In [1]:

```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn import preprocessing,svm
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
```

In [2]:

```
df=pd.read_csv(r"C:\Users\MSI\Downloads\fiat500_VehicleSelection_Dataset(csv).csv")
df
```

Out[2]:

	ID	model	engine_power	age_in_days	km	previous_owners	lat	
0	1	lounge	51	882	25000	1	44.907242	8.611
1	2	pop	51	1186	32500	1	45.666359	12.241
2	3	sport	74	4658	142228	1	45.503300	11.417
3	4	lounge	51	2739	160000	1	40.633171	17.634
4	5	pop	73	3074	106880	1	41.903221	12.495
...	...	...	...	...	...	...	...	
1533	1534	sport	51	3712	115280	1	45.069679	7.704
1534	1535	lounge	74	3835	112000	1	45.845692	8.666
1535	1536	pop	51	2223	60457	1	45.481541	9.413
1536	1537	lounge	51	2557	80750	1	45.000702	7.682
1537	1538	pop	51	1766	54276	1	40.323410	17.568

1538 rows × 9 columns

In [3]:

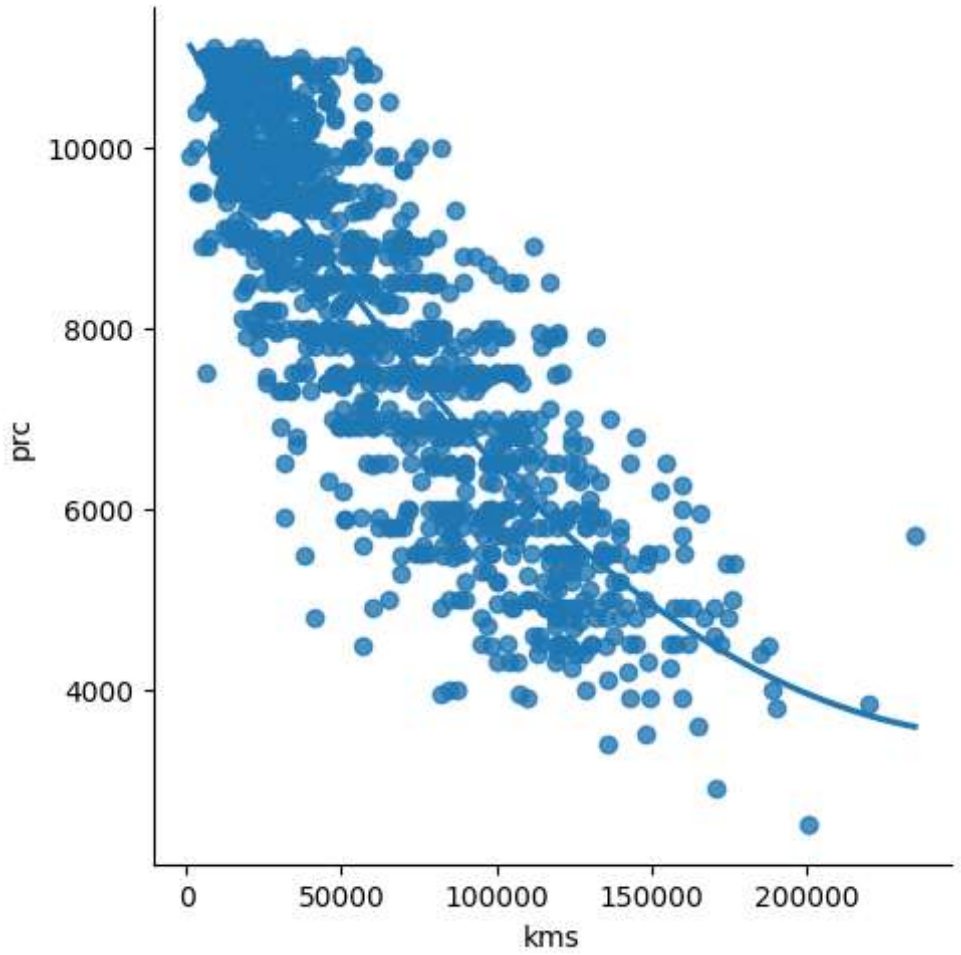
```
df=df[['km','price']]
df.columns=['kms','prc']
```

In [4]:

```
sns.lmplot(x="kms",y="prc",data=df,order=2,ci=None)
```

Out[4]:

```
<seaborn.axisgrid.FacetGrid at 0x25ae33715d0>
```



In [5]:

```
df.describe()
```

Out[5]:

	kms	prc
count	1538.000000	1538.000000
mean	53396.011704	8576.003901
std	40046.830723	1939.958641
min	1232.000000	2500.000000
25%	20006.250000	7122.500000
50%	39031.000000	9000.000000
75%	79667.750000	10000.000000
max	235000.000000	11100.000000

In [6]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1538 entries, 0 to 1537
Data columns (total 2 columns):
 #   Column  Non-Null Count  Dtype
---  ------  --------------  -----
 0   kms     1538 non-null   int64
 1   prc     1538 non-null   int64
dtypes: int64(2)
memory usage: 24.2 KB
```

In [16]:

```
df.fillna(method="ffill")
```

Out[16]:

	kms	prc
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 [8]:

```
x=np.array(df['kms']).reshape(-1,1)
y=np.array(df['prc']).reshape(-1,1)
```

In [15]:

```
df.dropna()
```

Out[15]:

	kms	prc
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

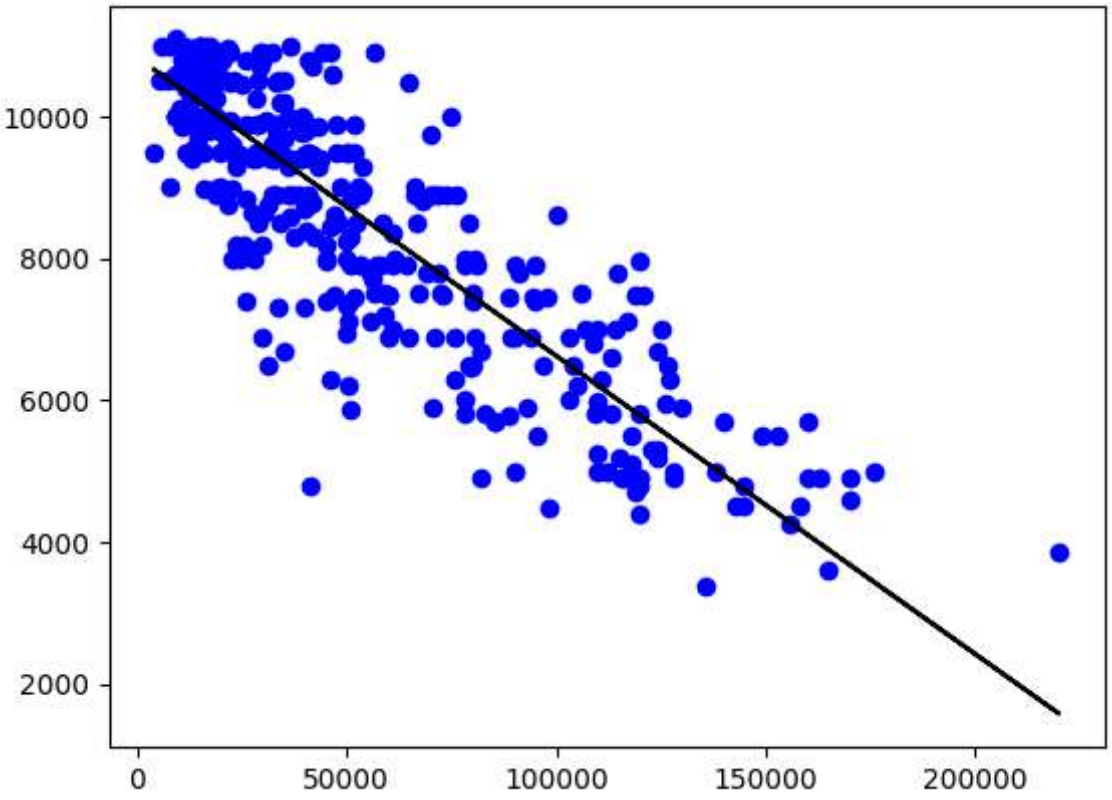
In [10]:

```
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.25)
regr=LinearRegression()
regr.fit(x_train,y_train)
print(regr.score(x_test,y_test))
```

```
0.7380720102655363
```

In [11]:

```
y_pred=regr.predict(x_test)
plt.scatter(x_test,y_test,color='b')
plt.plot(x_test,y_pred,color='k')
plt.show()
```

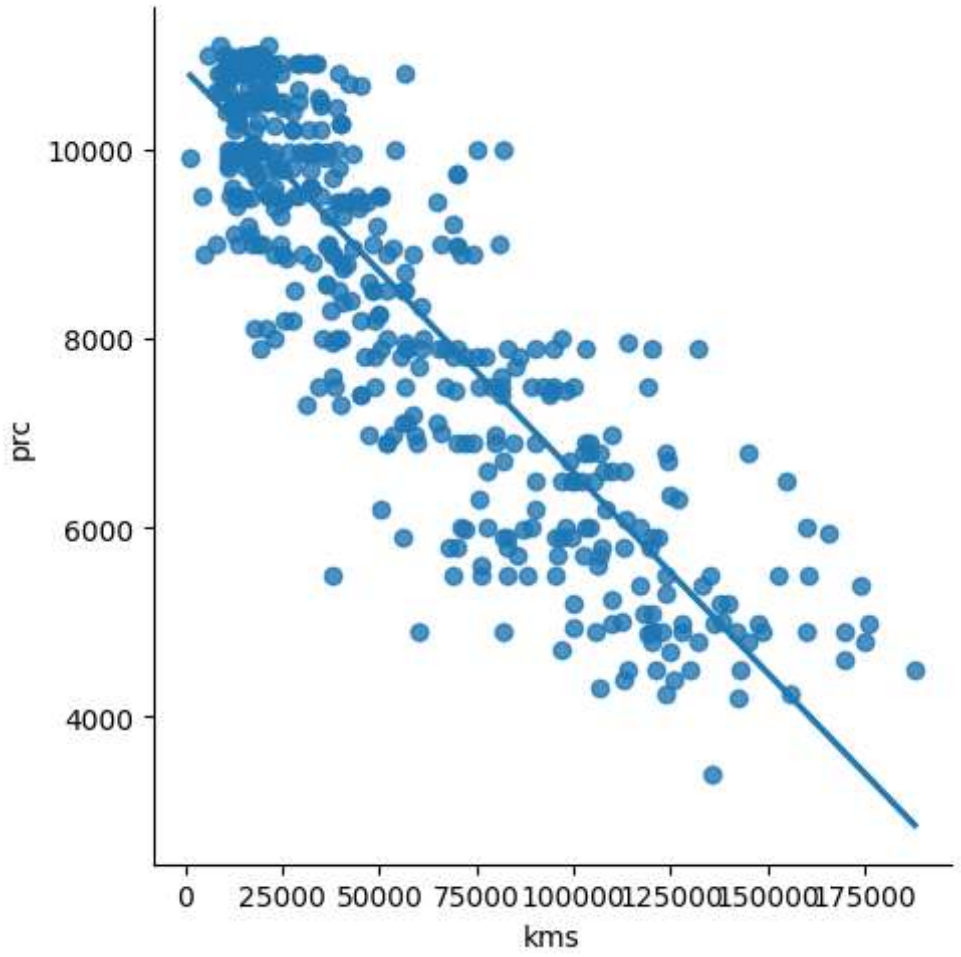


In [12]:

```
df500=df[:][:500]
sns.lmplot(x="kms",y="prc",data=df500,order=1,ci=None)
```

Out[12]:

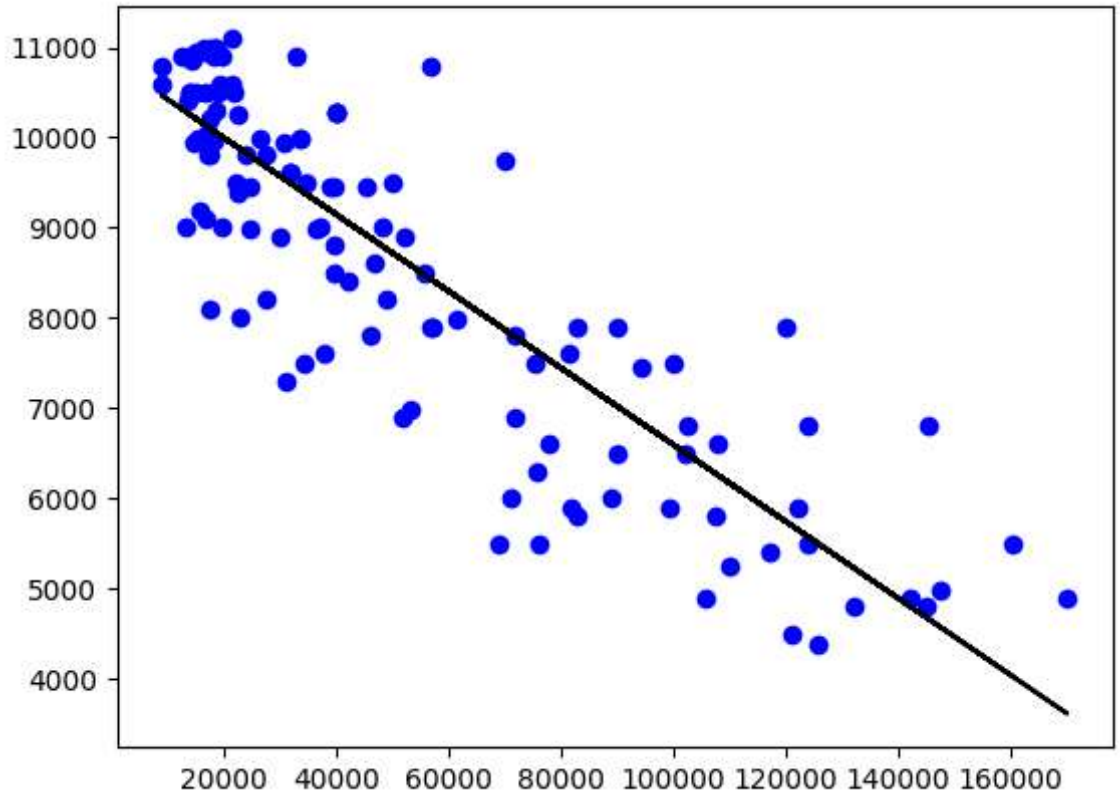
```
<seaborn.axisgrid.FacetGrid at 0x25ae3371a50>
```



In [13]:

```
df500.fillna(method='ffill',inplace=True)
x=np.array(df500['kms']).reshape(-1,1)
y=np.array(df500['prc']).reshape(-1,1)
df500.dropna(inplace=True)
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.25)
regr=LinearRegression()
regr.fit(x_train,y_train)
print("Regression:",regr.score(x_test,y_test))
y_pred=regr.predict(x_test)
plt.scatter(x_test,y_test,color='b')
plt.plot(x_test,y_pred,color='k')
plt.show()
```

```
Regression: 0.7579703396141574
```



In [14]:

```
from sklearn.linear_model import LinearRegression
from sklearn.metrics import r2_score
model=LinearRegression()
model.fit(x_train,y_train)
y_pred=model.predict(x_test)
r2=r2_score(y_test,y_pred)
print("R2 score:",r2)
```

```
R2 score: 0.7579703396141574
```

In [ ]:

```

```