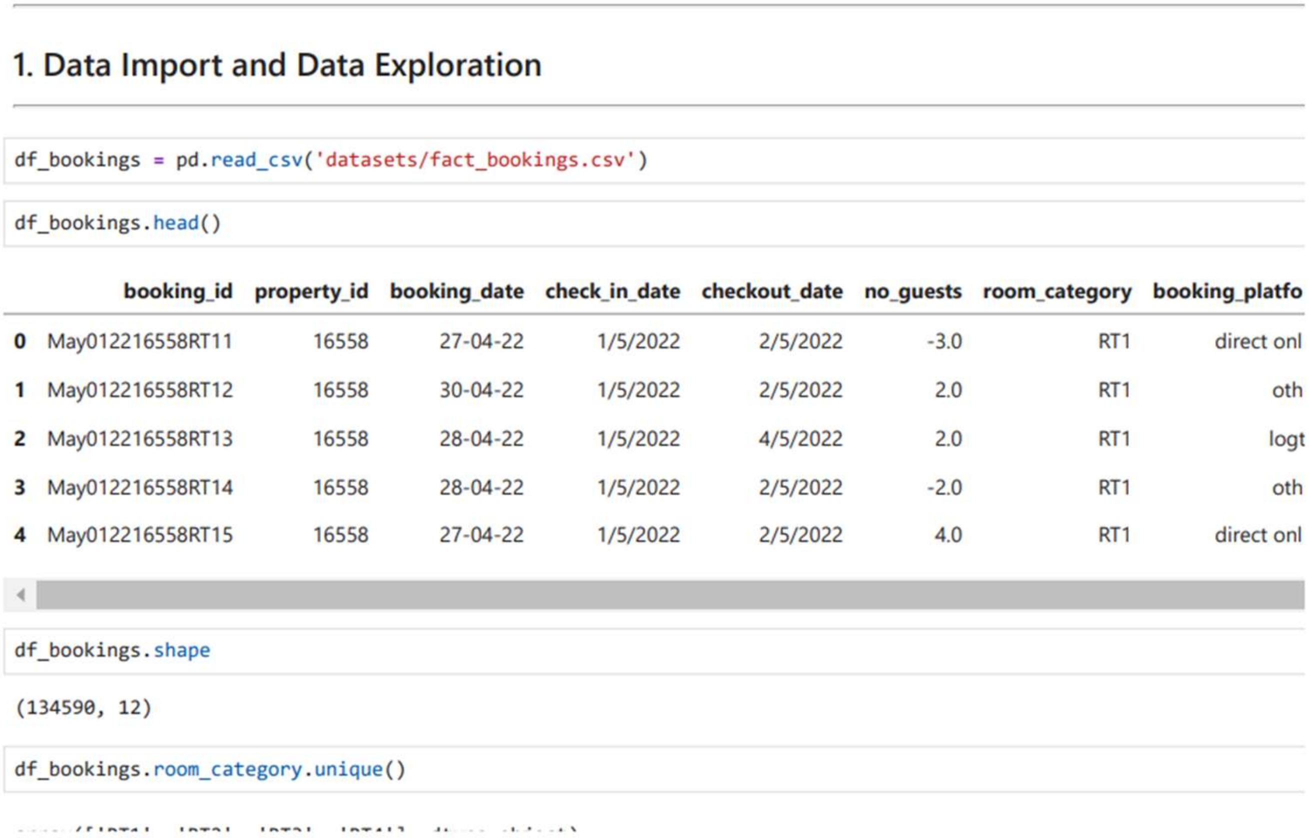
Python Project : Hotel Domain Analysis



1. Data Import and Data Exploration

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

```
df_bookings.head()
```

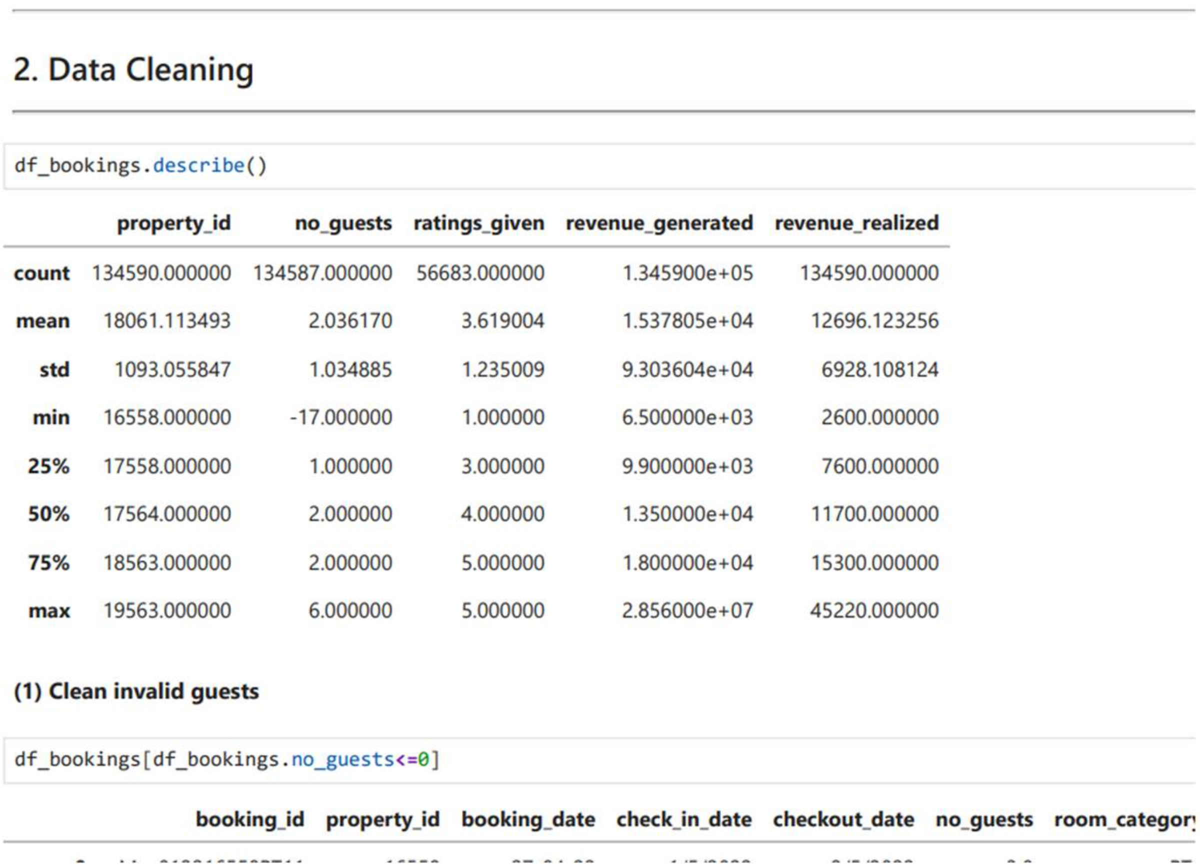
	booking_id	property_id	booking_date	check_in_date	checkout_date	no_guests	room_category	booking_platfo
0	May012216558RT11	16558	27-04-22	1/5/2022	2/5/2022	-3.0	RT1	direct onl
1	May012216558RT12	16558	30-04-22	1/5/2022	2/5/2022	2.0	RT1	oth
2	May012216558RT13	16558	28-04-22	1/5/2022	4/5/2022	2.0	RT1	logt
3	May012216558RT14	16558	28-04-22	1/5/2022	2/5/2022	-2.0	RT1	oth
4	May012216558RT15	16558	27-04-22	1/5/2022	2/5/2022	4.0	RT1	direct onl

```
df_bookings.shape
```

```
(134590, 12)
```

```
df_bookings.room_category.unique()
```

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



2. Data Cleaning

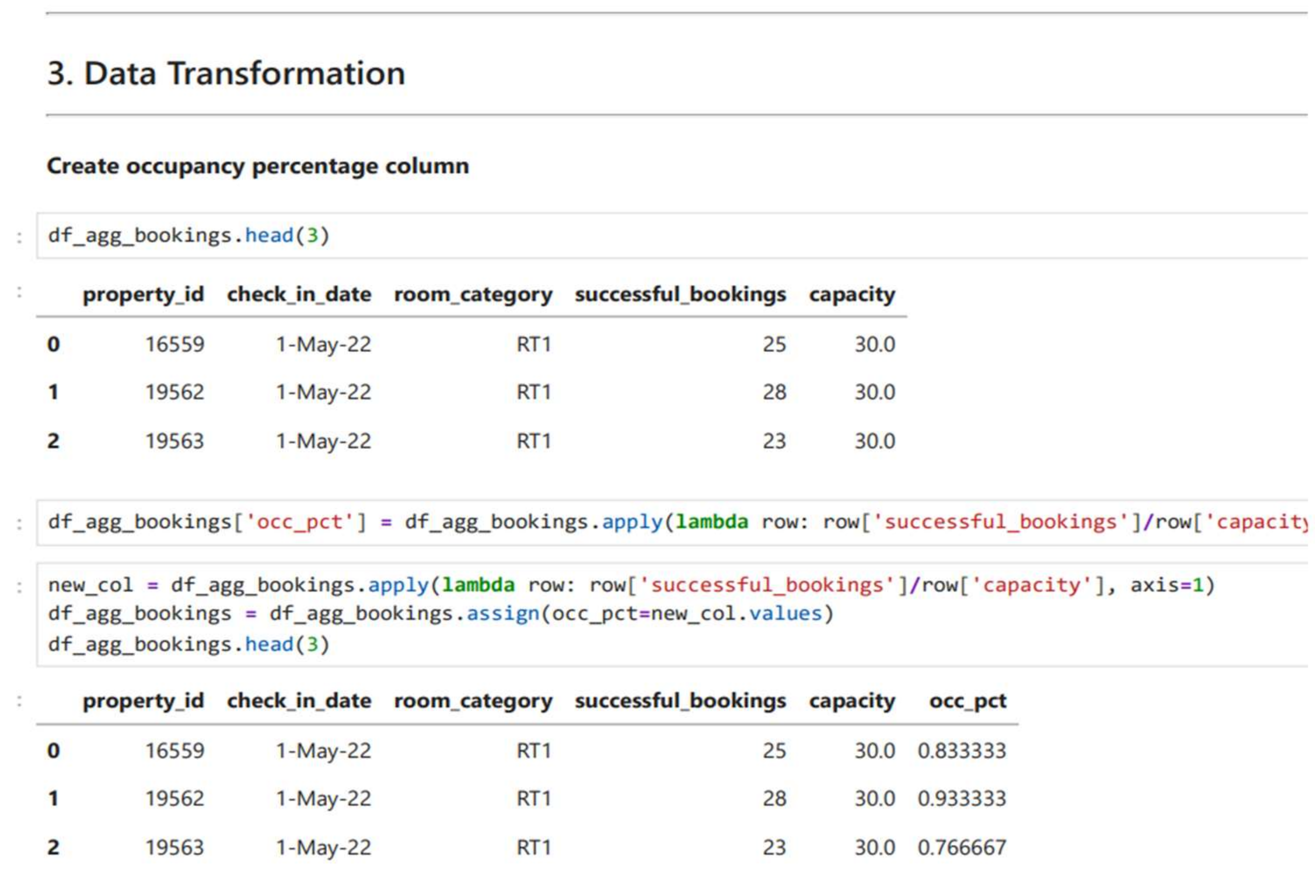
```
df_bookings.describe()
```

	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	7600.000000
50%	17564.000000	2.000000	4.000000	1.350000e+04	11700.000000
75%	18563.000000	2.000000	5.000000	1.800000e+04	15300.000000
max	19563.000000	6.000000	5.000000	2.856000e+07	45220.000000

(1) Clean invalid guests

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

	booking_id	property_id	booking_date	check_in_date	checkout_date	no_guests	room_categor



3. Data Transformation

Create occupancy percentage column

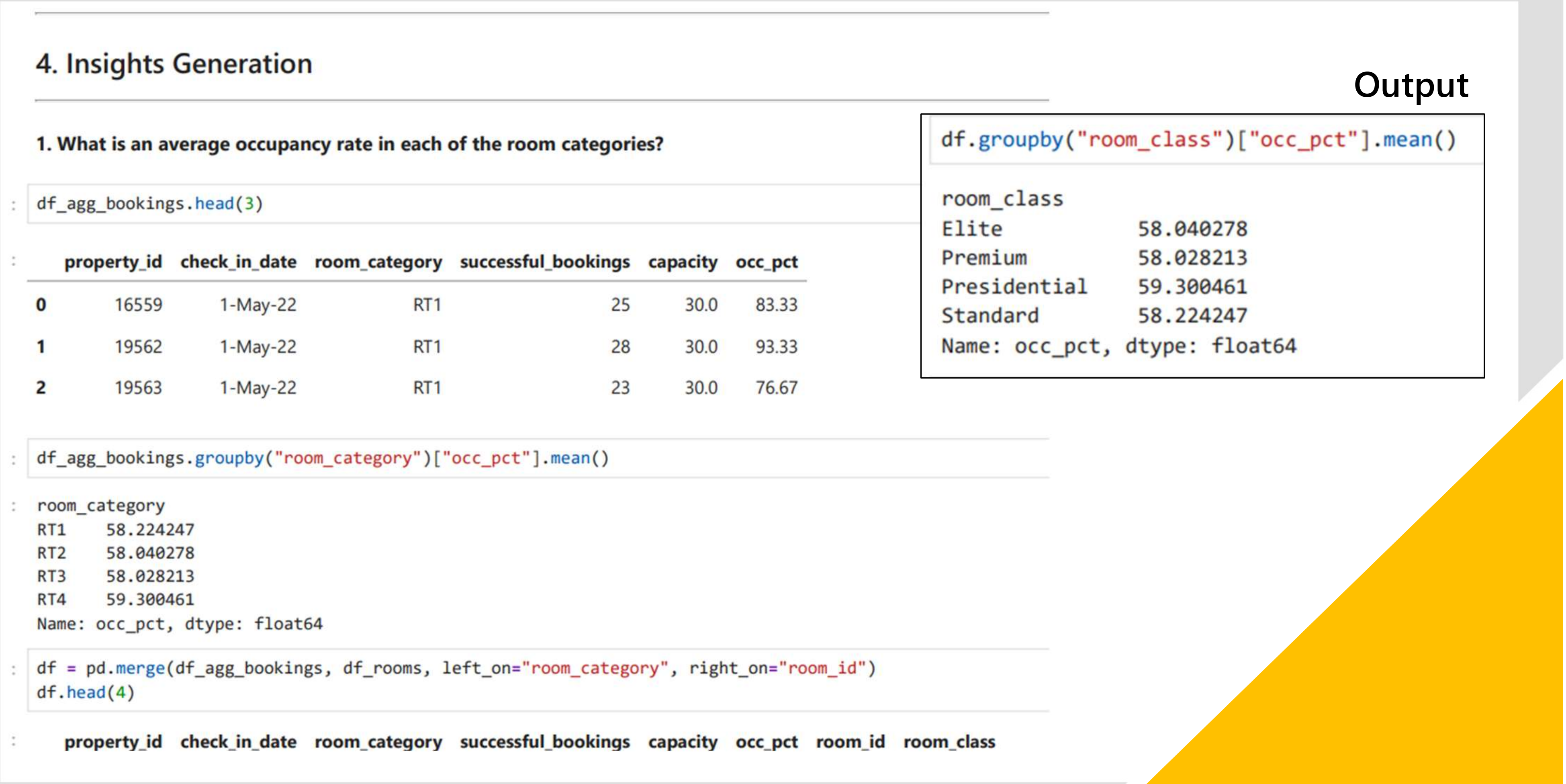
```
df_agg_bookings.head(3)
```

	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
```

```
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	occ_pct
0	16559	1-May-22	RT1	25	30.0	0.833333
1	19562	1-May-22	RT1	28	30.0	0.933333
2	19563	1-May-22	RT1	23	30.0	0.766667



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	occ_pct
0	16559	1-May-22	RT1	25	30.0	83.33
1	19562	1-May-22	RT1	28	30.0	93.33
2	19563	1-May-22	RT1	23	30.0	76.67

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

```
room_category
RT1    58.224247
RT2    58.040278
RT3    58.028213
RT4    59.300461
Name: occ_pct, dtype: float64
```

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

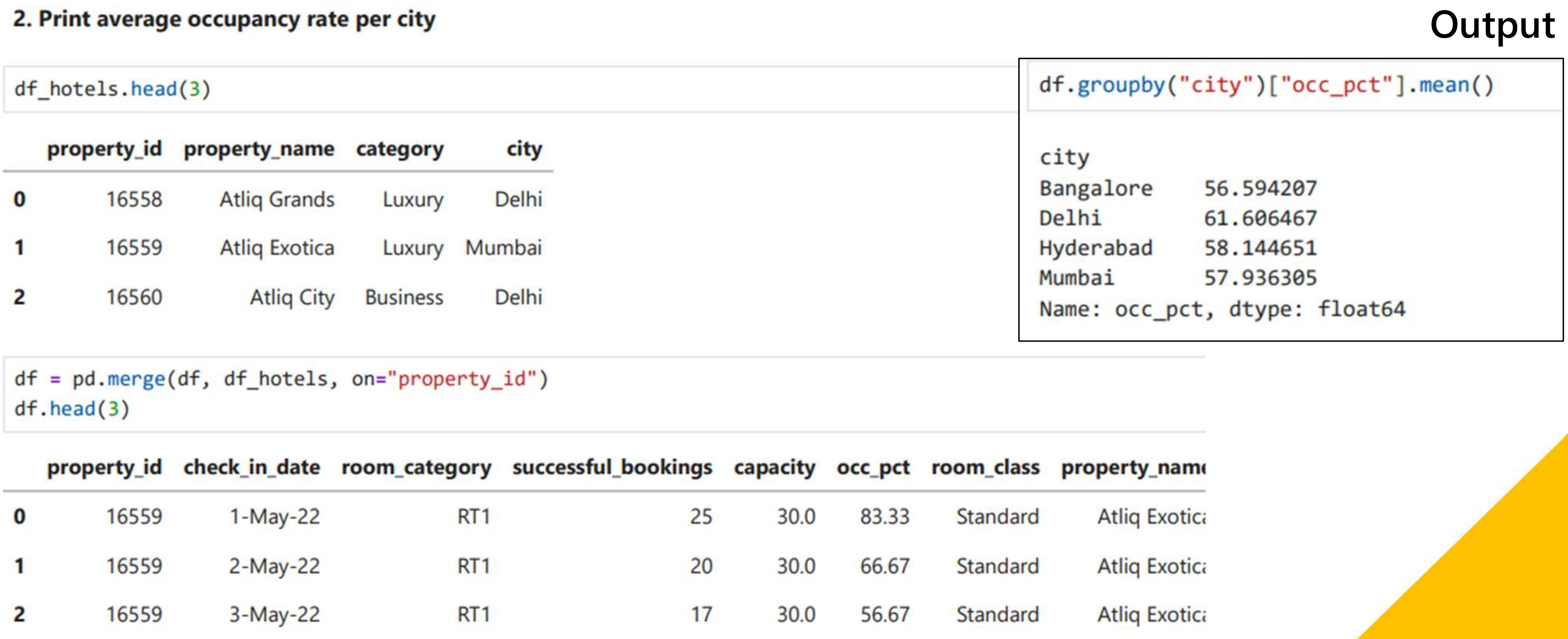
	property_id	check_in_date	room_category	successful_bookings	capacity	occ_pct	room_id	room_class

Output

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

```
room_class
Elite           58.040278
Premium         58.028213
Presidential    59.300461
Standard        58.224247
Name: occ_pct, dtype: float64
```

Output



2. Print average occupancy rate per city

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

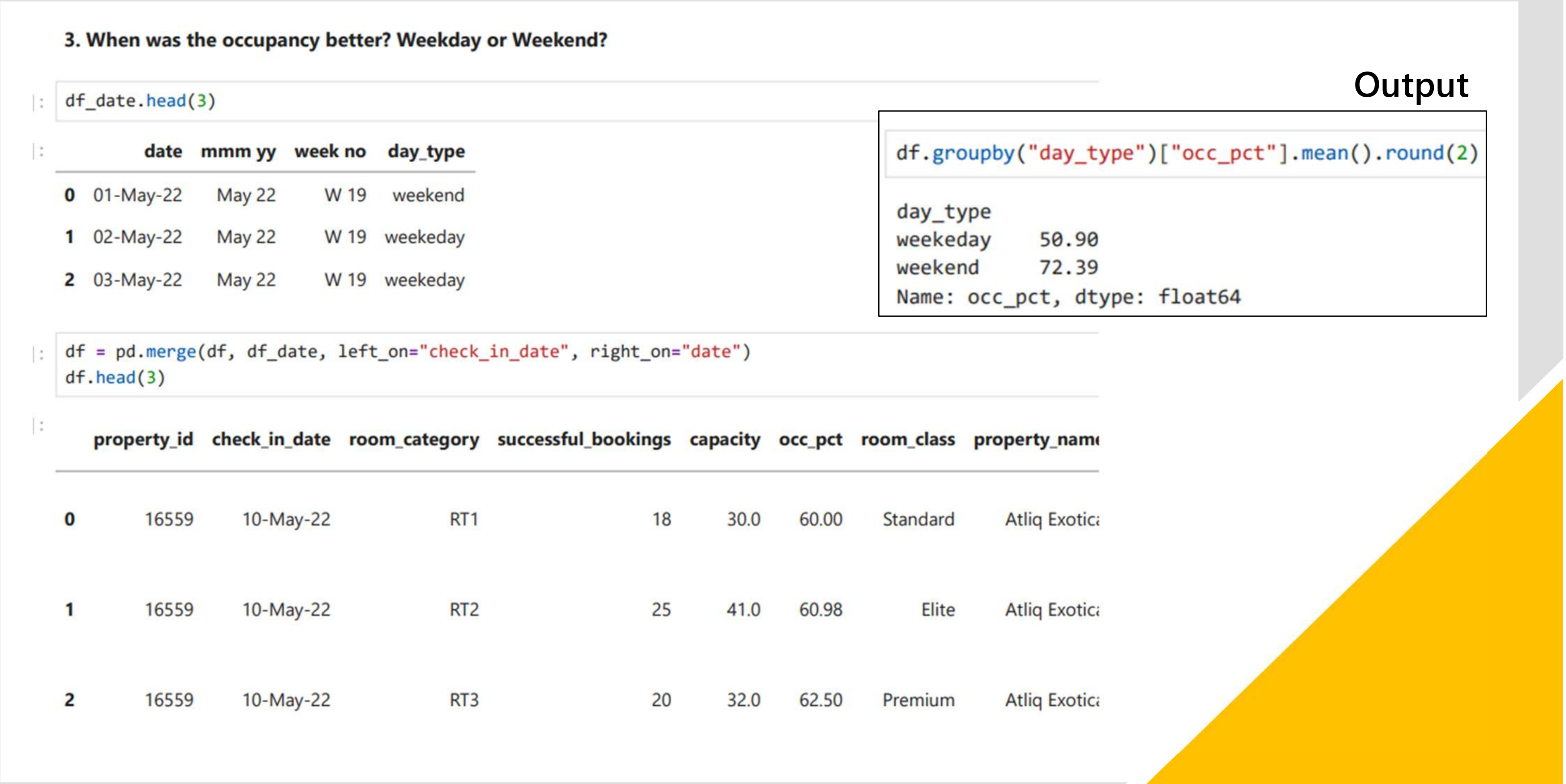
	property_id	property_name	category	city
0	16558	Atliq Grands	Luxury	Delhi
1	16559	Atliq Exotica	Luxury	Mumbai
2	16560	Atliq City	Business	Delhi

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

	property_id	check_in_date	room_category	successful_bookings	capacity	occ_pct	room_class	property_nam
0	16559	1-May-22	RT1	25	30.0	83.33	Standard	Atliq Exotic
1	16559	2-May-22	RT1	20	30.0	66.67	Standard	Atliq Exotic
2	16559	3-May-22	RT1	17	30.0	56.67	Standard	Atliq Exotic

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

```
city
Bangalore    56.594207
Delhi        61.606467
Hyderabad    58.144651
Mumbai       57.936305
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

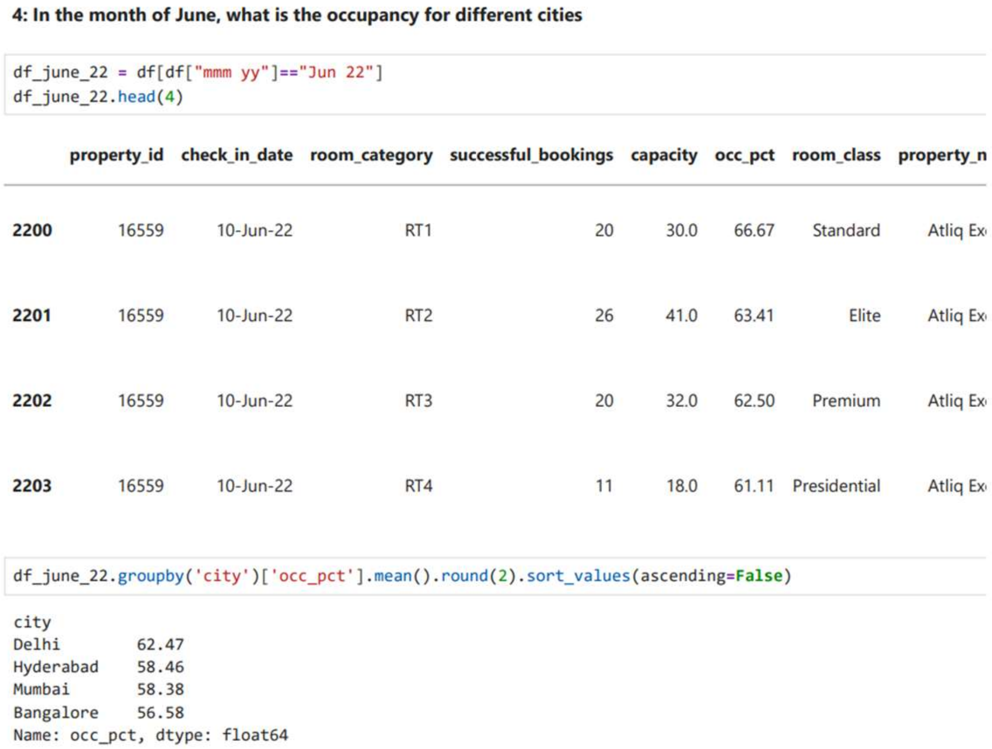
```
df = pd.merge(df, df_date, left_on="check_in_date", right_on="date")
df.head(3)
```

	property_id	check_in_date	room_category	successful_bookings	capacity	occ_pct	room_class	property_nam
0	16559	10-May-22	RT1	18	30.0	60.00	Standard	Atliq Exotic
1	16559	10-May-22	RT2	25	41.0	60.98	Elite	Atliq Exotic
2	16559	10-May-22	RT3	20	32.0	62.50	Premium	Atliq Exotic

Output

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

```
day_type
weekeday    50.90
weekend     72.39
Name: occ_pct, dtype: float64
```



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

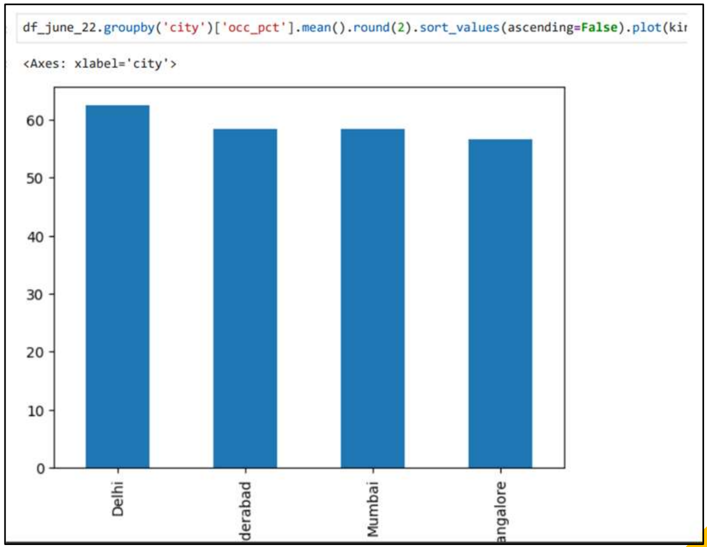
```
df_june_22 = df[df["mmm yy"]=="Jun 22"]
df_june_22.head(4)
```

	property_id	check_in_date	room_category	successful_bookings	capacity	occ_pct	room_class	property_n
2200	16559	10-Jun-22	RT1	20	30.0	66.67	Standard	Atliq Ex
2201	16559	10-Jun-22	RT2	26	41.0	63.41	Elite	Atliq Ex
2202	16559	10-Jun-22	RT3	20	32.0	62.50	Premium	Atliq Ex
2203	16559	10-Jun-22	RT4	11	18.0	61.11	Presidential	Atliq Ex

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

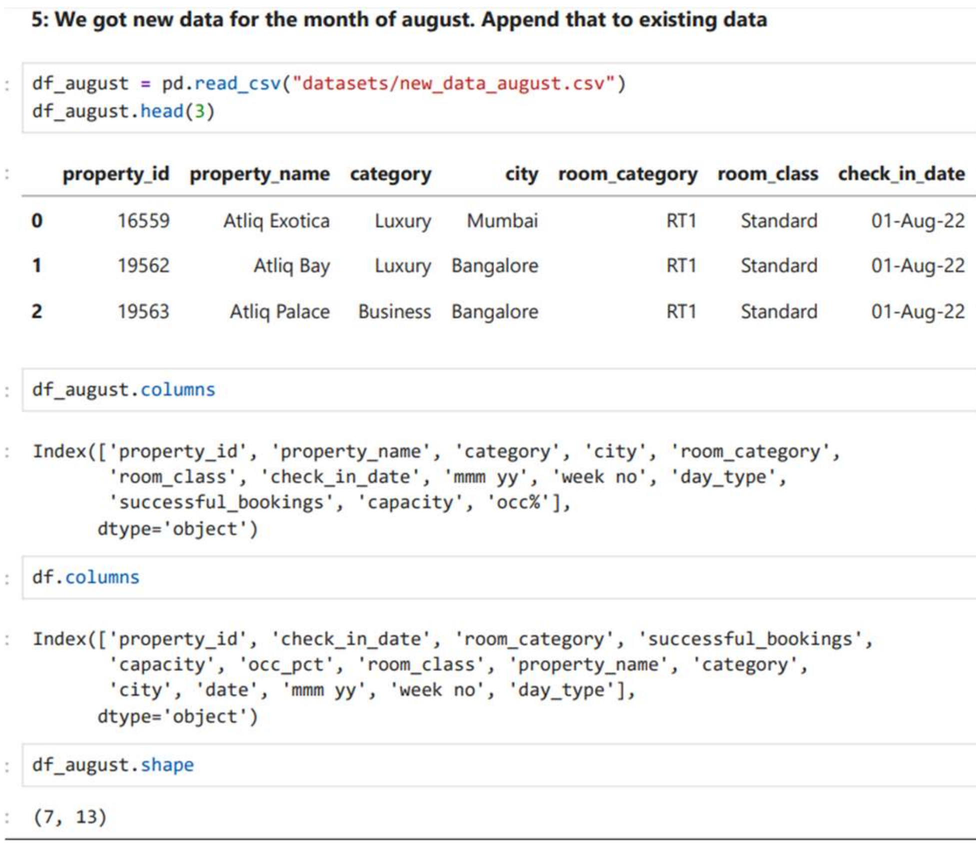
```
city
Delhi        62.47
Hyderabad    58.46
Mumbai       58.38
Bangalore    56.58
Name: occ_pct, dtype: float64
```

Output



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

```
<Axes: xlabel='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	check_in_date
0	16559	Atliq Exotica	Luxury	Mumbai	RT1	Standard	01-Aug-22
1	19562	Atliq Bay	Luxury	Bangalore	RT1	Standard	01-Aug-22
2	19563	Atliq Palace	Business	Bangalore	RT1	Standard	01-Aug-22

```
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')
```

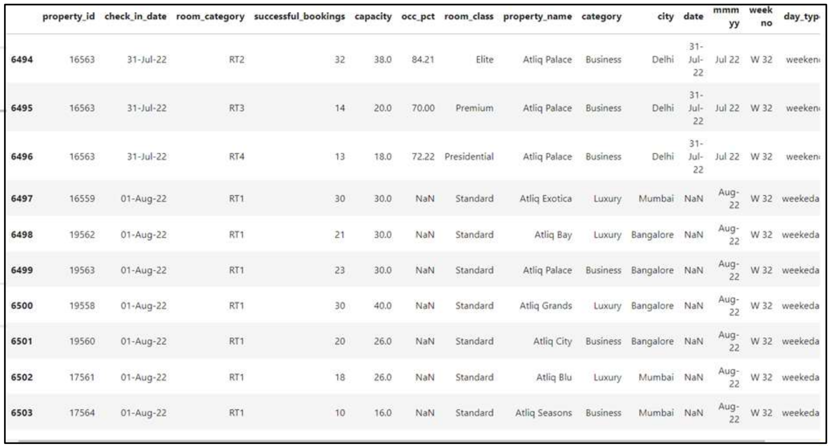
```
df.columns
```

```
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')
```

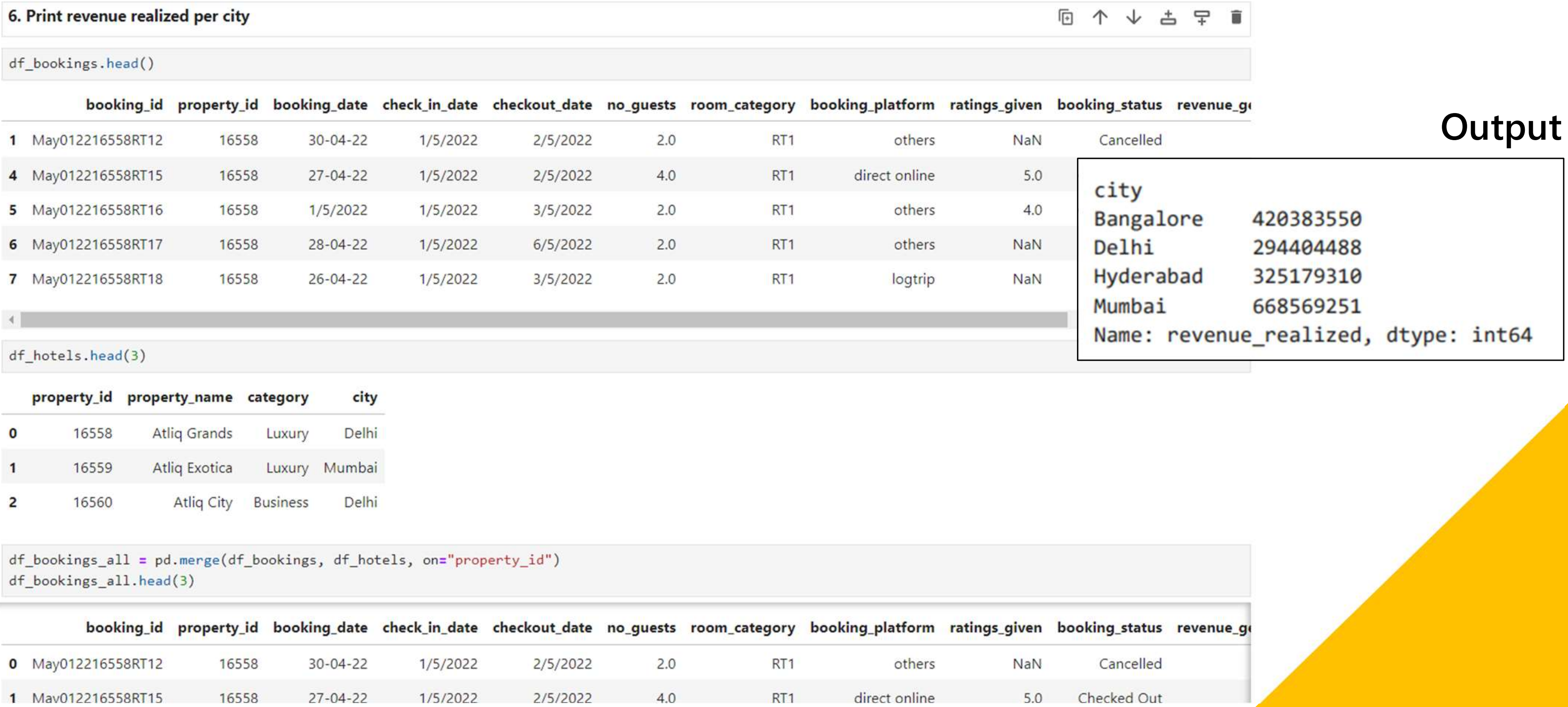
```
df_august.shape
```

```
(7, 13)
```

Output



	property_id	check_in_date	room_category	successful_bookings	capacity	occ_pct	room_class	property_name	category	city	date	mmm yy	week no	day_typ
6494	16563	31-Jul-22	RT2	32	38.0	84.21	Elite	Atliq Palace	Business	Delhi	31-Jul-22	Jul 22	W 32	weeken
6495	16563	31-Jul-22	RT3	14	20.0	70.00	Premium	Atliq Palace	Business	Delhi	31-Jul-22	Jul 22	W 32	weeken
6496	16563	31-Jul-22	RT4	13	18.0	72.22	Presidential	Atliq Palace	Business	Delhi	31-Jul-22	Jul 22	W 32	weeken
6497	16559	01-Aug-22	RT1	30	30.0	NaN	Standard	Atliq Exotica	Luxury	Mumbai	NaN	Aug-22	W 32	weekeda
6498	19562	01-Aug-22	RT1	21	30.0	NaN	Standard	Atliq Bay	Luxury	Bangalore	NaN	Aug-22	W 32	weekeda
6499	19563	01-Aug-22	RT1	23	30.0	NaN	Standard	Atliq Palace	Business	Bangalore	NaN	Aug-22	W 32	weekeda
6500	19558	01-Aug-22	RT1	30	40.0	NaN	Standard	Atliq Grands	Luxury	Bangalore	NaN	Aug-22	W 32	weekeda
6501	19560	01-Aug-22	RT1	20	26.0	NaN	Standard	Atliq City	Business	Bangalore	NaN	Aug-22	W 32	weekeda
6502	17561	01-Aug-22	RT1	18	26.0	NaN	Standard	Atliq Blu	Luxury	Mumbai	NaN	Aug-22	W 32	weekeda
6503	17564	01-Aug-22	RT1	10	16.0	NaN	Standard	Atliq Seasons	Business	Mumbai	NaN	Aug-22	W 32	weekeda



6. Print revenue realized per city

```
df_bookings.head()
```

	booking_id	property_id	booking_date	check_in_date	checkout_date	no_guests	room_category	booking_platform	ratings_given	booking_status	revenue_g
1	May012216558RT12	16558	30-04-22	1/5/2022	2/5/2022	2.0	RT1	others	NaN	Cancelled	
4	May012216558RT15	16558	27-04-22	1/5/2022	2/5/2022	4.0	RT1	direct online	5.0		
5	May012216558RT16	16558	1/5/2022	1/5/2022	3/5/2022	2.0	RT1	others	4.0		
6	May012216558RT17	16558	28-04-22	1/5/2022	6/5/2022	2.0	RT1	others	NaN		
7	May012216558RT18	16558	26-04-22	1/5/2022	3/5/2022	2.0	RT1	logtrip	NaN		

```
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)
```

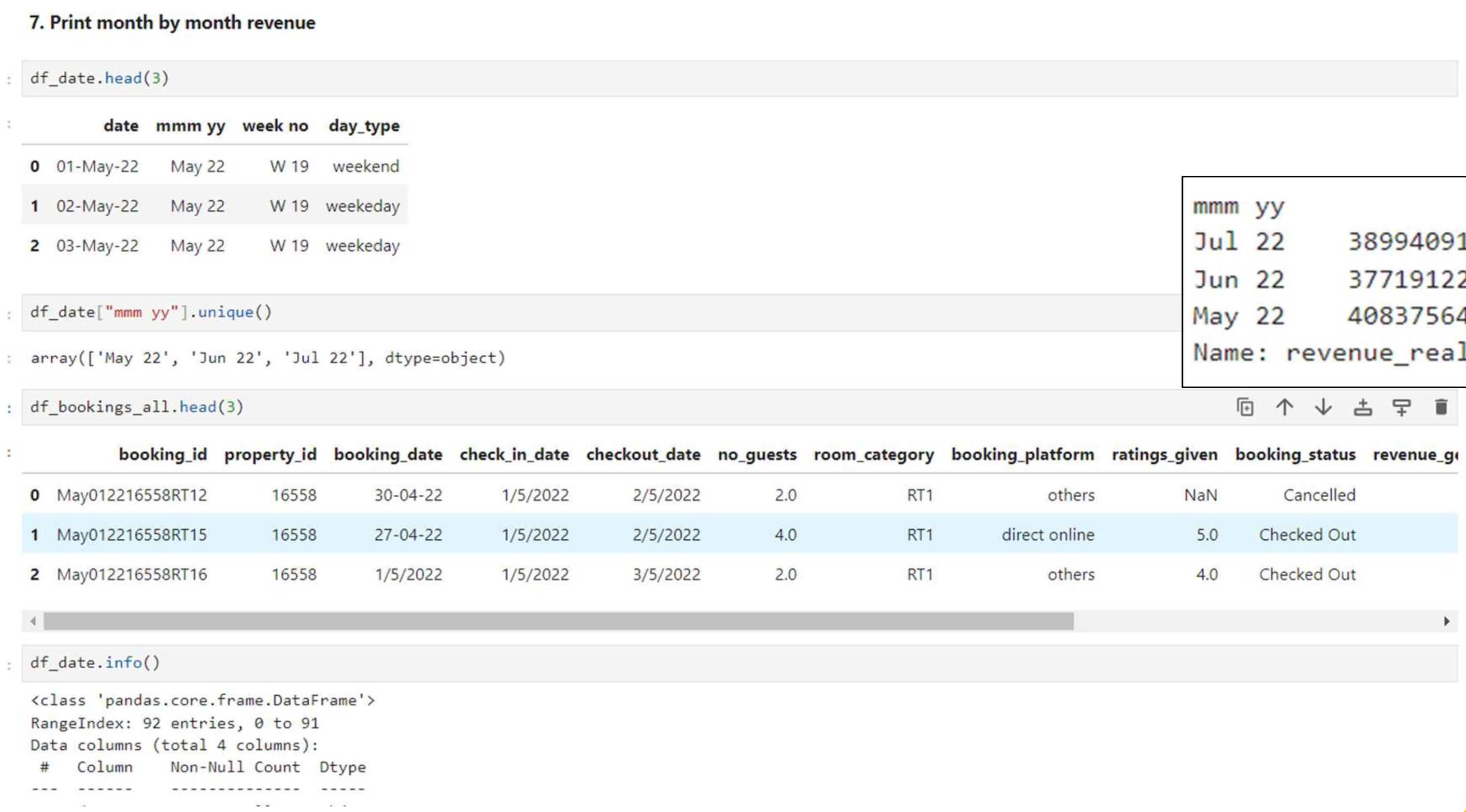
	booking_id	property_id	booking_date	check_in_date	checkout_date	no_guests	room_category	booking_platform	ratings_given	booking_status	revenue_g
0	May012216558RT12	16558	30-04-22	1/5/2022	2/5/2022	2.0	RT1	others	NaN	Cancelled	
1	May012216558RT15	16558	27-04-22	1/5/2022	2/5/2022	4.0	RT1	direct online	5.0	Checked Out	

Output

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

Output

```
mmm yy
Jul 22     389940912
Jun 22     377191229
May 22     408375641
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	no_guests	room_category	booking_platform	ratings_given	booking_status	revenue_g
0	May012216558RT12	16558	30-04-22	1/5/2022	2/5/2022	2.0	RT1	others	NaN	Cancelled	
1	May012216558RT15	16558	27-04-22	1/5/2022	2/5/2022	4.0	RT1	direct online	5.0	Checked Out	
2	May012216558RT16	16558	1/5/2022	1/5/2022	3/5/2022	2.0	RT1	others	4.0	Checked Out	

```
df_date.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 92 entries, 0 to 91
Data columns (total 4 columns):
 #   Column    Non-Null Count  Dtype
---  ------    --------------  -----
```