Deena 20104016

In [1]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as pp
```

Problem Statement

LINEAR REGRESSION

In [2]:

```
a = pd.read_csv("vehicle.csv")
```

Out[2]:

	ID	model	engine_power	age_in_days	km	previous_owners	lat	l
0	1.0	lounge	51.0	882.0	25000.0	1.0	44.907242	8.611559
1	2.0	pop	51.0	1186.0	32500.0	1.0	45.666359	12.24188
2	3.0	sport	74.0	4658.0	142228.0	1.0	45.503300	11.417
3	4.0	lounge	51.0	2739.0	160000.0	1.0	40.633171	17.63460
4	5.0	pop	73.0	3074.0	106880.0	1.0	41.903221	12.49565
...	...	...	...	...	...	...	...	
1544	NaN	NaN	NaN	NaN	NaN	NaN	NaN	len
1545	NaN	NaN	NaN	NaN	NaN	NaN	NaN	con
1546	NaN	NaN	NaN	NaN	NaN	NaN	NaN	Null val
1547	NaN	NaN	NaN	NaN	NaN	NaN	NaN	f
1548	NaN	NaN	NaN	NaN	NaN	NaN	NaN	sea

1549 rows × 11 columns

HEAD

In [3]:

```
a.head(8)
```

Out[3]:

	ID	model	engine_power	age_in_days	km	previous_owners	lat	lon
0	1.0	lounge	51.0	882.0	25000.0	1.0	44.907242	8.611559868
1	2.0	pop	51.0	1186.0	32500.0	1.0	45.666359	12.24188995
2	3.0	sport	74.0	4658.0	142228.0	1.0	45.503300	11.41784
3	4.0	lounge	51.0	2739.0	160000.0	1.0	40.633171	17.63460922
4	5.0	pop	73.0	3074.0	106880.0	1.0	41.903221	12.49565029
5	6.0	pop	74.0	3623.0	70225.0	1.0	45.000702	7.68227005
6	7.0	lounge	51.0	731.0	11600.0	1.0	44.907242	8.611559868
7	8.0	lounge	51.0	1521.0	49076.0	1.0	41.903221	12.49565029

Data Cleaning and Preprocessing

In [4]:

```
b=a.head(8)
```

Out[4]:

	ID	model	engine_power	age_in_days	km	previous_owners	lat	lon
0	1.0	lounge	51.0	882.0	25000.0	1.0	44.907242	8.611559868
1	2.0	pop	51.0	1186.0	32500.0	1.0	45.666359	12.24188995
2	3.0	sport	74.0	4658.0	142228.0	1.0	45.503300	11.41784
3	4.0	lounge	51.0	2739.0	160000.0	1.0	40.633171	17.63460922
4	5.0	pop	73.0	3074.0	106880.0	1.0	41.903221	12.49565029
5	6.0	pop	74.0	3623.0	70225.0	1.0	45.000702	7.68227005
6	7.0	lounge	51.0	731.0	11600.0	1.0	44.907242	8.611559868
7	8.0	lounge	51.0	1521.0	49076.0	1.0	41.903221	12.49565029

In [5]:

```
[illegible]
```

Out[5]:

	ID	engine_power	age_in_days	km	previous_owners	lat
count	1538.000000	1538.000000	1538.000000	1538.000000	1538.000000	1538.000000
mean	769.500000	51.904421	1650.980494	53396.011704	1.123537	43.541361
std	444.126671	3.988023	1289.522278	40046.830723	0.416423	2.133518
min	1.000000	51.000000	366.000000	1232.000000	1.000000	36.855839
25%	385.250000	51.000000	670.000000	20006.250000	1.000000	41.802990
50%	769.500000	51.000000	1035.000000	39031.000000	1.000000	44.394096
75%	1153.750000	51.000000	2616.000000	79667.750000	1.000000	45.467960
max	1538.000000	77.000000	4658.000000	235000.000000	4.000000	46.795612

To display heading

In [6]:

```
[illegible]
```

Out[6]:

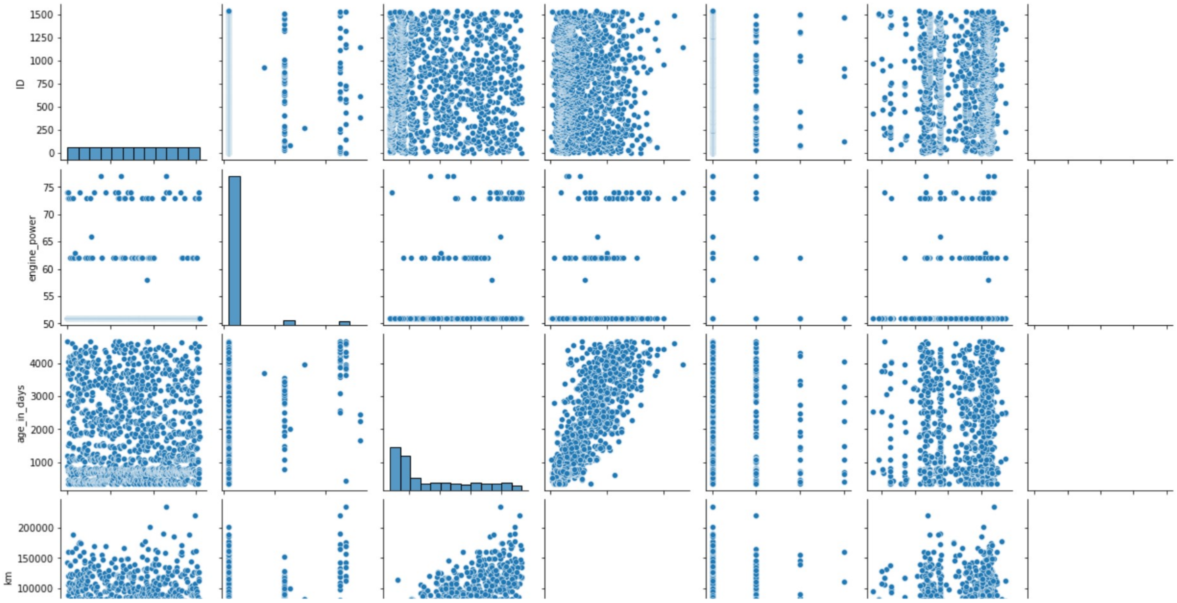
```
Index(['ID', 'model', 'engine_power', 'age_in_days', 'km', 'previous_owners',
       'lat', 'lon', 'price', 'Unnamed: 9', 'Unnamed: 10'],
      dtype='object')
```

In [7]:

```
[illegible]
```

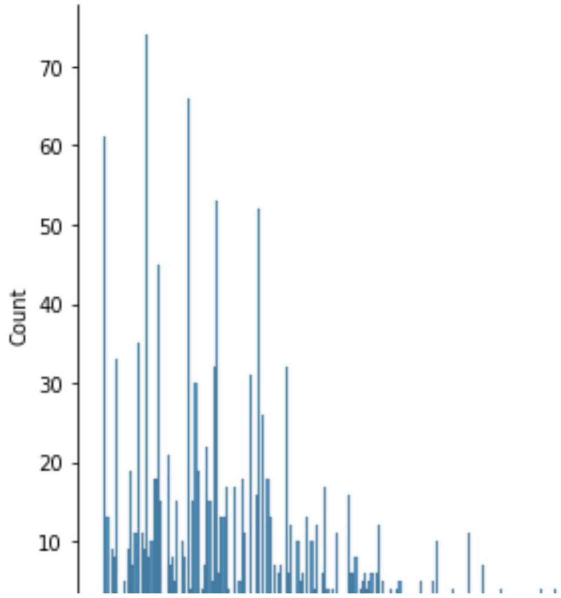
Out[7]:

```
<seaborn.axisgrid.PairGrid at 0x27139eb5970>
```



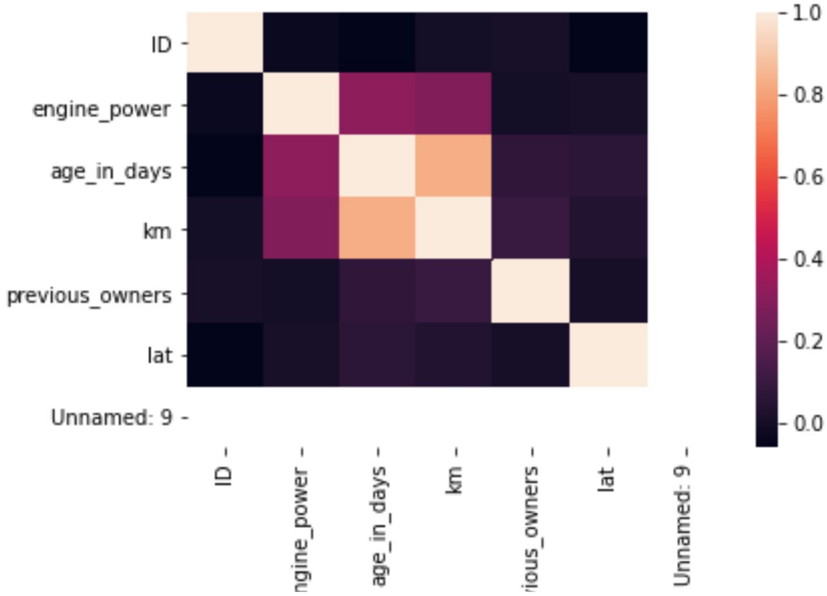
In [8]:
```
[illegible]
```

Out[8]:
```
<seaborn.axisgrid.FacetGrid at 0x2713b8cf700>
```



In [9]:
```
[illegible]
```

Out[9]:
```
<AxesSubplot:>
```



TO TRAIN THE MODEL - MODEL BUILDING

In [10]:
```
x = b[['price']]
```

In [11]:
```
# to split my dataset into training and test data
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)
```

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

Out[12]:
```
LinearRegression()
```

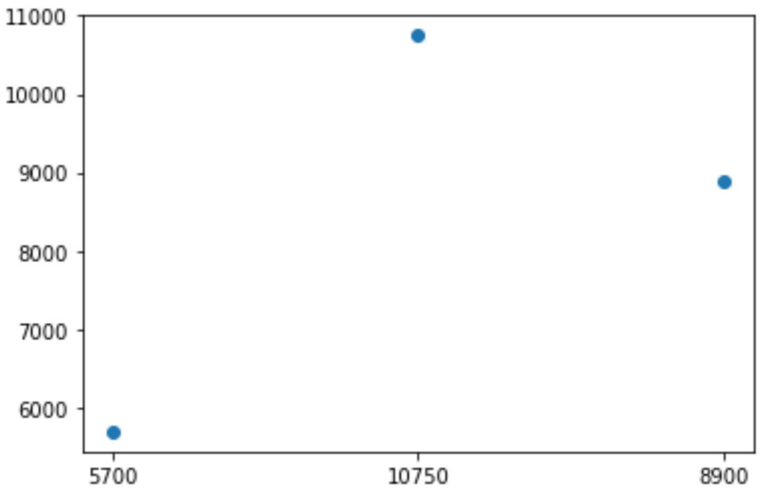
In [13]:
```
coeff = pd.DataFrame(lr.coef_,x.columns,columns=['Co-efficient'])
```

Out[13]:

	Co-efficient
price	1.0

In [14]:
```
prediction= lr.predict(x_test)
```

Out[14]:
```
<matplotlib.collections.PathCollection at 0x2713e0c37c0>
```



In [15]:

Out[15]:
```
1.0
```

RIDGE & LASSO

In [16]:
```
from sklearn.linear_model import Ridge,Lasso
rr=Ridge(alpha=10)
```

Out[16]:
```
Ridge(alpha=10)
```

In [17]:

Out[17]:
```
0.999999999999557
```

In [18]:
```
la=Lasso(alpha=10)
```

Out[18]:
```
Lasso(alpha=10)
```

In [19]: [illegible]

```
Out[19]: 0.9999999999889243
```