In [10]:
```
import pandas as pd
```

In [11]:
```
data=pd.read_csv("/home/placement/Desktop/naren/fiat500.csv")
```

In [12]:
```
data=data.drop(['ID','lat','lon'],axis=1)
```

In [13]:
```
data
```

Out[13]:

	model	engine_power	age_in_days	km	previous_owners	price
0	lounge	51	882	25000	1	8900
1	pop	51	1186	32500	1	8800
2	sport	74	4658	142228	1	4200
3	lounge	51	2739	160000	1	6000
4	pop	73	3074	106880	1	5700
...	...	...	...	...	...	...
1533	sport	51	3712	115280	1	5200
1534	lounge	74	3835	112000	1	4600
1535	pop	51	2223	60457	1	7500
1536	lounge	51	2557	80750	1	5990
1537	pop	51	1766	54276	1	7900

1538 rows × 6 columns

In [14]:
```
data1['model']=data1['model'].map({'lounge':1,'pop':2,'sport':3})
```

In [15]:
```
data1
```

Out[15]:

	model	engine_power	age_in_days	km	previous_owners	price
0	1	51	882	25000	1	8900
1	2	51	1186	32500	1	8800
2	3	74	4658	142228	1	4200
3	1	51	2739	160000	1	6000
4	2	73	3074	106880	1	5700
...	...	...	...	...	...	...
1533	3	51	3712	115280	1	5200
1534	1	74	3835	112000	1	4600
1535	2	51	2223	60457	1	7500
1536	1	51	2557	80750	1	5990
1537	2	51	1766	54276	1	7900

1538 rows × 6 columns

In [16]:
```
data2=data1.loc[(data1.previous_owners==1)]
```

In [17]:
```
data2
```

Out[17]:

	model	engine_power	age_in_days	km	previous_owners	price
0	1	51	882	25000	1	8900
1	2	51	1186	32500	1	8800
2	3	74	4658	142228	1	4200
3	1	51	2739	160000	1	6000
4	2	73	3074	106880	1	5700
...	...	...	...	...	...	...
1533	3	51	3712	115280	1	5200
1534	1	74	3835	112000	1	4600
1535	2	51	2223	60457	1	7500
1536	1	51	2557	80750	1	5990
1537	2	51	1766	54276	1	7900

1389 rows × 6 columns

In [18]:
```
y=data2['price']
x=data2.drop('price',axis=1)
```

In [19]:
```
x
```

Out[19]:

	model	engine_power	age_in_days	km	previous_owners
0	1	51	882	25000	1
1	2	51	1186	32500	1
2	3	74	4658	142228	1
3	1	51	2739	160000	1
4	2	73	3074	106880	1
...	...	...	...	...	...
1533	3	51	3712	115280	1
1534	1	74	3835	112000	1
1535	2	51	2223	60457	1
1536	1	51	2557	80750	1
1537	2	51	1766	54276	1

1389 rows × 5 columns

In [20]:
```
y
```

Out[20]:
```
0       8900
1       8800
2       4200
3       6000
4       5700
        ...
1533    5200
1534    4600
1535    7500
1536    5990
1537    7900
Name: price, Length: 1389, dtype: int64
```

In [55]:
```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.33,random_state=42)
```

In [56]:
```
x_train.shape
```

Out[56]: (930, 5)

In [57]:
```
x_test.shape
```

Out[57]: (459, 5)

In [58]:
```
y_train.shape
```

Out[58]: (930,)

In [59]:
```
y_test.shape
```

Out[59]: (459,)

In [60]:
```
x_train.head()
```

Out[60]:

	model	engine_power	age_in_days	km	previous_owners
915	1	51	397	17081	1
12	1	51	456	18450	1
638	1	51	397	21276	1
190	1	51	821	19000	1
701	1	51	701	27100	1

In [61]:
```
x_test.head()
```

Out[61]:

	model	engine_power	age_in_days	km	previous_owners
625	1	51	3347	148000	1
187	1	51	4322	117000	1
279	2	51	4322	120000	1
734	2	51	974	12500	1
315	1	51	1096	37000	1

In [62]:
```
y_train.head()
```

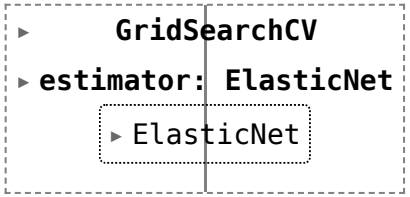
Out[62]:
```
915    10900
12      9700
638    10850
190     9990
701    10300
Name: price, dtype: int64
```

In [63]:
```
y_test.head()
```

Out[63]:
```
625     5400
187     5399
279     4900
734    10500
315     9300
Name: price, dtype: int64
```

In [64]:
```
from sklearn.linear_model import ElasticNet
from sklearn.model_selection import GridSearchCV

elastic = ElasticNet()

parameters = {'alpha': [1e-15, 1e-10, 1e-8, 1e-4, 1e-3,1e-2, 1, 5, 10, 20]}

elastic_regressor = GridSearchCV(elastic, parameters)

elastic_regressor.fit(x_train, y_train)
```

Out[64]:



In [65]:
```
elastic_regressor.best_params_
```

Out[65]:
```
{'alpha': 1e-15}
```

In [71]:
```
elastic=ElasticNet(alpha=1e-15)
elastic.fit(x_train,y_train)
y_pred_elastic=elastic.predict(x_test)
```

In [72]:
```
from sklearn.metrics import mean_squared_error
Elasticnet_Error=mean_squared_error(y_pred_elastic,y_test)
Elasticnet_Error
```

Out[72]:
```
522589.16921946756
```

In [73]:
```
from sklearn.metrics import r2_score
r2_score(y_test,y_pred_elastic)
```

Out[73]:
```
0.8582526737355334
```

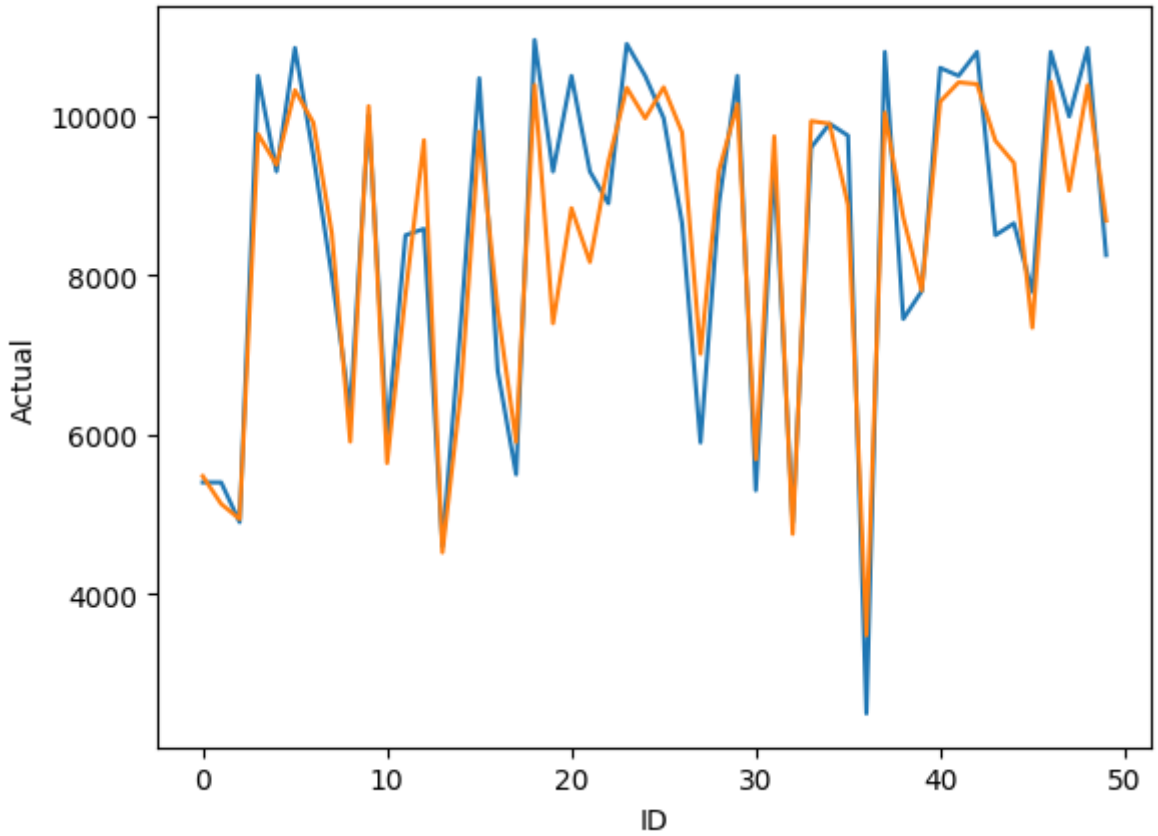
In [74]:
```
Results=pd.DataFrame(columns=['Actual','predicted'])
Results['Actual']=y_test
Results['predicted']=y_pred_elastic
Results=Results.reset_index()
Results['ID']=Results.index
Results.head(10)
```

Out[74]:

	index	Actual	predicted	ID
0	625	5400	5478.082470	0
1	187	5399	5128.749813	1
2	279	4900	4939.964669	2
3	734	10500	9770.938056	3
4	315	9300	9383.407921	4
5	652	10850	10319.804281	5
6	1472	9500	9912.760894	6
7	619	7999	8526.411840	7
8	992	6300	5910.610353	8
9	1154	10000	10119.997990	9

In [75]:
```
import seaborn as sns
import matplotlib.pyplot as plt
sns.lineplot(x='ID',y='Actual',data=Results.head(50))
sns.lineplot(x='ID',y='predicted',data=Results.head(50))
plt.plot()
```

Out[75]: []



In [ ]: