```
import pandas as pd

import numpy as np

df =
pd.read_csv(r'https://raw.githubusercontent.com/Sarvesh-S-Patil/Dataset/main/Car%20Price.csv')

df.head()
```

```
     Brand                     Model  Year  Selling_Price  KM_Driven
Fuel  \
0   Maruti             Maruti 800 AC  2007          60000      70000
Petrol
1   Maruti  Maruti Wagon R LXI Minor  2007         135000      50000
Petrol
2  Hyundai      Hyundai Verna 1.6 SX  2012         600000     100000
Diesel
3   Datsun    Datsun RediGO T Option  2017         250000      46000
Petrol
4    Honda     Honda Amaze VX i-DTEC  2014         450000     141000
Diesel

  Seller_Type Transmission         Owner
0  Individual       Manual   First Owner
1  Individual       Manual   First Owner
2  Individual       Manual   First Owner
3  Individual       Manual   First Owner
4  Individual       Manual  Second Owner
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4340 entries, 0 to 4339
Data columns (total 9 columns):
 #   Column         Non-Null Count  Dtype
---  ------         --------------  -----
 0   Brand          4340 non-null   object
 1   Model          4340 non-null   object
 2   Year           4340 non-null   int64
 3   Selling_Price  4340 non-null   int64
 4   KM_Driven      4340 non-null   int64
 5   Fuel           4340 non-null   object
 6   Seller_Type    4340 non-null   object
 7   Transmission   4340 non-null   object
 8   Owner          4340 non-null   object
dtypes: int64(3), object(6)
memory usage: 305.3+ KB
```

```
df.describe()
```

```
              Year  Selling_Price      KM_Driven
count  4340.000000   4.340000e+03    4340.000000
mean   2013.090783   5.041273e+05   66215.777419
std       4.215344   5.785487e+05   46644.102194
min    1992.000000   2.000000e+04       1.000000
25%    2011.000000   2.087498e+05   35000.000000
50%    2014.000000   3.500000e+05   60000.000000
75%    2016.000000   6.000000e+05   90000.000000
max    2020.000000   8.900000e+06  806599.000000
```

```
df[['Brand']].value_counts()
```

```
Brand
Maruti           1280
Hyundai           821
Mahindra          365
Tata              361
Honda             252
Ford              238
Toyota            206
Chevrolet         188
Renault           146
Volkswagen        107
Skoda              68
Nissan             64
Audi               60
BMW                39
Fiat               37
Datsun             37
Mercedes-Benz      35
Mitsubishi          6
Jaguar              6
Land                5
Ambassador          4
Volvo               4
Jeep                3
OpelCorsa           2
MG                  2
Isuzu               1
Force               1
Daewoo              1
Kia                 1
dtype: int64
```

```
df[['Model']].value_counts()
```

```
Model
Maruti Swift Dzire VDI                  69
Maruti Alto 800 LXI                     59
Maruti Alto LXi                         47
Hyundai EON Era Plus                    35
```

```
Maruti Alto LX                          35
                                        ..
Mahindra KUV 100 G80 K4 Plus             1
Mahindra KUV 100 mFALCON D75 K8          1
Mahindra KUV 100 mFALCON D75 K8 AW       1
Mahindra KUV 100 mFALCON G80 K2 Plus     1
Volvo XC60 D5 Inscription                1
Length: 1491, dtype: int64
```

```
df[['Fuel']].value_counts()
```

```
Fuel
Diesel      2153
Petrol      2123
CNG           40
LPG           23
Electric       1
dtype: int64
```

```
df[['Seller_Type']].value_counts()
```

```
Seller_Type
Individual          3244
Dealer               994
Trustmark Dealer     102
dtype: int64
```

```
df[['Transmission']].value_counts()
```

```
Transmission
Manual          3892
Automatic        448
dtype: int64
```

```
df[['Owner']].value_counts()
```

```
Owner
First Owner             2832
Second Owner            1106
Third Owner              304
Fourth & Above Owner      81
Test Drive Car            17
dtype: int64
```

```
df.columns
```

```
Index(['Brand', 'Model', 'Year', 'Selling_Price', 'KM_Driven', 'Fuel',
       'Seller_Type', 'Transmission', 'Owner'],
      dtype='object')
```

```
df.shape
```

```
(4340, 9)
```

```
 df.replace({'Fuel' : {
'Diesel'   :0,
'Petrol'   :1,
'CNG'      :2,
'LPG'      :3,
'Electric' :4}}, inplace = True)

df.replace({'Seller_Type' :{
'Individual'  :0,
'Dealer'      :1,
'Trustmark Dealer' :2  }},inplace = True)

df.replace({ 'Transmission' :{
'Manual'        :0,
'Automatic'     :1}},inplace = True)

df.replace({'Owner' : {
'First Owner'             :0,
'Second Owner'            :1,
'Third Owner'             :2,
'Fourth & Above Owner'    :3,
'Test Drive Car'          :4   }},inplace =True)

y = df['Selling_Price']

y.shape

(4340,)

y

0        60000
1       135000
2       600000
3       250000
4       450000
         ...
4335    409999
4336    409999
4337    110000
4338    865000
4339    225000
Name: Selling_Price, Length: 4340, dtype: int64

X = df.drop(['Brand','Model','Selling_Price'],axis=1)

X.shape

(4340, 6)

X
```

```
      Year  KM_Driven  Fuel  Seller_Type  Transmission  Owner
0     2007      70000     1            0             0      0
1     2007      50000     1            0             0      0
2     2012     100000     0            0             0      0
3     2017      46000     1            0             0      0
4     2014     141000     0            0             0      1
...    ...        ...   ...          ...           ...    ...
4335  2014      80000     0            0             0      1
4336  2014      80000     0            0             0      1
4337  2009      83000     1            0             0      1
4338  2016      90000     0            0             0      0
4339  2016      40000     1            0             0      0

[4340 rows x 6 columns]
```

```
from sklearn.model_selection import train_test_split

X_train,X_test,y_train,y_test = train_test_split(X,y,test_size=0.3 ,
random_state=2529)

X_train.shape,X_test.shape,y_train.shape,y_test.shape
```

```
((3038, 6), (1302, 6), (3038,), (1302,))
```

```
from sklearn.linear_model import LinearRegression

lr = LinearRegression()

lr.fit(X_train,y_train)
```

```
LinearRegression()
```

```
y_pred = lr.predict(X_test)

y_pred.shape
```

```
(1302,)
```

```
y_pred
```

```
array([498101.85236396, 671225.9969687 , 513329.18564908, ...,
       648494.78893037, 355442.65667918, 754207.78681143])
```

```
from sklearn.metrics import
mean_squared_error,mean_absolute_error,r2_score

mean_squared_error(y_test,y_pred)
```

```
191389180613.39957
```

```
mean_absolute_error(y_test,y_pred)
```

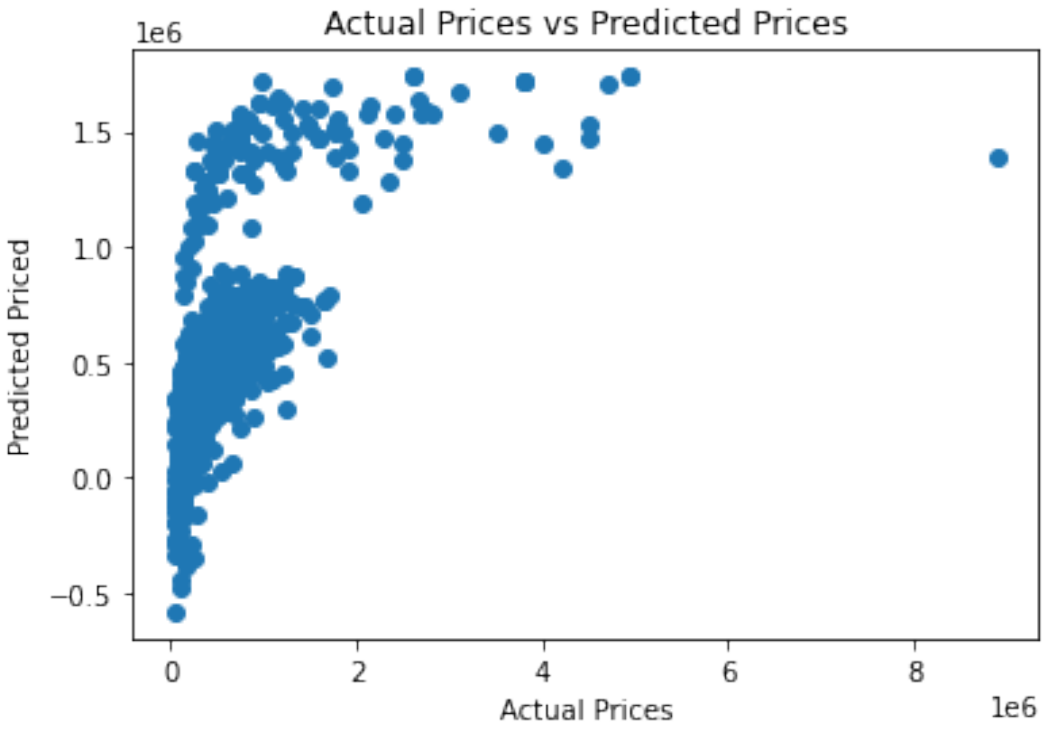
```
229182.23205422275
```

```
r2_score(y_test,y_pred)
```

```
0.41323968781941944
```

```
import matplotlib.pyplot as plt
plt.scatter(y_test,y_pred)
plt.xlabel("Actual Prices")
plt.ylabel("Predicted Priced")
plt.title("Actual Prices vs Predicted Prices")
```

```
Text(0.5, 1.0, 'Actual Prices vs Predicted Prices')
```




```
df_new = df.sample(1)
```

```
df_new
```

```
        Brand                      Model  Year  Selling_Price
KM_Driven  \
3317  Hyundai  Hyundai Verna CRDi 1.6 SX  2017         900000
50000

      Fuel  Seller_Type  Transmission  Owner
3317     0            0             0      0
```

```
X_new = df_new.drop(['Brand','Model','Selling_Price'],axis=1)
```

```
y_new = df_new['Selling_Price']
```

```
X_new.shape,y_new.shape
```

```
((1, 6), (1,))
y_pred_new = lr.predict(X_new)
y_pred_new
array([686233.74647512])
```