

```
In [1]: import numpy as np
import pandas as pd
```

```
In [2]: df=pd.read_csv(r"C:\Users\Sushma sree\Downloads\used_cars_data.csv")
df
```

Out[2]:

	S.No.	Name	Location	Year	Kilometers_Driven	Fuel_Type	Transmission	Owner_
0	0	Maruti Wagon R LXI CNG	Mumbai	2010	72000	CNG	Manual	
1	1	Hyundai Creta 1.6 CRDi SX Option	Pune	2015	41000	Diesel	Manual	
2	2	Honda Jazz V	Chennai	2011	46000	Petrol	Manual	
3	3	Maruti Ertiga VDI	Chennai	2012	87000	Diesel	Manual	
4	4	Audi A4 New 2.0 TDI Multitronic	Coimbatore	2013	40670	Diesel	Automatic	Se
...
7248	7248	Volkswagen Vento Diesel Trendline	Hyderabad	2011	89411	Diesel	Manual	
7249	7249	Volkswagen Polo GT TSI	Mumbai	2015	59000	Petrol	Automatic	
7250	7250	Nissan Micra Diesel XV	Kolkata	2012	28000	Diesel	Manual	
7251	7251	Volkswagen Polo GT TSI	Pune	2013	52262	Petrol	Automatic	
7252	7252	Mercedes-Benz E-Class 2009-2013 E 220 CDI Avan...	Kochi	2014	72443	Diesel	Automatic	

7253 rows × 14 columns



```
In [3]: df.head()
```

```
Out[3]:
```

	S.No.	Name	Location	Year	Kilometers_Driven	Fuel_Type	Transmission	Owner_Type
0	0	Maruti Wagon R LXI CNG	Mumbai	2010	72000	CNG	Manual	First
1	1	Hyundai Creta 1.6 CRDi SX Option	Pune	2015	41000	Diesel	Manual	First
2	2	Honda Jazz V	Chennai	2011	46000	Petrol	Manual	First
3	3	Maruti Ertiga VDI	Chennai	2012	87000	Diesel	Manual	First
4	4	Audi A4 New 2.0 TDI Multitronic	Coimbatore	2013	40670	Diesel	Automatic	Second



```
In [4]: df.tail()
```

```
Out[4]:
```

	S.No.	Name	Location	Year	Kilometers_Driven	Fuel_Type	Transmission	Owner_1
7248	7248	Volkswagen Vento Diesel Trendline	Hyderabad	2011	89411	Diesel	Manual	
7249	7249	Volkswagen Polo GT TSI	Mumbai	2015	59000	Petrol	Automatic	
7250	7250	Nissan Micra Diesel XV	Kolkata	2012	28000	Diesel	Manual	
7251	7251	Volkswagen Polo GT TSI	Pune	2013	52262	Petrol	Automatic	1
7252	7252	Mercedes-Benz E-Class 2009-2013 E 220 CDI Avan...	Kochi	2014	72443	Diesel	Automatic	



```
In [5]: df.shape
```

```
Out[5]: (7253, 14)
```

```
In [6]: df.describe
```

```
Out[6]: <bound method NDFrame.describe of          S.No.
Name      Location
0          0          Maruti Wagon R LXI CNG      Mumbai \
1          1      Hyundai Creta 1.6 CRDi SX Option      Pune
2          2          Honda Jazz V      Chennai
3          3      Maruti Ertiga VDI      Chennai
4          4      Audi A4 New 2.0 TDI Multitronic      Coimbatore
...      ...          ...      ...
7248      7248      Volkswagen Vento Diesel Trendline      Hyderabad
7249      7249      Volkswagen Polo GT TSI      Mumbai
7250      7250      Nissan Micra Diesel XV      Kolkata
7251      7251      Volkswagen Polo GT TSI      Pune
7252      7252      Mercedes-Benz E-Class 2009-2013 E 220 CDI Avan...      Kochi

      Year  Kilometers_Driven  Fuel_Type  Transmission  Owner_Type      Mileage
0      2010          72000      CNG      Manual      First      26.6 km/kg
\
1      2015          41000      Diesel      Manual      First      19.67 kmpl
2      2011          46000      Petrol      Manual      First      18.2 kmpl
3      2012          87000      Diesel      Manual      First      20.77 kmpl
4      2013          40670      Diesel      Automatic      Second      15.2 kmpl
...      ...          ...      ...      ...      ...      ...
7248      2011          89411      Diesel      Manual      First      20.54 kmpl
7249      2015          59000      Petrol      Automatic      First      17.21 kmpl
7250      2012          28000      Diesel      Manual      First      23.08 kmpl
7251      2013          52262      Petrol      Automatic      Third      17.2 kmpl
7252      2014          72443      Diesel      Automatic      First      10.0 kmpl

      Engine      Power  Seats  New_Price  Price
0      998 CC      58.16 bhp      5.0      NaN      1.75
1      1582 CC      126.2 bhp      5.0      NaN      12.50
2      1199 CC      88.7 bhp      5.0      8.61 Lakh      4.50
3      1248 CC      88.76 bhp      7.0      NaN      6.00
4      1968 CC      140.8 bhp      5.0      NaN      17.74
...      ...      ...      ...      ...      ...
7248      1598 CC      103.6 bhp      5.0      NaN      NaN
7249      1197 CC      103.6 bhp      5.0      NaN      NaN
7250      1461 CC      63.1 bhp      5.0      NaN      NaN
7251      1197 CC      103.6 bhp      5.0      NaN      NaN
7252      2148 CC      170 bhp      5.0      NaN      NaN

[7253 rows x 14 columns]>
```

```
In [7]: df.isnull().sum()
```

```
Out[7]: S.No.          0
        Name          0
        Location      0
        Year          0
        Kilometers_Driven  0
        Fuel_Type      0
        Transmission   0
        Owner_Type     0
        Mileage        2
        Engine         46
        Power          46
        Seats          53
        New_Price      6247
        Price          1234
        dtype: int64
```

```
In [8]: df.dropna(inplace=True)
```

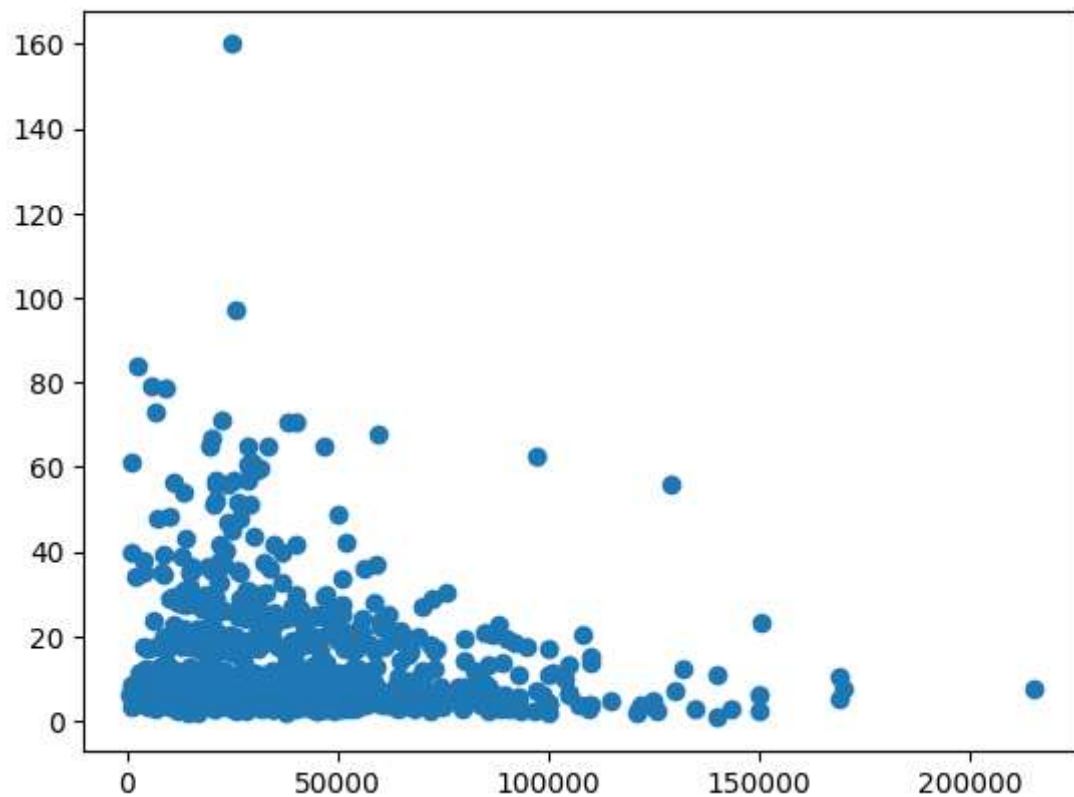
```
In [9]: df.isnull().sum()
```

```
Out[9]: S.No.          0
        Name          0
        Location      0
        Year          0
        Kilometers_Driven  0
        Fuel_Type      0
        Transmission   0
        Owner_Type     0
        Mileage        0
        Engine         0
        Power          0
        Seats          0
        New_Price      0
        Price          0
        dtype: int64
```

```
In [10]: from sklearn.model_selection import train_test_split
         from matplotlib import pyplot as plt
```

```
In [11]: plt.scatter(df['Kilometers_Driven'],df['Price'])
```

```
Out[11]: <matplotlib.collections.PathCollection at 0x23948799810>
```



```
In [12]: from sklearn.linear_model import LinearRegression  
lr=LinearRegression()
```

```
In [13]: x=df[['Kilometers_Driven']]  
y=df['Price']
```

```
In [14]: x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.3)
```

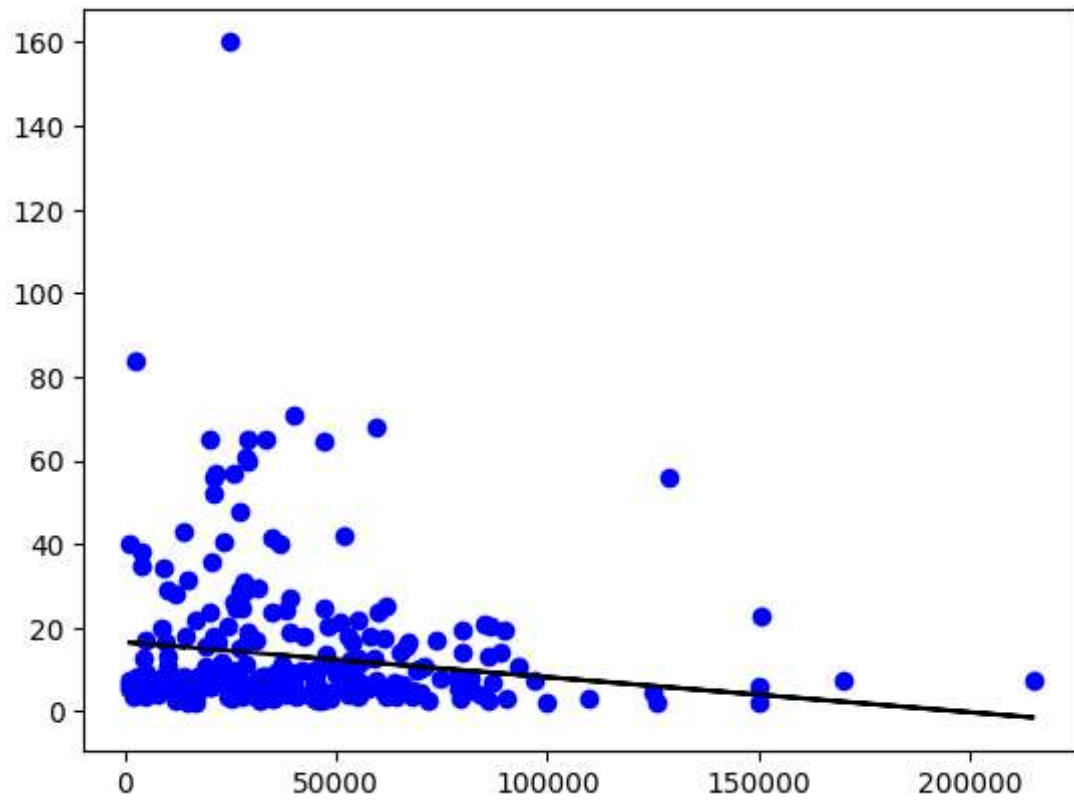
```
In [15]: lr.fit(x_train,y_train)
```

```
Out[15]: ▾ LinearRegression  
LinearRegression()
```

```
In [16]: lr.score(x_test,y_test)
```

```
Out[16]: 0.008270420401903733
```

```
In [17]: y_pred=lr.predict(x_test)
plt.scatter(x_test,y_test,color='b')
plt.plot(x_test,y_pred,color='k')
plt.show()
```



```
In [30]: df1000=df[:1000]
df1000
```

Out[30]:

	S.No.	Name	Location	Year	Kilometers_Driven	Fuel_Type	Transmission	Owner_Ty
2	2	Honda Jazz V	Chennai	2011	46000	Petrol	Manual	Fi
7	7	Toyota Innova Crysta 2.8 GX AT 8S	Mumbai	2016	36000	Diesel	Automatic	Fi
10	10	Maruti Ciaz Zeta	Kochi	2018	25692	Petrol	Manual	Fi
15	15	Mitsubishi Pajero Sport 4X4	Delhi	2014	110000	Diesel	Manual	Fi
20	20	BMW 3 Series 320d	Kochi	2014	32982	Diesel	Automatic	Fi
...
5999	5999	Tata Bolt Revotron XT	Chennai	2016	10000	Petrol	Manual	Fi
6002	6002	Volkswagen Vento 1.6 Highline	Mumbai	2011	38000	Petrol	Manual	Fi
6005	6005	Maruti Vitara Brezza VDi	Pune	2016	37208	Diesel	Manual	Fi
6010	6010	Honda Brio 1.2 VX MT	Delhi	2013	33746	Petrol	Manual	Fi
6014	6014	Maruti Swift VDI	Delhi	2014	27365	Diesel	Manual	Fi

823 rows × 14 columns



```
In [31]: x=df1000[['Kilometers_Driven']]
y=df1000['Price']
```

```
In [32]: x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2)
```

```
In [33]: lr.fit(x_train,y_train)
```

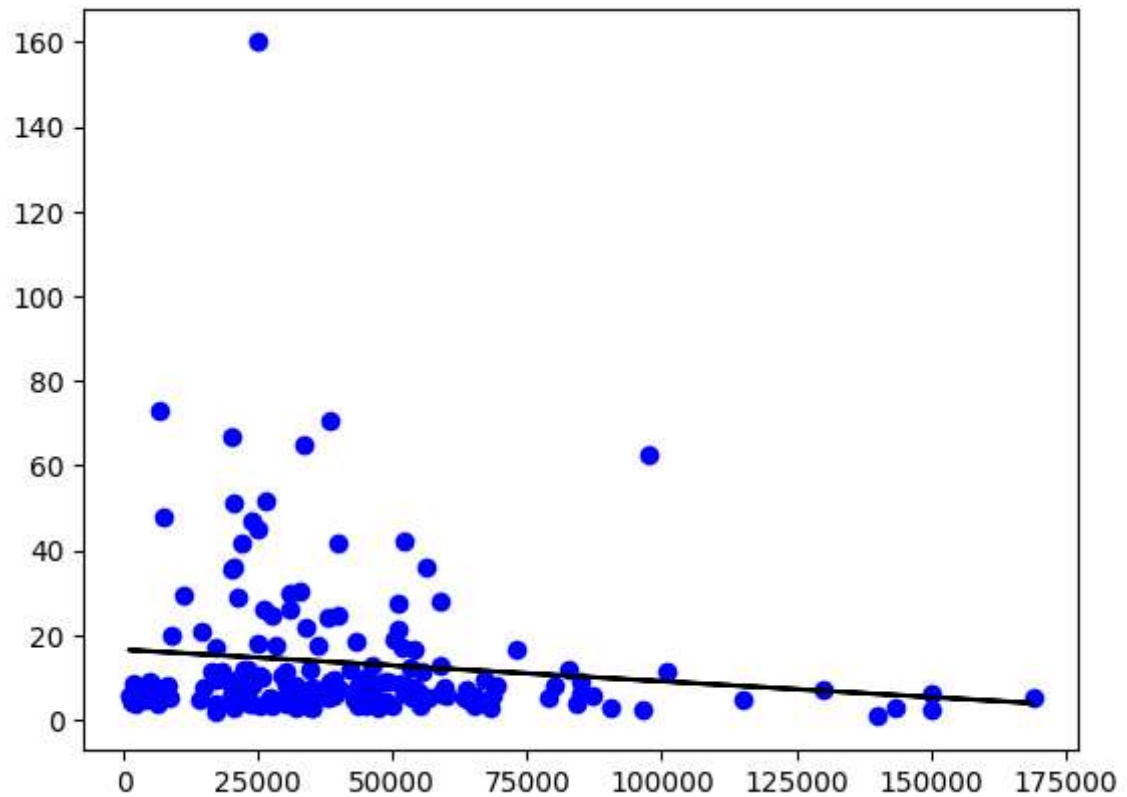
Out[33]:

```
LinearRegression
LinearRegression()
```

```
In [34]: lr.score(x_test,y_test)
```

```
Out[34]: 0.023020345210620463
```

```
In [35]: y_pred=lr.predict(x_test)
plt.scatter(x_test,y_test,color='b')
plt.plot(x_test,y_pred,color='k')
plt.show()
```



```
In [ ]:
```