In [3]: import numpy as np
import pandas as pd

In [8]: x=pd.read_csv(r"C:\Users\user\Downloads\fiat500_VehicleSelection_Dataset - fiat
x

Out[8]:

	ID	model	engine_power	age_in_days	km	previous_owners	lat	Ic
0	1.0	lounge	51.0	882.0	25000.0	1.0	44.907242	8.6115598
1	2.0	pop	51.0	1186.0	32500.0	1.0	45.666359	12.241889
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	17.634609
4	5.0	рор	73.0	3074.0	106880.0	1.0	41.903221	12.495650
1544	NaN	NaN	NaN	NaN	NaN	NaN	NaN	lenç
1545	NaN	NaN	NaN	NaN	NaN	NaN	NaN	conc
1546	NaN	NaN	NaN	NaN	NaN	NaN	NaN	Null valu
1547	NaN	NaN	NaN	NaN	NaN	NaN	NaN	fi
1548	NaN	NaN	NaN	NaN	NaN	NaN	NaN	sear

1549 rows × 11 columns

In [4]: x.head(5)

Out[4]:

	ID	model	engine_power	age_in_days	km	previous_owners	lat	lon	ļ
	0 1.0	lounge	51.0	882.0	25000.0	1.0	44.907242	8.611559868	i
	1 2.0	pop	51.0	1186.0	32500.0	1.0	45.666359	12.24188995	i
:	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	1
	4 5.0	pop	73.0	3074.0	106880.0	1.0	41.903221	12.49565029	;

In [5]: x.tail(5)Out[5]: Un ID model engine_power age_in_days previous_owners lat lon price km 1544 NaN NaN NaN NaN NaN NaN NaN length 5 1545 NaN NaN NaN NaN NaN NaN NaN concat Ionprice Null 1546 NaN NaN NaN NaN NaN NaN NaN NO values 1547 NaN NaN NaN NaN 1 NaN NaN NaN find NaN 1 1548 NaN NaN NaN NaN NaN NaN search In [6]: x.dtypes Out[6]: ID float64 model object float64 engine_power age_in_days float64 float64 float64 previous_owners float64 lat lon object price object Unnamed: 9 float64 Unnamed: 10 object dtype: object In [7]: | x.index Out[7]: RangeIndex(start=0, stop=1549, step=1) In [8]: x.describe() Out[8]: engine_power previous_owners lat age_in_days 1538.000000 1538.000000 1538.000000 1538.000000 1538.000000 1538.000000 count 769.500000 51.904421 1650.980494 53396.011704 1,123537 43.541361 mean 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%

75%

max

769.500000

1153.750000

1538.000000

51.000000

51.000000

77.000000

1035.000000

2616.000000

4658.000000

39031.000000

79667.750000

235000.000000

1.000000

1.000000

4.000000

44.394096

45.467960

46.795612

```
In [9]: x["ID"]
Out[9]: 0
                 1.0
        1
                 2.0
        2
                 3.0
        3
                 4.0
        4
                 5.0
        1544
                 NaN
        1545
                 NaN
        1546
                 NaN
        1547
                 NaN
        1548
                NaN
        Name: ID, Length: 1549, dtype: float64
```

In [10]: x.loc[1:7]

Out[10]:

	ID	model	engine_power	age_in_days	km	previous_owners	lat	lon
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
							_	

t[11]:		ID	model	engine_power	age_in_days	km pr	revious_owners	lat	lon	price	Uni
	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	
					•••						
1	544	True	True	True	True	True	True	True	False	False	
1:	545	True	True	True	True	True	True	True	False	False	
1:	546	True	True	True	True	True	True	True	False	False	
1	547	True	True	True	True	True	True	True	False	False	
1	548	True	True	True	True	True	True	True	False	False	
4									,		,
12]: x.	fil	lna(va	alue=10 model		age in days	km	previous own	ers	la	at	
		ID	model	engine_power			previous_own			at	1155
	0	ID	model lounge	engine_power	882.0	25000.0	<u> </u>	1.0	14.90724	2 8.61	11559
		1.0 2.0	model lounge	engine_power 51.0 51.0	882.0 1186.0		<u> </u>	1.0		2 8.61 9 12.2	2418
	0	1.0 2.0 3.0	model lounge	engine_power	882.0 1186.0 4658.0	25000.0 32500.0		1.0 4 1.0 4	44.90724 45.66635	2 8.61 9 12.2 0	2418≀ 11.4
	0 1 2	1.0 2.0 3.0	model lounge pop sport	engine_power 51.0 51.0 74.0	882.0 1186.0 4658.0	25000.0 32500.0 142228.0		1.0 4 1.0 4 1.0 4	44.90724 45.66635 45.50330	2 8.61 9 12.2 0	2418≀ 11.4
_	0 1 2 3	1.0 2.0 3.0 4.0	model lounge pop sport lounge	engine_power 51.0 51.0 74.0 51.0	882.0 1186.0 4658.0 2739.0	25000.0 32500.0 142228.0 160000.0		1.0 4 1.0 4 1.0 4	44.90724 45.66635 45.50330 40.63317 41.90322	2 8.61 9 12.2 0	2418{ 11.4 3346(
2]:	0 1 2 3 4	1.0 2.0 3.0 4.0 5.0	model lounge pop sport lounge pop	engine_power 51.0 51.0 74.0 51.0 73.0	882.0 1186.0 4658.0 2739.0 3074.0	25000.0 32500.0 142228.0 160000.0 106880.0		1.0 4 1.0 4 1.0 4 1.0 4	44.90724 45.66635 45.50330 40.63317 41.90322	2 8.61 9 12.2 0 17.6 1 12.4	2418{ 11.4 3346(
2]:	0 1 2 3 4	1.0 2.0 3.0 4.0 5.0	model lounge pop sport lounge pop	engine_power 51.0 51.0 74.0 51.0 73.0	882.0 1186.0 4658.0 2739.0 3074.0	25000.0 32500.0 142228.0 160000.0 106880.0	10	1.0 4 1.0 4 1.0 4 1.0 4 1.0 4 1.0 4 1.0 4	44.90724 45.66635 45.50330 40.63317 41.90322	2 8.61 9 12.2 0 17.6 1 12.4	2418(11.4 6346(956(
2]:	0 1 2 3 4 	1.0 2.0 3.0 4.0 5.0 	model lounge pop sport lounge pop 100	engine_power 51.0 51.0 74.0 51.0 73.0 100.0	882.0 1186.0 4658.0 2739.0 3074.0 	25000.0 32500.0 142228.0 160000.0 106880.0 100.0	10	1.0 4 1.0 4 1.0 4 1.0 4 1.0 4 1.0 4 1.0 10	44.90724 45.66635 45.50330 40.63317 41.90322	2 8.61 9 12.2 0 1 17.6 1 12.4 	24181 11.4 33460 9560 I e
2]: 1 1	0 1 2 3 4 544	1.0 2.0 3.0 4.0 5.0 100.0	model lounge pop sport lounge pop 100 100	engine_power 51.0 51.0 74.0 51.0 73.0 100.0 100.0	882.0 1186.0 4658.0 2739.0 3074.0 100.0	25000.0 32500.0 142228.0 160000.0 106880.0 100.0	10 10 10	1.0 4 1.0 4 1.0 4 1.0 4 1.0 4 1.0 4 1.0 10 1.0 10	44.90724 45.66635 45.50330 40.63317 41.90322 00.00000	2 8.61 9 12.2 0 1 17.6 1 12.4 0 0	24184 11.4 63460 9564 le
2]: 	0 1 2 3 4 544 545	1.0 2.0 3.0 4.0 5.0 100.0 100.0	model lounge pop sport lounge pop 100 100	engine_power 51.0 51.0 74.0 51.0 73.0 100.0 100.0 100.0	882.0 1186.0 4658.0 2739.0 3074.0 100.0 100.0	25000.0 32500.0 142228.0 160000.0 106880.0 100.0 100.0	10 10 10 10	1.0 4 1.0 4 1.0 4 1.0 4 1.0 4 1.0 6 1.0 10 0.0 10 0.0 10	44.90724 45.66635 45.50330 40.63317 41.90322 00.00000 00.00000	2 8.61 9 12.2 0 1 17.6 1 12.4 0 0 No	24184 11.4 63460 9564 le
2]: 1 1 1 1	0 1 2 3 4 544 545 546 547	1.0 2.0 3.0 4.0 5.0 100.0 100.0 100.0 100.0	model lounge pop sport lounge pop 100 100 100 100	engine_power 51.0 51.0 74.0 51.0 73.0 100.0 100.0 100.0 100.0 100.0	882.0 1186.0 4658.0 2739.0 3074.0 100.0 100.0 100.0	25000.0 32500.0 142228.0 160000.0 106880.0 100.0 100.0 100.0	10 10 10 10	1.0 4 1.0 4 1.0 4 1.0 4 1.0 4 1.0 6 1.0 10 0.0 10 0.0 10	44.90724 45.66635 45.50330 40.63317 41.90322 00.00000 00.00000 00.00000	2 8.61 9 12.2 0 1 17.6 1 12.4 0 0 No	24184 11.4 33464 9564 le cc ull va
1. 1. 1. 1. 1.	0 1 2 3 4 544 545 546 547 548	1.0 2.0 3.0 4.0 5.0 100.0 100.0 100.0 100.0	model lounge pop sport lounge pop 100 100 100 100 100	engine_power 51.0 51.0 74.0 51.0 73.0 100.0 100.0 100.0 100.0 100.0	882.0 1186.0 4658.0 2739.0 3074.0 100.0 100.0 100.0	25000.0 32500.0 142228.0 160000.0 106880.0 100.0 100.0 100.0	10 10 10 10	1.0 4 1.0 4 1.0 4 1.0 4 1.0 4 1.0 6 1.0 10 0.0 10 0.0 10	44.90724 45.66635 45.50330 40.63317 41.90322 00.00000 00.00000 00.00000	2 8.61 9 12.2 0 1 17.6 1 12.4 0 0 No	24184 11.4 33464 9564 le cc ull va

```
In [14]: x.columns
dtype='object')
In [15]: x["lon"]
Out[15]: 0
                8.611559868
                12.24188995
         1
         2
                   11.41784
         3
                17.63460922
                12.49565029
                   . . .
         1544
                     length
                     concat
         1545
         1546
                Null values
         1547
                       find
         1548
                     search
         Name: lon, Length: 1549, dtype: object
In [16]: | x.dropna(axis=1,how="any")
Out[16]:
                     lon
                          price
            0 8.611559868
                          8900
            1 12.24188995
                          8800
            2
                 11.41784
                          4200
              17.63460922
                          6000
                          5700
              12.49565029
         1544
                   length
                             5
         1545
                  concat lonprice
                           NO
         1546
                Null values
         1547
                    find
                             1
         1548
                             1
                  search
         1549 rows × 2 columns
In [10]: | x=x[["km","price"]]
```

In [13]: x

Out[13]:

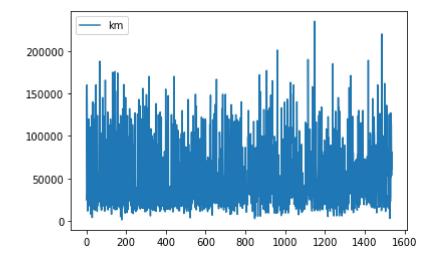
	km	price
0	25000.0	8900
1	32500.0	8800
2	142228.0	4200
3	160000.0	6000
4	106880.0	5700
1544	NaN	5
1545	NaN	Ionprice
1546	NaN	NO
1547	NaN	1
1548	NaN	1

1549 rows × 2 columns

```
In [14]: import matplotlib.pyplot as pp
```

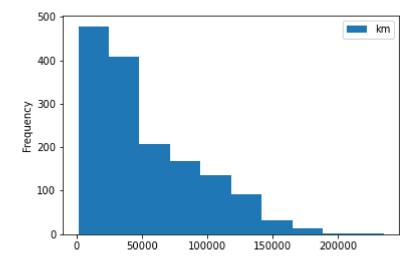
```
In [16]: x.plot.line()
```

Out[16]: <AxesSubplot:>



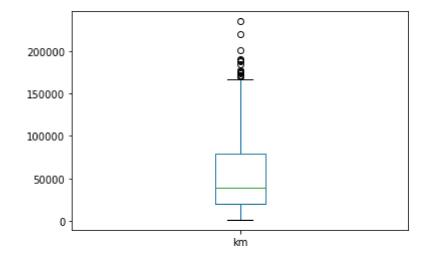
```
In [18]: x.plot.hist()
```

Out[18]: <AxesSubplot:ylabel='Frequency'>



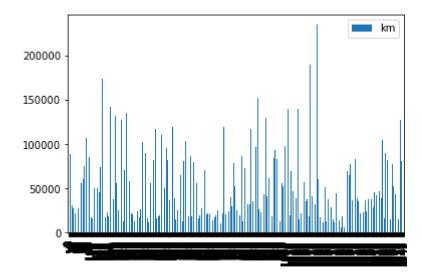
In [24]: x.plot.box()

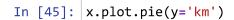
Out[24]: <AxesSubplot:>



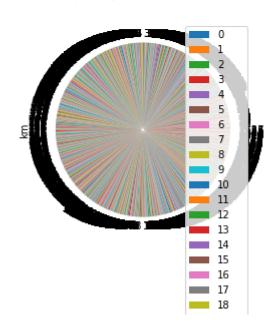
```
In [26]: x.plot.bar()
```

Out[26]: <AxesSubplot:>



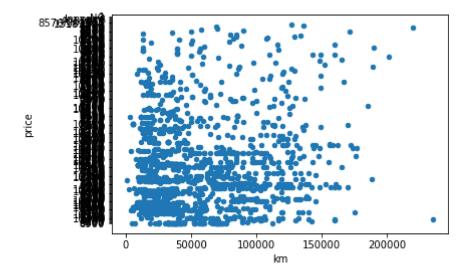


Out[45]: <AxesSubplot:ylabel='km'>



```
In [44]: x.plot.scatter(x='km',y='price')
```

Out[44]: <AxesSubplot:xlabel='km', ylabel='price'>



In []: