In [1]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [2]:

```
df=pd.read_csv(r'C:\Users\user\Downloads\fiat500_VehicleSelection_Dataset (2).csv')
df
```

Out[2]:

	ID	model	engine_power	age_in_days	km	previous_owners	lat	l
0	1	lounge	51	882	25000	1	44.907242	8.6115
1	2	pop	51	1186	32500	1	45.666359	12.2418
2	3	sport	74	4658	142228	1	45.503300	11.4178
3	4	lounge	51	2739	160000	1	40.633171	17.6346
4	5	pop	73	3074	106880	1	41.903221	12.4956
...	...	...	...	...	...	...	...	
1533	1534	sport	51	3712	115280	1	45.069679	7.7049
1534	1535	lounge	74	3835	112000	1	45.845692	8.6668
1535	1536	pop	51	2223	60457	1	45.481541	9.4134
1536	1537	lounge	51	2557	80750	1	45.000702	7.6822
1537	1538	pop	51	1766	54276	1	40.323410	17.5682

1538 rows × 9 columns

In [3]:

```
df.head(10)
```

Out[3]:

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

In [4]:

```
df.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              1537 non-null   float64
 8   price            1538 non-null   int64  
dtypes: float64(2), int64(6), object(1)
memory usage: 108.3+ KB
```

In [5]:

```
df.describe()
```

Out[5]:

	ID	engine_power	age_in_days	km	previous_owners	la
count	1538.000000	1538.000000	1538.000000	1538.000000	1538.000000	1538.00000
mean	769.500000	51.904421	1650.980494	53396.011704	1.123537	43.54136
std	444.126671	3.988023	1289.522278	40046.830723	0.416423	2.13351
min	1.000000	51.000000	366.000000	1232.000000	1.000000	36.85583
25%	385.250000	51.000000	670.000000	20006.250000	1.000000	41.80299
50%	769.500000	51.000000	1035.000000	39031.000000	1.000000	44.39409
75%	1153.750000	51.000000	2616.000000	79667.750000	1.000000	45.46796
max	1538.000000	77.000000	4658.000000	235000.000000	4.000000	46.79561

In [6]:

```
df.columns
```

Out[6]:

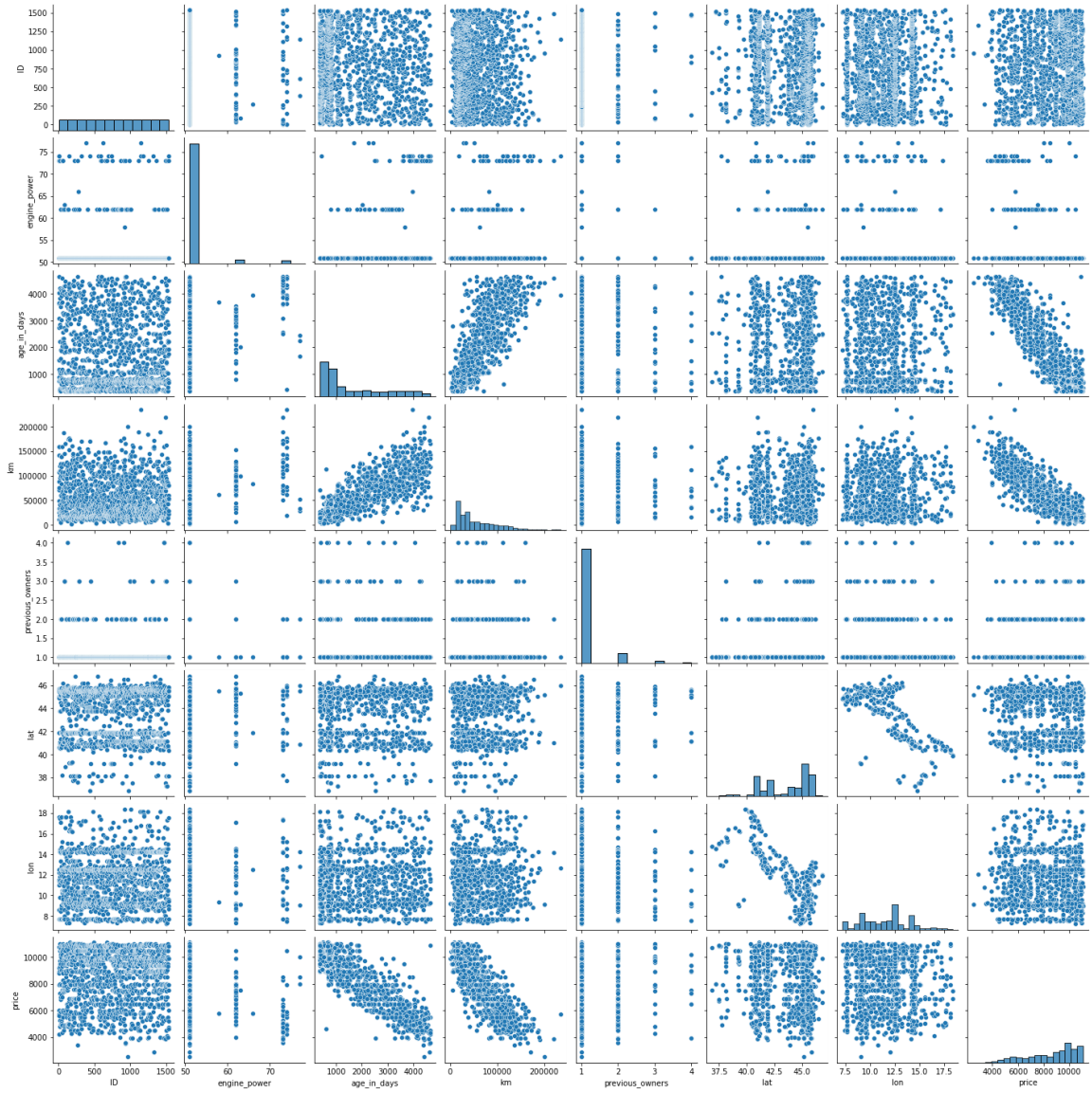
```
Index(['ID', 'model', 'engine_power', 'age_in_days', 'km', 'previous_owner
s',
       'lat', 'lon', 'price'],
      dtype='object')
```

In [7]:

```
sns.pairplot(df)
```

Out[7]:

```
<seaborn.axisgrid.PairGrid at 0x26bf6619dc0>
```



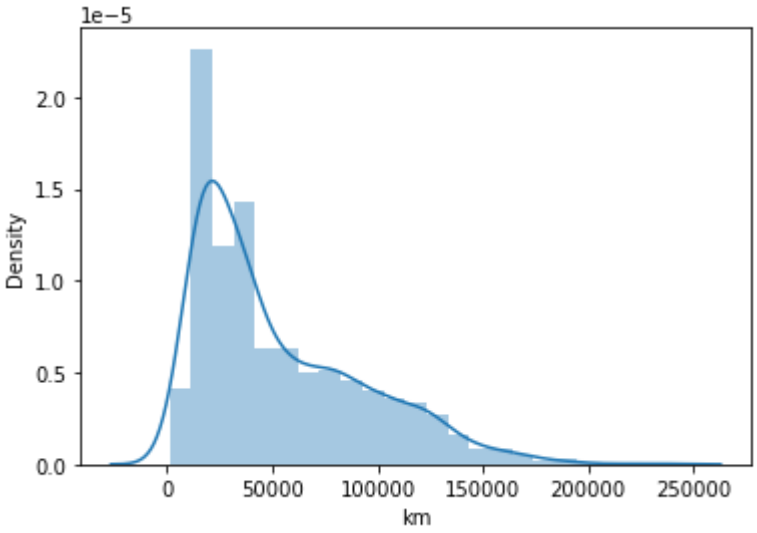
In [8]:

```
sns.distplot(df['km'])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\distributions.py:2557:
FutureWarning: `distplot` is a deprecated function and will be removed in
a future version. Please adapt your code to use either `displot` (a figure
-level function with similar flexibility) or `histplot` (an axes-level fun
ction for histograms).
  warnings.warn(msg, FutureWarning)
```

Out[8]:

```
<AxesSubplot:xlabel='km', ylabel='Density'>
```

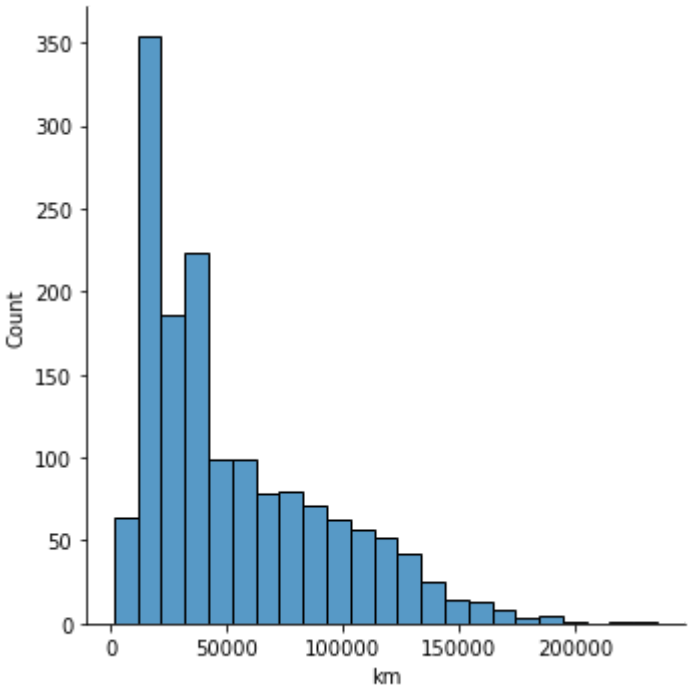


In [9]:

```
sns.displot(df["km"])
```

Out[9]:

```
<seaborn.axisgrid.FacetGrid at 0x26bf9415d30>
```



In [10]:

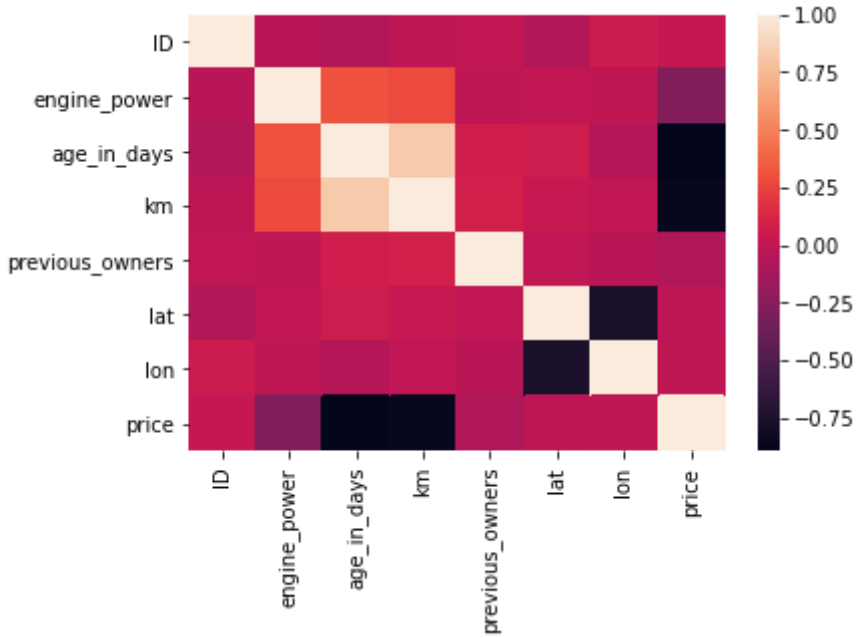
```
df1=df[['ID', 'model', 'engine_power', 'age_in_days', 'km', 'previous_owners',
       'lat', 'lon', 'price']]
```

In [11]:

```
sns.heatmap(df1.corr())
```

Out[11]:

<AxesSubplot:>



In [14]:

```
x=df1[['engine_power', 'age_in_days', 'km']]
y=df1[['price']]
```

In [15]:

```
from sklearn.model_selection import train_test_split
```

In [16]:

```
x_train,x_test,y_train,y_test = train_test_split(x,y,test_size=0.3)
```

In [17]:

```
from sklearn.linear_model import LinearRegression

lr=LinearRegression()
lr.fit(x_train,y_train)#ValueError: Input contains NaN, infinity or a value too large for
```

Out[17]:

```
LinearRegression()
```

In [18]:

```
print(lr.intercept_)
```

```
[10559.14815828]
```

In [19]:

```
coef= pd.DataFrame(lr.coef_)
coef
```

Out[19]:

	0	1	2
0	9.089696	-0.885904	-0.018897

In [20]:

```
print(lr.score(x_test,y_test))
```

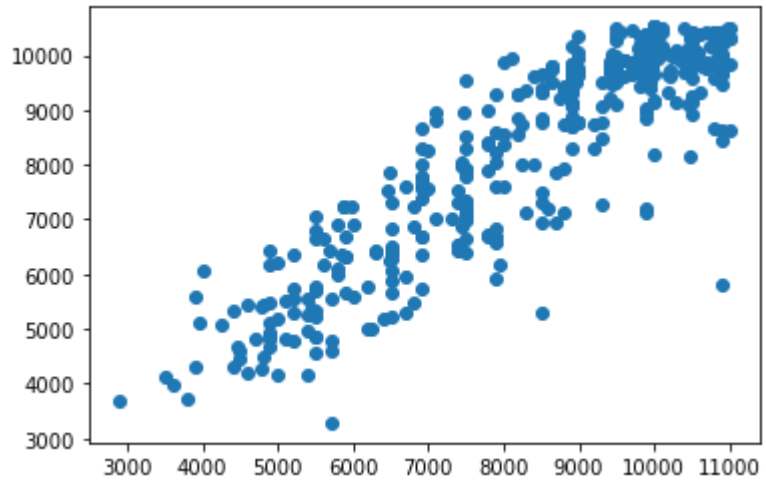
```
0.8126192264373202
```

In [21]:

```
prediction = lr.predict(x_test)
plt.scatter(y_test,prediction)
```

Out[21]:

```
<matplotlib.collections.PathCollection at 0x26bfae4b100>
```



In [22]:

```
lr.score(x_test,y_test)
```

Out[22]:

```
0.8126192264373202
```

In [23]:

```
lr.score(x_train,y_train)
```

Out[23]:

```
0.853532785051327
```

In [24]:

```
from sklearn.linear_model import Ridge,Lasso
```

In [25]:

```
rr=Ridge(alpha=10)
rr.fit(x_train,y_train)
```

Out[25]:

```
Ridge(alpha=10)
```

In [26]:

```
rr.score(x_test,y_test)
```

Out[26]:

```
0.8126193443083323
```

In [27]:

```
la=Lasso(alpha=10)
la.fit(x_train,y_train)
```

Out[27]:

```
Lasso(alpha=10)
```

In [28]:

```
la.score(x_test,y_test)
```

Out[28]:

```
0.8126309693731364
```