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

In [2]:
```python
venu=pd.read_csv("/home/placement/Downloads/fiat500.csv")#reading the data
venu.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1538 entries, 0 to 1537
Data columns (total 9 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   ID               1538 non-null   int64
 1   model            1538 non-null   object
 2   engine_power     1538 non-null   int64
 3   age_in_days      1538 non-null   int64
 4   km               1538 non-null   int64
 5   previous_owners  1538 non-null   int64
 6   lat              1538 non-null   float64
 7   lon              1538 non-null   float64
 8   price            1538 non-null   int64
dtypes: float64(2), int64(6), object(1)
memory usage: 108.3+ KB
```

In [3]: `venu.head(10)`

Out[3]:

|  | ID | model | engine_power | age_in_days | km | previous_owners | lat | lon | price |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | lounge | 51 | 882 | 25000 | 1 | 44.907242 | 8.611560 | 8900 |
| 1 | 2 | pop | 51 | 1186 | 32500 | 1 | 45.666359 | 12.241890 | 8800 |
| 2 | 3 | sport | 74 | 4658 | 142228 | 1 | 45.503300 | 11.417840 | 4200 |
| 3 | 4 | lounge | 51 | 2739 | 160000 | 1 | 40.633171 | 17.634609 | 6000 |
| 4 | 5 | pop | 73 | 3074 | 106880 | 1 | 41.903221 | 12.495650 | 5700 |
| 5 | 6 | pop | 74 | 3623 | 70225 | 1 | 45.000702 | 7.682270 | 7900 |
| 6 | 7 | lounge | 51 | 731 | 11600 | 1 | 44.907242 | 8.611560 | 10750 |
| 7 | 8 | lounge | 51 | 1521 | 49076 | 1 | 41.903221 | 12.495650 | 9190 |
| 8 | 9 | sport | 73 | 4049 | 76000 | 1 | 45.548000 | 11.549470 | 5600 |
| 9 | 10 | sport | 51 | 3653 | 89000 | 1 | 45.438301 | 10.991700 | 6000 |

In [4]: `list(venu)`

Out[4]: 
```
['ID',
 'model',
 'engine_power',
 'age_in_days',
 'km',
 'previous_owners',
 'lat',
 'lon',
 'price']
```

In [5]: 
```
k=venu.drop('model',axis=1)#removing model column from table
k
```

Out[5]:

|  | ID | engine_power | age_in_days | km | previous_owners | lat | lon | price |
|---|---|---|---|---|---|---|---|---|
| **0** | 1 | 51 | 882 | 25000 | 1 | 44.907242 | 8.611560 | 8900 |
| **1** | 2 | 51 | 1186 | 32500 | 1 | 45.666359 | 12.241890 | 8800 |
| **2** | 3 | 74 | 4658 | 142228 | 1 | 45.503300 | 11.417840 | 4200 |
| **3** | 4 | 51 | 2739 | 160000 | 1 | 40.633171 | 17.634609 | 6000 |
| **4** | 5 | 73 | 3074 | 106880 | 1 | 41.903221 | 12.495650 | 5700 |
| **...** | ... | ... | ... | ... | ... | ... | ... | ... |
| **1533** | 1534 | 51 | 3712 | 115280 | 1 | 45.069679 | 7.704920 | 5200 |
| **1534** | 1535 | 74 | 3835 | 112000 | 1 | 45.845692 | 8.666870 | 4600 |
| **1535** | 1536 | 51 | 2223 | 60457 | 1 | 45.481541 | 9.413480 | 7500 |
| **1536** | 1537 | 51 | 2557 | 80750 | 1 | 45.000702 | 7.682270 | 5990 |
| **1537** | 1538 | 51 | 1766 | 54276 | 1 | 40.323410 | 17.568270 | 7900 |

1538 rows × 8 columns

In [6]: `venu.isnull()`

Out[6]:

| | ID | model | engine_power | age_in_days | km | previous_owners | lat | lon | price |
|---|---|---|---|---|---|---|---|---|---|
| 0 | False | False | False | False | False | False | False | False | False |
| 1 | False | False | False | False | False | False | False | False | False |
| 2 | False | False | False | False | False | False | False | False | False |
| 3 | False | False | False | False | False | False | False | False | False |
| 4 | False | False | False | False | False | False | False | False | False |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 1533 | False | False | False | False | False | False | False | False | False |
| 1534 | False | False | False | False | False | False | False | False | False |
| 1535 | False | False | False | False | False | False | False | False | False |
| 1536 | False | False | False | False | False | False | False | False | False |
| 1537 | False | False | False | False | False | False | False | False | False |

1538 rows × 9 columns

In [7]: `venu.notnull()`

Out[7]:

| | ID | model | engine_power | age_in_days | km | previous_owners | lat | lon | price |
|---|---|---|---|---|---|---|---|---|---|
| 0 | True | True | True | True | True | True | True | True | True |
| 1 | True | True | True | True | True | True | True | True | True |
| 2 | True | True | True | True | True | True | True | True | True |
| 3 | True | True | True | True | True | True | True | True | True |
| 4 | True | True | True | True | True | True | True | True | True |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 1533 | True | True | True | True | True | True | True | True | True |
| 1534 | True | True | True | True | True | True | True | True | True |
| 1535 | True | True | True | True | True | True | True | True | True |
| 1536 | True | True | True | True | True | True | True | True | True |
| 1537 | True | True | True | True | True | True | True | True | True |

1538 rows × 9 columns

In [8]: `venu.count()`

Out[8]:
```
ID                1538
model             1538
engine_power      1538
age_in_days       1538
km                1538
previous_owners   1538
lat               1538
lon               1538
price             1538
dtype: int64
```

In [9]: `venu.groupby(["previous_owners"]).count()`

Out[9]:

| previous_owners | ID | model | engine_power | age_in_days | km | lat | lon | price |
|---|---|---|---|---|---|---|---|---|
| 1 | 1389 | 1389 | 1389 | 1389 | 1389 | 1389 | 1389 | 1389 |
| 2 | 117 | 117 | 117 | 117 | 117 | 117 | 117 | 117 |
| 3 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| 4 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |

In [10]: `venu["price"].sum()`

Out[10]: 13189894

In [11]: 
```
cor=k.corr()#correlecting the values in table
cor
```

Out[11]:

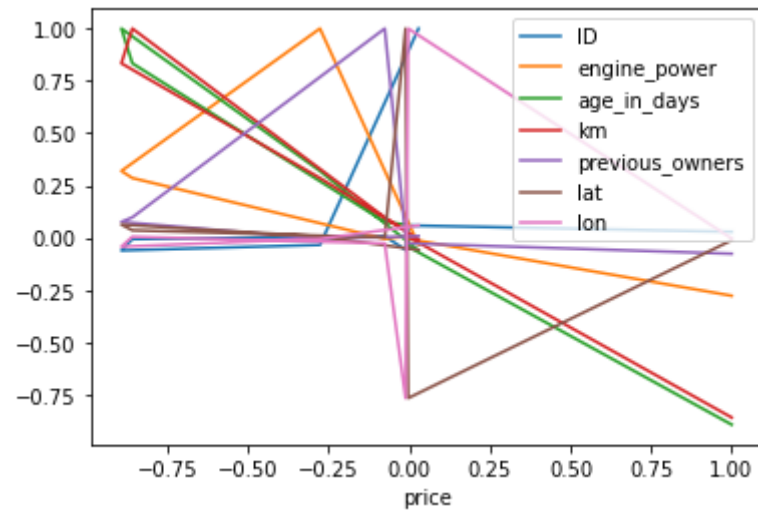| | ID | engine_power | age_in_days | km | previous_owners | lat | lon | price |
|---|---|---|---|---|---|---|---|---|
| ID | 1.000000 | -0.034059 | -0.060753 | -0.006537 | 0.007803 | -0.058207 | 0.058941 | 0.028516 |
| engine_power | -0.034059 | 1.000000 | 0.319190 | 0.285495 | -0.005030 | 0.005721 | -0.005032 | -0.277235 |
| age_in_days | -0.060753 | 0.319190 | 1.000000 | 0.833890 | 0.075775 | 0.062982 | -0.042667 | -0.893328 |
| km | -0.006537 | 0.285495 | 0.833890 | 1.000000 | 0.097539 | 0.035519 | 0.004839 | -0.859373 |
| previous_owners | 0.007803 | -0.005030 | 0.075775 | 0.097539 | 1.000000 | 0.001697 | -0.026836 | -0.076274 |
| lat | -0.058207 | 0.005721 | 0.062982 | 0.035519 | 0.001697 | 1.000000 | -0.766646 | -0.011733 |
| lon | 0.058941 | -0.005032 | -0.042667 | 0.004839 | -0.026836 | -0.766646 | 1.000000 | -0.003541 |
| price | 0.028516 | -0.277235 | -0.893328 | -0.859373 | -0.076274 | -0.011733 | -0.003541 | 1.000000 |

In [12]: cor.plot()#*plot the grap from corr*

Out[12]: <Axes: >
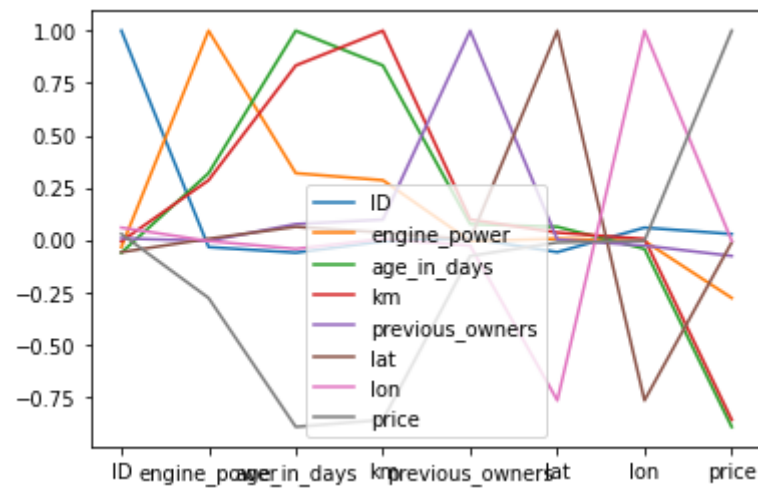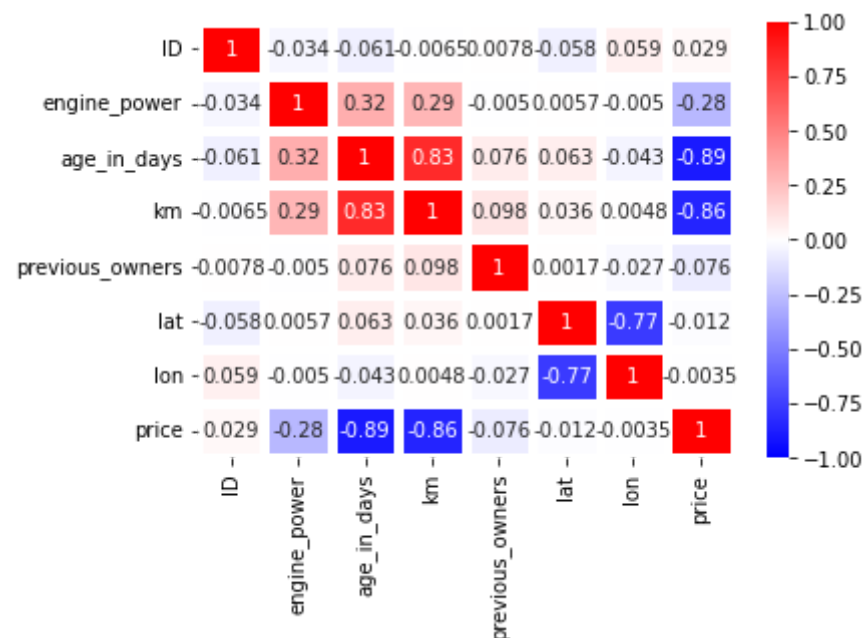
In [13]: `cor.plot("price")`

Out[13]: <Axes: xlabel='price'>

```
In [14]: import seaborn as sb
         sb.heatmap(cor,vmax=1,vmin=-1,annot=True,linewidth=5,cmap='bwr')#plotting correlection graph
```

Out[14]: <Axes: >

In [15]:
```python
det=venu.drop(['ID','engine_power','model','age_in_days','previous_owners','lat','lon'],axis=1)
det#removing unwanted columns from table
```

Out[15]:

|  | km | price |
|---|---|---|
| **0** | 25000 | 8900 |
| **1** | 32500 | 8800 |
| **2** | 142228 | 4200 |
| **3** | 160000 | 6000 |
| **4** | 106880 | 5700 |
| **...** | ... | ... |
| **1533** | 115280 | 5200 |
| **1534** | 112000 | 4600 |
| **1535** | 60457 | 7500 |
| **1536** | 80750 | 5990 |
| **1537** | 54276 | 7900 |

1538 rows × 2 columns

In [16]:
```
det1=venu.drop(['ID','engine_power','model','age_in_days','previous_owners','lat','lon'],axis=1)
det1
```

Out[16]:

| | km | price |
|---|---|---|
| 0 | 25000 | 8900 |
| 1 | 32500 | 8800 |
| 2 | 142228 | 4200 |
| 3 | 160000 | 6000 |
| 4 | 106880 | 5700 |
| ... | ... | ... |
| 1533 | 115280 | 5200 |
| 1534 | 112000 | 4600 |
| 1535 | 60457 | 7500 |
| 1536 | 80750 | 5990 |
| 1537 | 54276 | 7900 |

1538 rows × 2 columns

In [18]:
```python
venu['model']=venu['model'].map({'lounge':1,'pop':2,'sport':3})
venu#convrting tje strings into integer
```

Out[18]:

| | ID | model | engine_power | age_in_days | km | previous_owners | lat | lon | price |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 1 | 51 | 882 | 25000 | 1 | 44.907242 | 8.611560 | 8900 |
| 1 | 2 | 2 | 51 | 1186 | 32500 | 1 | 45.666359 | 12.241890 | 8800 |
| 2 | 3 | 3 | 74 | 4658 | 142228 | 1 | 45.503300 | 11.417840 | 4200 |
| 3 | 4 | 1 | 51 | 2739 | 160000 | 1 | 40.633171 | 17.634609 | 6000 |
| 4 | 5 | 2 | 73 | 3074 | 106880 | 1 | 41.903221 | 12.495650 | 5700 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 1533 | 1534 | 3 | 51 | 3712 | 115280 | 1 | 45.069679 | 7.704920 | 5200 |
| 1534 | 1535 | 1 | 74 | 3835 | 112000 | 1 | 45.845692 | 8.666870 | 4600 |
| 1535 | 1536 | 2 | 51 | 2223 | 60457 | 1 | 45.481541 | 9.413480 | 7500 |
| 1536 | 1537 | 1 | 51 | 2557 | 80750 | 1 | 45.000702 | 7.682270 | 5990 |
| 1537 | 1538 | 2 | 51 | 1766 | 54276 | 1 | 40.323410 | 17.568270 | 7900 |

1538 rows × 9 columns

In [ ]: