking the mean value to get the assumption that where data is range around**

```
In [51]: 1 df = pd.DataFrame(oyo)
        2 df
```

Out[51]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune· 1....	4148.0	71	1199.0	4.3	Private Entrance Parking Facility Window +...	1029	Very Good
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	3937.0	67	1299.0	4.1	Parking Facility Reception Free Wifi + 11 ...	996	Very Good
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune· 1.2 km	3582.0	47	1881.0	4.6	Parking Facility Private Entrance Reception...	1741	Excellent
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune· ...	3569.0	47	1874.0	4.5	Parking Facility Free Wifi Geyser + 8 more	1413	Excellent
4	Collection O 86505 Vardhan Executive	India, Pune· 8.0 km	3587.0	74	899.0	4.7	Parking Facility Free Wifi Geyser + 6 more	76	Excellent
...	...	...	...	...	...	...	...	...	...
1354	OYO 27730 Pawna Lake House	Near Maval Dhabha, Pavananagar- Kamshet Rd, Lon...	3142.0	47	1650.0	NaN	Reception Balcony Caretaker + 15 more	0	NEW
1355	POP 87742 Ekvira Nivas	Lonavala, Lonavala· 6.8 km	2315.0	47	1216.0	2.2	Reception Caretaker Power backup + 24 more	23	very good Lonav

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
1356	SPOT ON 77844 Shahani Wellness Retreat	India, Lonavala· 0.5 km	2865.0	47	1504.0	4.2	Elevator Free Wifi Geyser + 7 more	194	Very Good
1357	SPOT ON 65135 Hotel Suvarna Samrat Lodge	Near Pavana Dam, Sawantwadi, Lonavala· 1...	1669.0	46	899.0	2.8	Parking Facility Reception Free Wifi + 19 ...	0	very good
1358	Collection O 85518 Hotel Gulab Paradise	India, Lonavala· 8.0 km	3097.0	47	1626.0	4.3	Private Entrance Parking Facility Reception...	83	Very Good

1359 rows × 10 columns



In [52]: 1 oyo.head()

Out[52]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality	Location
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune- 1....	4148.0	71	1199.0	4.3	Private Entrance Parking Facility Window +...	1029	Very Good	Pune
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	3937.0	67	1299.0	4.1	Parking Facility Reception Free Wifi + 11 ...	996	Very Good	Pune
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune- 1.2 km	3582.0	47	1881.0	4.6	Parking Facility Private Entrance Reception...	1741	Excellent	Pune
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune- ...	3569.0	47	1874.0	4.5	Parking Facility Free Wifi Geyser + 8 more	1413	Excellent	Pune
4	Collection O 86505 Vardhan Executive	India, Pune- 8.0 km	3587.0	74	899.0	4.7	Parking Facility Free Wifi Geyser + 6 more	76	Excellent	Pune

**Go for Group by to check rent by location**

```
In [53]: 1 oyo.groupby(by=['Location'])['AmountPayableNight'].agg(np.mean)
```

```
Out[53]: Location
Bangalore          1236.934884
BangaloreBangalore 1257.782609
BangaloreBangaloreBangalore 899.000000
Chennai            1414.820225
ChennaiChennai     1198.700000
Delhi              1347.382653
DelhiDelhi         1172.129032
DelhiDelhiDelhi    1216.000000
Goa                2143.519231
GoaGoa             2058.500000
GoaGoaGoa          1786.000000
Hyderabad          1341.588235
HyderabadHyderabad 1379.789474
HyderabadHyderabadHyderabad 1579.000000
Lonavala           1403.066667
LonavalaLonavala   1257.500000
Mahabaleshwar      1220.593750
MahabaleshwarMahabaleshwar 1422.600000
Manali             1330.302326
ManaliManali       1252.666667
Mumbai             1815.508929
MumbaiBangalorePune 1678.000000
MumbaiMumbai       1779.700000
MumbaiPuneLonavala 1635.000000
MumbaiPunePune     1641.000000
Pune               1430.926316
PunePune           1436.666667
PunePunePunePune   1308.000000
Shimla             1422.476190
ShimlaShimla       1443.000000
chennai            899.000000
chennaiChennai     814.000000
delhi              899.000000
delhiDelhi         1107.000000
goaGoa             1227.000000
hyderabadHyderabad 799.000000
lonavalaLonavala   1199.000000
manaliManali       1356.000000
punePune           1444.000000
```

```

punePunePune      1489.000000
shimla            1199.000000
shimlaShimla      1241.000000
shimlashimla      1477.000000
Name: AmountPayableNight, dtype: float64

```

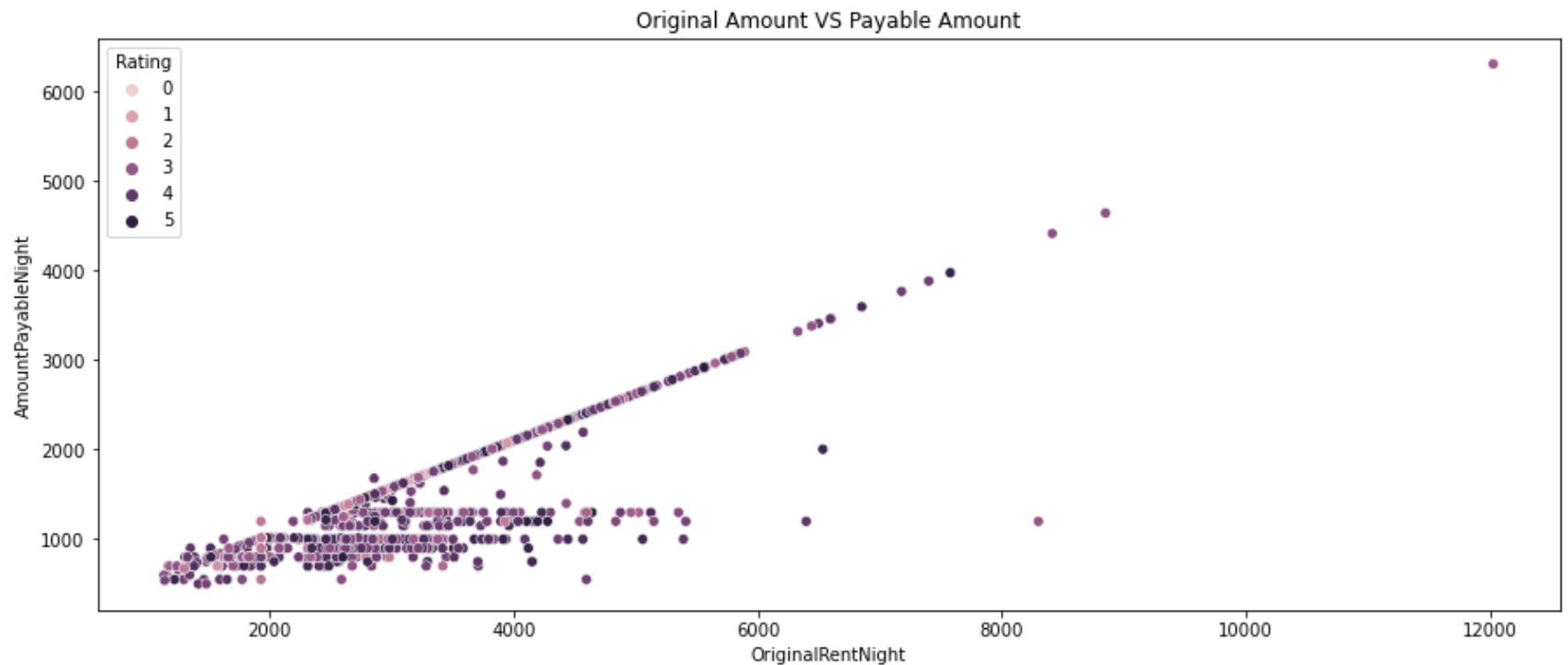
- Inference
  - by seeing the above data we can say the rent of hotels in GOA ,MUMBAI is higher than other cities.

## Checking the Discount rate of each city

```

In [54]: 1 size = (15, 6)
          2 fig, ax = plt.subplots(figsize=size)
          3 plt.title('Original Amount VS Payable Amount')
          4 sns.scatterplot(data=oyo,x=oyo['OriginalRentNight'], y=oyo['AmountPayableNight'], hue=oyo['Rating'])
          5 plt.show()

```

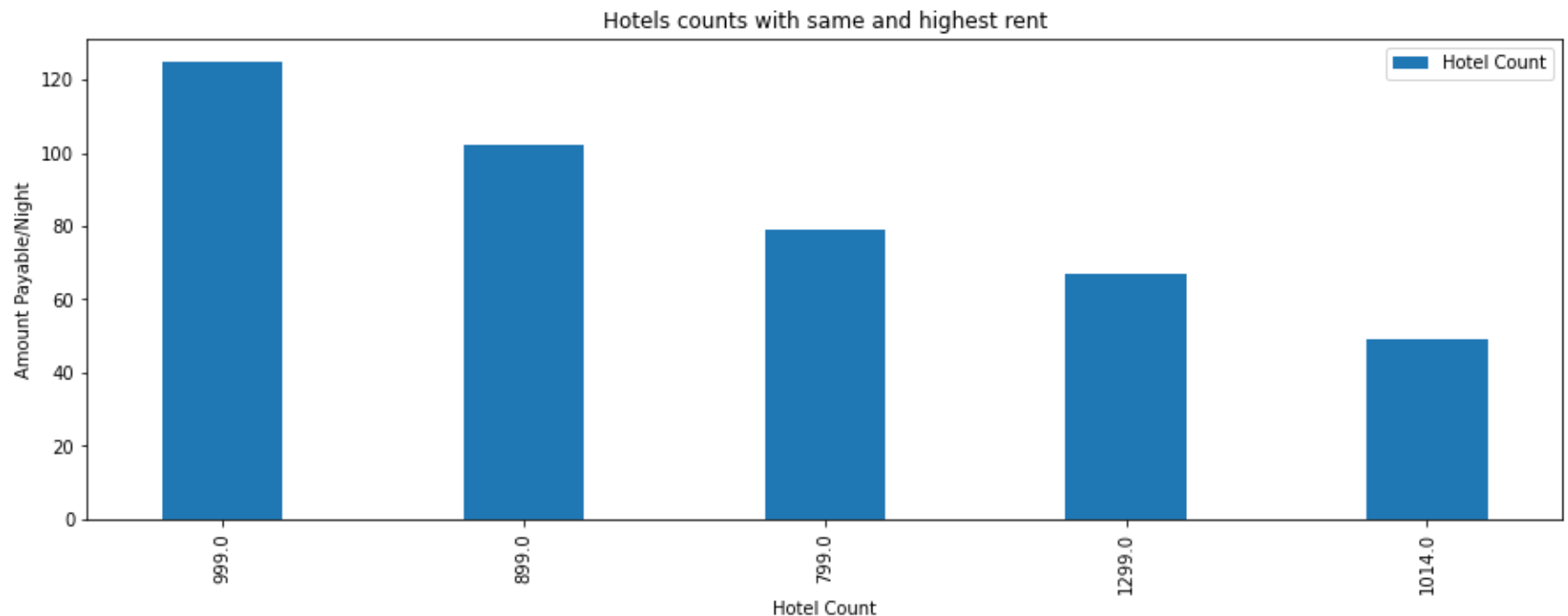


- Inference:
  - original rent is high , Amount Payable per night is high
  - one outlier whose original rent is 12000 but amount to pay is 6000 with 3 star rating , it seems that it gives 50% discount
  - again outlier whose original rent is 8200 but its amount payable per night is 1500 with 3 star rating
  - Maximum hotels whose original rent is lies between 1000 to 4500 its discounted rent is in between 500 to 2500.

## Getting the no. of hotels having highest Rent from Dataset

In [55]:

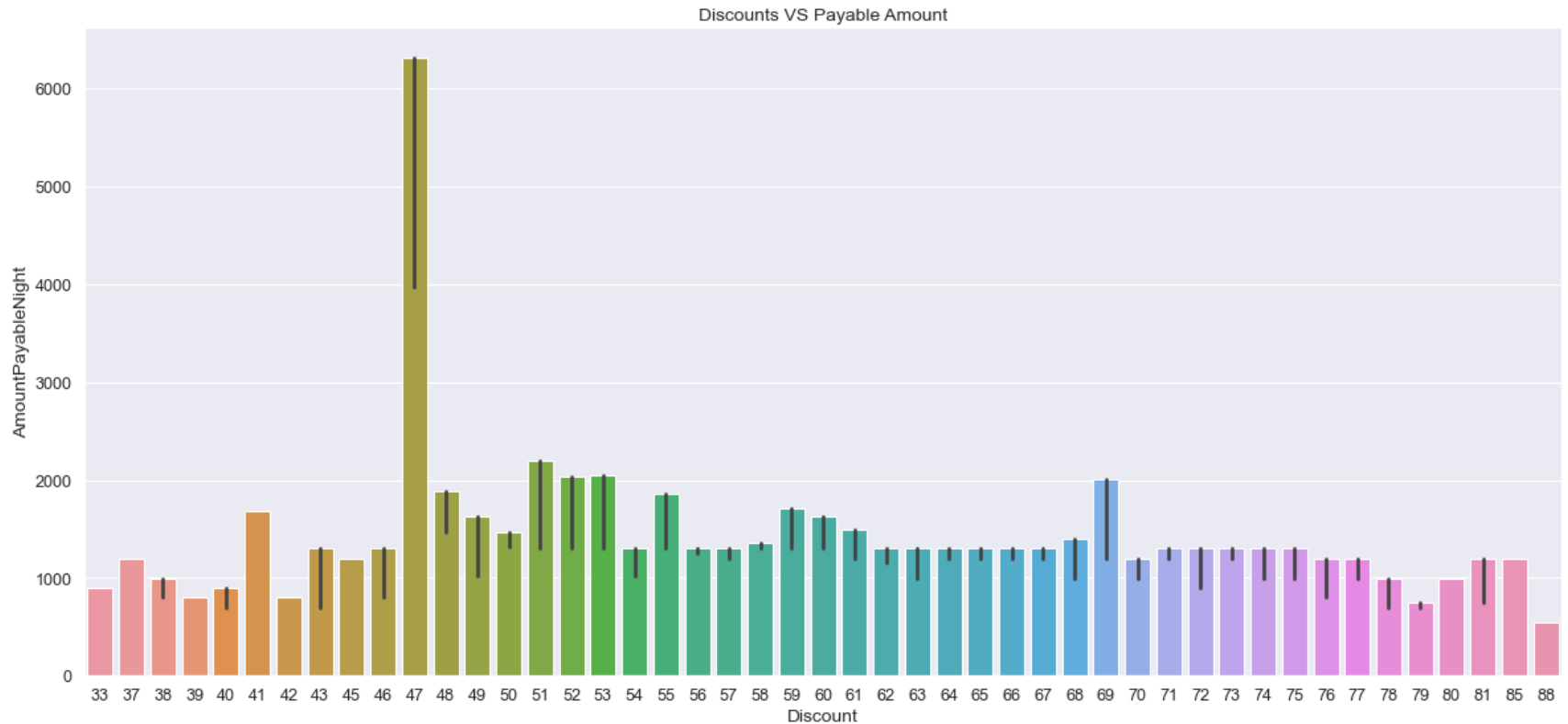
```
1 plt.ylabel('Amount Payable/Night')
2 plt.xlabel('Hotel Count')
3 plt.title('Hotels counts with same and highest rent')
4 oyo['AmountPayableNight'].value_counts().nlargest(5).plot(kind='bar',figsize= (15,5),width = 0.4)
5 plt.legend(["Hotel Count"])
6 plt.show()
```



## Plotting the data of Discount and rating to see the dependencies if any and the

## discount rate

```
In [89]: 1 size = (20, 9)
2 fig, ax = plt.subplots(figsize=size)
3 plt.title('Discounts VS Payable Amount')
4 sns.barplot(data=oyo,x=oyo['Discount'], y=oyo['AmountPayableNight'], estimator=np.max)
5 plt.show()
```

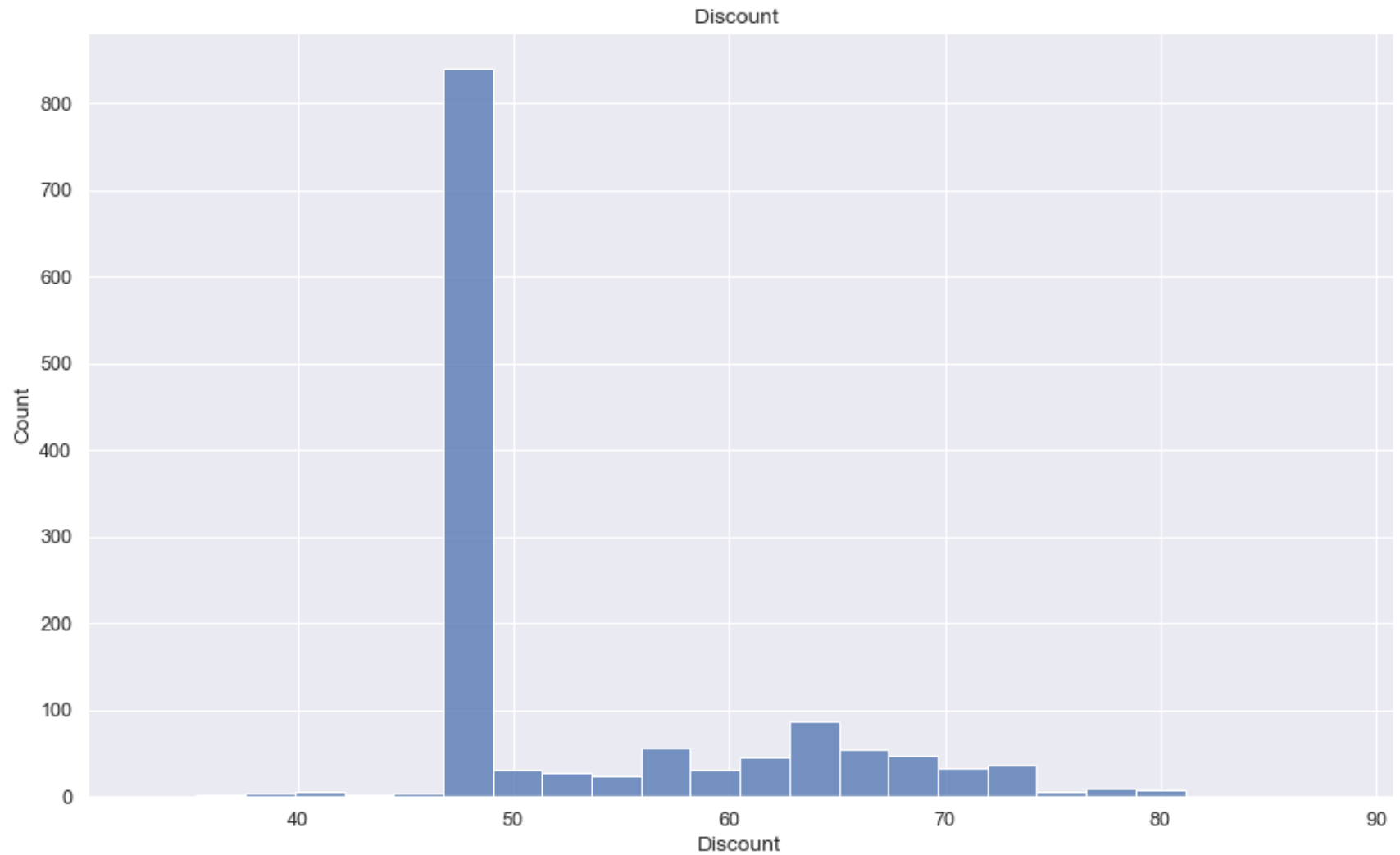


- Inference
  - for highest rent there is 47% discount
  - for least rent there is 88 % discount
  - Maximum rent is lies between 500 to 2500
  - only one hotel is there , of rent 6500.



## Checking Discount for all dataset

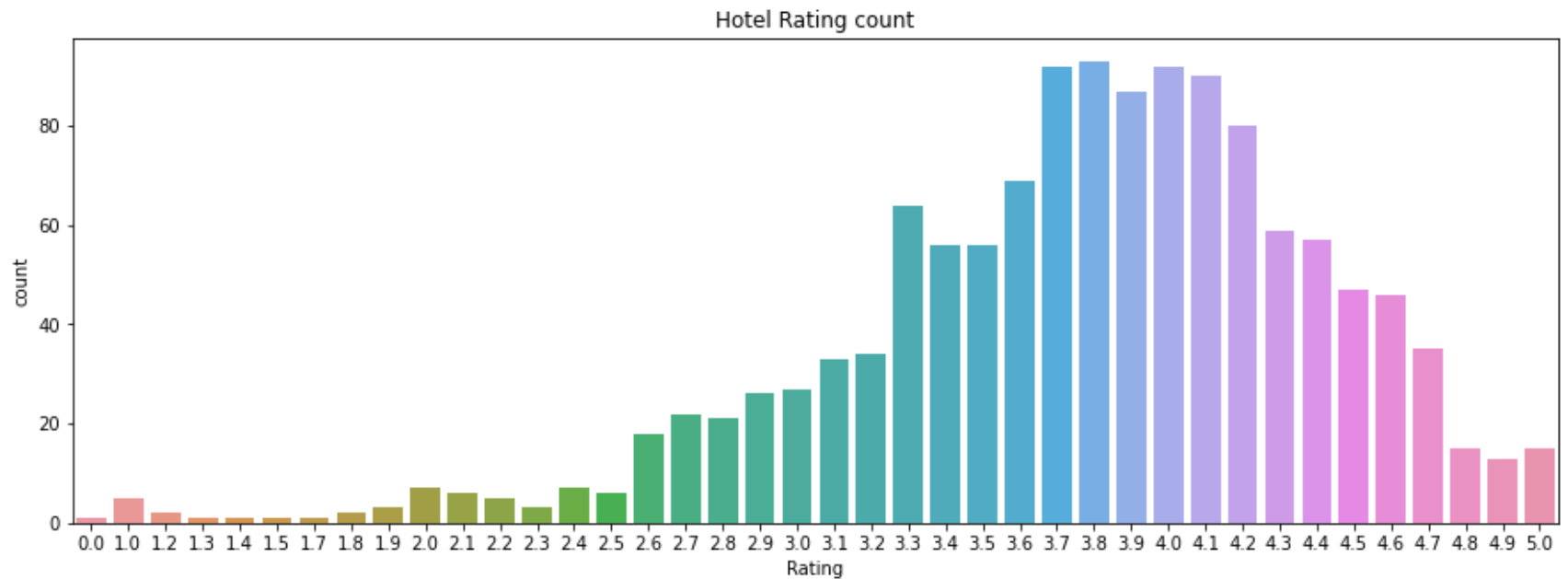
```
In [100]: 1 size = (15, 9)
          2 fig, ax = plt.subplots(figsize=size)
          3 plt.title('Discount ')
          4 sns.histplot(data=oyo, x=oyo['Discount'])
          5 plt.show()
```



**by seeing above data we can say that there are maximum hotels providing 47% discount**

## Searching for maximum rating of hotels

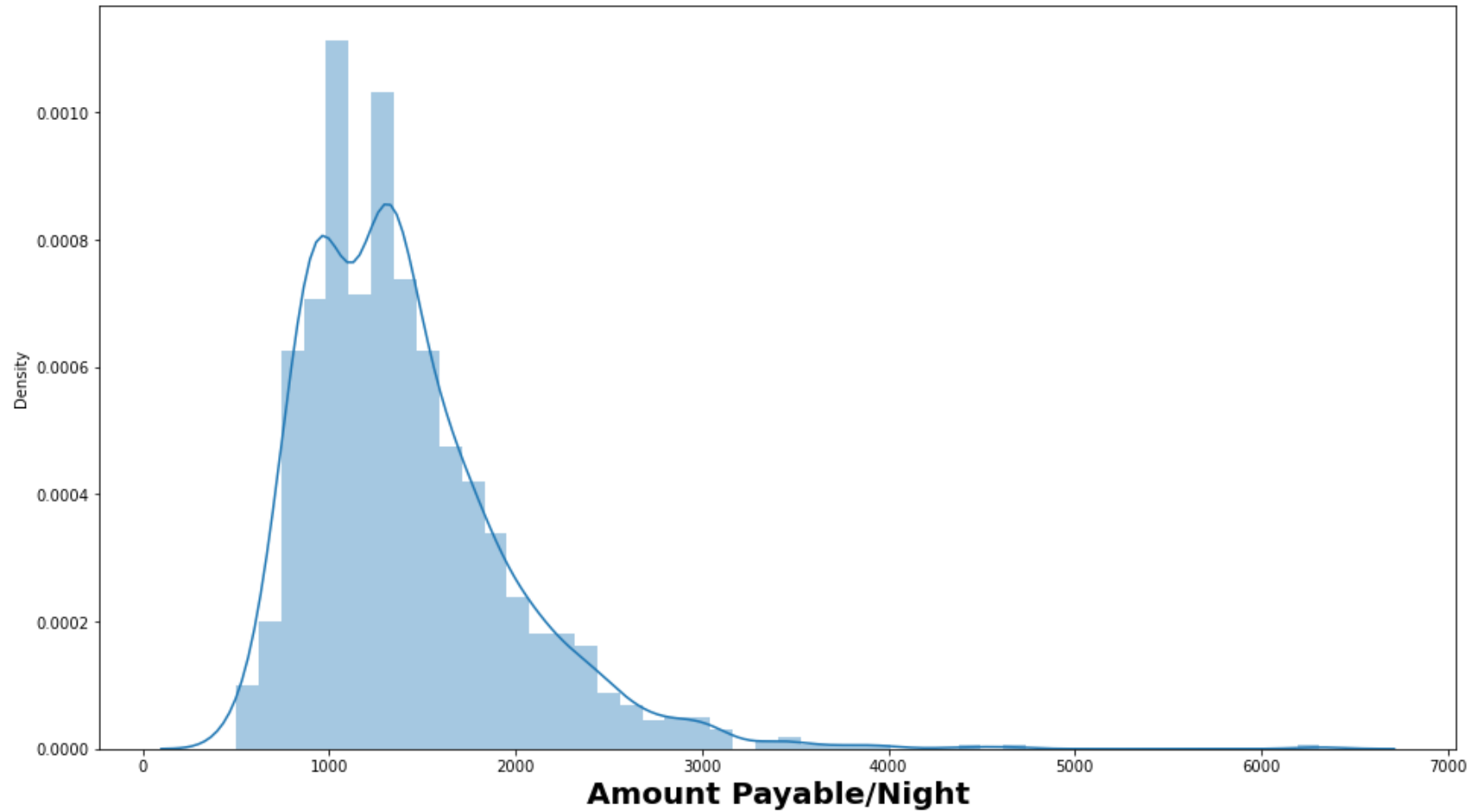
```
In [63]: 1 size = (15, 5)
2 fig, ax = plt.subplots(figsize=size)
3 plt.title('Hotel Rating count')
4 sns.countplot(data=oyo, x=oyo['Rating'])
5 plt.show()
```



*by seeing above data we can say that there are maximum hotels having rating 3.7 to 4.1 .*

## Checking for rent distribution of Hotels

```
In [66]: 1 fig = plt.figure(figsize=(16,9))
2 sns.distplot(oyo.AmountPayableNight)
3 plt.xlabel('Amount Payable/Night', fontdict={'fontsize':20,'fontweight':'bold'})
4 plt.show()
```

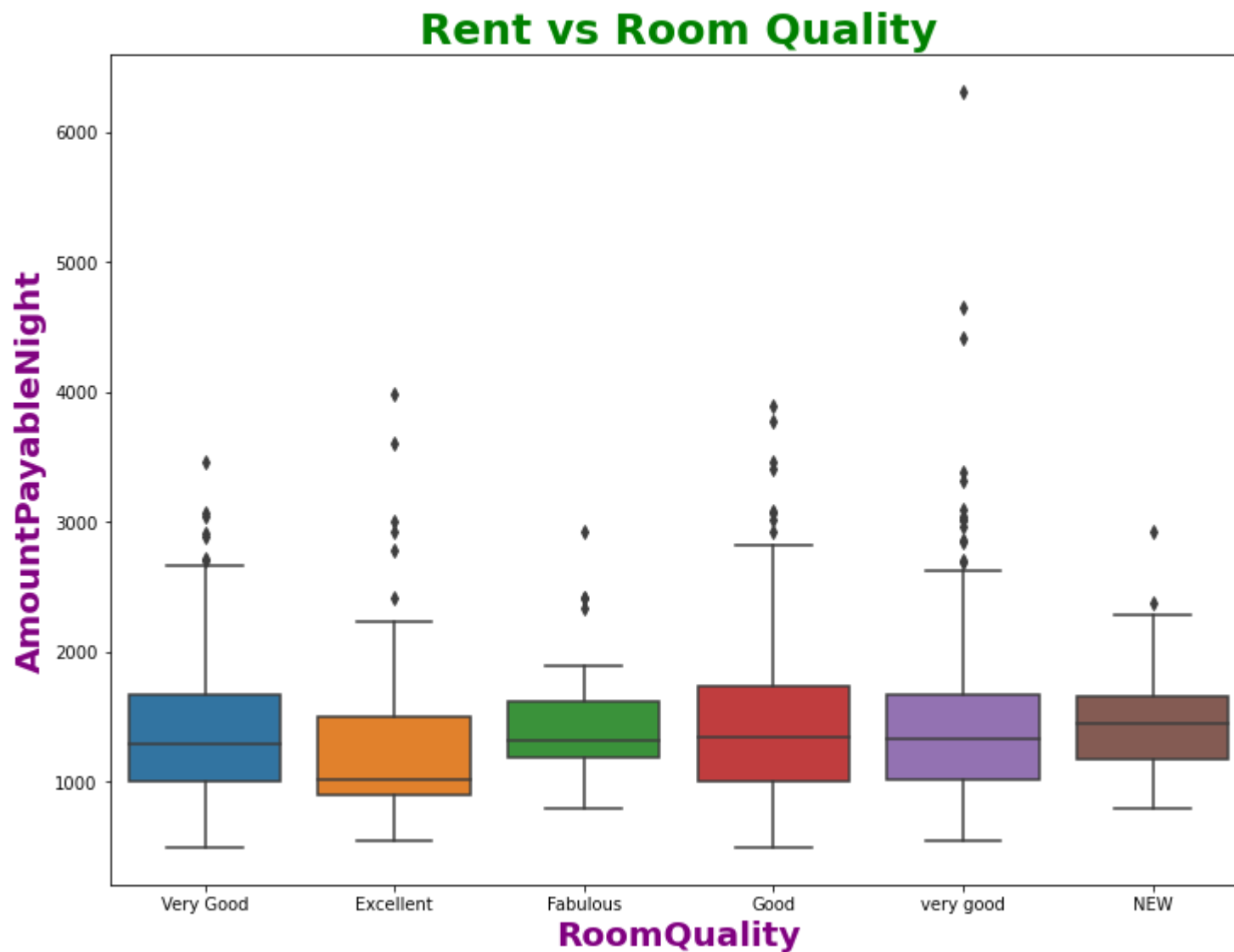


- Inference:
  - Maximum hotel rent lies between 1000 to 2000

- highest rent is approx 6500.
- minimum hotels having rent between 3000 to 4500

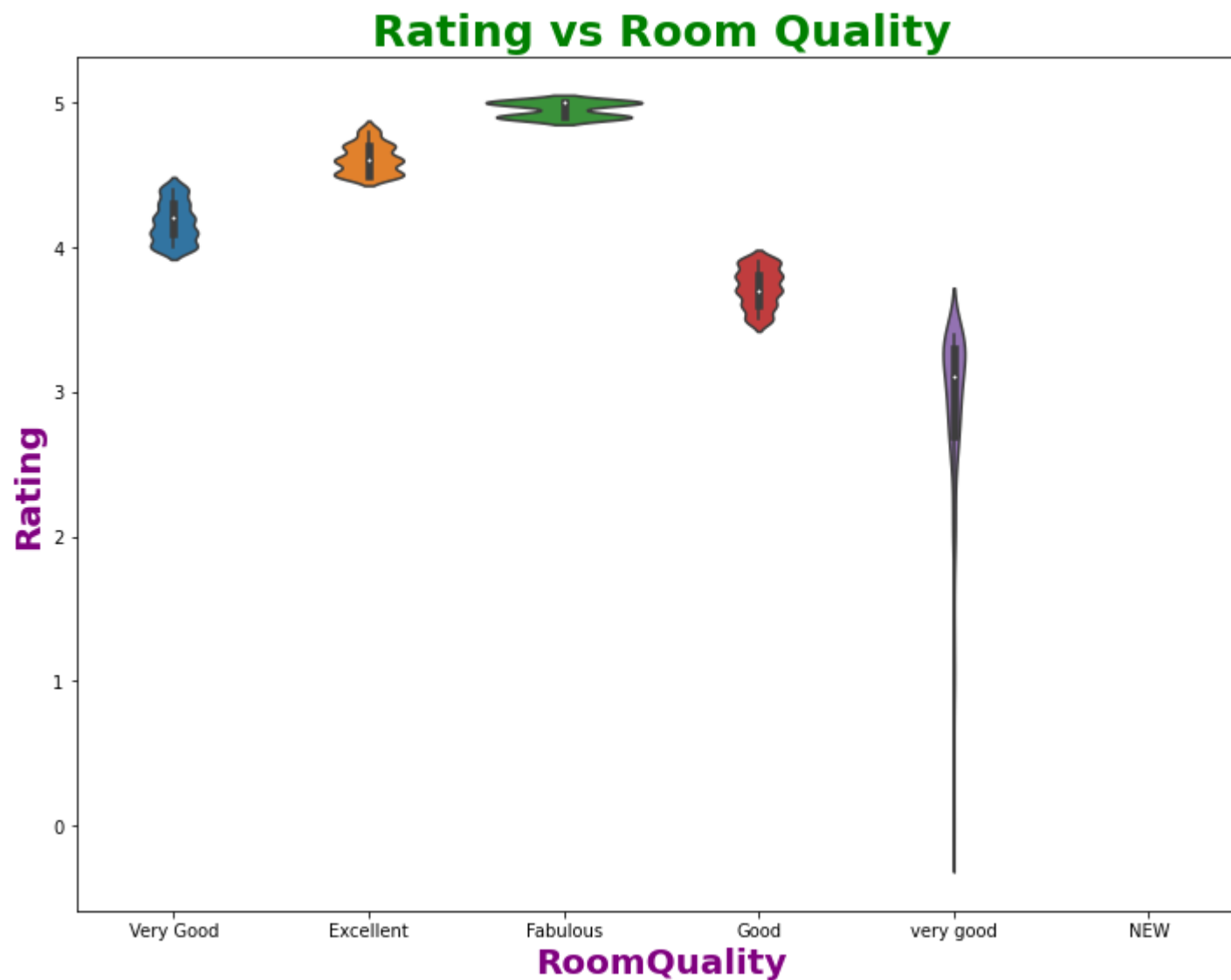
## Bivariate plot for rent vs Quality

```
In [67]: 1 fig = plt.figure(figsize=(12,9))
2 plt.ylabel('Amount Payable/Night', fontdict={'fontsize':20,'fontweight':'bold', 'color':'purple'})
3 plt.xlabel('Room Quality',fontdict={'fontsize':20,'fontweight':'bold', 'color':'purple'})
4 plt.title('Rent vs Room Quality',fontdict={'fontsize':25,'fontweight':'bold', 'color':'green'})
5 sns.boxplot(x='RoomQuality', y='AmountPayableNight', data =oyo, )
6 plt.show()
7
```



- Inference:
  - From above graph it seems that rent is normally distributed as per room quality.
  - There are some outliers, in room quality(Very Good) one of the hotels rent is approx 6500.
  - Some hotels seems new having rent in between 1000 to 2500.

```
In [68]: 1 fig = plt.figure(figsize=(12,9))
2 plt.ylabel('Rating', fontdict={'fontsize':20,'fontweight':'bold', 'color':'purple'})
3 plt.xlabel('Room Quality',fontdict={'fontsize':20,'fontweight':'bold', 'color':'purple'})
4 plt.title('Rating vs Room Quality',fontdict={'fontsize':25,'fontweight':'bold', 'color':'green'})
5 sns.violinplot(x='RoomQuality', y='Rating', data =oyo, )
6 plt.show()
```



- Inference:
  - For very good room quality rating is outlier rating which is almost 0.
  - For very good room quality rating is starting from 1 to 3.5 .
  - For fabulous room quality rating is starts from 4.5 to 5 stars (which is highest rating)

In [ ]:

1

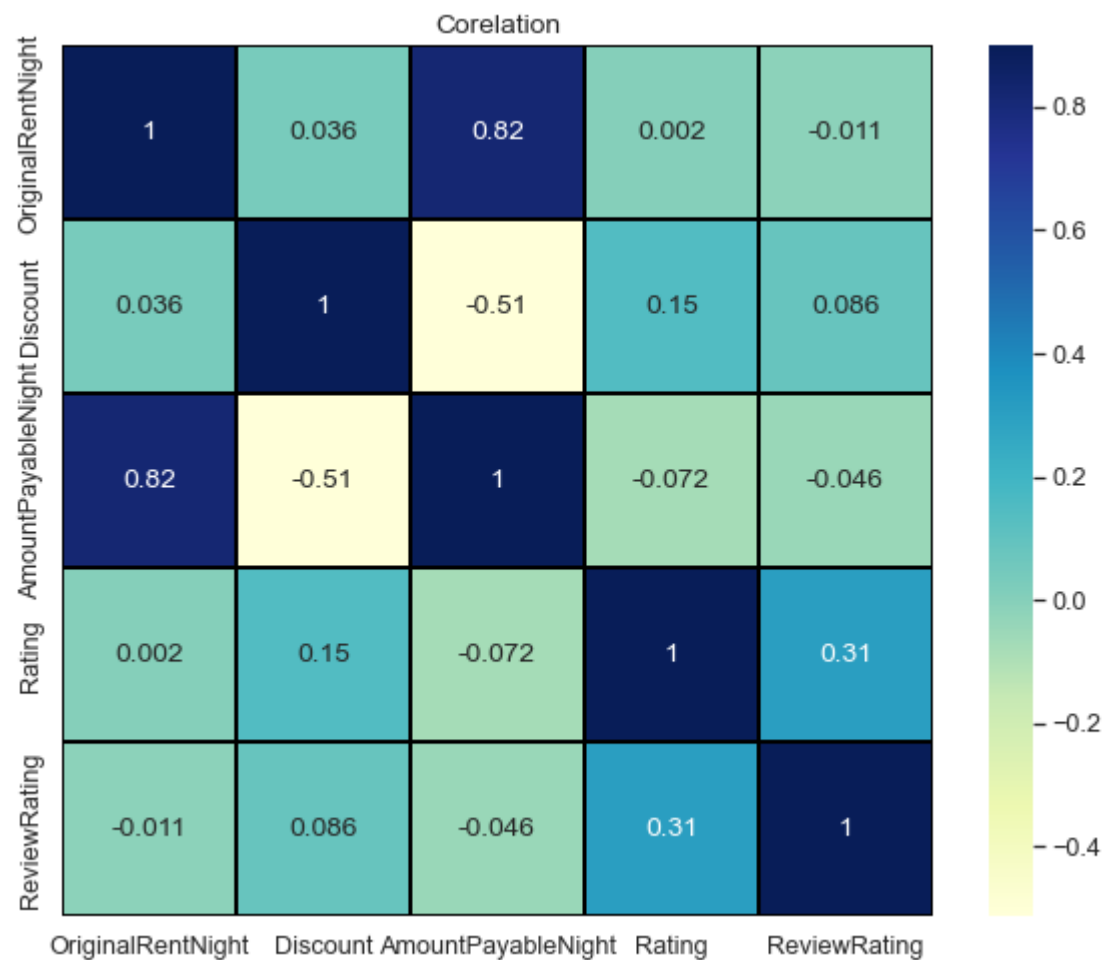
In [69]:

1

`corrmat = oyo.corr()`



```
In [71]: 1 sns.set(font_scale=1.15)
2 plt.figure(figsize=(10,8))
3 sns.heatmap(corrmat, vmax=0.9, linewidths=0.02,
4             square=True,
5             annot=True,
6             cmap='YlGnBu',
7             linecolor="black")
8 plt.title('Corelation')
9 plt.show()
```



```
In [72]: 1 pune = oyo[(oyo['Location']=='Pune')]
2 mumbai = oyo[(oyo['Location']=='Mumbai')]
3 hyderabad = oyo[(oyo['Location']=='Hyderabad')]
4 bangalore = oyo[(oyo['Location']=='Bangalore')]
5 chennai = oyo[(oyo['Location']=='Chennai')]
6 delhi = oyo[(oyo['Location']=='Delhi')]
7 shimla = oyo[(oyo['Location']=='Shimla')]
8 goa = oyo[(oyo['Location']=='Goa')]
9 manali = oyo[(oyo['Location']=='Manali')]
10 mahabaleshwar = oyo[(oyo['Location']=='Mahabaleshwar')]
11 lonavala = oyo[(oyo['Location']=='Lonavala')]
12
```

## Performing some operation to analyse the data more

```
In [73]: 1 oyo[(oyo['Rating']>4.5)&(oyo['RoomQuality']=='Excellent') & (oyo['ReviewRating']>500)]
```

Out[73]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune· 1.2 km	3582.0	47	1881.0	4.6	Parking Facility Private Entrance Reception...	1741	Excellen
6	Collection O 84160 Omkar Inn	India, Pune· 8.4 km	3678.0	72	999.0	4.7	Parking Facility Reception Free Wifi + 10 ...	1405	Excellen
8	Collection O 84516 Hotel Royce Studios	Pune, Pune· 9.0 km	2425.0	62	899.0	4.7	AC TV	2606	Excellen
9	OYO 17036 P's Regency	Near Dhayari Phata, Wadgaon	2894.0	47	1519.0	4.6	Reception Free Wifi Power	2715	Excellen

**From above data it seems that where the room quality is Excellent and rating is more than 4.5 stars, also have affordable room rent.**

In [91]: 1 oyo[(oyo['Rating']>4.5)&(oyo['ReviewRating']>1000)&(oyo['AmountPayableNight']<=1500)]

Out[91]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality	L
6	Collection O 84160 Omkar Inn	India, Pune 8.4 km	3678.0	72	999.0	4.7	Parking Facility Reception Free Wifi + 10 ...	1405	Excellent	
8	Collection O 84516 Hotel Royce Studios	Pune, Pune 9.0 km	2425.0	62	899.0	4.7	AC TV	2606	Excellent	Pu
14	Capital O 15610 Omkar Executive	Lane No 2, Sane Guruji Society, Sainikwadi, Ne...	4171.0	71	1199.0	4.6	Parking Facility Elevator Free Wifi + 8 more	1460	Excellent	
288	OYO Flagship 16018 Rainbow Saphire	Near Niloufer Hospital, Lakdikapul, Hyderabad...	1931.0	47	1014.0	4.7	Reception Free Wifi 24/7 Checkin + 10 more	1638	Excellent	Hy
291	OYO 74184 Hotel Meridian Comfort Inn	Near Metro Station, Aghapura, Hyderabad ...	2482.0	63	899.0	4.7	Parking Facility Reception Free Wifi + 10 ...	4837	Excellent	Hy
320	OYO 73783 Hotel Sai Pariwar	500027, Hyderabad 1.1 km	2315.0	61	899.0	4.7	Reception Free Wifi Caretaker + 14 more	2843	Excellent	Hy
327	OYO Flagship 18926 Tourist Krishna Inn	Near Barkatpura Rd, Kachiguda Station Rd,Hyder...	3324.0	69	999.0	4.6	TV Parking Facility AC + 12 more	3141	Excellent	Hy

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality	L
335	OYO Flagship 67479 Alpine Glow Zenith	Near Malani Colony, Bowenpally, Hyderabad· ...	2754.0	67	899.0	4.7	Free Wifi Attached Washroom Power backup +...	1934	Excellent	Hy
492	SPOT ON 67398 Hotel Shree Pawan Paradise	Near Cotton Pete Police Station, Bangalore· ...	1577.0	47	828.0	4.7	Elevator Free Wifi Geyser + 5 more	2469	Excellent	Ba
494	OYO 12965 Archana INN	Near Minerva Circle, JC Road, Bangalore· ...	1931.0	53	899.0	4.6	Parking Facility Free Wifi CCTV Cameras + ...	2000	Excellent	Ba
513	SPOT ON 80454 Janapriya Lodge	India, Bangalore· 7.0 km	1792.0	60	699.0	4.7	Reception Free Wifi Power backup + 11 more	1386	Excellent	Ba
525	Capital O 68975 The Blueberry's	Near Forum Mall, 4th Cross Rd, Bangalore· ...	2802.0	67	899.0	4.6	Parking Facility Free Wifi Power backup + ...	1294	Excellent	Ba
555	Collection O Sukhi Palace	Bengaluru, Bangalore· 5.5 km	2729.0	63	999.0	4.6	Hair Dryer Reception Caretaker + 10 more	1445	Excellent	Ba
598	Capital O 62579 Royal Wood Premier	Centrally Located, Near 1st Stage, Domlur, Ban...	4107.0	70	1199.0	4.9	Parking Facility Free Wifi Power backup + ...	2511	Fabulous	Ba
868	SPOT ON 40016 Hotel Vandana	Near New Delhi Railway Station, Delhi· 4...	2805.0	73	749.0	4.7	Reception Ticket Tour Assistance Free Wifi ...	2386	Excellent	De

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality	L
873	OYO 43141 Suraj Dx	Near NDLS, Paharganj, Delhi· 4.5 km	2315.0	65	799.0	4.6	AC AC TV + 2 more	1892	Excellent	
874	OYO Flagship 60410 Ashoka	Near New Delhi Railway Station, Delhi· 4...	2909.0	69	899.0	4.7	Reception Free Wifi Power backup + 10 more	2093	Excellent	De
881	OYO 1824 Hotel Grand Peepal	Near Karol Bagh, WEA, Delhi· 5.4 km	2888.0	65	999.0	4.7	Reception Free Wifi CCTV Cameras + 7 more	3269	Excellent	
892	OYO 14710 Hotel Pallvi palace	Near New Delhi railway station, Dariba Pan, De...	2858.0	68	899.0	4.6	AC TV	1684	Excellent	De
911	OYO 69461 Jagriti Dx	Near Rk ashram marg , Pahar Ganj, Delhi· ...	4152.0	81	749.0	4.6	Hair Dryer Free Wifi Power backup + 16 more	1746	Excellent	
965	OYO Flagship 48186 DORAEMON RESIDENCY	Village Todapur, Delhi· 9.4 km	2835.0	68	899.0	4.6	Doctor on Call Free Wifi Power backup + 13...	1454	Excellent	
998	OYO 76733 Hotel Mannat Inn	Kotwali Tehsil, Delhi· 4.5 km	1904.0	58	799.0	4.7	AC TV	3206	Excellent	

**There are 22 hotels which have Excellent room quality and rating is more than 4.5 but still the rent is under 1500**

**These hotels are avialable in Pune,Hyderabad,Delhi,Bangalore(in city area)**

In [75]:

```
1 oyo[(oyo['Rating']>4) & (oyo['AmountPayableNight']<1000) &(oyo['ReviewRating']>1000)]
```

Out[75]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQual
6	Collection O 84160 Omkar Inn	India, Pune· 8.4 km	3678.0	72	999.0	4.7	Parking Facility Reception Free Wifi + 10 ...	1405	Excell
8	Collection O 84516 Hotel Royce Studios	Pune, Pune· 9.0 km	2425.0	62	899.0	4.7	AC TV	2606	Excell
32	OYO Home 77978 Peaceful Stay Keshav Nagar	Mundhwa, Pune· 9.8 km	1870.0	57	799.0	4.3	Parking Facility Private Entrance Elevator ...	1988	Very Gc
62	OYO 704 Apartment	Near Zensar, Rakshak Nagar,	3187.0	68	999.0	4.1	Elevator Free Wifi Geyser +	1093	Very Gc

from above analysis we can say that there are many hotel under 1k which are most affordable by seeing the price rating and room quality

## Getting hotes charging rent less than 500

In [76]: 1 oyo[(oyo['AmountPayableNight']<500)]

Out[76]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality	Location
507	SPOT ON 83062 Vasavi Residency	India, Bangalore· 2.4 km	1419.0	64	499.0	4.1	Private Entrance Reception Free Wifi + 14 ...	1861	Very Good	Bangalore
740	SPOT ON 40837 Bt Mansion	Pillayar Koil St Triplicane., Chennai· 2...	1484.0	66	499.0	3.6	AC,TV	11	Good	Chennai

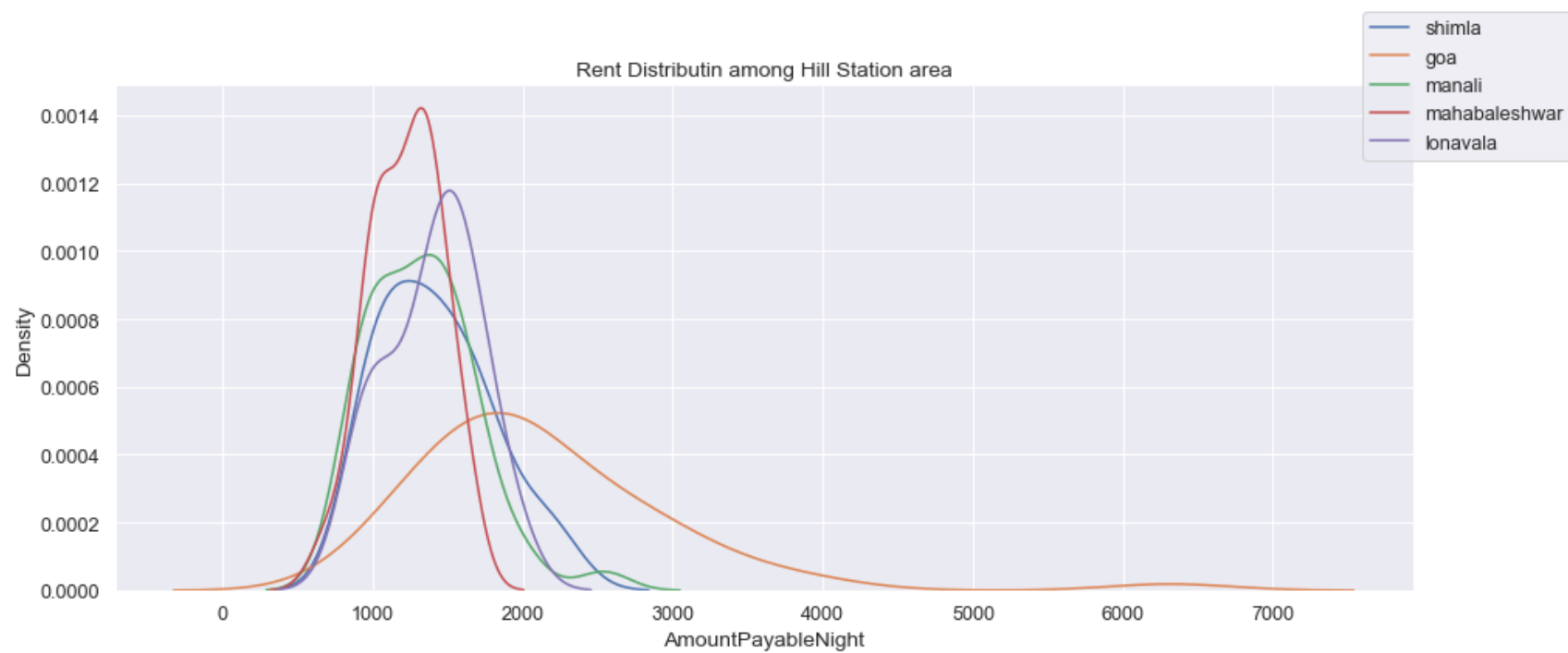
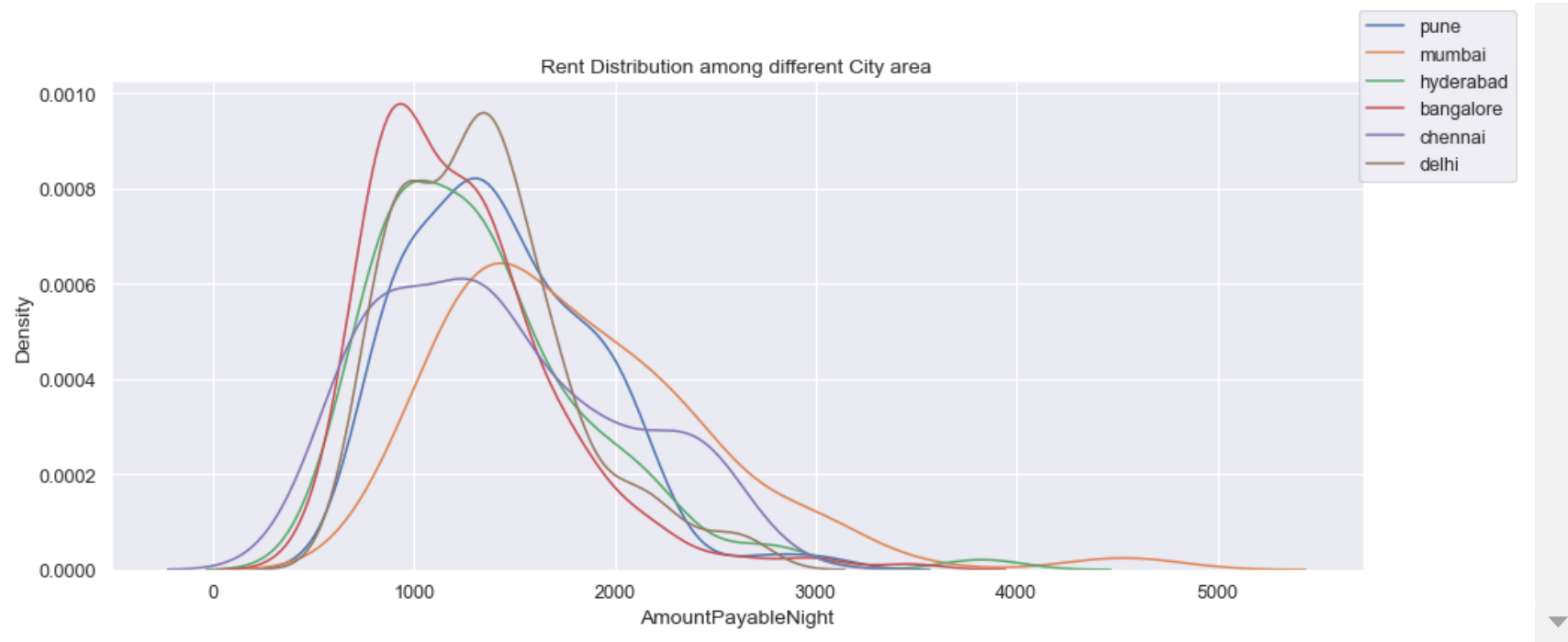
most affordabe hotel under rs 500 also excepted in Bangalore & Chennai, there is no another location where the rent is less than 500

## Checking the data distibution of different citie's Hotels

In [77]: 1 import warnings  
2 warnings.filterwarnings("ignore")



```
In [111]: 1 fig = plt.figure(figsize=(15,6))
2 plt.title('Rent Distribution among different City area')
3 sns.distplot(pune['AmountPayableNight'],hist=False)
4 sns.distplot(mumbai['AmountPayableNight'],hist=False)
5 sns.distplot(hyderabad['AmountPayableNight'],hist=False)
6 sns.distplot(bangalore['AmountPayableNight'],hist=False)
7 sns.distplot(chennai['AmountPayableNight'],hist=False)
8 sns.distplot(delhi['AmountPayableNight'],hist=False)
9 fig.legend(labels=['pune', 'mumbai', 'hyderabad', 'bangalore', 'chennai', 'delhi'])
10
11 fig = plt.figure(figsize=(15,6))
12 plt.title('Rent Distributin among Hill Station area')
13 sns.distplot(shimla['AmountPayableNight'],hist=False)
14 sns.distplot(goa['AmountPayableNight'],hist=False)
15 sns.distplot(manali['AmountPayableNight'],hist=False)
16 sns.distplot(mahabaleshwar['AmountPayableNight'],hist=False)
17 sns.distplot(lonavala['AmountPayableNight'],hist=False)
18 fig.legend(labels=['shimla', 'goa', 'manali', 'mahabaleshwar', 'lonavala'])
19
20 plt.show()
21
```



## Plot 1 (City area Observation)

*The highest rent from city area is 5500 and it is from Mumbai.*

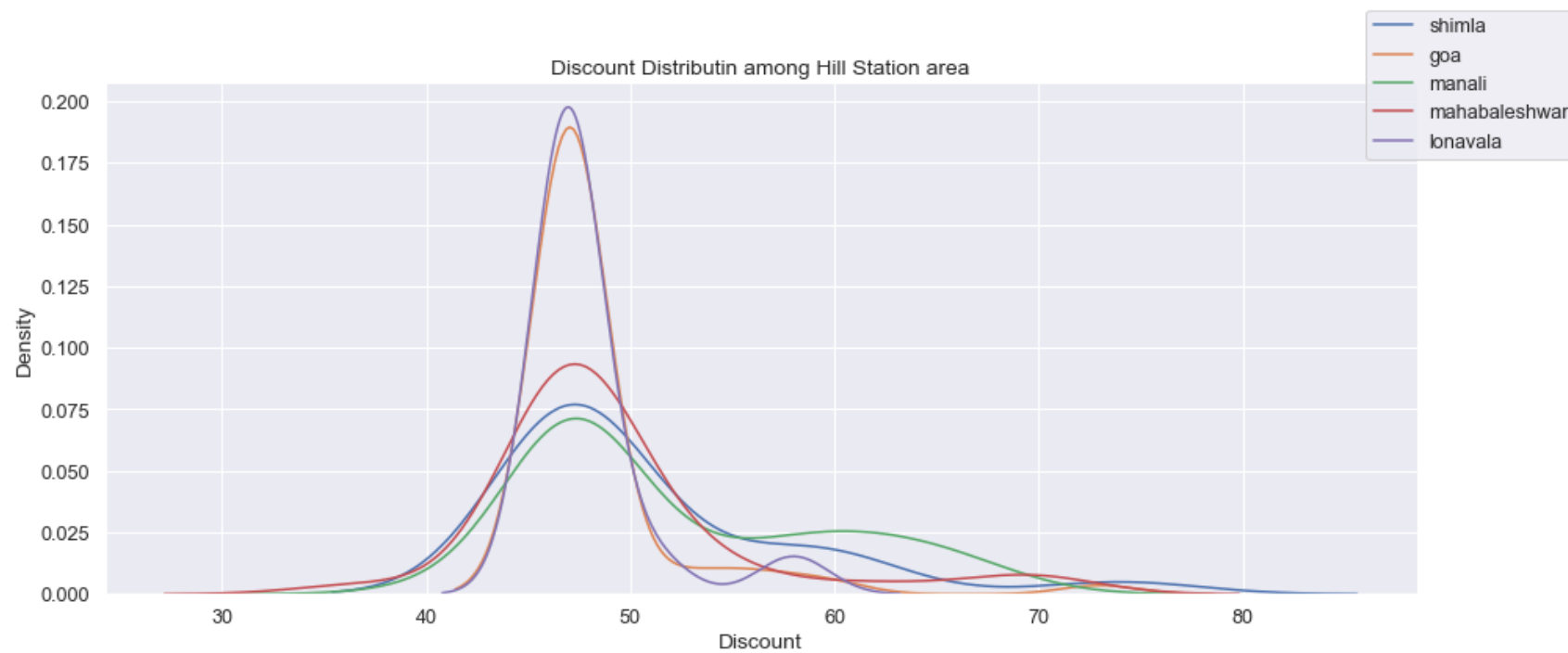
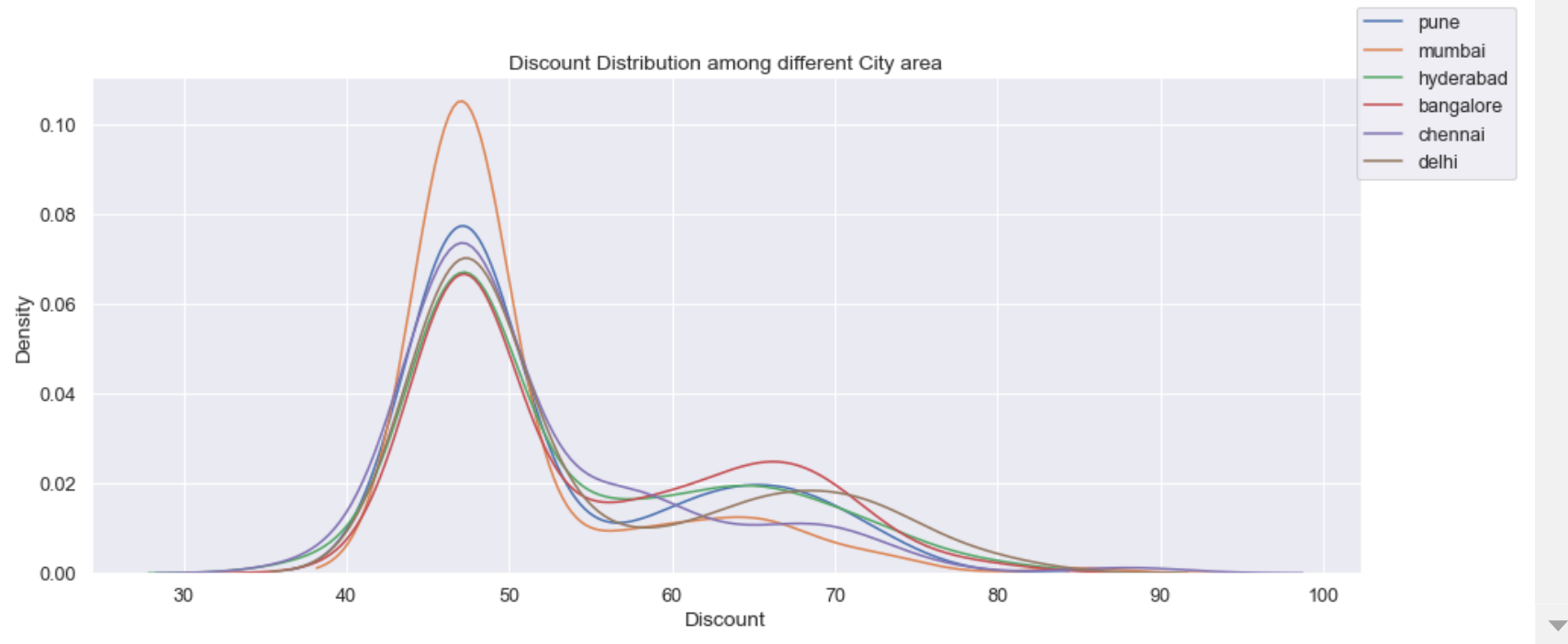
*The maximum rent among the different areas(city) lies between 1000 - 2000, which is affordable.*

## Plot 2 (Hill station area Observation)

*1. In goa the rent is normally distributed , but here some hotels have highest rent .*

*2. the rent of hotels except goa are some what same and around 1.5 to 1.6k*

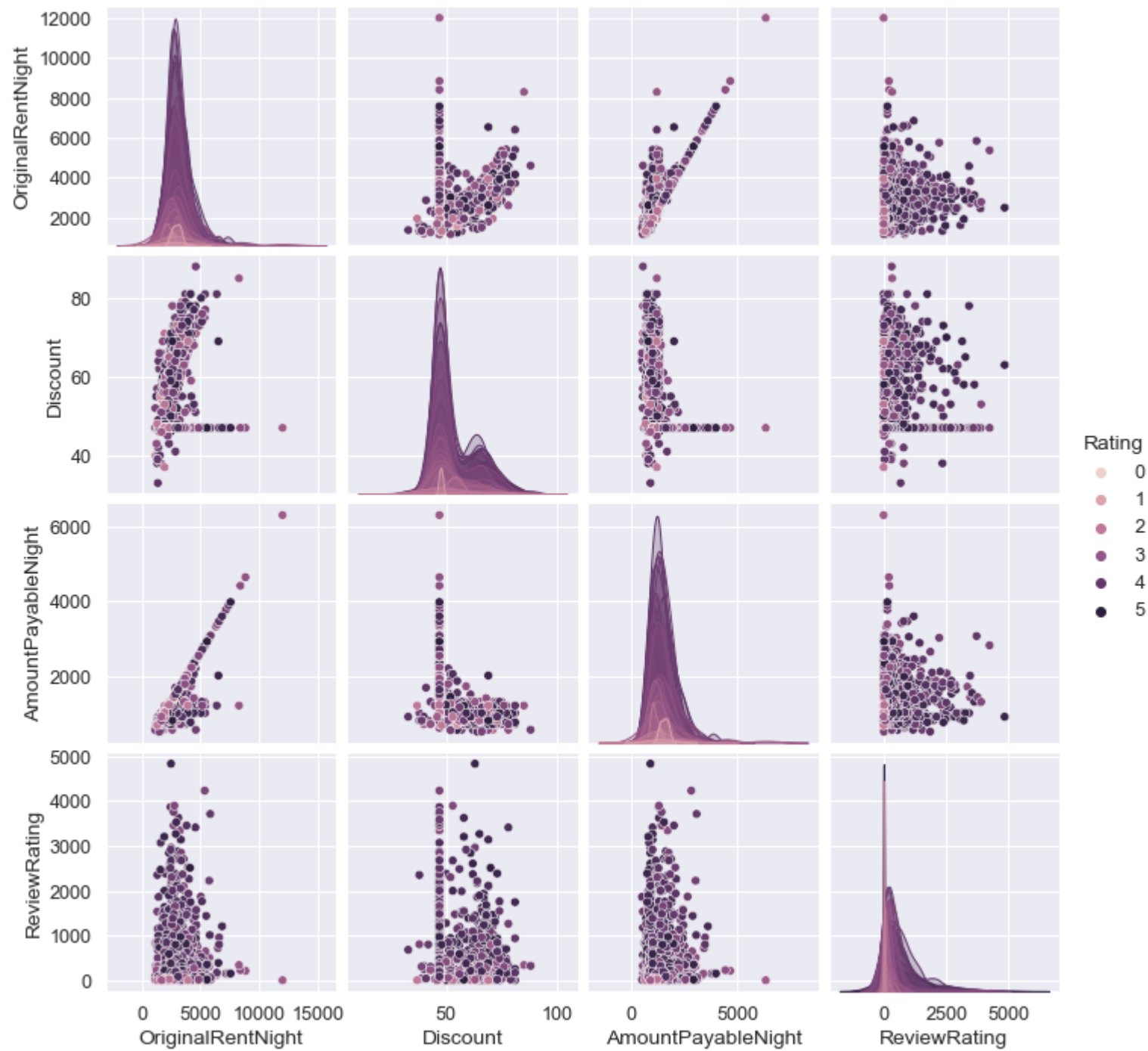
```
In [112]: 1 fig = plt.figure(figsize=(15,6))
2 plt.title('Discount Distribution among different City area')
3 sns.distplot(pune['Discount'],hist=False)
4 sns.distplot(mumbai['Discount'],hist=False)
5 sns.distplot(hyderabad['Discount'],hist=False)
6 sns.distplot(bangalore['Discount'],hist=False)
7 sns.distplot(chennai['Discount'],hist=False)
8 sns.distplot(delhi['Discount'],hist=False)
9 fig.legend(labels=['pune', 'mumbai', 'hyderabad', 'bangalore', 'chennai', 'delhi'])
10
11 fig = plt.figure(figsize=(15,6))
12 plt.title('Discount Distributin among Hill Station area')
13 sns.distplot(shimla['Discount'],hist=False)
14 sns.distplot(goa['Discount'],hist=False)
15 sns.distplot(manali['Discount'],hist=False)
16 sns.distplot(mahabaleshwar['Discount'],hist=False)
17 sns.distplot(lonavala['Discount'],hist=False)
18 fig.legend(labels=['shimla', 'goa', 'manali', 'mahabaleshwar', 'lonavala'])
19
20 plt.show()
21
```



```
In [113]: 1 mumbai2 = mumbai['AmountPayableNight']
```

**Plotting pair plot to chek all possible conditions**

```
In [114]: 1 sns.pairplot(oyo,hue="Rating")  
          2 plt.show()
```





- the higher is the original rent the higher is the amount user have to pay there is trend which is linearly increasing from this observation we can't say that the higher is the rent the higher is the rating rating is totally independent

## Inference

*From the whole dataset analysis, it seems that as per the rent, room quality , rating and discount , city area is affordable than hill station area.*

**Creating the function which accept the value from user and suggest the hotel to the user**

In [82]:

1 oyo

Out[82]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune· 1....	4148.0	71	1199.0	4.3	Private Entrance Parking Facility Window +...	1029	Very Good
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	3937.0	67	1299.0	4.1	Parking Facility Reception Free Wifi + 11 ...	996	Very Good
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune· 1.2 km	3582.0	47	1881.0	4.6	Parking Facility Private Entrance Reception...	1741	Excellent
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune· ...	3569.0	47	1874.0	4.5	Parking Facility Free Wifi Geyser + 8 more	1413	Excellent
4	Collection O 86505 Vardhan Executive	India, Pune· 8.0 km	3587.0	74	899.0	4.7	Parking Facility Free Wifi Geyser + 6 more	76	Excellent
...	...	...	...	...	...	...	...	...	...
1354	OYO 27730 Pawna Lake House	Near Maval Dhabha, Pavananagar- Kamshet Rd, Lon...	3142.0	47	1650.0	NaN	Reception Balcony Caretaker + 15 more	0	NEW
1355	POP 87742 Ekvira Nivas	Lonavala, Lonavala· 6.8 km	2315.0	47	1216.0	2.2	Reception Caretaker Power backup + 24 more	23	very good

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality
1356	SPOT ON 77844 Shahani Wellness Retreat	India, Lonavala· 0.5 km	2865.0	47	1504.0	4.2	Elevator Free Wifi Geyser + 7 more	194	Very Good
1357	SPOT ON 65135 Hotel Suvarna Samrat Lodge	Near Pavana Dam, Sawantwadi, Lonavala· 1...	1669.0	46	899.0	2.8	Parking Facility Reception Free Wifi + 19 ...	0	very good
1358	Collection O 85518 Hotel Gulab Paradise	India, Lonavala· 8.0 km	3097.0	47	1626.0	4.3	Private Entrance Parking Facility Reception...	83	Very Good

1359 rows × 10 columns



```
In [84]: 1 city = input('Enter city name: ')
2 rent = int(input('Enter the rent: '))
3 oyo[(oyo['Location']==city)&(oyo['AmountPayableNight']<=rent)]
```

Enter city name: Pune

Enter the rent: 2000

Out[84]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality	Location
0	OYO Flagship 70715 Sunshine Inn	Near Datta Mandir, Somwar Peth, Pune- 1....	4148.0	71	1199.0	4.3	Private Entrance Parking Facility Window +...	1029	Very Good	
1	Collection O 76358 Kapil Residency Parage Chowk	Near Hotel Tourist International, Mangalwar Pe...	3937.0	67	1299.0	4.1	Parking Facility Reception Free Wifi + 11 ...	996	Very Good	
2	Collection O 30070 Hotel Rajdhani	Near SBI, Somwar Peth, Pune- 1.2 km	3582.0	47	1881.0	4.6	Parking Facility Private Entrance Reception...	1741	Excellent	
3	Collection O 11693 Hotel Sunshine	Near New White House, Koregaon Park,Pune- ...	3569.0	47	1874.0	4.5	Parking Facility Free Wifi Geyser + 8 more	1413	Excellent	
4	Collection O 86505 Vardhan Executive	India, Pune- 8.0 km	3587.0	74	899.0	4.7	Parking Facility Free Wifi Geyser + 6 more	76	Excellent	
...	...	...	...	...	...	...	...	...	...	...
100	OYO Flagship 83068 Shree Lodge	, Pune- 8.3 km	2315.0	47	1216.0	3.2	Private Entrance Parking Facility Reception...	19	very good	

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality	Location
101	Capital O 70524 Hotel Shreeyash Executive	Near MIDAS India, Kondhwa Budruk, Pune ...	3054.0	47	1603.0	3.2	Private Entrance Parking Facility Reception...	129	very good	
103	OYO 76128 Hotel Star Inn	Near AXIS bank, Sakore Nagar, Pune 7.1 km	2961.0	47	1555.0	3.4	Parking Facility Free Wifi Power backup + ...	539	very good	
104	Collection O 81517 Pearl Inns Executive	Pearl inn Adarsh nagar lane number 3 opposite ...	3039.0	47	1596.0	3.0	Free Wifi Power backup Card Payment + 11 more	0	very good	
105	Capital O 22124 Hotel Lotus Residency	Near Ashiyana Park, Aundh, Pune 7.2 km	3394.0	47	1782.0	3.3	Reception Garden/Backyard Power backup + 2...	291	very good	

83 rows × 10 columns



```
In [85]: 1 city = input('Enter city name: ')
2 oyo[(oyo['Location']==city)&(oyo['Rating']>=4) & (oyo['ReviewRating']>1000)&(oyo['AmountPayableNight']<1500
```

Enter city name: Mumbai

Out[85]:

	HotelName	Address	OriginalRentNight	Discount	AmountPayableNight	Rating	Facility	ReviewRating	RoomQuality	Location
124	OYO Flagship 76261 Lake Bloom	Near Solaris complex, Saki Vihar, Mumbai ...	2587.0	47	1358.0	4.0	Private Entrance Reception Free Wifi + 11 ...	1040	Very Good	Mumbai

In [86]:

```

1 def system_recommand():
2     print('Please enter the city name correctly in Capatalised format')
3     city = input('Enter city name: ')
4     a = oyo.index[(oyo['Location']==city)&(oyo['Rating']>4) & (oyo['ReviewRating']>1000)&(oyo['AmountPayableNight']<1500)]
5
6     print('\nAll Hotels Rating is grater than 4, Reviews are greater than 1000 and Rent is less than 1500\n')
7     print('*'*100)
8     for i in a:
9         print(oyo.iloc[i], '\n', '- '*100, '\n')
10    print('There is no more hotels as per requirement\n')
11    print('If there is no system recomended hotel you can filter hotels as per your requirements\n')
12

```

In [87]:

```

1 def user_required():
2     print("Enter the data to recomment hotels to you: ")
3     city = input('City: ')
4     rent = int(input('Rent (System is showing all the hotels under the entered rent): '))
5     rating = int(input('Rating: '))
6     a = oyo.index[(oyo['Location']==city)&(oyo['Rating']>rating)&(oyo['AmountPayableNight']<rent)].to_list()
7
8     print('*'*100)
9     for i in a:
10        print(oyo.iloc[i], '\n', '- '*100, '\n')
11    print('There is no more hotels as per requirement')
12

```

```
In [88]: 1 print('Enter your choice\n1. System recommended OYO Room\n2. User required\n')
2 choice = int(input('Your choice'))
3 if choice == 1:
4     system_recommand()
5 elif choice == 2:
6     user_required()
7 else:
8     print('Please select proper choice ')
9
```

Enter your choice

1. System recommended OYO Room
2. User required

Your choice2

Enter the data to recommend hotels to you:

City: Hyderabad

Rent (System is showing all the hotels under the entered rent): 3000

Rating: 4

\*\*\*\*\*

HotelName	OYO 30744 The Gate
Address	Below Flyover, Railway station 1, Begumpet, Hy...
OriginalRentNight	3192.0
Discount	68
AmountPayableNight	999.0
Rating	5.0
Facility	AC TV AC + 12 more
ReviewRating	0
RoomQuality	Fabulous