AtliQ Hotels Data Analysis Project

```
import pandas as pd
```

==> 1. Data Import and Data Exploration

Datasets

We have 5 csv file

- dim_date.csv

- dim_hotels.csv
- dim_rooms.csv
- fact_aggregated_bookings
- fact_bookings.csv

Read bookings data in a datagrame

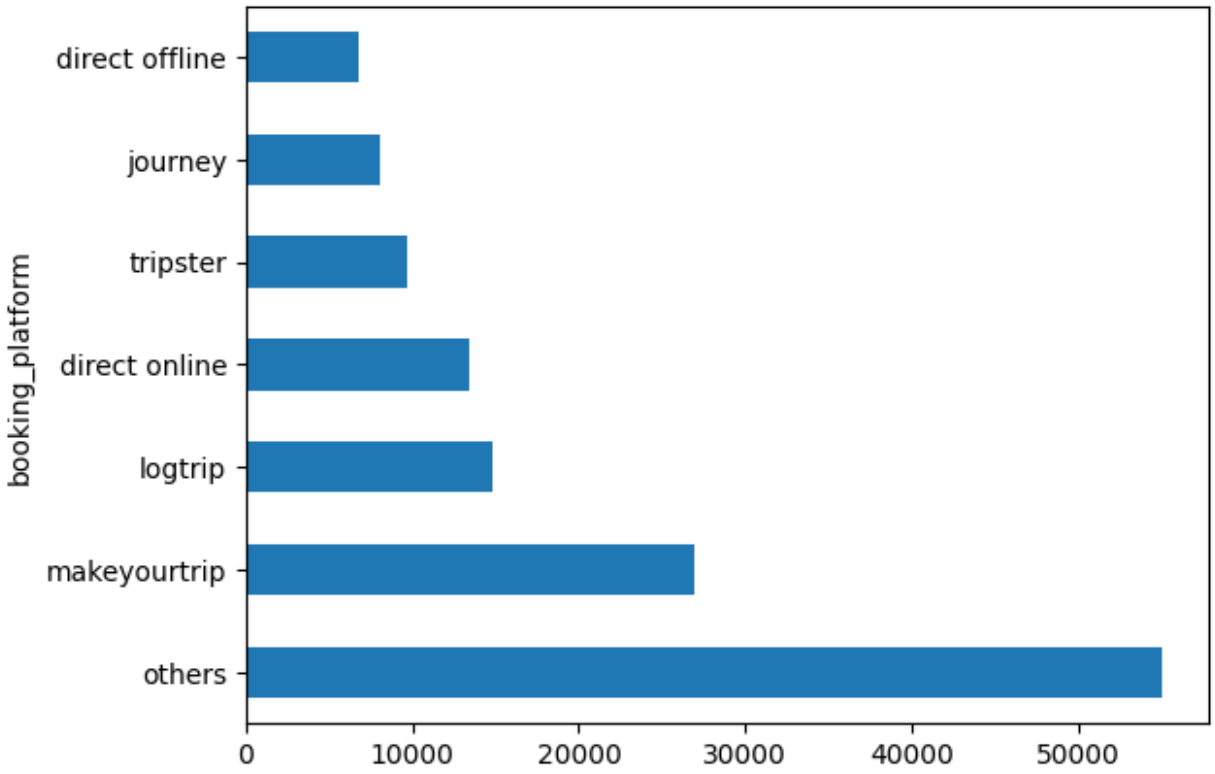
```
df_bookings = pd.read_csv('datasets/fact_bookings.csv')
```

Explore bookings data

```
df_bookings.head()
```

```
         booking_id  property_id booking_date check_in_date
checkout_date  \
0  May012216558RT11        16558     27-04-22      1/5/2022
2/5/2022
1  May012216558RT12        16558     30-04-22      1/5/2022
2/5/2022
2  May012216558RT13        16558     28-04-22      1/5/2022
4/5/2022
3  May012216558RT14        16558     28-04-22      1/5/2022
2/5/2022
4  May012216558RT15        16558     27-04-22      1/5/2022
2/5/2022

   no_guests room_category booking_platform  ratings_given
booking_status  \
0       -3.0           RT1    direct online            1.0    Checked
Out
1        2.0           RT1           others            NaN
Cancelled
2        2.0           RT1          logtrip            5.0    Checked
```

```
Out
3       -2.0           RT1           others             NaN
Cancelled
4        4.0           RT1    direct online             5.0    Checked
Out

   revenue_generated  revenue_realized
0              10010             10010
1               9100              3640
2            9100000              9100
3               9100              3640
4              10920             10920

df_bookings.shape

(134590, 12)

df_bookings.room_category.unique()

array(['RT1', 'RT2', 'RT3', 'RT4'], dtype=object)

df_bookings.booking_platform.unique()

array(['direct online', 'others', 'logtrip', 'tripster',
'makeyourtrip',
       'journey', 'direct offline'], dtype=object)

df_bookings.booking_platform.value_counts()

booking_platform
others            55066
makeyourtrip      26898
logtrip           14756
direct online     13379
tripster           9630
journey            8106
direct offline     6755
Name: count, dtype: int64

df_bookings.booking_platform.value_counts().plot(kind="barh")

<Axes: ylabel='booking_platform'>
```




```
df_bookings.describe()
```

	property_id	no_guests	ratings_given	revenue_generated	revenue_realized
count	134590.000000	134587.000000	56683.000000	1.345900e+05	134590.000000
mean	18061.113493	2.036170	3.619004	1.537805e+04	12696.123256
std	1093.055847	1.034885	1.235009	9.303604e+04	6928.108124
min	16558.000000	-17.000000	1.000000	6.500000e+03	2600.000000
25%	17558.000000	1.000000	3.000000	9.900000e+03	
50%	17564.000000	2.000000	4.000000	1.350000e+04	
75%	18563.000000	2.000000	5.000000	1.800000e+04	
max	19563.000000	6.000000	5.000000	2.856000e+07	

```
25%          7600.000000
50%         11700.000000
75%         15300.000000
max         45220.000000
```

Read rest of the files

```
df_date = pd.read_csv('datasets/dim_date.csv')
df_hotels = pd.read_csv('datasets/dim_hotels.csv')
df_rooms = pd.read_csv('datasets/dim_rooms.csv')
df_agg_bookings = pd.read_csv('datasets/fact_aggregated_bookings.csv')
```

```
df_hotels.shape
```

```
(25, 4)
```

```
df_hotels.head(3)
```

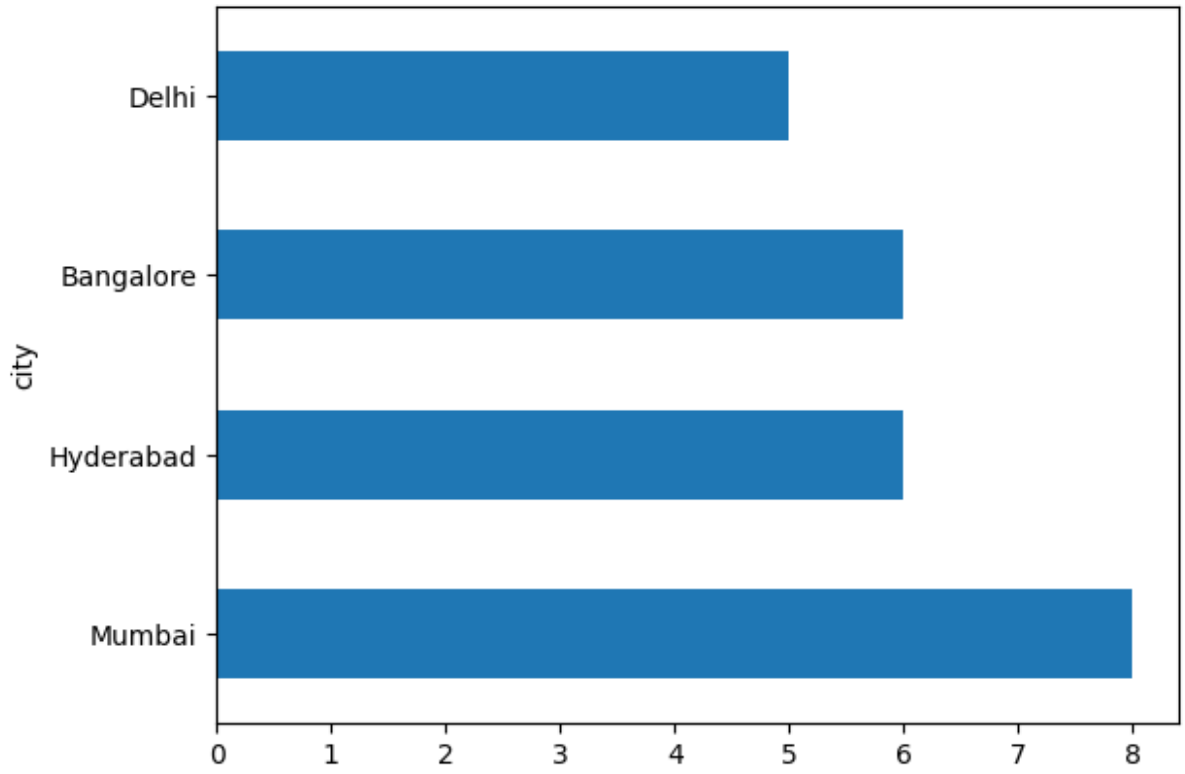
```
   property_id  property_name  category    city
0        16558   Atliq Grands    Luxury   Delhi
1        16559  Atliq Exotica    Luxury  Mumbai
2        16560     Atliq City  Business   Delhi
```

```
df_hotels.category.value_counts()
```

```
category
Luxury      16
Business     9
Name: count, dtype: int64
```

```
df_hotels.city.value_counts().plot(kind="barh")
```

```
<Axes: ylabel='city'>
```



Exercise: Explore aggregate bookings ***

```
df_agg_bookings.head(3)
```

```
   property_id check_in_date room_category  successful_bookings
capacity
0        16559      1-May-22           RT1                   25
30.0
1        19562      1-May-22           RT1                   28
30.0
2        19563      1-May-22           RT1                   23
30.0
```

Exercise-1. Find out unique property ids in aggregate bookings dataset

```
# write your code here
df_agg_bookings.property_id.unique()
```

```
array([16559, 19562, 19563, 17558, 16558, 17560, 19558, 19560, 17561,
       16560, 16561, 16562, 16563, 17559, 17562, 17563, 18558, 18559,
       18561, 18562, 18563, 19559, 19561, 17564, 18560], dtype=int64)
```

Exercise-2. Find out total bookings per property_id

```
# write your code here
df_agg_bookings.groupby("property_id")["successful_bookings"].sum()
```

```
property_id
16558    3153
16559    7338
16560    4693
16561    4418
16562    4820
16563    7211
17558    5053
17559    6142
17560    6013
17561    5183
17562    3424
17563    6337
17564    3982
18558    4475
18559    5256
18560    6638
18561    6458
18562    7333
18563    4737
19558    4400
19559    4729
19560    6079
19561    5736
19562    5812
19563    5413
Name: successful_bookings, dtype: int64
```

Exercise-3. Find out days on which bookings are greater than capacity

```
# write your code here
df_agg_bookings[df_agg_bookings.successful_bookings>df_agg_bookings.ca
pacity]
```

```
      property_id check_in_date room_category  successful_bookings
capacity
3           17558      1-May-22           RT1                   30
19.0
12          16563      1-May-22           RT1                  100
41.0
4136        19558     11-Jun-22           RT2                   50
39.0
6209        19560      2-Jul-22           RT1                  123
26.0
8522        19559     25-Jul-22           RT1                   35
24.0
```

```
9194        18563     31-Jul-22           RT4                    20
18.0
```

Exercise-4. Find out properties that have highest capacity

```
# write your code here
df_agg_bookings.capacity.max()
```

```
50.0
```

==> 2. Data Cleaning

```
df_bookings.describe()
```

```
         property_id      no_guests  ratings_given  revenue_generated
\
count  134590.000000  134587.000000   56683.000000       1.345900e+05

mean    18061.113493       2.036170       3.619004       1.537805e+04

std      1093.055847       1.034885       1.235009       9.303604e+04

min     16558.000000     -17.000000       1.000000       6.500000e+03

25%     17558.000000       1.000000       3.000000       9.900000e+03

50%     17564.000000       2.000000       4.000000       1.350000e+04

75%     18563.000000       2.000000       5.000000       1.800000e+04

max     19563.000000       6.000000       5.000000       2.856000e+07


       revenue_realized
count     134590.000000
mean       12696.123256
std         6928.108124
min         2600.000000
25%         7600.000000
50%        11700.000000
75%        15300.000000
max        45220.000000
```

(1) Clean invalid guests

```
df_bookings[df_bookings.no_guests<=0]
```

```
               booking_id  property_id booking_date check_in_date  \
0        May012216558RT11        16558     27-04-22      1/5/2022
3        May012216558RT14        16558     28-04-22      1/5/2022
17924    May122218559RT44        18559    12/5/2022     12/5/2022
18020    May122218561RT22        18561     8/5/2022     12/5/2022
18119   May122218562RT311        18562     5/5/2022     12/5/2022
18121   May122218562RT313        18562    10/5/2022     12/5/2022
56715    Jun082218562RT12        18562     5/6/2022      8/6/2022
119765  Jul202219560RT220        19560     19-07-22      20-07-22
134586   Jul312217564RT47        17564     30-07-22      31-07-22

       checkout_date  no_guests room_category booking_platform
ratings_given  \
0           2/5/2022       -3.0           RT1    direct online
1.0
3           2/5/2022       -2.0           RT1           others
NaN
17924       14-05-22      -10.0           RT4    direct online
NaN
18020       14-05-22      -12.0           RT2     makeyourtrip
NaN
18119       17-05-22       -6.0           RT3   direct offline
5.0
18121       17-05-22       -4.0           RT3    direct online
NaN
56715       13-06-22      -17.0           RT1           others
NaN
119765      22-07-22       -1.0           RT2           others
NaN
134586      1/8/2022       -4.0           RT4          logtrip
2.0

       booking_status  revenue_generated  revenue_realized
0         Checked Out              10010             10010
3           Cancelled               9100              3640
17924         No Show              20900             20900
18020       Cancelled               9000              3600
18119     Checked Out              16800             16800
18121       Cancelled              14400              5760
56715     Checked Out               6500              6500
119765    Checked Out              13500             13500
134586    Checked Out              38760             38760
```

As you can see above, number of guests having less than zero value represents data error. We can ignore these records.

```
df_bookings = df_bookings[df_bookings.no_guests>0]

df_bookings.shape
```

```
(134578, 12)
```

(2) Outlier removal in revenue generated

```
df_bookings.revenue_generated.min(),
df_bookings.revenue_generated.max()
```

```
(6500, 28560000)
```

```
df_bookings.revenue_generated.mean(),
df_bookings.revenue_generated.median()
```

```
(15378.036937686695, 13500.0)
```

```
avg, std = df_bookings.revenue_generated.mean(),
df_bookings.revenue_generated.std()

higher_limit = avg + 3*std
higher_limit
```

```
294498.50173207896
```

```
lower_limit = avg - 3*std
lower_limit
```

```
-263742.4278567056
```

```
df_bookings[df_bookings.revenue_generated<=0]
```

```
Empty DataFrame
Columns: [booking_id, property_id, booking_date, check_in_date,
checkout_date, no_guests, room_category, booking_platform,
ratings_given, booking_status, revenue_generated, revenue_realized]
Index: []
```

```
df_bookings[df_bookings.revenue_generated>higher_limit]
```

```
               booking_id  property_id booking_date check_in_date  \
2        May012216558RT13        16558     28-04-22      1/5/2022
111      May012216559RT32        16559     29-04-22      1/5/2022
315      May012216562RT22        16562     28-04-22      1/5/2022
562     May012217559RT118        17559     26-04-22      1/5/2022
129176   Jul282216562RT26        16562     21-07-22      28-07-22

       checkout_date  no_guests room_category booking_platform
ratings_given  \
2           4/5/2022        2.0           RT1          logtrip
5.0
111         2/5/2022        6.0           RT3    direct online
NaN
315         4/5/2022        2.0           RT2   direct offline
3.0
```

```
562         2/5/2022        2.0           RT1           others
NaN
129176      29-07-22        2.0           RT2    direct online
3.0
```

```
       booking_status  revenue_generated  revenue_realized
2         Checked Out            9100000              9100
111       Checked Out           28560000             28560
315       Checked Out           12600000             12600
562         Cancelled            2000000              4420
129176    Checked Out           10000000             12600
```

```
df_bookings = df_bookings[df_bookings.revenue_generated<=higher_limit]
df_bookings.shape
```

```
(134573, 12)
```

```
df_bookings.revenue_realized.describe()
```

```
count    134573.000000
mean      12695.983585
std        6927.791692
min        2600.000000
25%        7600.000000
50%       11700.000000
75%       15300.000000
max       45220.000000
Name: revenue_realized, dtype: float64
```

```
higher_limit = df_bookings.revenue_realized.mean() +
3*df_bookings.revenue_realized.std()
higher_limit
```

```
33479.358661845814
```

```
df_bookings[df_bookings.revenue_realized>higher_limit]
```

One observation we can have in above dataframe is that all rooms are RT4 which means presidential suit. Now since RT4 is a luxurious room it is likely their rent will be higher. To make a fair analysis, we need to do data analysis only on RT4 room types

```
df_bookings[df_bookings.room_category=="RT4"].revenue_realized.describ
e()
```

```
count    16071.000000
mean     23439.308444
std       9048.599076
min       7600.000000
25%      19000.000000
50%      26600.000000
75%      32300.000000
```

```
max      45220.000000
Name: revenue_realized, dtype: float64
```

```
# mean + 3*standard deviation
23439+3*9048
```

```
50583
```

Here higher limit comes to be 50583 and in our dataframe above we can see that max value for revenue realized is 45220. Hence we can conclude that there is no outlier and we don't need to do any data cleaning on this particular column

```
df_bookings[df_bookings.booking_id=="May012216558RT213"]
```

```
Empty DataFrame
Columns: [booking_id, property_id, booking_date, check_in_date,
checkout_date, no_guests, room_category, booking_platform,
ratings_given, booking_status, revenue_generated, revenue_realized]
Index: []
```

```
df_bookings.isnull().sum()
```

```
booking_id                0
property_id               0
booking_date              0
check_in_date             0
checkout_date             0
no_guests                 0
room_category             0
booking_platform          0
ratings_given         77897
booking_status            0
revenue_generated         0
revenue_realized          0
dtype: int64
```

Total values in our dataframe is 134576. Out of that 77899 rows has null rating. Since there are many rows with null rating, we should not filter these values. Also we should not replace this rating with a median or mean rating etc

Exercise-1. In aggregate bookings find columns that have null values. Fill these null values with whatever you think is the appropriate subtitute (possible ways is to use mean or median)

```
# write your code here
df_agg_bookings.isnull().sum()
```

```
property_id            0
check_in_date          0
```

```
room_category          0
successful_bookings    0
capacity               2
dtype: int64
```

```
df_agg_bookings[df_agg_bookings.capacity.isna()]
```

```
    property_id check_in_date room_category  successful_bookings
capacity
8         17561      1-May-22           RT1                   22
NaN
14        17562      1-May-22           RT1                   12
NaN
```

```
df_agg_bookings.capacity.median()
```

```
25.0
```

```
df_agg_bookings['capacity'] =
df_agg_bookings['capacity'].fillna(df_agg_bookings['capacity'].median(
))
```

```
df_agg_bookings.loc[[8,15]]
```

```
    property_id check_in_date room_category  successful_bookings
capacity
8         17561      1-May-22           RT1                   22
25.0
15        17563      1-May-22           RT1                   21
25.0
```

Exercise-2. In aggregate bookings find out records that have successful_bookings value greater than capacity. Filter those records

```
# write your code here
df_agg_bookings[df_agg_bookings.successful_bookings>df_agg_bookings.ca
pacity]
```

```
      property_id check_in_date room_category  successful_bookings
capacity
3           17558      1-May-22           RT1                   30
19.0
12          16563      1-May-22           RT1                  100
41.0
4136        19558     11-Jun-22           RT2                   50
39.0
6209        19560      2-Jul-22           RT1                  123
26.0
8522        19559     25-Jul-22           RT1                   35
24.0
```

```
9194        18563     31-Jul-22           RT4                    20
18.0

df_agg_bookings.shape

(9200, 5)

df_agg_bookings =
df_agg_bookings[df_agg_bookings.successful_bookings<=df_agg_bookings.c
apacity]
df_agg_bookings.shape

(9194, 5)
```

==> 3. Data Transformation

Create occupancy percentage column

```
df_agg_bookings.head(3)

   property_id check_in_date room_category  successful_bookings
capacity
0        16559      1-May-22           RT1                   25
30.0
1        19562      1-May-22           RT1                   28
30.0
2        19563      1-May-22           RT1                   23
30.0

df_agg_bookings['occ_pct'] = df_agg_bookings.apply(lambda row:
row['successful_bookings']/row['capacity'], axis=1)
```

You can use following approach to get rid of SettingWithCopyWarning

```
new_col = df_agg_bookings.apply(lambda row:
row['successful_bookings']/row['capacity'], axis=1)
df_agg_bookings = df_agg_bookings.assign(occ_pct=new_col.values)
df_agg_bookings.head(3)

   property_id check_in_date room_category  successful_bookings
capacity  \
0        16559      1-May-22           RT1                   25
30.0
1        19562      1-May-22           RT1                   28
30.0
2        19563      1-May-22           RT1                   23
30.0
```

```
    occ_pct
0  0.833333
1  0.933333
2  0.766667
```

Convert it to a percentage value

```
df_agg_bookings['occ_pct'] = df_agg_bookings['occ_pct'].apply(lambda
x: round(x*100, 2))
df_agg_bookings.head(4)
```

```
   property_id check_in_date room_category  successful_bookings
capacity  \
0        16559      1-May-22           RT1                   25
30.0
1        19562      1-May-22           RT1                   28
30.0
2        19563      1-May-22           RT1                   23
30.0
4        16558      1-May-22           RT1                   18
19.0

   occ_pct
0    83.33
1    93.33
2    76.67
4    94.74
```

```
df_bookings.head()
```

```
         booking_id  property_id booking_date check_in_date
checkout_date  \
1  May012216558RT12        16558     30-04-22      1/5/2022
2/5/2022
4  May012216558RT15        16558     27-04-22      1/5/2022
2/5/2022
5  May012216558RT16        16558     1/5/2022      1/5/2022
3/5/2022
6  May012216558RT17        16558     28-04-22      1/5/2022
6/5/2022
7  May012216558RT18        16558     26-04-22      1/5/2022
3/5/2022

   no_guests room_category booking_platform  ratings_given
booking_status  \
1        2.0           RT1           others            NaN
Cancelled
4        4.0           RT1    direct online            5.0    Checked
Out
```

```
5        2.0           RT1           others             4.0    Checked
Out
6        2.0           RT1           others             NaN
Cancelled
7        2.0           RT1          logtrip             NaN         No
Show

   revenue_generated  revenue_realized
1               9100              3640
4              10920             10920
5               9100              9100
6               9100              3640
7               9100              9100

df_agg_bookings.info()

<class 'pandas.core.frame.DataFrame'>
Index: 9194 entries, 0 to 9199
Data columns (total 6 columns):
 #   Column               Non-Null Count  Dtype
---  ------               --------------  -----
 0   property_id          9194 non-null   int64
 1   check_in_date        9194 non-null   object
 2   room_category        9194 non-null   object
 3   successful_bookings  9194 non-null   int64
 4   capacity             9194 non-null   float64
 5   occ_pct              9194 non-null   float64
dtypes: float64(2), int64(2), object(2)
memory usage: 502.8+ KB
```

There are various types of data transformations that you may have to perform based on the need. Few examples of data transformations are,

1. Creating new columns
2. Normalization
3. Merging data
4. Aggregation

==> 4. Insights Generation

---

1. What is an average occupancy rate in each of the room categories?

```
df_agg_bookings.head(3)

   property_id check_in_date room_category  successful_bookings
capacity  \
0        16559      1-May-22           RT1                   25
```

```
30.0
1        19562      1-May-22           RT1                    28
30.0
2        19563      1-May-22           RT1                    23
30.0

   occ_pct
0    83.33
1    93.33
2    76.67

df_agg_bookings.groupby("room_category")["occ_pct"].mean()
```

I don't understand RT1, RT2 etc. Print room categories such as Standard, Premium, Elite etc along with average occupancy percentage

```
df = pd.merge(df_agg_bookings, df_rooms, left_on="room_category",
right_on="room_id")
df.head(4)

   property_id check_in_date room_category  successful_bookings
capacity  \
0        16559      1-May-22           RT1                    25
30.0
1        19562      1-May-22           RT1                    28
30.0
2        19563      1-May-22           RT1                    23
30.0
3        16558      1-May-22           RT1                    18
19.0

   occ_pct room_id room_class
0    83.33     RT1   Standard
1    93.33     RT1   Standard
2    76.67     RT1   Standard
3    94.74     RT1   Standard

df.drop("room_id",axis=1, inplace=True)
df.head(4)

   property_id check_in_date room_category  successful_bookings
capacity  \
0        16559      1-May-22           RT1                    25
30.0
1        19562      1-May-22           RT1                    28
30.0
2        19563      1-May-22           RT1                    23
30.0
3        16558      1-May-22           RT1                    18
19.0
```

```
   occ_pct room_class
0    83.33   Standard
1    93.33   Standard
2    76.67   Standard
3    94.74   Standard
```

```
df.groupby("room_class")["occ_pct"].mean().round(2)
```

```
room_class
Elite           58.01
Premium         58.03
Presidential    59.28
Standard        57.89
Name: occ_pct, dtype: float64
```

```
df[df.room_class=="Standard"].occ_pct.mean().round(2)
```

```
57.89
```

2. Print average occupancy rate per city

```
df_hotels.head(3)
```

```
   property_id  property_name  category    city
0        16558   Atliq Grands    Luxury   Delhi
1        16559  Atliq Exotica    Luxury  Mumbai
2        16560     Atliq City  Business   Delhi
```

```
df = pd.merge(df, df_hotels, on="property_id")
df.head(3)
```

```
   property_id check_in_date room_category  successful_bookings
capacity  \
0        16559      1-May-22           RT1                   25
30.0
1        19562      1-May-22           RT1                   28
30.0
2        19563      1-May-22           RT1                   23
30.0

   occ_pct room_class  property_name  category       city
0    83.33   Standard  Atliq Exotica    Luxury     Mumbai
1    93.33   Standard      Atliq Bay    Luxury  Bangalore
2    76.67   Standard   Atliq Palace  Business  Bangalore
```

```
df.groupby("city")["occ_pct"].mean().round(2)
```

```
city
Bangalore    56.33
Delhi        61.51
```

```
Hyderabad    58.12
Mumbai       57.91
Name: occ_pct, dtype: float64
```

3. When was the occupancy better? Weekday or Weekend?

```
df_date.head(3)
```

```
        date  mmm yy week no  day_type
0  01-May-22  May 22    W 19   weekend
1  02-May-22  May 22    W 19  weekeday
2  03-May-22  May 22    W 19  weekeday
```

```
df = pd.merge(df, df_date, left_on="check_in_date", right_on="date")
df.head(3)
```

```
   property_id check_in_date room_category  successful_bookings
capacity  \
0        19563     10-May-22           RT3                   15
29.0
1        18560     10-May-22           RT1                   19
30.0
2        19562     10-May-22           RT1                   18
30.0

   occ_pct room_class property_name  category       city       date
mmm yy  \
0    51.72    Premium  Atliq Palace  Business  Bangalore  10-May-22
May 22
1    63.33   Standard    Atliq City  Business  Hyderabad  10-May-22
May 22
2    60.00   Standard     Atliq Bay    Luxury  Bangalore  10-May-22
May 22

  week no  day_type
0    W 20  weekeday
1    W 20  weekeday
2    W 20  weekeday
```

```
df.groupby("day_type")["occ_pct"].mean().round(2)
```

```
day_type
weekeday    50.88
weekend     72.34
Name: occ_pct, dtype: float64
```

4: In the month of June, what is the occupancy for different cities

```
df_june_22 = df[df["mmm yy"]=="Jun 22"]
df_june_22.head(4)
```

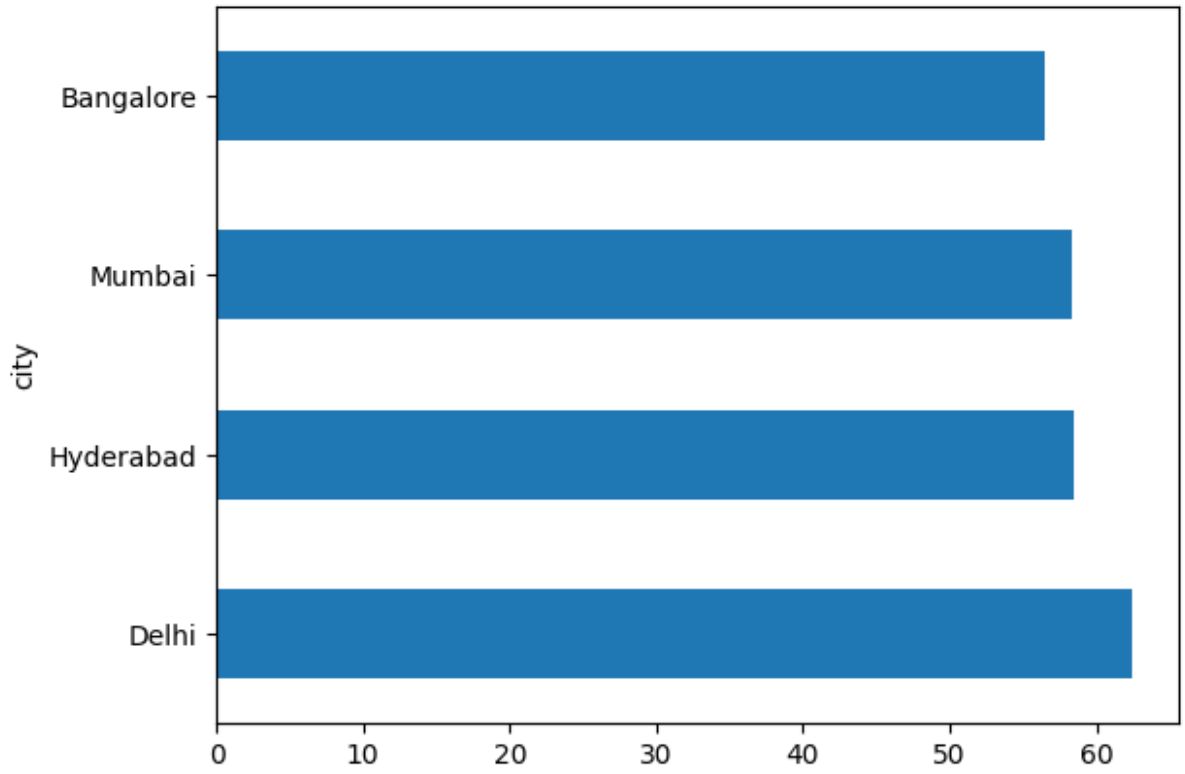
```
      property_id check_in_date room_category  successful_bookings
capacity  \
2200        16559     10-Jun-22           RT1                   20
30.0
2201        19562     10-Jun-22           RT1                   19
30.0
2202        19563     10-Jun-22           RT1                   17
30.0
2203        17558     10-Jun-22           RT1                    9
19.0

      occ_pct room_class  property_name  category       city
date  \
2200    66.67   Standard  Atliq Exotica    Luxury     Mumbai  10-Jun-
22
2201    63.33   Standard      Atliq Bay    Luxury  Bangalore  10-Jun-
22
2202    56.67   Standard   Atliq Palace  Business  Bangalore  10-Jun-
22
2203    47.37   Standard   Atliq Grands    Luxury     Mumbai  10-Jun-
22

      mmm yy week no  day_type
2200  Jun 22    W 24  weekeday
2201  Jun 22    W 24  weekeday
2202  Jun 22    W 24  weekeday
2203  Jun 22    W 24  weekeday
```

```
df_june_22.groupby('city')
['occ_pct'].mean().round(2).sort_values(ascending=False)
```

```
city
Delhi        62.47
Hyderabad    58.46
Mumbai       58.38
Bangalore    56.44
Name: occ_pct, dtype: float64
```

```
df_june_22.groupby('city')
['occ_pct'].mean().round(2).sort_values(ascending=False).plot(kind="ba
rh")
```

```
<Axes: ylabel='city'>
```



5: We got new data for the month of august. Append that to existing data

```
df_august = pd.read_csv("datasets/new_data_august.csv")
df_august.head(3)
```

```
   property_id  property_name  category       city room_category
room_class  \
0        16559  Atliq Exotica    Luxury     Mumbai            RT1
Standard
1        19562      Atliq Bay    Luxury  Bangalore            RT1
Standard
2        19563   Atliq Palace  Business  Bangalore            RT1
Standard

  check_in_date  mmm yy week no  day_type  successful_bookings
capacity  \
0     01-Aug-22  Aug-22    W 32  weekeday                    30
30
1     01-Aug-22  Aug-22    W 32  weekeday                    21
30
2     01-Aug-22  Aug-22    W 32  weekeday                    23
30

     occ%
0  100.00
```

```
1   70.00
2   76.67
```

```
df_august.columns
```

```
Index(['property_id', 'property_name', 'category', 'city',
'room_category',
       'room_class', 'check_in_date', 'mmm yy', 'week no', 'day_type',
       'successful_bookings', 'capacity', 'occ%'],
      dtype='object')
```

```
df.columns
```

```
Index(['property_id', 'check_in_date', 'room_category',
'successful_bookings',
       'capacity', 'occ_pct', 'room_class', 'property_name',
'category',
       'city', 'date', 'mmm yy', 'week no', 'day_type'],
      dtype='object')
```

```
df_august.shape
```

```
(7, 13)
```

```
df.shape
```

```
(6497, 14)
```

```
latest_df = pd.concat([df, df_august], ignore_index = True, axis = 0)
latest_df.tail(10)
```

```
      property_id check_in_date room_category  successful_bookings
capacity  \
6494        17558     31-Jul-22           RT4                    3
6.0
6495        19563     31-Jul-22           RT4                    3
6.0
6496        17561     31-Jul-22           RT4                    3
4.0
6497        16559     01-Aug-22           RT1                   30
30.0
6498        19562     01-Aug-22           RT1                   21
30.0
6499        19563     01-Aug-22           RT1                   23
30.0
6500        19558     01-Aug-22           RT1                   30
40.0
6501        19560     01-Aug-22           RT1                   20
26.0
6502        17561     01-Aug-22           RT1                   18
26.0
```

```
6503        17564     01-Aug-22           RT1                    10
16.0

      occ_pct    room_class  property_name  category       city
date  \
6494     50.0  Presidential   Atliq Grands    Luxury     Mumbai  31-
Jul-22
6495     50.0  Presidential   Atliq Palace  Business  Bangalore  31-
Jul-22
6496     75.0  Presidential      Atliq Blu    Luxury     Mumbai  31-
Jul-22
6497      NaN      Standard  Atliq Exotica    Luxury     Mumbai
NaN
6498      NaN      Standard      Atliq Bay    Luxury  Bangalore
NaN
6499      NaN      Standard   Atliq Palace  Business  Bangalore
NaN
6500      NaN      Standard   Atliq Grands    Luxury  Bangalore
NaN
6501      NaN      Standard     Atliq City  Business  Bangalore
NaN
6502      NaN      Standard      Atliq Blu    Luxury     Mumbai
NaN
6503      NaN      Standard  Atliq Seasons  Business     Mumbai
NaN

      mmm yy week no  day_type    occ%
6494  Jul 22    W 32   weekend     NaN
6495  Jul 22    W 32   weekend     NaN
6496  Jul 22    W 32   weekend     NaN
6497  Aug-22    W 32  weekeday  100.00
6498  Aug-22    W 32  weekeday   70.00
6499  Aug-22    W 32  weekeday   76.67
6500  Aug-22    W 32  weekeday   75.00
6501  Aug-22    W 32  weekeday   76.92
6502  Aug-22    W 32  weekeday   69.23
6503  Aug-22    W 32  weekeday   62.50
```

```
latest_df.shape
```

```
(6504, 15)
```

Check this post for codebasics resume project challange winner entry:
https://www.linkedin.com/posts/ashishbabaria_codebasicsresumeprojectchallenge-data-powerbi-activity-6977940034414886914-dmoJ?utm_source=share&utm_medium=member_desktop

6. Print revenue realized per city

```
df_bookings.head()
```

```
         booking_id  property_id booking_date check_in_date
checkout_date  \
1  May012216558RT12        16558     30-04-22      1/5/2022
2/5/2022
4  May012216558RT15        16558     27-04-22      1/5/2022
2/5/2022
5  May012216558RT16        16558     1/5/2022      1/5/2022
3/5/2022
6  May012216558RT17        16558     28-04-22      1/5/2022
6/5/2022
7  May012216558RT18        16558     26-04-22      1/5/2022
3/5/2022

   no_guests room_category booking_platform  ratings_given
booking_status  \
1        2.0           RT1           others            NaN
Cancelled
4        4.0           RT1    direct online            5.0    Checked
Out
5        2.0           RT1           others            4.0    Checked
Out
6        2.0           RT1           others            NaN
Cancelled
7        2.0           RT1          logtrip            NaN        No
Show

   revenue_generated  revenue_realized
1               9100              3640
4              10920             10920
5               9100              9100
6               9100              3640
7               9100              9100

df_hotels.head(3)

   property_id  property_name  category    city
0        16558   Atliq Grands    Luxury   Delhi
1        16559  Atliq Exotica    Luxury  Mumbai
2        16560     Atliq City  Business   Delhi

df_bookings_all = pd.merge(df_bookings, df_hotels, on="property_id")
df_bookings_all.head(3)

         booking_id  property_id booking_date check_in_date
checkout_date  \
0  May012216558RT12        16558     30-04-22      1/5/2022
2/5/2022
1  May012216558RT15        16558     27-04-22      1/5/2022
2/5/2022
2  May012216558RT16        16558     1/5/2022      1/5/2022
```

```
3/5/2022

   no_guests room_category booking_platform  ratings_given
booking_status  \
0        2.0           RT1           others            NaN
Cancelled
1        4.0           RT1    direct online            5.0    Checked
Out
2        2.0           RT1           others            4.0    Checked
Out

   revenue_generated  revenue_realized property_name category   city
0               9100              3640  Atliq Grands   Luxury  Delhi
1              10920             10920  Atliq Grands   Luxury  Delhi
2               9100              9100  Atliq Grands   Luxury  Delhi

df_bookings_all.groupby("city")["revenue_realized"].sum()

city
Bangalore    420383550
Delhi        294404488
Hyderabad    325179310
Mumbai       668569251
Name: revenue_realized, dtype: int64
```

7. Print month by month revenue

```
df_date.head(3)

        date  mmm yy week no  day_type
0  01-May-22  May 22    W 19   weekend
1  02-May-22  May 22    W 19  weekeday
2  03-May-22  May 22    W 19  weekeday

df_date["mmm yy"].unique()

array(['May 22', 'Jun 22', 'Jul 22'], dtype=object)

df_bookings_all.head(3)

         booking_id  property_id booking_date check_in_date
checkout_date  \
0  May012216558RT12        16558     30-04-22      1/5/2022
2/5/2022
1  May012216558RT15        16558     27-04-22      1/5/2022
2/5/2022
2  May012216558RT16        16558     1/5/2022      1/5/2022
3/5/2022

   no_guests room_category booking_platform  ratings_given
booking_status  \
```

```
0        2.0           RT1           others             NaN
Cancelled
1        4.0           RT1    direct online             5.0    Checked
Out
2        2.0           RT1           others             4.0    Checked
Out
```

```
   revenue_generated  revenue_realized property_name category   city
0               9100              3640  Atliq Grands   Luxury  Delhi
1              10920             10920  Atliq Grands   Luxury  Delhi
2               9100              9100  Atliq Grands   Luxury  Delhi
```

```
df_date.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 92 entries, 0 to 91
Data columns (total 4 columns):
 #   Column    Non-Null Count  Dtype
---  ------    --------------  -----
 0   date      92 non-null     object
 1   mmm yy    92 non-null     object
 2   week no   92 non-null     object
 3   day_type  92 non-null     object
dtypes: object(4)
memory usage: 3.0+ KB
```

```
df_date["date"] = pd.to_datetime(df_date["date"], format="%d-%b-%y")
```

```
df_date.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 92 entries, 0 to 91
Data columns (total 4 columns):
 #   Column    Non-Null Count  Dtype
---  ------    --------------  -----
 0   date      92 non-null     datetime64[ns]
 1   mmm yy    92 non-null     object
 2   week no   92 non-null     object
 3   day_type  92 non-null     object
dtypes: datetime64[ns](1), object(3)
memory usage: 3.0+ KB
```

```
df["check_in_date"] = pd.to_datetime(df["check_in_date"], format="%d-
%m-%y")
df_date.head(3)
```

```
        date  mmm yy week no  day_type
0 2022-05-01  May 22    W 19   weekend
1 2022-05-02  May 22    W 19  weekeday
2 2022-05-03  May 22    W 19  weekeday
```

```
df_bookings_all.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 134573 entries, 0 to 134572
Data columns (total 15 columns):
 #   Column             Non-Null Count   Dtype         
---  ------             --------------   -----         
 0   booking_id         134573 non-null  object        
 1   property_id        134573 non-null  int64         
 2   booking_date       134573 non-null  object        
 3   check_in_date      55790 non-null   datetime64[ns]
 4   checkout_date      134573 non-null  object        
 5   no_guests          134573 non-null  float64       
 6   room_category      134573 non-null  object        
 7   booking_platform   134573 non-null  object        
 8   ratings_given      56676 non-null   float64       
 9   booking_status     134573 non-null  object        
 10  revenue_generated  134573 non-null  int64         
 11  revenue_realized   134573 non-null  int64         
 12  property_name      134573 non-null  object        
 13  category           134573 non-null  object        
 14  city               134573 non-null  object        
dtypes: datetime64[ns](1), float64(2), int64(3), object(9)
memory usage: 15.4+ MB

df_bookings_all.head(4)

         booking_id  property_id booking_date check_in_date
checkout_date  \
0  May012216558RT12        16558     30-04-22    2022-01-05
2/5/2022
1  May012216558RT15        16558     27-04-22    2022-01-05
2/5/2022
2  May012216558RT16        16558     1/5/2022    2022-01-05
3/5/2022
3  May012216558RT17        16558     28-04-22    2022-01-05
6/5/2022

   no_guests room_category booking_platform  ratings_given
booking_status  \
0        2.0           RT1           others             NaN
Cancelled
1        4.0           RT1    direct online             5.0    Checked
Out
2        2.0           RT1           others             4.0    Checked
Out
3        2.0           RT1           others             NaN
Cancelled

   revenue_generated  revenue_realized property_name category   city
```

```
0                9100              3640  Atliq Grands   Luxury  Delhi
1               10920             10920  Atliq Grands   Luxury  Delhi
2                9100              9100  Atliq Grands   Luxury  Delhi
3                9100              3640  Atliq Grands   Luxury  Delhi
```

```
df_bookings_all = pd.merge(df_bookings_all, df_date,
left_on="check_in_date", right_on="date")
df_bookings_all.head(3)
```

```
         booking_id  property_id booking_date check_in_date
checkout_date  \
0  May052216558RT11        16558     15-04-22    2022-05-05
7/5/2022
1  May052216558RT12        16558     30-04-22    2022-05-05
7/5/2022
2  May052216558RT13        16558     1/5/2022    2022-05-05
6/5/2022

   no_guests room_category booking_platform  ratings_given
booking_status  \
0        3.0           RT1         tripster            5.0    Checked
Out
1        2.0           RT1           others            NaN
Cancelled
2        3.0           RT1   direct offline            5.0    Checked
Out

   revenue_generated  revenue_realized property_name category
city  \
0              10010             10010  Atliq Grands   Luxury  Delhi

1               9100              3640  Atliq Grands   Luxury  Delhi

2              10010             10010  Atliq Grands   Luxury  Delhi


        date  mmm yy week no  day_type
0 2022-05-05  May 22    W 19  weekeday
1 2022-05-05  May 22    W 19  weekeday
2 2022-05-05  May 22    W 19  weekeday
```

```
df_bookings_all.groupby("mmm yy")["revenue_realized"].sum()
```

```
mmm yy
Jul 22    60278496
Jun 22    52903014
May 22    60961428
Name: revenue_realized, dtype: int64
```

Exercise-1. Print revenue realized per hotel type

```
# write your code here
df_bookings_all.property_name.unique()
```

```
array(['Atliq Grands', 'Atliq Exotica', 'Atliq City', 'Atliq Blu',
       'Atliq Bay', 'Atliq Palace', 'Atliq Seasons'], dtype=object)
```

```
df_bookings_all.groupby("property_name")
["revenue_realized"].sum().round(2).sort_values()
```

```
property_name
Atliq Seasons     6672245
Atliq Grands     21644446
Atliq Blu        26459751
Atliq Bay        26936115
Atliq City       29047727
Atliq Palace     30945855
Atliq Exotica    32436799
Name: revenue_realized, dtype: int64
```

Exercise-2 Print average rating per city

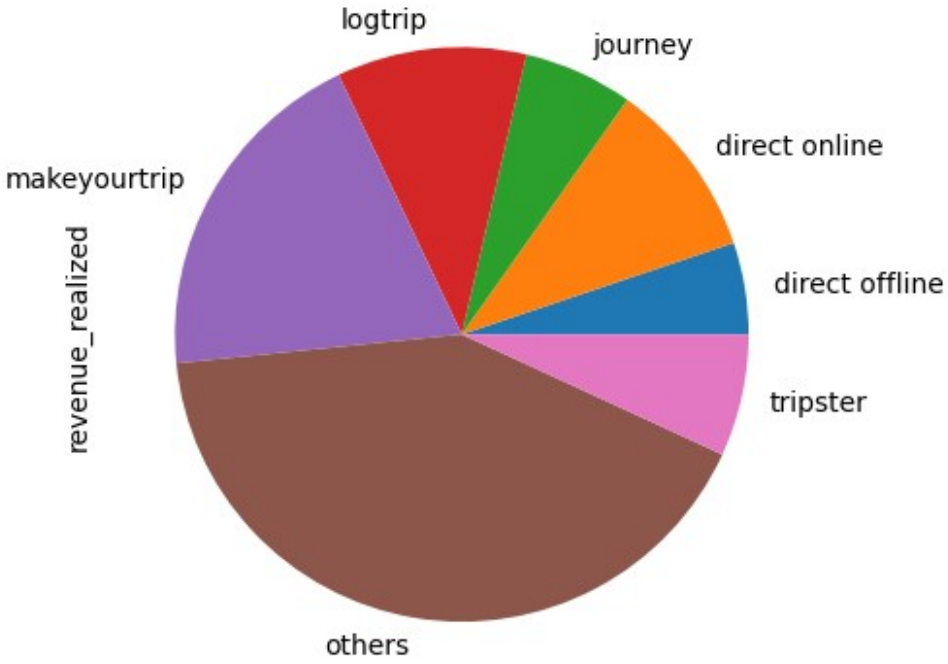
```
# write your code here
df_bookings_all.groupby("city")["ratings_given"].mean().round(2)
```

```
city
Bangalore    3.41
Delhi        3.79
Hyderabad    3.65
Mumbai       3.63
Name: ratings_given, dtype: float64
```

Exercise-3 Print a pie chart of revenue realized per booking platform

```
# write your code here
df_bookings_all.groupby("booking_platform")
["revenue_realized"].sum().plot(kind="pie")
```

```
<Axes: ylabel='revenue_realized'>
```


logtrip
journey
direct online
makeyourtrip
direct offline
revenue_realized
tripster
others