# ASSIGNMENT 3

House Price India

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Assignment - 3

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
[3] df=pd.read_csv('/content/House Price India.csv')
```

```
[4] df.head()
```

| | id | Date | number of bedrooms | number of bathrooms | living area | lot area | number of floors | waterfront present | number of views | condition of the house | ... | Built Year | Renovation Year | Postal Code | Lattitude | Longitude | living_ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 6762810145 | 42491 | 5 | 2.50 | 3650 | 9050 | 2.0 | 0 | 4 | 5 | ... | 1921 | 0 | 122003 | 52.8645 | -114.557 | |
| 1 | 6762810635 | 42491 | 4 | 2.50 | 2920 | 4000 | 1.5 | 0 | 0 | 5 | ... | 1909 | 0 | 122004 | 52.8878 | -114.470 | |
| 2 | 6762810998 | 42491 | 5 | 2.75 | 2910 | 9480 | 1.5 | 0 | 0 | 3 | ... | 1939 | 0 | 122004 | 52.8852 | -114.468 | |
| 3 | 6762812605 | 42491 | 4 | 2.50 | 3310 | 42998 | 2.0 | 0 | 0 | 3 | ... | 2001 | 0 | 122005 | 52.9532 | -114.321 | |
| 4 | 6762812919 | 42491 | 3 | 2.00 | 2710 | 4500 | 1.5 | 0 | 0 | 4 | ... | 1929 | 0 | 122006 | 52.9047 | -114.485 | |

5 rows × 23 columns

```
df.shape
```

```
(14620,23)
```

```
(14620, 23)
```

Univariate Analysis

```
[7] df_price = df.loc[df['Price']>=3000000]
    df_year = df.loc[df['Built Year']>1990]
    df_ryear = df.loc[df['Renovation Year']>2000]
```

```
[8] df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 14620 entries, 0 to 14619
Data columns (total 23 columns):
 #   Column                                Non-Null Count  Dtype
---  ------                                --------------  -----
 0   id                                    14620 non-null  int64
 1   Date                                  14620 non-null  int64
 2   number of bedrooms                    14620 non-null  int64
 3   number of bathrooms                   14620 non-null  float64
 4   living area                           14620 non-null  int64
 5   lot area                              14620 non-null  int64
 6   number of floors                      14620 non-null  float64
 7   waterfront present                    14620 non-null  int64
 8   number of views                       14620 non-null  int64
 9   condition of the house                14620 non-null  int64
 10  grade of the house                    14620 non-null  int64
 11  Area of the house(excluding basement) 14620 non-null  int64
```

```
[8] df.info()
```

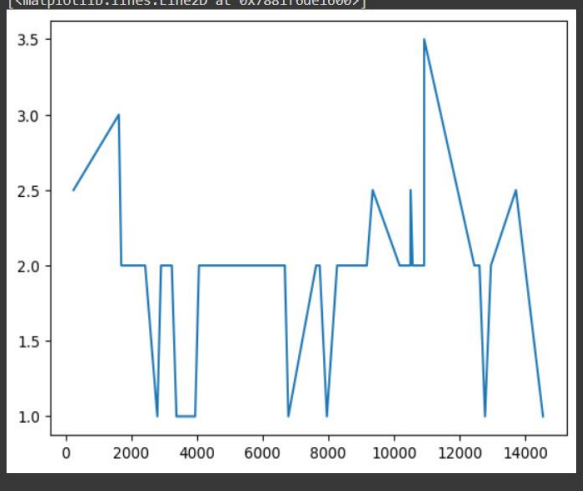
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 14620 entries, 0 to 14619
Data columns (total 23 columns):
 #   Column                                Non-Null Count  Dtype
---  ------                                --------------  -----
 0   id                                    14620 non-null  int64
 1   Date                                  14620 non-null  int64
 2   number of bedrooms                    14620 non-null  int64
 3   number of bathrooms                   14620 non-null  float64
 4   living area                           14620 non-null  int64
 5   lot area                              14620 non-null  int64
 6   number of floors                      14620 non-null  float64
 7   waterfront present                    14620 non-null  int64
 8   number of views                       14620 non-null  int64
 9   condition of the house                14620 non-null  int64
 10  grade of the house                    14620 non-null  int64
 11  Area of the house(excluding basement) 14620 non-null  int64
 12  Area of the basement                  14620 non-null  int64
 13  Built Year                            14620 non-null  int64
 14  Renovation Year                       14620 non-null  int64
 15  Postal Code                           14620 non-null  int64
 16  Lattitude                             14620 non-null  float64
 17  Longitude                             14620 non-null  float64
 18  living_area_renov                     14620 non-null  int64
 19  lot_area_renov                        14620 non-null  int64
 20  Number of schools nearby              14620 non-null  int64
 21  Distance from the airport             14620 non-null  int64
 22  Price                                 14620 non-null  int64
dtypes: float64(4), int64(19)
memory usage: 2.6 MB
```

```
[9] df_price
```

| | id | Date | number of bedrooms | number of bathrooms | living area | lot area | number of floors | waterfront present | number of views | condition of the house | ... | Built Year | Renovation Year | Postal Code | Lattitude | Longitude | li |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **243** | 6762810052 | 42496 | 7 | 4.50 | 6210 | 8856 | 2.5 | 0 | 2 | 5 | ... | 1910 | 0 | 122061 | 52.8607 | -114.544 | |
| **1622** | 6762810059 | 42518 | 6 | 4.25 | 6980 | 15682 | 3.0 | 0 | 4 | 4 | ... | 1999 | 0 | 122057 | 52.7852 | -114.421 | |
| **1697** | 6762810035 | 42519 | 4 | 3.50 | 5550 | 28078 | 2.0 | 0 | 2 | 4 | ... | 2000 | 0 | 122071 | 52.8695 | -114.424 | |
| **2424** | 6762810021 | 42531 | 5 | 4.50 | 10040 | 37325 | 2.0 | 1 | 2 | 3 | ... | 1940 | 2001 | 122048 | 52.8800 | -114.404 | |
| **2794** | 6762810027 | 42537 | 5 | 6.75 | 9640 | 13068 | 1.0 | 1 | 4 | 3 | ... | 1983 | 2009 | 122057 | 52.7870 | -114.400 | |
| **2907** | 6762810029 | 42538 | 4 | 3.00 | 6430 | 27517 | 2.0 | 0 | 0 | 3 | ... | 2001 | 0 | 122048 | 52.8508 | -114.409 | |
| **2908** | 6762810065 | 42538 | 4 | 4.25 | 4850 | 12445 | 2.0 | 1 | 4 | 5 | ... | 1989 | 0 | 122033 | 52.9311 | -114.434 | |
| **3234** | 6762810043 | 42543 | 3 | 4.50 | 5230 | 17826 | 2.0 | 1 | 4 | 3 | ... | 2005 | 0 | 122057 | 52.7648 | -114.433 | |
| **3376** | 6762810062 | 42544 | 4 | 5.00 | 4550 | 18641 | 1.0 | 1 | 4 | 3 | ... | 2002 | 0 | 122019 | 52.8353 | -114.267 | |
| **3946** | 6762810033 | 42551 | 5 | 5.50 | 7050 | 42840 | 1.0 | 0 | 2 | 4 | ... | 1978 | 0 | 122048 | 52.8529 | -114.410 | |
| **4061** | 6762810047 | 42552 | 5 | 6.25 | 8020 | 21738 | 2.0 | 0 | 0 | 3 | ... | 2001 | 0 | 122027 | 52.7975 | -114.379 | |
| **5887** | 6762810060 | 42579 | 5 | 5.25 | 5090 | 23669 | 2.0 | 0 | 0 | 3 | ... | 2006 | 0 | 122048 | 52.8597 | -114.406 | |
| **6244** | 6762810023 | 42585 | 5 | 5.75 | 9200 | 35069 | 2.0 | 0 | 0 | 3 | ... | 2001 | 0 | 122071 | 52.8589 | -114.423 | |
| **6674** | 6762810066 | 42592 | 3 | 3.50 | 4410 | 10756 | 2.0 | 1 | 4 | 3 | ... | 2014 | 0 | 122053 | 52.7583 | -114.395 | |
| **6781** | 6762810053 | 42593 | 4 | 3.25 | 7000 | 28206 | 1.0 | 1 | 4 | 4 | ... | 1991 | 0 | 122020 | 52.8228 | -114.276 | |

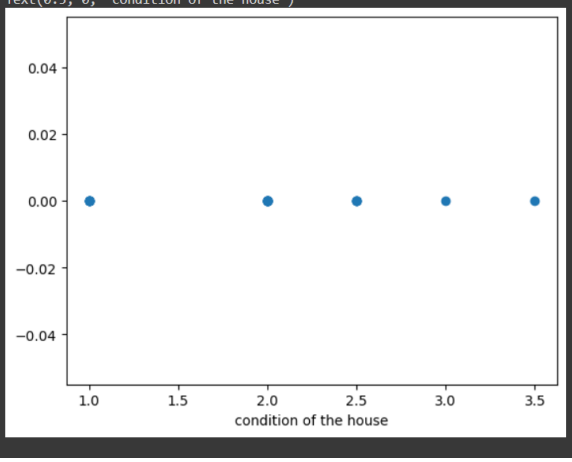
```
[10] plt.plot(df_price['number of floors'])
```

```
[<matplotlib.lines.Line2D at 0x7881f6de1600>]
```



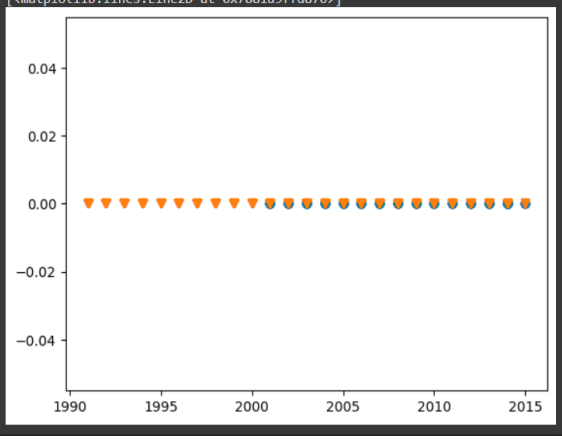

```
plt.plot(df_price['number of floors'],np.zeros_like(df_price['number of floors']),'o')
plt.xlabel('condition of the house')
```

```
Text(0.5, 0, 'condition of the house')
```

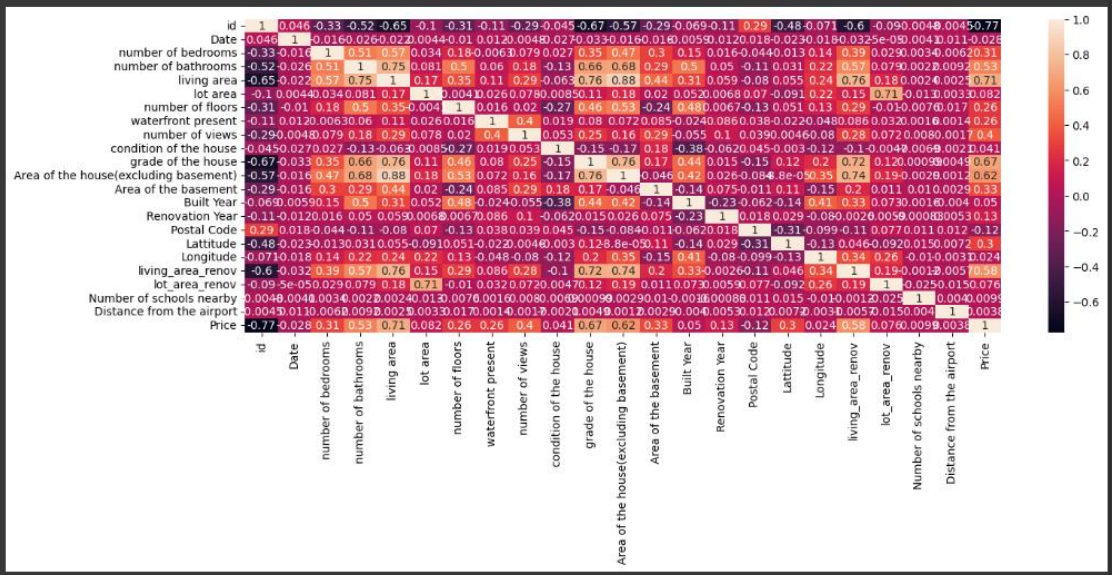



```
plt.plot(df_ryear['Renovation Year'],np.zeros_like(df_ryear['Renovation Year']),'o')
plt.plot(df_year['Built Year'],np.zeros_like(df_year['Built Year']),'v')
```

```
[<matplotlib.lines.Line2D at 0x7881d9ffd870>]
```

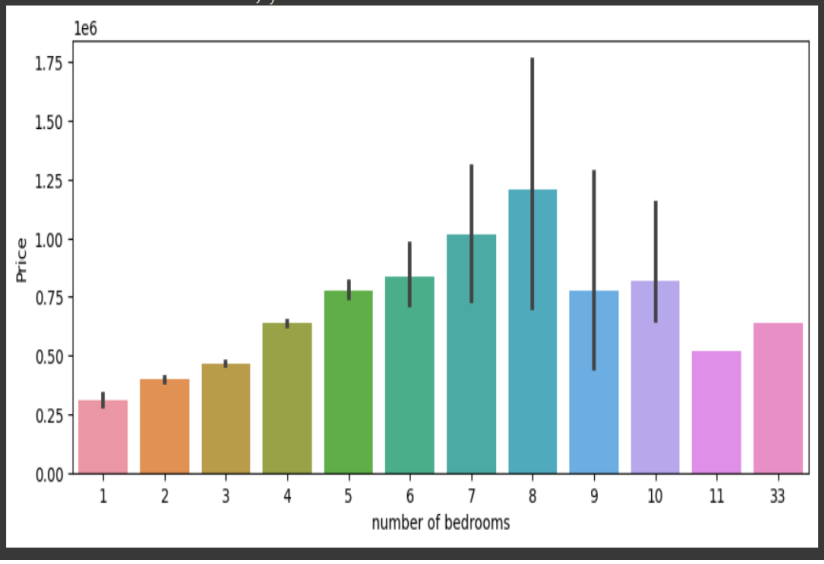


```
plt.figure(figsize=(15,5))
sns.heatmap(df.corr(),annot=True)
plt.show()
```




```
[47] plt.figure(figsize=(10,4))
     sns
     sns.barplot(data=df,x='number of bedrooms',y='Price')
```

```
<Axes: xlabel='number of bedrooms', ylabel='Price'>
```



```
df.describe()
```

| | id | Date | number of bedrooms | number of bathrooms | living area | lot area | number of floors | waterfront present | number of views | condition of the house | ... | Built Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| count | 1.462000e+04 | 14620.000000 | 14620.000000 | 14620.000000 | 14620.000000 | 1.462000e+04 | 14620.000000 | 14620.000000 | 14620.000000 | 14620.000000 | ... | 14620.000 |
| mean | 6.762821e+09 | 42604.538646 | 3.379343 | 2.129583 | 2098.262996 | 1.509328e+04 | 1.502360 | 0.007661 | 0.233105 | 3.430506 | ... | 1970.926 |
| std | 6.237575e+03 | 67.347991 | 0.938719 | 0.769934 | 928.275721 | 3.791962e+04 | 0.540239 | 0.087193 | 0.766259 | 0.664151 | ... | 29.493 |
| min | 6.762810e+09 | 42491.000000 | 1.000000 | 0.500000 | 370.000000 | 5.200000e+02 | 1.000000 | 0.000000 | 0.000000 | 1.000000 | ... | 1900.000 |
| 25% | 6.762815e+09 | 42546.000000 | 3.000000 | 1.750000 | 1440.000000 | 5.010750e+03 | 1.000000 | 0.000000 | 0.000000 | 3.000000 | ... | 1951.000 |
| 50% | 6.762821e+09 | 42600.000000 | 3.000000 | 2.250000 | 1930.000000 | 7.620000e+03 | 1.500000 | 0.000000 | 0.000000 | 3.000000 | ... | 1975.000 |
| 75% | 6.762826e+09 | 42662.000000 | 4.000000 | 2.500000 | 2570.000000 | 1.080000e+04 | 2.000000 | 0.000000 | 0.000000 | 4.000000 | ... | 1997.000 |
| max | 6.762832e+09 | 42734.000000 | 33.000000 | 8.000000 | 13540.000000 | 1.074218e+06 | 3.500000 | 1.000000 | 4.000000 | 5.000000 | ... | 2015.000 |

8 rows × 23 columns

```
[34] df['living area'].value_counts()
```

```
1400    93
1010    92
1320    91
1660    90
1820    88
        ..
2448     1
2846     1
5320     1
5930     1
1556     1
Name: living area, Length: 865, dtype: int64
```

```
[35] df['grade of the house'].value_counts().to_frame()
```

| | grade of the house |
|---|---|
| 7 | 6011 |
| 8 | 4137 |
| 9 | 1828 |
| 6 | 1324 |
| 10 | 804 |
| 11 | 280 |
| 5 | 154 |
| 12 | 55 |
| 4 | 17 |
| 13 | 10 |

```
[36] df['living area'].value_counts().to_frame()
```

| | living area |
|---|---|
| 1400 | 93 |
| 1010 | 92 |
| 1320 | 91 |
| 1660 | 90 |
| 1820 | 88 |
| ... | ... |
| 2448 | 1 |
| 2846 | 1 |
| 5320 | 1 |
| 5930 | 1 |
| 1556 | 1 |

865 rows × 1 columns

```
[38] new_count = df['number of floors'].value_counts().to_frame()
     new_count.rename(columns={'number of floors' : 'new count'},inplace=True)
     new_count
```

| | new count |
|---|---|
| 1.0 | 7103 |
| 2.0 | 5666 |
| 1.5 | 1311 |
| 3.0 | 418 |
| 2.5 | 118 |
| 3.5 | 4 |

```
df.isnull().sum()
```

```
id                                    0
Date                                  0
number of bedrooms                    0
number of bathrooms                   0
living area                           0
lot area                              0
number of floors                      0
waterfront present                    0
number of views                       0
condition of the house                0
grade of the house                    0
Area of the house(excluding basement)    0
Area of the basement                  0
Built Year                            0
Renovation Year                       0
Postal Code                           0
Lattitude                             0
Longitude                             0
living_area_renov                     0
lot_area_renov                        0
Number of schools nearby              0
Distance from the airport             0
Price                                 0
dtype: int64
```