

None

yasin porrashno project(price house)

import libraries

```
In [30]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import csv
%matplotlib inline
```

import dataset

```
In [31]: df=pd.read_csv("C:\\Users\\yasin porrashno\\Downloads\\dataset_pricehouse.csv")
df
```

```
Out[31]:
```

	Area	Room	Parking	Warehouse	Elevator	Address	Price	Price(USD)
0	63	1	True	True	True	Shahran	1850000000	61666.67
1	60	1	True	True	True	Shahran	1850000000	61666.67
2	79	2	True	True	True	Pardis	550000000	18333.33
3	95	2	True	True	True	Shahrake Qods	902500000	30083.33
4	123	2	True	True	True	Shahrake Gharb	7000000000	233333.33
...
3470	86	2	True	True	True	Southern Janatabad	3500000000	116666.67
3471	83	2	True	True	True	Niavaran	6800000000	226666.67
3472	75	2	False	False	False	Parand	365000000	12166.67
3473	105	2	True	True	True	Dorous	5600000000	186666.67
3474	82	2	False	True	True	Parand	360000000	12000.00

3475 rows × 8 columns

data organization

```
In [32]: df.isnull().sum()
```

```
Out[32]: Area          0
Room            0
Parking         0
Warehouse       0
Elevator        0
Address         23
Price           0
Price(USD)      0
dtype: int64
```

```
In [76]: df=df.dropna(subset=['Address'])
df=df.replace({True : 1,False:0})
df
```

```
Out[76]:
```

	Area	Room	Parking	Warehouse	Elevator	Address	Price	Price(USD)
0	63	1	1	1	1	122	1850000000	61666.67
1	60	1	1	1	1	122	1850000000	61666.67
2	79	2	1	1	1	89	550000000	18333.33
3	95	2	1	1	1	118	902500000	30083.33
4	123	2	1	1	1	116	7000000000	233333.33
...
3467	94	2	1	1	1	78	8450000000	281666.67
3468	113	3	1	1	1	84	3170000000	105666.67
3470	86	2	1	1	1	128	3500000000	116666.67
3471	83	2	1	1	1	78	6800000000	226666.67
3473	105	2	1	1	1	28	5600000000	186666.67

2437 rows × 8 columns

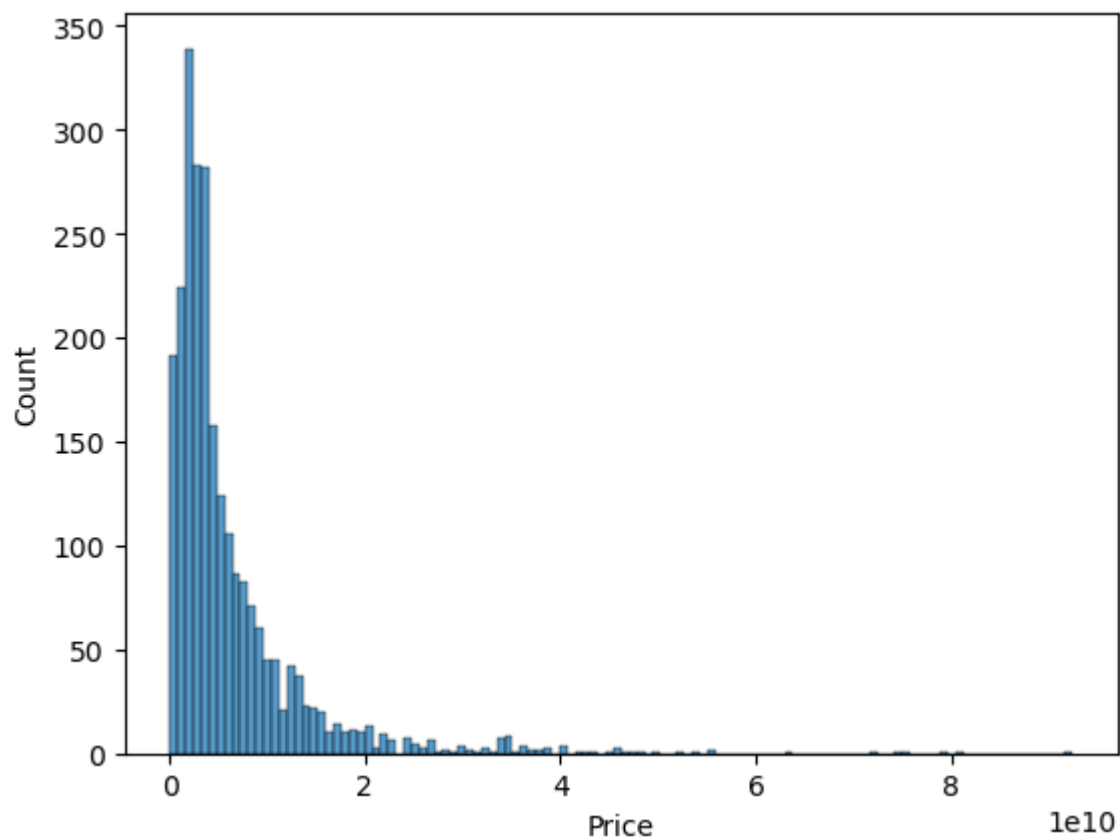
```
In [77]: df.describe()
```

```
Out[77]:
```

	Room	Parking	Warehouse	Elevator	Address	Price	Price(USD)
count	2437.000000	2437.0	2437.0	2437.0	2437.000000	2.437000e+03	2.437000e+03
mean	2.200246	1.0	1.0	1.0	81.408699	6.328872e+09	2.109624e+05
std	0.675723	0.0	0.0	0.0	39.629001	7.992958e+09	2.664319e+05
min	0.000000	1.0	1.0	1.0	0.000000	5.500000e+07	1.833330e+03
25%	2.000000	1.0	1.0	1.0	43.000000	2.139000e+09	7.130000e+04
50%	2.000000	1.0	1.0	1.0	89.000000	3.750000e+09	1.250000e+05
75%	3.000000	1.0	1.0	1.0	113.000000	7.541000e+09	2.513667e+05
max	5.000000	1.0	1.0	1.0	149.000000	9.240000e+10	3.080000e+06

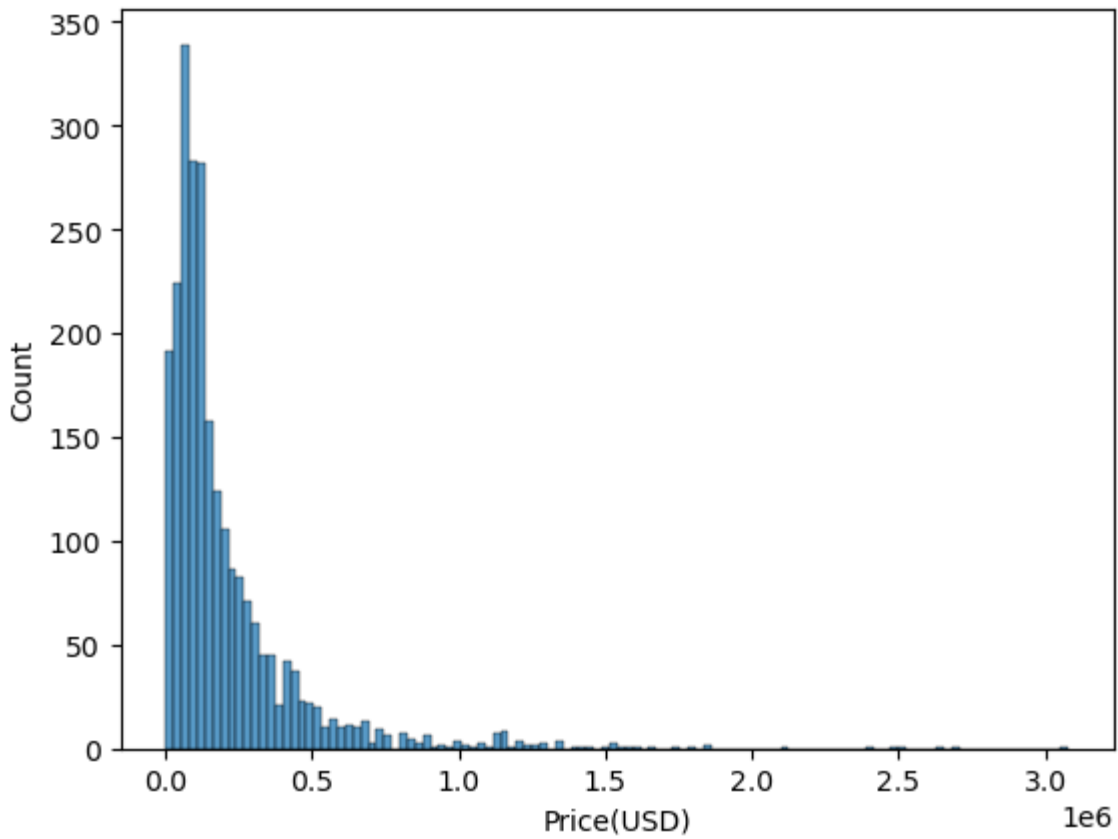
```
In [78]: sns.histplot(df['Price'])
```

Out[78]: <AxesSubplot:xlabel='Price', ylabel='Count'>



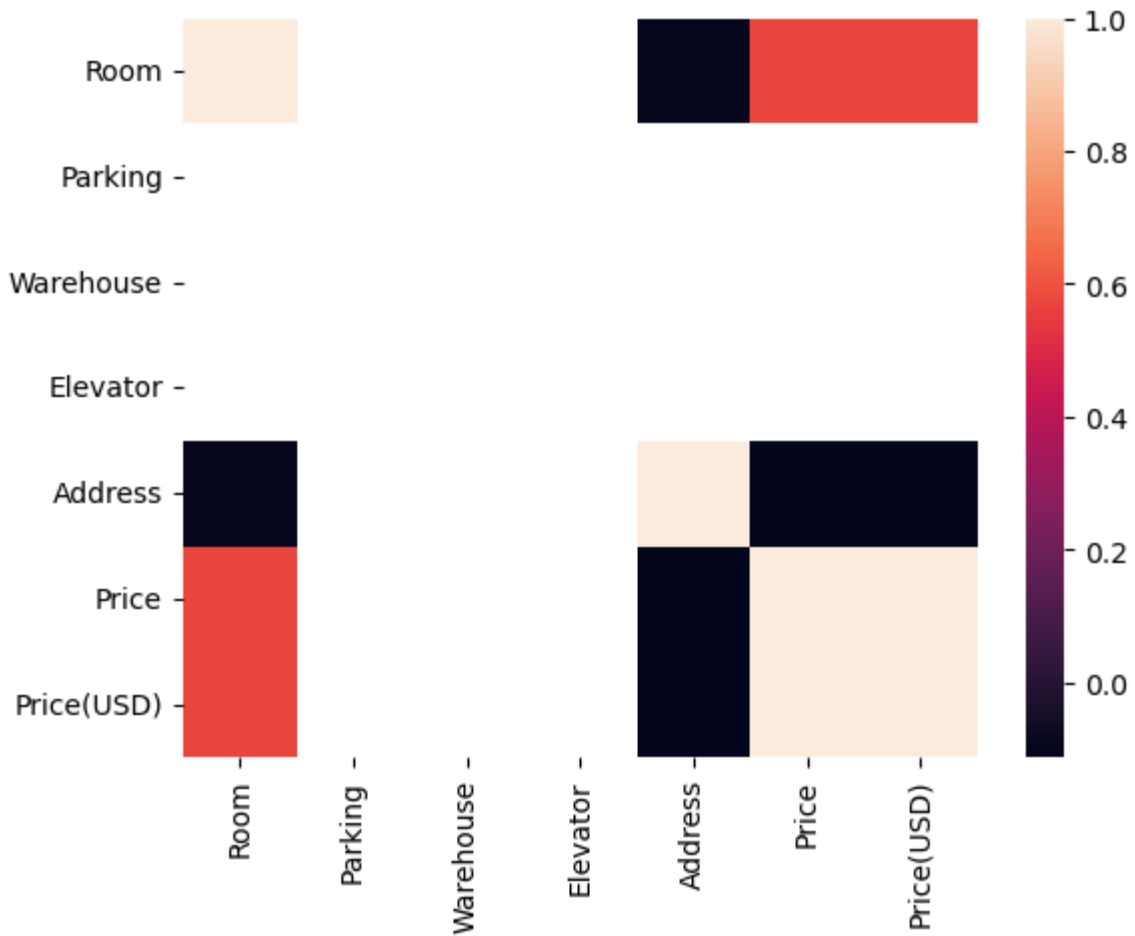
In [79]: `sns.histplot(df['Price(USD)'])`

Out[79]: <AxesSubplot:xlabel='Price(USD)', ylabel='Count'>



```
In [80]: sns.heatmap(df.corr())
```

```
Out[80]: <AxesSubplot:>
```



```
In [81]: from sklearn.preprocessing import LabelEncoder, PolynomialFeatures
```

```
In [82]: le = LabelEncoder()
df["Address"] = le.fit_transform(df["Address"])
df
```

Out[82]:

	Area	Room	Parking	Warehouse	Elevator	Address	Price	Price(USD)
0	63	1	1	1	1	122	1850000000	61666.67
1	60	1	1	1	1	122	1850000000	61666.67
2	79	2	1	1	1	89	550000000	18333.33
3	95	2	1	1	1	118	902500000	30083.33
4	123	2	1	1	1	116	7000000000	233333.33
...
3467	94	2	1	1	1	78	8450000000	281666.67
3468	113	3	1	1	1	84	3170000000	105666.67
3470	86	2	1	1	1	128	3500000000	116666.67
3471	83	2	1	1	1	78	6800000000	226666.67
3473	105	2	1	1	1	28	5600000000	186666.67

2437 rows × 8 columns

```
In [83]: x=df[['Area','Room','Parking','Warehouse','Elevator','Address']].values
         y=df['Price(USD)']
```

time to train and test of dataset

```
In [84]: from sklearn.model_selection import train_test_split
```

```
In [85]: X_train,X_test,Y_train,Y_test=train_test_split(x,y,test_size=0.3,random_state=0)
```

```
In [86]: from sklearn.linear_model import LinearRegression
```

```
In [87]: lr=LinearRegression()
```

```
In [88]: lr.fit(X_train ,Y_train)
```

Out[88]: LinearRegression()

```
In [89]: Y_prediction =lr.predict(X_test)
         Y_prediction
```

```
Out[89]: array([ 5.75966762e+04,  9.02589847e+04,  1.03389641e+05,  2.04527179e+05,
 5.35451820e+05,  3.22878394e+05,  4.61294297e+04,  8.82359093e+04,
 2.07940790e+05,  2.58935751e+05,  1.61730160e+05,  2.24762419e+05,
-1.27361917e+04,  2.23649728e+05,  2.05904665e+05,  1.81560786e+05,
 3.73229562e+05,  1.34149361e+05,  3.36639794e+05,  7.75909430e+04,
 1.42487124e+05,  4.61856339e+04,  3.49529476e+05,  3.03534204e+05,
 1.78659710e+05,  1.08490483e+05,  2.27044006e+05,  1.63550928e+05,
-5.62412863e+04,  1.08895098e+05,  1.63626466e+05,  6.47205939e+04,
 7.81029951e+04,  2.10740712e+05,  1.24597753e+05,  8.44113995e+04,
 1.44409046e+05,  3.80024402e+05,  4.05596894e+04,  8.64538080e+04,
 3.58634621e+04,  5.15216580e+05,  2.86060074e+04,  3.21018960e+05,
 2.34895334e+05,  7.28947157e+04,  1.95018725e+05,  7.53592003e+03,
 2.04324871e+05,  4.36462333e+05,  1.39105896e+05,  3.54548498e+05,
 5.25389879e+04,  6.49883655e+05,  2.32189798e+05,  1.05677511e+05,
 7.65169180e+04,  3.60617724e+05,  1.48941632e+05,  7.12632054e+04,
 3.46927710e+04,  2.56002292e+05,  5.41299406e+05, -5.75209419e+03,
 8.64538080e+04,  3.03250076e+05,  4.15775103e+04,  1.67022463e+04,
 1.08895098e+05,  1.28504083e+05,  4.36905614e+05,  3.30527414e+05,
 1.23788523e+05,  5.14988656e+05,  5.66110387e+05,  2.24116830e+05,
 5.52314732e+04,  5.88058884e+03,  9.49507243e+04,  2.55251062e+05,
 2.88477138e+05,  2.37992434e+05,  4.52752500e+04,  1.08895098e+05,
 6.78370274e+04,  1.10836353e+05,  3.22473779e+05,  9.02589847e+04,
 1.13610659e+05,  1.17676143e+05,  2.82610220e+05,  1.88034627e+05,
 1.07700235e+06,  1.52361527e+05,  2.64423671e+05,  1.86396834e+05,
 1.23383908e+05,  1.63213069e+03,  4.97307875e+05,  1.13851633e+05,
 3.40103111e+04, -6.03622228e+03, -1.66187012e+04,  2.83343913e+05,
 4.99229797e+05,  4.42893287e+04,  2.23927573e+05,  2.47810632e+05,
 4.09669201e+03,  2.29938799e+05,  1.67394771e+05,  2.86150602e+05,
 2.42139738e+05,  3.40464304e+05, -1.15866294e+04,  1.08895098e+05,
 1.16544118e+05,  2.27246314e+05,  2.03894640e+05,  3.09444277e+05,
 9.76238763e+04,  9.02843947e+05,  5.85170449e+05,  2.10194750e+04,
 2.55319832e+05,  2.32999029e+05,  1.21096038e+05,  3.40464304e+05,
 3.39048151e+05,  5.37721663e+04,  7.45091787e+05,  5.59975491e+04,
 1.29414467e+05,  3.89696497e+05,  1.67394771e+05,  5.43730736e+03,
 2.63007518e+05,  1.74822150e+05,  1.40623202e+05,  4.01420244e+04,
 1.06411204e+05,  1.58493240e+05,  2.43884969e+05,  1.95601681e+04,
 6.69757435e+05,  1.79070608e+05,  5.91139827e+04,  4.48966733e+05,
 7.43540225e+04,  1.78213460e+06,  1.88615933e+05,  4.62362184e+05,
 2.09660404e+05,  1.48252743e+04,  3.00701899e+05,  7.93986608e+04,
 7.79137375e+04,  4.92250187e+05,  1.90606625e+05,  3.38055947e+05,
 2.45060148e+05,  4.61490467e+05,  1.32935516e+05,  7.12955887e+04,
 6.14643402e+04,  2.46353941e+04,  2.39163125e+05,  1.96033222e+04,
 2.74922534e+05,  2.83096656e+05,  2.58935751e+05,  1.31476209e+05,
 2.23927573e+05,  3.36437486e+05,  3.81763349e+05,  4.30498672e+04,
 1.16178170e+05,  3.69437703e+04,  3.96879720e+04,  1.56521881e+05,
 1.48877617e+04,  1.97345261e+05,  2.00278720e+05,  3.37752485e+05,
 9.37993664e+04,  6.34874155e+04,  5.45730838e+05,  1.23990830e+05,
 1.34149361e+05,  1.57077087e+05,  1.21784781e+05,  1.96738339e+05,
 1.04887614e+05, -4.33322708e+04,  1.27897161e+05,  8.59611726e+05,
 3.41191713e+05,  1.81560786e+05,  1.01246079e+05,  1.23788523e+05,
 1.12719608e+05,  2.81902144e+05,  4.21809882e+05,  2.62260775e+05,
 1.27126597e+05,  1.42809919e+05,  9.71299843e+05,  1.70573692e+05,
 2.50016682e+05,  2.08108842e+04,  4.38296150e+05,  1.04950102e+05,
 1.01528679e+04,  1.28523417e+05,  5.34989206e+05,  1.00880130e+05,
 5.14069633e+04,  3.34009796e+05,  1.20248141e+05,  2.27088956e+05,
 2.44737353e+05,  8.25668108e+04,  2.16588298e+05,  1.50964707e+05,
 8.12979261e+03,  1.43335021e+05,  2.58050984e+05,  3.01252617e+05,
 1.81358479e+05,  4.80772850e+02,  2.83096656e+05,  4.80772850e+02,
 1.12719608e+05,  1.12719608e+05,  7.87854550e+04,  3.21341754e+05,
```

1.89412113e+05,	-3.35976883e+04,	2.18288578e+05,	1.12719608e+05,
2.84898090e+05,	2.55623293e+05,	5.71596779e+04,	2.63007518e+05,
2.16467811e+05,	1.39967110e+04,	1.02642898e+05,	2.06449100e+05,
1.54789217e+05,	1.26481008e+05,	1.47019710e+05,	1.96033222e+04,
1.40584536e+05,	-1.86417765e+04,	7.40892277e+04,	7.91275827e+04,
1.08712124e+05,	1.12353660e+05,	9.40834945e+04,	1.21765448e+05,
1.05070589e+05,	1.81560786e+05,	3.80024402e+05,	2.09660404e+05,
2.79272146e+05,	5.72988843e+05,	9.32311103e+04,	5.20138859e+04,
1.28504083e+05,	2.01796027e+05,	1.26177547e+05,	9.09045737e+04,
5.29281441e+05,	5.27499339e+05,	5.15216580e+05,	5.43730736e+03,
1.54789217e+05,	1.09719216e+06,	2.90429164e+05,	4.05596894e+04,
6.34874155e+04,	3.62236184e+05,	2.38416382e+05,	1.81560786e+05,
2.16259220e+05,	5.15144002e+04,	4.51375090e+05,	2.72938125e+05,
4.08780380e+05,	3.54548498e+05,	1.79133096e+05,	4.28509852e+05,
1.01125592e+05,	1.67091310e+05,	1.43802123e+05,	1.01853001e+05,
3.13638715e+03,	2.12454043e+05,	1.66686695e+05,	1.69108370e+04,
2.44694199e+05,	1.97586235e+05,	3.42330021e+05,	1.67394771e+05,
3.43113635e+05,	1.17940938e+05,	-2.51394385e+04,	1.66180926e+05,
1.81560786e+05,	8.80978846e+04,	8.37076656e+03,	1.27613033e+05,
1.93154803e+05,	2.21398729e+05,	1.88843857e+05,	1.62337083e+05,
9.27878288e+04,	4.94273262e+05,	1.01246079e+05,	9.39329034e+04,
3.51918500e+05,	5.27862450e+04,	2.16263976e+04,	3.53960909e+05,
1.05272896e+05,	2.47621643e+04,	6.85644370e+04,	1.81560786e+05,
6.68196975e+05,	9.26181724e+03,	1.95322186e+05,	9.35970589e+04,
8.99555234e+04,	1.63213069e+03,	1.20855064e+05,	1.36798692e+05,
2.47621643e+04,	2.16284836e+05,	3.34534898e+05,	1.12719608e+05,
2.79310812e+05,	1.66559925e+05,	7.43540225e+04,	1.98255645e+05,
1.37001000e+05,	8.93872672e+04,	1.32175165e+06,	2.78949351e+05,
1.04792744e+05,	6.82223093e+04,	2.34882284e+05,	2.75327149e+05,
1.82572324e+05,	4.37579435e+04,	4.36096384e+05,	2.20899243e+05,
4.81762579e+05,	2.75124841e+05,	1.51147681e+05,	4.90732881e+05,
6.64353132e+05,	2.65334055e+05,	6.12624478e+05,	2.71465768e+05,
6.30356491e+05,	5.26690109e+05,	8.90460034e+05,	4.35124818e+04,
1.96033222e+04,	-2.24662864e+04,	2.63791132e+05,	2.40622432e+05,
5.76591635e+04,	1.68064181e+05,	3.63450030e+05,	1.61629007e+05,
1.50964707e+05,	1.34157419e+02,	2.34983437e+05,	3.24843470e+05,
6.18478346e+05,	2.58974418e+05,	4.26140161e+05,	8.12979261e+03,
7.21720780e+05,	4.11954813e+05,	4.26212859e+03,	1.63247467e+05,
2.23219497e+05,	9.54996472e+04,	1.68569950e+05,	1.16178170e+05,
8.26099649e+04,	1.47949427e+05,	5.48847271e+05,	1.95322186e+05,
8.96151911e+04,	1.62944006e+05,	6.09210866e+05,	3.20147242e+05,
2.00683336e+05,	9.95071314e+04,	4.78084172e+05,	2.61565749e+05,
6.77165404e+04,	2.61262288e+05,	5.93787775e+04,	1.12030865e+05,
1.05778665e+05,	1.45136455e+05,	2.76667764e+05,	1.44163584e+05,
1.23827189e+05,	3.38055947e+05,	4.37579435e+04,	1.20248141e+05,
1.63531595e+05,	1.21500653e+05,	2.51667793e+04,	1.87673166e+05,
2.07418741e+06,	8.25088111e+04,	2.36292153e+05,	1.60920930e+05,
8.55434241e+04,	6.11638557e+05,	3.51937833e+05,	2.37411128e+05,
6.64208747e+04,	-4.04374780e+04,	1.16178170e+05,	1.72123382e+05,
7.43108684e+04,	4.93464032e+05,	7.28947157e+04,	1.81560786e+05,
2.45060148e+05,	9.36357253e+04,	6.77406455e+05,	1.61279748e+03,
-2.07466724e+04,	2.09255789e+05,	1.50598758e+05,	2.23281907e+04,
8.52214935e+05,	1.37549923e+05,	8.78949633e+05,	2.34471653e+04,
5.30495286e+05,	2.34376515e+05,	4.80772850e+02,	1.54789217e+05,
3.59061751e+05,	3.18731090e+05,	3.39269792e+05,	3.98843490e+05,
1.87673166e+05,	5.34743744e+05,	1.12719608e+05,	2.61464595e+05,
3.03755845e+05,	6.14274692e+04,	1.80043480e+05,	1.54688063e+05,
2.03894640e+05,	3.25407238e+05,	3.32449335e+05,	6.06985483e+05,
2.99709694e+05,	4.52791243e+05,	1.90361573e+02,	2.43581508e+05,

2.25875111e+05,	7.04926417e+04,	8.08663847e+03,	1.76604252e+05,
3.87258716e+04,	3.22878394e+05,	2.57861726e+05,	6.45230582e+05,
6.70277973e+04,	1.58290932e+05,	1.04950102e+05,	2.20552628e+05,
5.78484210e+04,	4.54968907e+04,	1.60029880e+05,	3.54548498e+05,
5.26651443e+05,	1.32733208e+05,	3.32795951e+05,	9.57406212e+04,
3.03250076e+05,	4.04778689e+04,	1.07377792e+05,	1.52867295e+05,
1.16178170e+05,	5.11421684e+04,	1.50560092e+05,	8.83757295e+04,
2.85909628e+05,	4.32461594e+03,	4.08743509e+05,	5.01994013e+04,
1.19540065e+05,	3.49226015e+05,	8.43682453e+04,	3.47796812e+05,
8.82359093e+04,	1.52279706e+05,	2.15658581e+05,	2.43899325e+04,
2.17074733e+05,	1.12719608e+05,	1.94810134e+05,	1.91497676e+05,
2.20311654e+05,	2.23421804e+05,	8.63443003e+05,	3.62197518e+05,
2.36109179e+05,	6.43353120e+04,	2.59783648e+05,	8.63443003e+05,
3.02466462e+05,	7.40892277e+04,	1.77615789e+05,	1.21259679e+05,
9.78261839e+04,	1.29351980e+05,	2.14444735e+05,	1.20248141e+05,
5.88730087e+04,	3.37954793e+05,	1.40603869e+05,	1.71036307e+05,
-1.16621667e+04,	8.93872672e+04,	1.41798381e+05,	2.58070317e+05,
1.19540065e+05,	1.48252743e+04,	3.80246042e+05,	4.37183459e+05,
1.78018877e+04,	2.05842178e+05,	1.27651699e+05,	8.36601690e+04,
-4.51891579e+03,	2.94778776e+05,	-4.38380396e+04,	4.58961623e+05,
2.23428087e+05,	1.79714402e+05,	1.17353348e+05,	4.20413063e+05,
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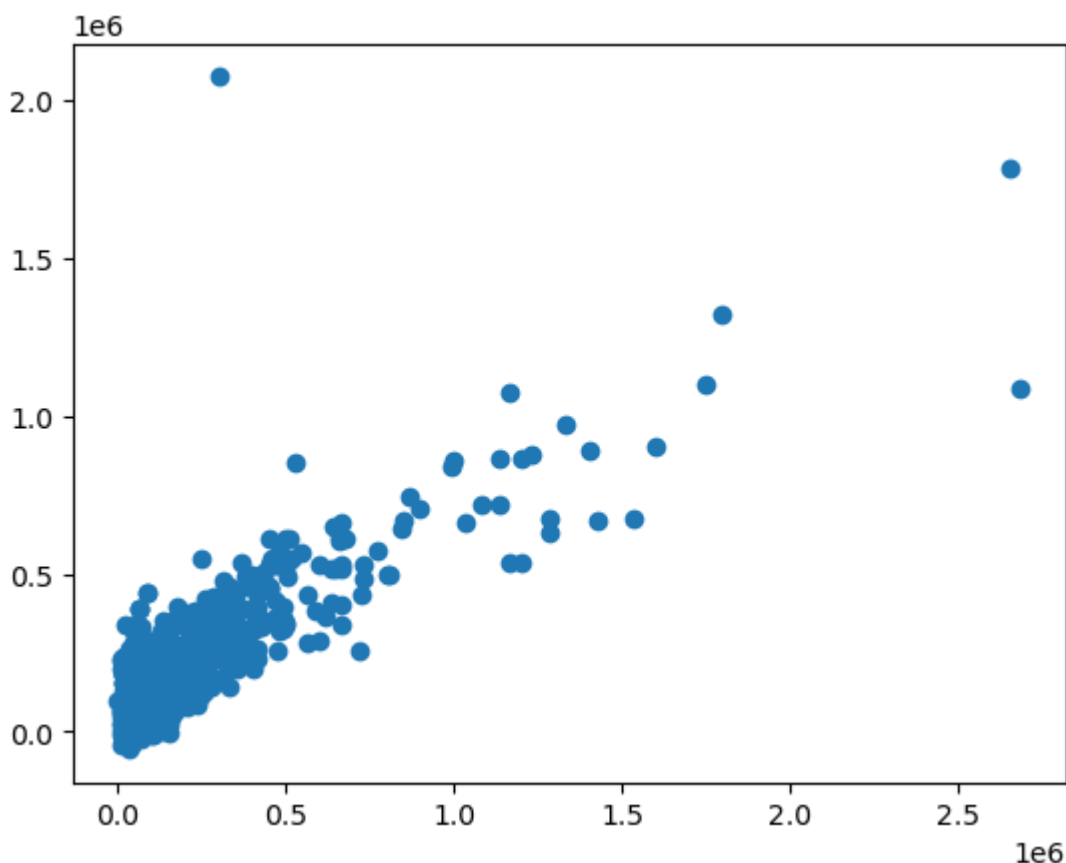
```

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1.89020548e+05, 2.84411655e+05, 3.35425949e+05, 2.09458097e+05,
2.10577071e+05, 1.44934148e+05, 3.11404865e+05, 4.80772850e+02,
2.27941340e+05, 9.97287722e+04, 4.72983253e+04, 1.80043480e+05,
5.38346536e+04, 1.54789217e+05, 2.60756519e+05, 3.24679829e+05,
2.04318856e+04, 2.33971900e+05, 4.00481283e+05, 1.37001000e+05])

```

```
In [90]: plt.scatter(Y_test,Y_prediction)
```

```
Out[90]: <matplotlib.collections.PathCollection at 0x1bfc3053520>
```



Measure the accuracy of the model

```
In [91]: from sklearn.metrics import r2_score
accuracy=r2_score(Y_test,Y_prediction)
print('accuracy:',accuracy)
```

```
accuracy: 0.6635533750980471
```

```
In [92]: from sklearn.metrics import mean_absolute_error
```

```
In [93]: mean_absolute_error(Y_test,Y_prediction)
```

```
Out[93]: 88771.81891128069
```

thanks for reading