NAME : M.SAI KRISHNA

```
import numpy as np
import pandas as pd
import seaborn as sns
```

Load dataset

```
df=pd.read_csv("/content/House Price India.csv")
```

```
df.head()
```

	id	Date	number of bedrooms	number of bathrooms	living area	lot area	number of floors	waterfront present	number of views	co
0	6762810145	42491	5	2.50	3650	9050	2.0	0	4	
1	6762810635	42491	4	2.50	2920	4000	1.5	0	0	
2	6762810998	42491	5	2.75	2910	9480	1.5	0	0	
3	6762812605	42491	4	2.50	3310	42998	2.0	0	0	
4	6762812919	42491	3	2.00	2710	4500	1.5	0	0	

5 rows × 23 columns

```
df.shape
```

```
(14620, 23)
```

```
df["Built Year"].isnull()
```

```
0        False
1        False
2        False
3        False
4        False
         ...
14615    False
14616    False
14617    False
14618    False
14619    False
Name: Built Year, Length: 14620, dtype: bool
```

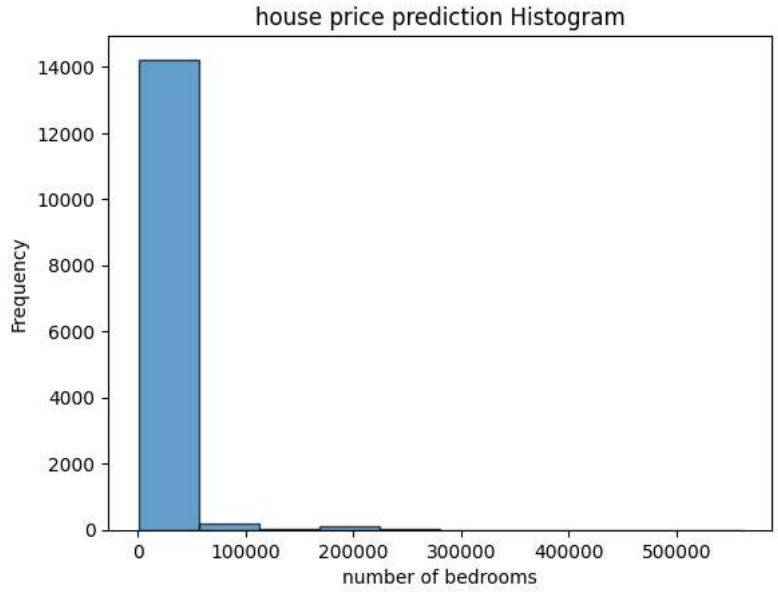
```
df.isnull().sum()
```

```
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
```

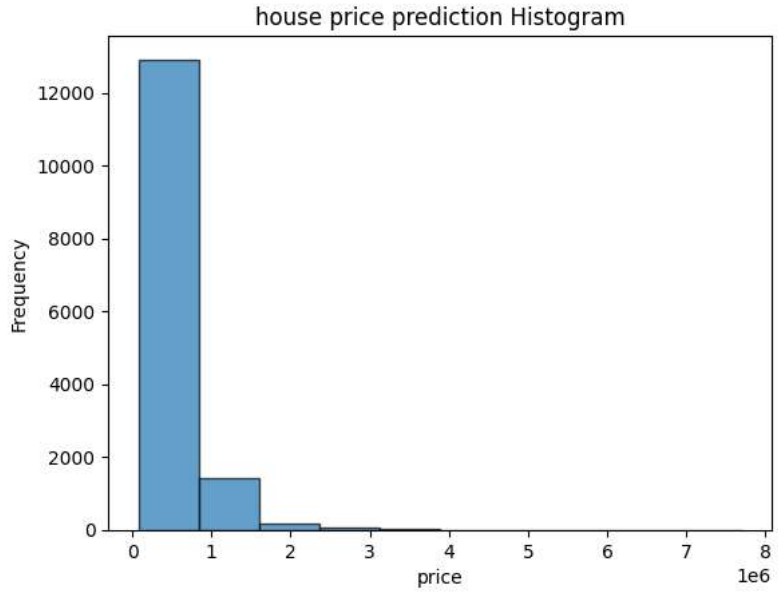
```
Distance from the airport               0
Price                                   0
dtype: int64
```

UNIVARIATE ANALYSIS

```
import matplotlib.pyplot as plt
import numpy as np
from matplotlib import rcParams
import seaborn as sns

plt.hist(df["lot_area_renov"], bins=10, edgecolor='k', alpha=0.7)
plt.xlabel('number of bedrooms')
plt.ylabel('Frequency')
plt.title('house price prediction Histogram')

plt.show()
```




```
plt.hist(df["Price"], bins=10, edgecolor='k', alpha=0.7)
plt.xlabel('price')
plt.ylabel('Frequency')
plt.title('house price prediction Histogram')

plt.show()
```



```
df['Price'].describe()
```

```
count    1.462000e+04
mean     5.389322e+05
std      3.675324e+05
min      7.800000e+04
25%      3.200000e+05
50%      4.500000e+05
75%      6.450000e+05
max      7.700000e+06
Name: Price, dtype: float64
```

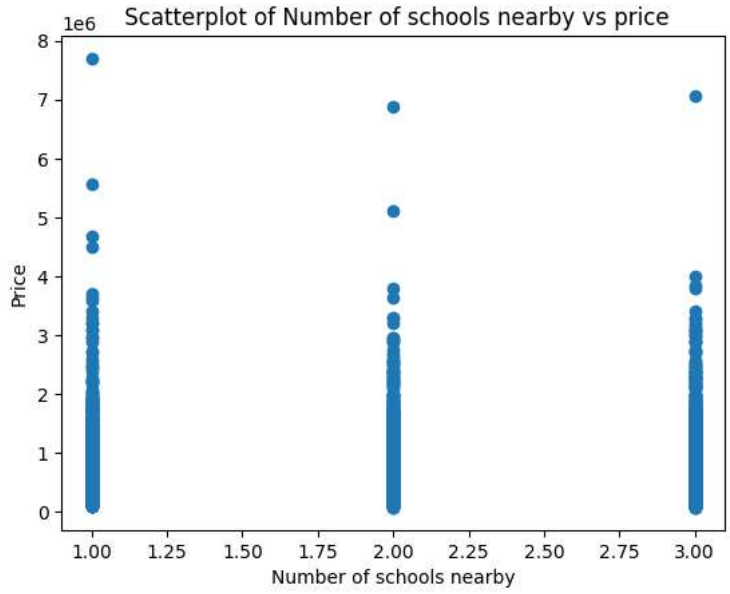
```
df['lot_area_renov'].describe()
```

```
count     14620.000000
mean      12753.500068
std       26058.414467
min         651.000000
25%        5097.750000
50%        7620.000000
75%       10125.000000
max      560617.000000
Name: lot_area_renov, dtype: float64
```

Bi variate analysis

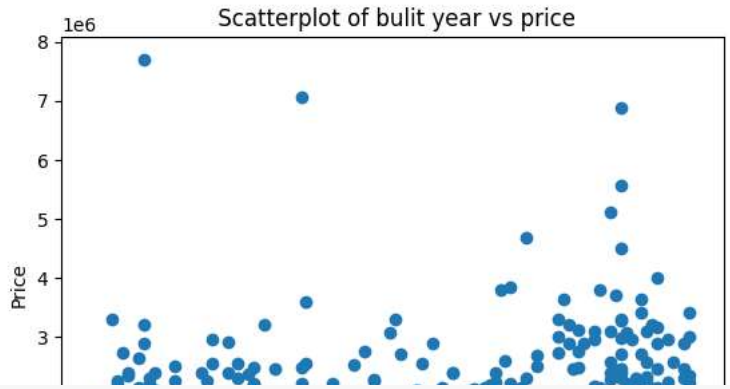
Scatter plot

```
plt.scatter(x=df["Number of schools nearby"],y=df["Price"])
plt.xlabel('Number of schools nearby')
plt.ylabel('Price')
plt.title(' Scatterplot of Number of schools nearby vs price')

plt.show()
```

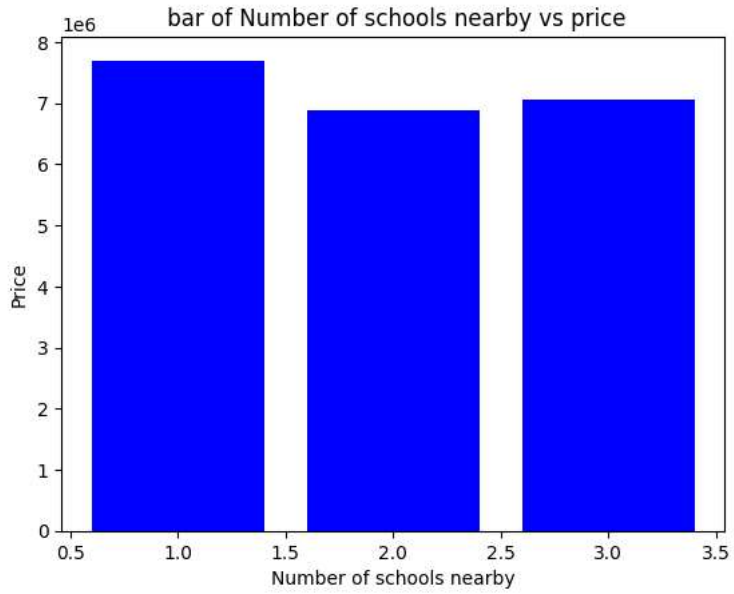



```
plt.scatter(x=df["Built Year"],y=df["Price"])
plt.xlabel('    Built Year')
plt.ylabel('Price')
plt.title(' Scatterplot of bulit year vs price')

plt.show()
```

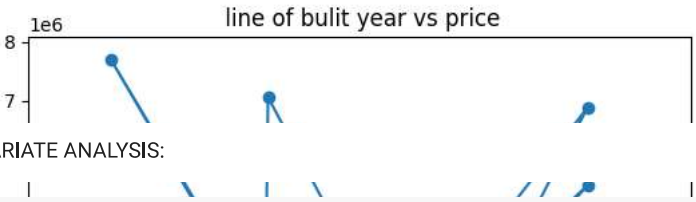
```
/usr/local/lib/python3.10/dist-packages/IPython/core/pylabtools.py:151: UserWarning: Glyph 9 (  ) missing from cu
  fig.canvas.print_figure(bytes_io, **kw)
```




```
plt.bar(df["Number of schools nearby"],df["Price"],color="blue")
plt.xlabel('Number of schools nearby')
plt.ylabel('Price')
plt.title(' bar of Number of schools nearby vs price')

plt.show()
```



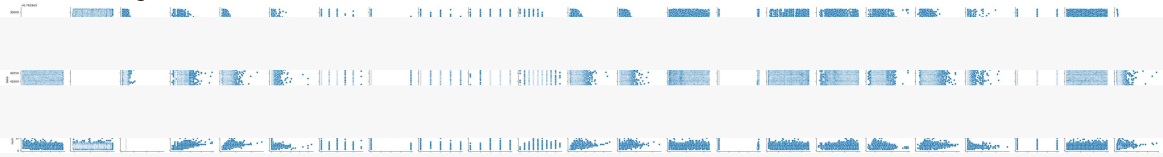

```
plt.plot(df["Built Year"],df["Price"],marker='o', linestyle='-')
plt.xlabel('    Built Year')
plt.ylabel('Price')
plt.title(' line of bulit year vs price')

plt.show()
```



MULTIVARIATE ANALYSIS:

```
sns.pairplot(df)
```

```
<seaborn.axisgrid.PairGrid at 0x77fe43c47880>
```



```
df.describe()
```

	id	Date	number of bedrooms	number of bathrooms	living area	lot area	number of floors	waterfron presen
count	1.462000e+04	14620.000000	14620.000000	14620.000000	14620.000000	1.462000e+04	14620.000000	14620.00000
mean	6.762821e+09	42604.538646	3.379343	2.129583	2098.262996	1.509328e+04	1.502360	0.00766
std	6.237575e+03	67.347991	0.938719	0.769934	928.275721	3.791962e+04	0.540239	0.08719
min	6.762810e+09	42491.000000	1.000000	0.500000	370.000000	5.200000e+02	1.000000	0.00000
25%	6.762815e+09	42546.000000	3.000000	1.750000	1440.000000	5.010750e+03	1.000000	0.00000
50%	6.762821e+09	42600.000000	3.000000	2.250000	1930.000000	7.620000e+03	1.500000	0.00000
75%	6.762826e+09	42662.000000	4.000000	2.500000	2570.000000	1.080000e+04	2.000000	0.00000
max	6.762832e+09	42734.000000	33.000000	8.000000	13540.000000	1.074218e+06	3.500000	1.00000

8 rows × 23 columns

HANDLING MISSING VALUES:

```
df.isnull()
```

	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	Renovati Ye
0	False	False	False	False	False	False	False	False	False	False	...	False	Fa
1	False	False	False	False	False	False	False	False	False	False	...	False	Fa
2	False	False	False	False	False	False	False	False	False	False	...	False	Fa
3	False	False	False	False	False	False	False	False	False	False	...	False	Fa
4	False	False	False	False	False	False	False	False	False	False	...	False	Fa
...	...	...	...	...	...	...	...	...	...	...	...	...	
14615	False	False	False	False	False	False	False	False	False	False	...	False	Fa
14616	False	False	False	False	False	False	False	False	False	False	...	False	Fa
14617	False	False	False	False	False	False	False	False	False	False	...	False	Fa
14618	False	False	False	False	False	False	False	False	False	False	...	False	Fa
14619	False	False	False	False	False	False	False	False	False	False	...	False	Fa

14620 rows × 23 columns

```
df.dropna()
```

	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	R
0	6762810145	42491	5	2.50	3650	9050	2.0	0	4	5	...	1921	
1	6762810635	42491	4	2.50	2920	4000	1.5	0	0	5	...	1909	
2	6762810998	42491	5	2.75	2910	9480	1.5	0	0	3	...	1939	
3	6762812605	42491	4	2.50	3310	42998	2.0	0	0	3	...	2001	
4	6762812919	42491	3	2.00	2710	4500	1.5	0	0	4	...	1929	

```
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
```

```
df['Built Year'].isnull()
```

```
0        False
1        False
2        False
3        False
4        False
         ...
14615    False
14616    False
14617    False
14618    False
14619    False
Name: Built Year, Length: 14620, dtype: bool
```